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Results of the Ninth International Winter Wheat Performance Nursery Grown in 1977

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ACKNOWLEDGMENTS

Cooperation of nursery collaborators from the 61 sites in 33 countries in which the Ninth International Winter Wheat Performance Nursery (IWWPN) was grown in 1977 is gratefully acknowledged. The nursery would not be possible without the information and data provided by these individuals. Their responsibility to nursery management, data recording, harvesting, and the return of data field-books and seed quality samples to Nebraska is an essential component of the program.

The cooperation of the United States Animal and Plant Health Inspection Service (APHIS) is acknowledged. Gratitude is also extended to the personnel in the Plant Production and Protection Divi-

sion, Food and Agriculture Organization of the United Nations, especially to Dr. W. Tahir and Dr. A. Hafiz for their assistance in forwarding seed shipments to testing sites. We acknowledge also the continued assistance and cooperation of wheat personnel of the International Maize and Wheat Improvement Center, Mexico, D.F.

We express our sincere appreciation to these organizations and people.

The assistance of Shelley Slocum, Regina Hogendorn and Joyce Kovar in the preparation of this report also is acknowledged.

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DATA MANAGEMENT

The results presented in this report are based on data provided by our cooperators throughout the world. We report the data as we receive it and we hope that we have kept transcription errors to a minimum. Where questions about the data have arisen we have contacted the cooperators for clarification. We sincerely hope that, by this procedure, we have detected questionable or incorrect data before it was published.

SUMMARY

Seed for the Ninth International Winter Wheat Performance Nursery (IWWPN) was sent to cooperators at 68 locations in 38 countries in the fall of 1976. Performance data were reported from 61 locations. The nursery consisted of 29 winter wheat varieties and one spring wheat variety, Lerma Rojo 64. Thirteen new cultivars were added for their first year of testing in the 1977 IWWPN while 17 were repeated from 1976.

Data are reported on grain yield, grain protein, test weight, 1000-kernel weight, plant height, lodging, winter survival, frost damage, maturity, shattering, seed grade, plant diseases, and all other traits reported by cooperators. Supplemental nursery management information is reported for each nursery site adjacent to the table of agronomic, grain quality, and disease data for the site. Summary tables are presented by trait over locations for each variety and across

varieties for 1977. Means and other statistics based on regionalization of the data into six broad geographical areas of the world are reported. In addition, two-year means and statistics for 16 cultivars that were grown in the IWWPN's in 1976 and 1977 also are reported.

The grand yield mean of all varieties averaged over 56 sites was 38.0 q/ha in 1977. This compares with 40.5 q/ha over 50 sites in 1976, and 39.0 q/ha over 42 sites in 1975. Individual nursery yield means ranged from a low of 1.7 q/ha at Jokioinen, Finland to a high of 98.3 q/ha at Male Ripnany, Czechoslovakia.

Eleven sites had nursery yield means less than 20 q/ha. Twenty-three sites had nursery means ranging between 20 and 40 q/ha while 17 sites had mean yields between 40 to 60 q/ha. There were seven sites which exceeded 60 q/ha for nursery yield means.

Yubiley, Sadovo-1, and Priboy having yields of 45.0, 43.2, and 42.7 q/ha, respectively, were the only three cultivars which equaled or surpassed the yield of Bezostaya 1 (42.7 q/ha), averaged over 56 sites. These differences were not significant in the statistical sense, however. Yubiley ranked among the 10 highest yielding varieties in 41 of the 56 sites. It was ranked first at six sites. Sadovo-1 and Priboy were among the 10 highest yielding varieties at 35 and 31 sites, respectively. Zg 887/73 was ranked first in yield at 9 sites; however, its overall rank was 14th.

In Southern Europe, Zg 887/73, Zg 4240/73, Yubiley, and Zg 4364/73 yielded 17.8, 17.5, 16.9, and 12.5% more than Bezostaya 1. In the other five regional analyses, none of the varieties were statistically significantly higher in yield than Bezostaya 1. Percentage-wise, Yubiley performed 10.2% better than Bezostaya 1 in Northern Europe; Priboy 11.1% better in the Far East; Blueboy 12.1% better in the Middle East; Probstdorfer Karat, 2.8% better in North America; and Odesskaya 51, 1.1% better in the Southern Hemisphere.

The grand mean for 16 varieties grown in 1976 and 1977 was 39.5 q/ha, averaged over 46 sites. Priboy had the highest two-year mean of 45.6 q/ha. The lowest yield for a test-cultivar was for Galiafen, 29.7 q/ha.

F26-70 possessed the highest grain protein content (16.7%) in the 9th IWWPN. Atlas 66, the long-term protein check, had a mean value of 16.6%. A correlation coefficient of $-.25^{**}$ was computed between grain yield and grain protein. The Romanian cultivars, F26-70, F53-70, F54-70, and Iulia tended to have high grain protein contents in conjunction with good productivity.

Averaged over 28 sites, Atlas 66 had the highest two-year protein value (16.6%), while WA5829 was lowest in protein content at 12.2%. The two-year grand mean was 14.2%. The overall analysis of variance indicated that the cultivars ranked consistently, relative to one another, in both years. F26-70 was not included in the two-year analysis because of a cultivar identity mix-up in the 8th IWWPN (1976).

Bezostaya 1, Iulia, and Bordenave Puan Sag shared the high test weight value of 79.6 kg/hl. Blueboy and WA5829 had the smallest volume weight values. The Middle East had the highest average test weight values, 79.0 kg/hl; Northern Europe the lowest average, 76.3 kg/hl. Averaged over 16 sites, the highest two-year mean was recorded for Probstdorfer Karat. WA5829 had the smallest two-year mean for test weight.

Sadovo-1 had the largest 1000-kernel weight mean of 47.0 grams, averaged over 24 sites. Priboy was second with 43.9 grams. NE68719 had the smallest mean of only 30.3 grams. Seed weights were heaviest in Northern Europe, while those in the Southern Hemisphere were the lightest. Averaged over 16 sites, Priboy had the highest two-year 1000-kernel weight mean; WA5829 displayed the lowest two-year mean.

The grand means for plant height and lodging were 90.5 cm and 32.7%, respectively. Plant height was positively correlated with yield (.36**) and with lodging (.32**). Mironovskaya 808, Atlas 66, Probstdorfer Karat, and Bordenave Puan Sag were the tallest varieties. Bordenave Puan Sag lodged most severely, 72.6%. The shortest variety, Zg 4293/73, had the least amount of lodging. Nursery sites in the Middle East observed little lodging, whereas the sites in Southern Europe recorded the most frequent occurrence of lodging.

For the two-year period, GKF-8001 was the shortest cultivar. This cultivar also had the least amount of lodging. Atlas 66 was the tallest variety, and Bordenave Puan Sag lodged most frequently.

Differential readings for winter survival were analyzed for 31 sites. The grand mean was 81.6% survival. Cultivar means ranged from 91.7% for Mironovskaya 808 to a low of 37.2% for Galiafen. The most severe winter-killing took place in the Far East and North America.

The grand mean for the two-year period was 76.4% survival. Oasis and Probstdorfer Karat had two-year survival means of 90.3 and 90.2%, respectively. Galiafen had the lowest two-year mean survival of 32.4%.

Varieties tested in the 1977 IWWPN differed considerably in maturity. F26-70, Flavio, and the Zagreb cultivars were the earliest flowering entries. Mironovskaya 808, Probstdorfer Karat, and WA5829 were the latest varieties in the nursery. Generally, the varieties which flowered the earliest also ripened the earliest. The correlation coefficient measuring this relationship was .99**.

Nurseries in the Middle East required an average of 26 fewer days from January 1 for flowering than did sites in Northern Europe. The two-year analyses indicated that Probstdorfer Karat and WA5829 were the latest cultivars while Lerma Rojo 64 and Flavio were the earliest.

Cultivar differences in frost damage, shattering, disease response, and other traits are reported and discussed.

Results of the Ninth International Winter Wheat Performance Nursery Grown in 1977

S. L. Kuhr, K. D. Wilhelmi, V. A. Johnson P. J. Mattern, and J. W. Schmidt[1]

This is the ninth report of results from an International Winter Wheat Performance Nursery (IWWPN) organized in 1968 by the Nebraska Agricultural Experiment Station and the Science and Education Administration (SEA), U.S. Department of Agriculture, under a contract with the Agency for International Development, U.S. Department of State. The Nursery was designed to (1) test the adaptation and stability of winter wheat cultivars in a range of latitudes,

[1]Assistant Professor, Wheat Breeding and IWWPN coordinator, University of Nebraska–Lincoln; former IWWPN coordinator, currently associated with Rohm & Haas Inc.; Supervisory Research Agronomist, Science and Education Administration, U.S. Department of Agriculture; Professor, Cereal Quality, University of Nebraska–Lincoln; and Professor, University of Nebraska–Lincoln; respectively. Cooperative investigations of the Nebraska Agricultural Experiment Station and Science and Education Administration, U.S. Department of Agriculture, Lincoln, Nebraska, under Contract number AID/ta-C-1093 with the Agency for International Development, U.S. Department of State.

daylengths, fertility conditions, water management regimes, and disease complexes; (2) identify superior winter cultivars to serve as recipient genotypes for high protein and high lysine genes, (3) test the degree of expression and stability of the high protein and high lysine traits in an array of environments, and (4) provide a vehicle for exchange of germplasm and research cooperation throughout the major winter wheat producing areas of the world.

EXPERIMENTAL PROCEDURE

Wheat seed for nursery planting was provided to each cooperator in the approximate quantity requested. Seed for planting in the Northern Hemisphere was shipped via air mail in early July from Nebraska for the fall planting in September to November. For the Southern Hemisphere, seed was shipped in December for planting in May or June. Each cooperator has been encouraged to adjust row length and spacing to achieve a seeding rate most compatible with local variety evaluation practices. Nursery size is restricted to 30 entries grown in 4 replications. However, cooperators are encouraged to add a limited number of local check varieties to the nursery to increase its utility at their locations.

Data field-books in duplicate accompanied the seed shipment to each nursery site. Following harvest one completed book was returned to Lincoln, Nebraska for data compilation and analysis. A 10-gram seed sample from each harvested plot also was returned to Lincoln for protein analysis in the University of Nebraska Wheat Quality Laboratory.

CULTIVARS

Of the 30 cultivars grown in the 1977 IWWPN, 17 were repeated from the 1976 nursery with 13 new cultivars added for their first year of testing. Cultivars are grown in the nursery for two successive years. Four check cultivars, Bezostaya 1 (U.S.S.R.), Blueboy (U.S.A.), Atlas 66 (U.S.A.), and Lerma Rojo 64 (Mexico), have been in the nursery from its beginning. Bezostaya 1 is known worldwide for its yielding ability, grain quality, and other desirable agronomic traits. The variety Blueboy also has high yield potential in addition to serving as a low-protein check. Atlas 66 is included for its high grain-protein trait along with resistance to several races of leaf rust. The spring variety, Lerma Rojo 64, has high yield potential but is included in the nursery primarily to serve as an indicator of winter severity and to provide comparative performance data on spring versus winter cultivars from plantings at locations with mild winters.

Names, pedigrees, and origins of cultivars in the nursery are given in Table 1.

Some cooperators included local winter cultivars in the IWWPN as additional entries at the end of the replications. The mean perfor-

Table 1. Cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977.

Name	Origin	Pedigree
Atlas 66	North Carolina, U.S.A.	Frondoso/2/Redhart 3/Noll 28
Bezostaya 1	U.S.S.R.	Lutescens 17/Skorospelka 2
Blueboy	North Carolina, U.S.A.	Norin 10/Brevor//Anderson/Coker 55-9
Bordenave Puan Sag	Argentina	Cheg 160 x 7748/Klein Anniversario
F26-70	Romania	Austria 57-59/Bezostaya 1
F53-70	Romania	Mironovskaya 262//Bucuresti 1/Skorospelka 3b
F54-70	Romania	Mironovskaya 264/Bezostaya 1
Flavio	Italy	Gallini/Marimp 8
Galiafen	Chile	Champlein/Mariache-Industrial Argentino
GKF-8001	Hungary	A composite was irradiated by isotope "T" rays and a dwarf line was selected. This was crossed with Bezostaya 1 and this variety was selected in the F_2 generation.
Iulia	Romania	Beloterkovskaya 198/Bezostaya 1
Krasnodarskaya 39	U.S.S.R.	Saratovskaya 3/Bezostaya 1
Lerma Rojo 64	Mexico	Lerma Rojo/4/Lerma 52/3/Norin 10/Brevor/2/Yaqui 50
Lindon	Colorado, U.S.A.	II 211 83/CO 652363//Lancer/KS 62136
Martonvasari 3	Hungary	Bezostaya 1/Fertodi 293//Bezostaya 1
Mironovskaya 808	U.S.S.R.	Autumnized selection from Artemovka spring wheat.
NE 68719	Nebraska, U.S.A.	Seu Seun/3/NB60//Mediterranean/Hope//Pawnee/Cheyenne// Cheyenne/Ponca//Turkey/Cheyenne
NE 73640	Nebraska, U.S.A.	Scout/3/Quivira/Tenmarq//Marquillo/Oro/4/Homestead
Oasis	Indiana, U.S.A.	Arthur 71/5/Arthur*3/3/Purdue 6028 A2-15-9-2/2/Riley*2/Riley 67 (Purdue 6559 sel.)*2/4/Arthur*2/3/Riley 67*2/2/Riley/Bulgaria 88, PI 94407
Odesskaya 51	U.S.S.R.	Odesskaya 16/Bezostaya 1
Priboy	U.S.S.R.	Odesskaya 16/Odesskaya 51
Probstdorfer Karat (WWP7147)	Austria	Probstdorfer Extrem/Bezostaya 1
Sadovo-1	Bulgaria	Yubileina 3/Bezostaya 1
Sage	Kansas, U.S.A.	Scout *4/Agent
WA 5829	Washington, U.S.A.	Super Helvia//Suwon 92/CI 13645
Yubiley (2109-36)	Bulgaria	(Flightman/Bezostaya 1) F_1 x Bezostaya 1
Zg 887/73	Yugoslavia	Zg 6877-61/T. timopheevi Der. 1951//Abondanza
Zg 4240/73[a/]	Yugoslavia	Zg 3814-65/Tpl14-1965A//Zg 3814-65/Sanja
Zg 4293/73	Yugoslavia	Zg 4938-65/Tpl14-1965A//Zg 8058-67/3/Zg 435-67
Zg 4364/73	Yugoslavia	Zg 5997-66/Tpl14-1965A//Zg 5997-66

a/ This cultivar has recently been named Moslavka.

mance of these cultivars has been included herein from all sites reporting such data, but they were not included in any of the statistical analyses.

A high-protein cultivar originating from Fundulea, Romania and tested as F26-70 in the Eighth IWWPN was identified as F26-67. The error was noted in the final report for that nursery. The identity of F26-70 tested in the Ninth IWWPN was confirmed to be correct.

NURSERY SITES

The cooperators at the 68 sites receiving seed of the Ninth IWWPN are listed in Table 2. The nursery was grown at 61 sites in 33 different countries, which represents a 90% completion rate. Fifty-four sites were in the Northern Hemisphere while 7 sites represented the Southern Hemisphere. The location of nursery sites with respect to latitude, longitude, and elevation is given in Table 3. Figure 1 shows the distribution of nursery sites on a worldwide basis. The length of growing season for each location is given in Figure 2.

Seed for planting the nurseries at: Algiers, Algeria; Florence, Italy; Beirut, Lebanon; Islamabad, Pakistan; Lima, Peru; Madrid, Spain; and Logrono, Spain; either arrived too late for normal planting, or the nursery was abandoned for other reasons.

All 61 of the sites reporting data returned 10-gram samples of grain from harvested plots to Nebraska for protein analyses. Many sites could not send samples from all plots however, since winter-kill, disease, etc., limited the number of harvested plots. The seed samples from Male Ripnany, Czechoslovakia were not analyzed due to discrepancies between plot and sample identity.

NURSERY MANAGEMENT

Details of nursery management of each IWWPN location are summarized and reported on the page preceding the table of nursery agronomic and disease data. This information is general and includes dates of seeding and harvest, precipitation, irrigation, fertilization, disease development, pest problems, plot size harvested for yield purposes, and a general description of production conditions.

Precipitation data for the growing cycle were reported from 50 locations. Precipitation ranged from a low of 39 mm at Herat, Afghanistan to a high of approximately 1219 mm at Prince Edward Island, Canada. Twenty-five locations were in the 0 to 500 mm range and 23 had precipitation amounts between 501 and 1000 mm. Two locations had precipitation totals in excess of 1000 mm. Average rainfall over 50 locations was 539 mm. Supplemental irrigation was applied at 6 locations.

Fertilizer was applied to most of the nurseries. Nitrogen, phosphorus, and potassium were applied to 56, 51, and 28 of the sites, respectively. Fertilizer rates applied by those cooperators using it were

Table 2. Nursery sites and cooperators of the Ninth International Winter Wheat Performance Nursery in 1977.[a/]

Country	Station	Cooperator(s)
Afghanistan	Herat	Mr. M. A. Noory, S. A. Pakdil, and M. Nasim
"	Kabul	Mr. M. A. Noory, A. Qaume, and M. Osmanzai
Algeria	Algiers	Dr. G. Varughese
Argentina	Balcarce	Dr. E. Godoy, Dr. R. Bedogni, and H. Delmagro
"	Bordenave	Dr. E. Godoy, Dr. S. E. Garbini, and J. R. Lopez
Austria	Vienna	Drs. R. Hron and H. Foessleitner
Bulgaria	Tolbukhin	Dr. Ivan Govedarov
Canada	Lethbridge	Dr. M. N. Grant
"	Prince Edward Island	Dr. H. G. Nass
Chile	Chillan	Dr. I. Ramírez and Lilian Aguayo
"	Temuco	Drs. J. Acevedo and I. Ramírez
Czechoslovakia	Male Ripnany	Dr. Dezider Michalik
"	Sedlec	Drs. J. Schmidt, J. Maly, and A. Vernerova
East Germany	Boehnshausen	Dr. A. Meinel
England	Cambridge	Dr. F. G. H. Lupton
Finland	Jokioinen	Prof. Rolf Manner
France	Orgerus	Drs. P. Benoist and J. P. Hardouin
Hungary	Martonvasar	Drs. S. Rajki and L. Balla
"	Szeged	Dr. I. Szaniel
Iran	Hamadan	Dr. H. Kaveh and M. R. Eslampour
"	Karaj	Dr. H. Kaveh
Iraq	Sulaimaniya	Dr. Y. Y. Klaimi, M. M. Said, and B. J. Isaa
Italy	Florence	Prof. M. Gasparini
"	Milano	Dr. Basilio Borghi
"	Rieti	Dr. G. Zitelli and E. Biaucolatte
Japan	Morioka, Iwate	Drs. T. Gotoh and H. Fujiwara
Jordan	Amman	Dr. Z. Gosheh, N. Katkhuda, S. Tahat, I. Jaber, and M. A. Aziz
Korea	Suwon	Mr. Chang Hwan Cho
Lebanon	Beirut	Dr. Jit Srivastava
Mexico	Toluca	CIMMYT Bread Wheat Staff
Nepal	Kathmandu	Dr. A. N. Bhattarai and B. B. Silwal
Netherlands	Wageningen	Dr. A. C. Zeven
Norway	Vollebekk	Dr. K. Ringlund and H. A. Magnus
Pakistan	Islamabad	Dr. M. Tahir
Peru	Lima	Dr. Marino Romero
Poland	Przeclaw	Dr. E. Bilski
"	Warsaw	Dr. Stanislaw Starzycki
Romania	Fundulea	Dr. N. Ceapoiu, N. Saulescu, and G. H. Ittu
South Africa	Bethlehem	Dr. I. B. J. Smit, Dr. K. W. Packendorf, and Miss G. M. French
"	Kroonstad	Drs. I. B. J. Smit, K. W. Packendorf, and L. A. S. Robinson
Spain	Madrid	Ing. Javier Salazar
"	Logrono	Dr. P. de la Hera
Sweden	Svalof	Drs. B. Kristiansson and T. Denward
Switzerland	Zurich	Drs. F. Weilenmann and G. Popow
Syria	Aleppo	Dr. Jit Srivastava
Turkey	Ankara	Wheat Research and Training Center
"	Erzurum	Drs. F. Tosun and C. Koycu
"	Eskisehir	Dr. M. N. Taysi, H. Kutluk, E. Karma, and F. Alt
United States	California, Davis	Dr. C. O. Qualset, H. E. Vogt, and C. C. Jan
"	Colorado, Akron	Drs. G. Hinze, and J. R. Welsh
"	Colorado, Fort Collins	Dr. J. R. Welsh
"	Indiana, Brookston	Dr. Douglas Baker
"	Kansas, Hutchinson	Dr. E. G. Heyne, Dr. G. Paulsen, and W. Moore
"	Montana, Billings	Dr. Peter Salm
"	Nebraska, Lincoln	Drs. V. A. Johnson and K. D. Wilhelmi
"	New York, Ithaca	Dr. Neal Jensen
"	North Carolina, Rowan Co.	Dr. C. F. Murphy
"	Oklahoma, Stillwater	Dr. E. L. Smith
"	Oregon, Corvallis	Drs. W. E. Kronstad, W. L. McCuistion, and F. Cholick
"	Washington, Pullman	Drs. R. E. Allan and C. J. Peterson
U.S.S.R.	Krasnodar	Dr. Y. M. Puchkov
"	Mironovski	Dr. V. N. Remeslo
"	Odessa	Dr. A. A. Sozinov
West Germany	Monsheim	Dr. K. Brunckhorst
	Weihenstephan	Dr. G. Fischbeck
Yugoslavia	Novi Sad	Dr. S. Borojevic
"	Zagreb	Dr. J. Potocanac and Ing. R. Mlinar

[a/] Nursery seed was distributed to 68 sites in 38 countries.

Table 3. Latitude, longitude and elevation of nursery sites in the Ninth International Winter Wheat Performance Nursery in 1977.

Country	Station	Latitude	Longitude	Elevation m
Afghanistan	Herat	N34° 11'	E62° 13'	964
"	Kabul	N34° 33'	E69° 12'	1803
Argentina	Balcarce	S37° 45'	W58° 14'	135
"	Bordenave	S37° 51'	W63° 01'	212
Austria	Vienna	N48° 12'	E16° 45'	147
Bulgaria	Tolbukhin	N43° 40'	E28° 10'	236
Canada	Lethbridge	N49° 43'	W112° 48'	909
"	Prince Edward Island	N46° 20'	W63° 00'	16
Chile	Chillan	S36° 34'	W72° 06'	144
"	Temuco	S38° 41'	W72° 25'	200
Czechoslovakia	Male Ripnany	N48° 29'	E17° 59'	172
"	Sedlec	N50° 14'	E14° 30'	300
East Germany	Boehnshausen	N51° 42'	E11° 00'	202
England	Cambridge	N52° 10'	E00° 06'	20
Finland	Jokioninen	N60° 49'	E23° 29'	92
France	Orgerus	N48° 40'	E02° 20'	90
Hungary	Martonvasar	N47° 21'	E18° 49'	150
"	Szeged	N46° 10'	E20° 00'	80
Iran	Hamadan	N34° 47'	E48° 30'	1870
"	Karaj	N35° 48'	E51° 00'	1321
Iraq	Sulaimaniya	N36° 05'	E46° 05'	700
Italy	Milano	N45° 13'	E09° 05'	70
"	Rieti	N42° 24'	E00° 24'	402
Japan	Morioka Iwate	N39° 45'	E141° 08'	167
Jordan	Amman	N35° 32'	E30° 31'	1300
Korea	Suwon	N37° 16'	E126° 59'	37
Mexico	Toluca	N19° 31'	W98° 50'	2635
Nepal	Kathmandu	N27° 40'	E85° 20'	1360
Netherlands	Wageningen	N51° 58'	E05° 38'	7
Norway	Vollebekk	N60° 00'	E11° 00'	90
Poland	Przeclaw	N50° 11'	E21° 29'	185
"	Warsaw	N52° 12'	E29° 39'	90
Romania	Fundulea	N44° 03'	E24° 10'	66
South Africa	Bethlehem	S28° 10'	E28° 18'	1631
"	Kroonstad	S27° 36'	E27° 14'	1427
Sweden	Svalof	N55° 35'	E13° 06'	50
Switzerland	Zurich	N47° 29'	E08° 32'	445
Syria	Aleppo	N36° 15'	E37° 05'	-
Turkey	Ankara	N39° 40'	E32° 39'	1055
"	Erzurum	N39° 58'	E41° 20'	1950
"	Eskisehir	N36° 45'	E30° 55'	789
United States	California, Davis	N38° 32'	W121° 46'	18
"	Colorado, Akron	N40° 05'	W103° 40'	1389
"	Colorado, Fort Collins	N40° 35'	W105° 10'	1475
"	Indiana, Brookston	N40° 35'	W87° 00'	183
"	Kansas, Hutchinson	N38° 00'	W98° 00'	468
"	Montana, Billings	N45° 38'	W108° 30'	923
"	Nebraska, Lincoln	N41° 10'	W96° 25'	360
"	New York, Ithaca	N42° 30'	W76° 30'	335
"	North Carolina, Rowan Co.	N35° 42'	W80° 37'	251
"	Oklahoma, Stillwater	N36° 07'	W97° 04'	270
"	Oregon, Corvallis	N44° 30'	W123° 30'	68
"	Washington, Pullman	N46° 42'	W117° 08'	777
U.S.S.R.	Krasnodar	N45° 00'	E38° 55'	37
"	Mironovski	N50° 15'	E31° 10'	151
"	Odessa	N46° 40'	E31° 20'	42
West Germany	Monsheim	N49° 35'	E08° 20'	140
"	Weihenstephan	N48° 24'	E11° 44'	467
Yugoslavia	Novi Sad	N45° 03'	E19° 08'	84
"	Zagreb	N45° 49'	E15° 59'	177

FIGURE I

9th INTERNATIONAL WINTER WHEAT PERFORMANCE NURSERY

68 SITES; 38 COUNTRIES

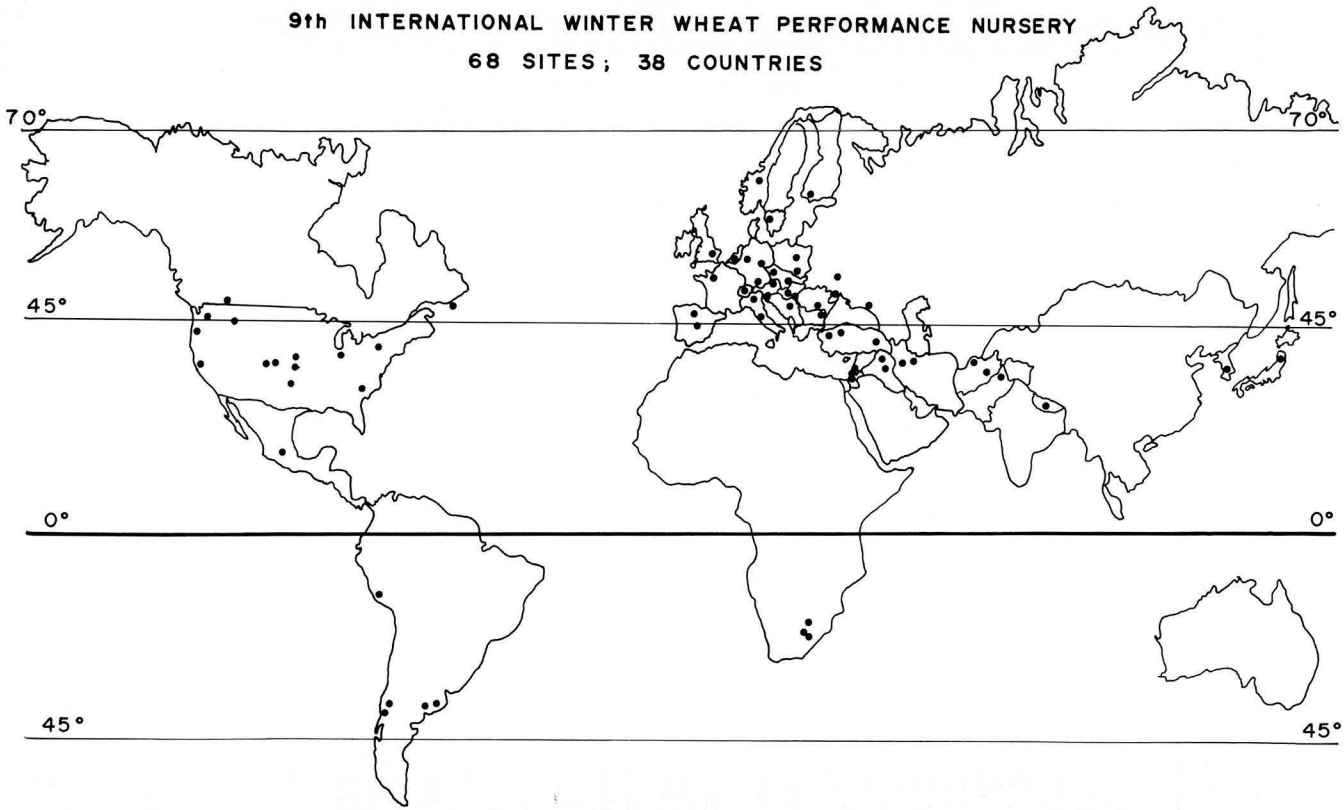
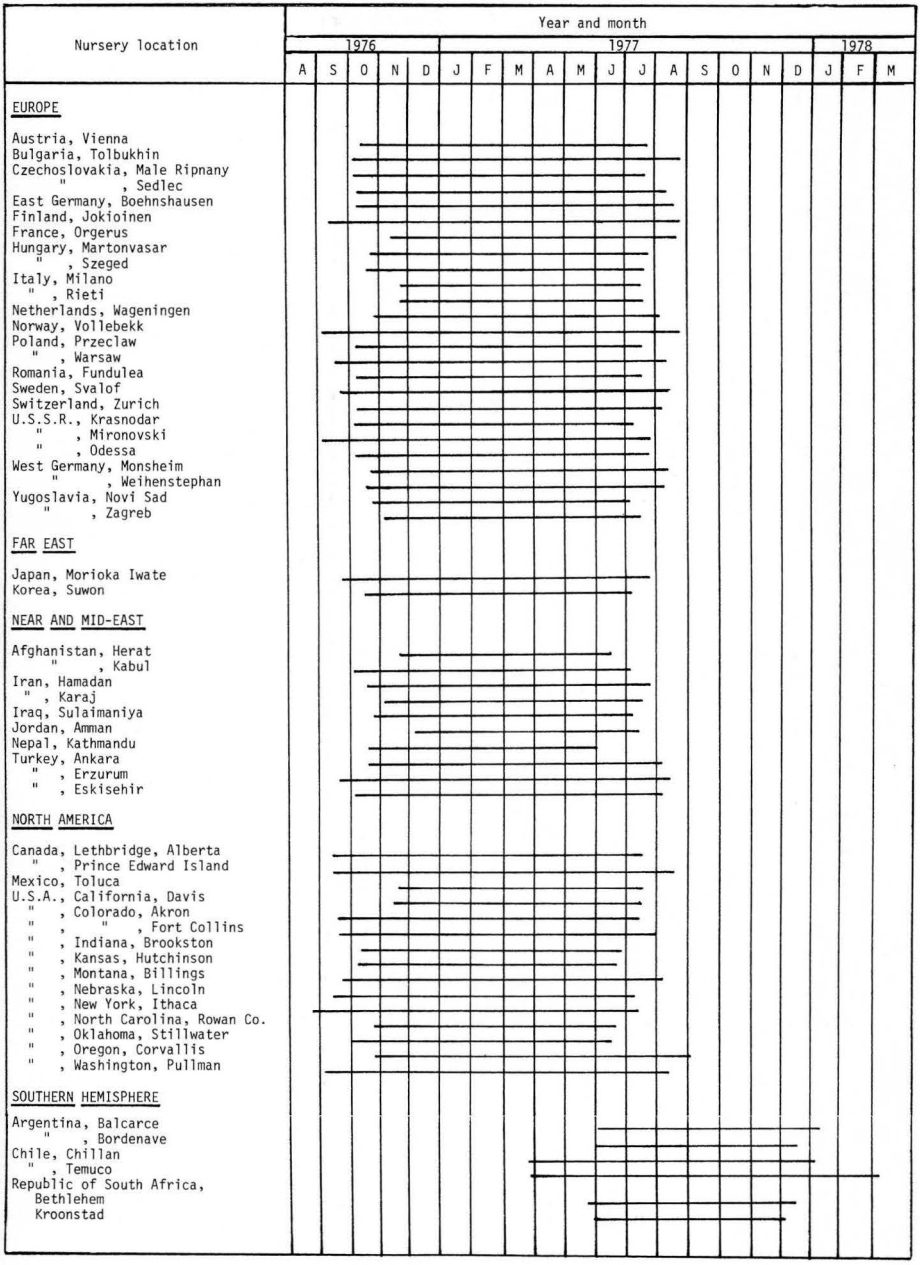


Figure 2. Length of growing season for nursery sites in the Ninth International Winter Wheat Performance Nursery in 1977.



102.8, 70.0 and 92.6 kg/ha of N, P, and K, respectively, on the average.

Diseases reported included (stem rust) *Puccinia graminis tritici*, (leaf rust) *Puccinia recondita*, (yellow rust) *Puccinia striiformis*, (powdery mildew) *Erysiphe* sp., and *Septoria* sp. Other hazards or problems identified by cooperators included weeds, bird damage, and insect damage (army-worms, aphids, etc.), which are reported with individual nursery site information.

DATA SUMMARIZATION AND STATISTICAL TREATMENT

Data were reported by cooperators and the Nebraska Wheat Quality Laboratory as follows:

Grain yield: Weight of clean grain produced by the central harvested rows of each plot. Unit of measurement = grams, which were converted to quintals per hectare.

Test weight: Volume-weight of clean grain. Unit of measurement = kilograms per hectoliter.

1000-kernel weight: Weight of one-thousand kernels selected at random from clean grain. Unit of measurement = grams.

Grain protein: Seed samples received from cooperators were analyzed for protein by the Kjeldahl Method. Unit of measurement = percent on a dry weight moisture basis.

Maturity: Date of flowering = date of anther extrusion from ⅓ of the spikes in a plot. Date of ripening = date of physiological maturity. Unit of measurement = days from January 1.

Plant height: Average height of plants excluding awns. Unit of measurement = centimeters.

Lodging: Estimated portion of a plot with lodged or down straw at maturity. Unit of measurement = percent.

Shattering: Estimated portion of grain lost from spikes in the standing border rows of a plot two weeks after harvest of the yield rows. Unit of measurement = percent.

Winter survival: Estimated portion of live plants in each plot in the spring. Unit of measurement = percent.

Frost damage: Estimated amount of flower sterility in a plot resulting from spring frosts. Unit of measurement = (0-9) scale.

Seed grade: 1 = very good, 9 = very poor. Seed was graded on seed samples returned to the University of Nebraska Wheat Quality Laboratory.

Diseases: Severity of the infection and response of cultivars according to the modified Cobb scale for stripe rust (*Puccinia striiformis*) West., leaf rust (*Puccinia recondita*) Rob. ex. Desm., and stem rust (*Puccinia graminis tritici*) Eriks. and Henn. For most other diseases only severity of infection was reported.

Analyses of variance were completed on all traits for which data were reported from two or more replications at a nursery site. Means,

coefficients of variation, and least significant differences (L.S.D.) for independent mean comparisons were reported for analyzable traits as a part of the individual nursery site data. For those locations reporting data for local cultivars not included in the IWWPN, mean values for each trait are reported. Correlation coefficients between all traits at a site are reported on the nursery information sheets adjacent to the individual location data results.

A combined analysis for each trait over all locations in the Ninth IWWPN having full complements of data was performed on yield, test weight, 1000-kernel weight, grain protein, days to flowering and ripening, plant height, lodging, shattering, winter survival and frost damage. The number of locations included in each analysis varied depending on the trait involved, but ranged from a low of 8 locations for frost damage to a high of 56 for yield. Statistics reported include means, coefficients of variation, and least significant differences for cultivar mean comparisons.

Correlation coefficients for yield, grain protein, and other agronomic traits over 61 nursery locations were computed. Correlation coefficients for yield vs disease severity and grain protein vs disease severity were also computed.

We have regionalized the data for each trait from the IWWPN testing network into various geographical areas that exhibit similar edaphic and/or ecological conditions. We have divided the winter wheat production areas of the world into six different regions as follows:

(1) Northern Europe — includes 13 countries and 16 sites as follows: Vienna, Austria; Male Ripnany and Sedlec, Czechoslovakia; Boehnshausen, East Germany; Cambridge, England; Jokioinen, Finland; Orgerus, France; Wageningen, Netherlands; Vollebekk, Norway; Przeclaw and Warsaw, Poland; Svalof, Sweden; Zurich, Switzerland; Mironovski, U.S.S.R.; Monsheim and Weihenstephan, West Germany.

(2) Southern Europe — includes 6 countries and 10 sites as follows: Tolbukhin, Bulgaria; Martonvasar and Szeged, Hungary; Milano and Rieti, Italy; Fundulea, Romania; Krasnodar and Odessa, U.S.S.R.; Novi Sad and Zagreb, Yugoslavia.

(3) North America — includes 12 sites in the United States, 2 in Canada, and 1 site in Mexico. The U.S. locations include Davis, California; Akron and Fort Collins, Colorado; Brookston, Indiana; Hutchinson, Kansas; Billings, Montana; Lincoln, Nebraska; Ithaca, New York; Rowan Co., North Carolina; Stillwater, Oklahoma; Corvallis, Oregon, and Pullman, Washington. The Mexico nursery was grown at Toluca. Sites in Canada were in Lethbridge, Alberta and Charlottetown, Prince Edward Island.

(4) Near and Middle East — includes 11 sites in 7 countries as follows: Herat and Kabul, Afghanistan; Hamadan and Karaj, Iran;

Sulaimaniya, Iraq; Amman, Jordan; Kathmandu, Nepal; Aleppo, Syria; Ankara, Erzurum, and Eskisehir, Turkey.

(5) Far East — includes one location each at Morioka, Japan and Suwon, Korea.

(6) Southern Hemisphere — includes nurseries at Balcarce and Bordenave, Argentina; Chillan and Temuco, Chile; Kroonstad and Bethlehem (two nurseries), Republic of South Africa.

Regional analyses were made on data for traits from all 30 cultivars grown in the Ninth IWWPN in 1977. Variety means over all locations for each trait within a region have been computed as well as the grand mean for each trait. Least significant differences (L.S.D.) for cultivar mean comparisons and coefficients of variation over all varieties and locations within a region are listed with the tables. Yield as a percentage of Bezostaya 1 for each cultivar within a region also is presented.

Two-year variety yield means with rankings by region with accompanying statistics for 16 cultivars comparing the six geographic regions of the world are presented. Variety yield means over 56 locations from the six regions are listed.

Two-year means for each trait have been computed and ranked for each of 16 varieties at each of those locations reporting complete data in both years, 1976-77. Individual cultivar means also have been calculated by trait for each variety over all locations. Least significant differences (L.S.D.) and coefficients of variation are reported for the various traits analyzed.

Two-year analyses do not include F26-70. In 1976, the cultivar listed as F26-70 was actually F26-67. In 1977, the cultivar was indeed F26-70. Consequently two-year analyses for this cultivar have been precluded.

RESULTS AND DISCUSSION

Yield and other agronomic, grain quality, and disease data are reported for individual Ninth International Winter Wheat Performance Nursery sites in Tables 4–64. Supplemental nursery management information also is given for each site on the page immediately preceding the nursery data table.

Grain Yield

Fifty-eight nursery sites reported complete data in 1977. Two sites, Kabul, Afghanistan and Balcarce, Argentina reported differential pest damage to plots. Consequently, these two sites were not included in the means and analyses over locations.

Summary tables of average yields and yield rankings from all nursery sites are reported in Tables 65–66. Cultivar grand means expressed as a percent of Bezostaya 1 are also shown in Table 65. Summaries of yield, agronomic traits, and grain quality measurements for each cultivar combined over nursery sites reporting complete replica-

tions of data are presented in Table 67. Descriptive statistics of yield including mean, standard deviation, low and high values, and coefficient of variation for each cultivar are given in Table 68.

Individual nursery yield means ranged from a low of 1.7 q/ha at Jokioinen, Finland to a high of 98.3 q/ha at Male Ripnany, Czechoslovakia. Eleven sites had nursery yield means less than 20 q/ha. Twenty-three sites had nursery means ranging between 20 and 40 q/ha while 17 sites had mean yields between 40 to 60 q/ha. There were seven sites which exceeded 60 q/ha for nursery yield means. The grand yield mean over 56 sites was 38.0 q/ha. This is 2.5 q/ha lower than the 40.5 q/ha grand mean reported for 50 sites in the Eighth IWWPN.

Yubiley, Sadovo-1, and Priboy having yields of 45.0, 43.2, and 42.7 q/ha, respectively, were the only three cultivars which equaled or surpassed the yield of Bezostaya 1 (42.7 q/ha) averaged over 56 sites. Both Yubiley and Sadovo-1 are from Bulgaria. Blueboy, the second long-term yield check variety was seventh, yielding 41.7 q/ha. Both Bezostaya 1 and Blueboy have again performed well. Galiafen was the lowest yielding test-culivar (27.4 q/ha) while Lerma Rojo 64, the spring check, was the lowest in the nursery with a yield of 26.9 q/ha.

The summary of yield rankings (Table 66) provides an indication of the range of adaptation for each cultivar. The number of times a cultivar ranked first in yield or among the highest 10 entries is given below.

	Number of sites			Number of sites	
Cultivar	Ranked first	Ranked among highest ten	Cultivar	Ranked first	Ranked among highest ten
Yubiley	6	41	Zg 4364/73	3	26
Sadovo-1	4	35	GKF-8001	3	24
Priboy	3	31	Zg 4240/73	3	24
Odesskaya 51	1	29	Mironovskaya 808	3	19
Bezostaya 1	0	29	F54-70	1	17
Blueboy	4	28	WA5829	3	15
Iulia	2	28	Krasnodarskaya 39	1	14
Zg 887/73	9	27	Lerma Rojo 64	2	8
Probstdorfer Karat	3	27	Bordenave Puan Sag	1	7
Lindon	2	27	Atlas 66	1	6
Martonvasari 3	1	27			

Twenty cultivars ranked first in yield in at least one nursery site. Zg 887/73 ranked highest most often (9 times), but its overall rank over 56 sites was 14th. The more often a cultivar ranks among the highest ten generally reflects its adaptability and overall yield potential. Bezostaya 1 ranked 4th overall, but was not the top yielder at any of the nursery sites.

Correlation coefficients for yield, grain protein, and other agronomic traits combined over 61 nursery sites are presented in Table 69. With so many observations, it is noted that even relatively small "r"

values appear as statistically significant. Yield was positively correlated with test weight, 1000-kernel weight, plant height, and winter survival. Negative correlations were computed for yield vs grain protein, date of flowering and ripening, and frost damage. A small "r" value exists for yield vs lodging. Apparently those plots which are "grainy" are heavier and thus tend to lodge, accounting for the positive relationship.

On a regional basis none of the varieties were ranked first in yield in more than one region (Tables 70–76). Yubiley was the highest yielding variety in Northern Europe. This variety ranked third in yield in three other regions, and was among the top ten varieties in all six world-regions. In Southern Europe, Zg 887/73 was the top performer; in the Middle East, Blueboy was best; in the Far East it was Priboy; in North America, Probstdorfer Karat; and in the Southern Hemisphere, Odesskaya 51 was the top yielder.

In Northern Europe, nine varieties surpassed Bezostaya 1 in yield. Fourteen varieties exceeded the yield of Bezostaya 1 in Southern Europe; four performed better in the Middle East; five did better than Bezostaya 1 in the Far East; only two varieties surpassed Bezostaya 1 in the Southern Hemisphere; and in North America, Bezostaya 1 was second only to Probstdorfer Karat.

Table 91 contains two-year means, rankings, and statistics for 16 cultivars grown in the 1976 and 1977 nurseries. Two-year yield means ranged from a high of 45.6 q/ha for Priboy to a low of 29.3 q/ha for Lerma Rojo 64 over 46 sites with a grand mean of 39.5 q/ha. There were no significant differences among variety yield means (summed over two years) at Herat, Afghanistan; Tolbukhin, Bulgaria; Boehnshausen, East Germany; Karaj, Iran; Milano and Rieti, Italy; Kathmandu, Nepal; Bethlehem, South Africa; Ankara, Erzurum, and Eskisehir, Turkey; and Krasnodar, U.S.S.R. At seven sites the year x cultivar interactions were not statistically significant. This probably indicates a similarity in environmental conditions in 1976 and 1977. The year x cultivar interaction computed for the two-year means over 46 sites also was not significant statistically.

Priboy had the top yield in Northern and Southern Europe in the two-year average (Table 90). Blueboy ranked first in the Middle East and Far East. Probstdorfer Karat was the most productive cultivar in North America, while Bezostaya 1 was the leader in the Southern Hemisphere. It should be noted however, that there were no significant statistical differences among the two-year means in the Southern Hemisphere.

Grain Protein

Protein data from individual locations from which 10-gram seed samples were returned to Nebraska are reported in Tables 4–64. Complete sets of seed samples were returned from 40 sites, over

which a combined statistical analysis was performed. Results of the protein analyses over locations are presented in Table 67.

The grand protein mean over 40 sites was 14.4%. This corresponds to 14.2% over 33 sites (8th IWWPN) and 14.3% over 35 sites (7th IWWPN). F26-70 possessed the highest protein content (16.7%) in the 9th IWWPN. Atlas 66, the long-term protein check, had a mean value of 16.6%. A comparison of yield and protein is made below.

	Yield		Protein	
Cultivar	q/ha	rank	%	rank
Martonvasari 3	41.5	8	14.6	11
Iulia	40.5	12	14.8	10
F53-70	38.9	15	15.4	7
F54-70	37.7	17	15.7	4
F26-70	36.5	19	16.7	1
Bordenave Puan Sag	32.6	27	15.8	3
Atlas 66	32.2	28	16.6	2

Martonvasari 3 (Hungary) and Iulia (Romania) possess good yield potential as well as relatively high protein contents. F53-70, F54-70, and F26-70 (Romania) have moderate yield potential together with high protein expression. Atlas 66 (U.S.A.) and Bordenave Puan Sag (Argentina) possess high grain protein levels, but lack the desirable yield potential sought by plant breeders. It is clear from the above that the Romanian cultivars represent combinations of acceptable productivity with improved nutritional quality.

Tables 70–75 contain grain protein means for the 30 cultivars in regional analyses. The Middle East grand protein mean of 15.4% was highest of the six geographical regions, while the grand mean of North America (13.3%) was lowest. Atlas 66 possessed the highest average protein content in all regions except Northern Europe. In that region F26-70 ranked first.

Table 92 presents two-year (1976-1977) cultivar means and rankings of 16 cultivars for grain protein content on an individual location basis. Location means ranged from a low of 11.7% at the irrigated nursery in Bethlehem, South Africa to a high of 16.5% in Morioka, Japan.

At three sites there were no significant statistical differences among the two-year cultivar means. There were only four sites at which significant year x cultivar interactions did not occur.

Averaged over 28 sites, Atlas 66 had the highest two-year protein value (16.6%) while WA5829 was lowest in protein content at 12.2%. The two-year grand mean was 14.2%. The year x cultivar interaction was non-significant, indicating that the cultivars performed consistently, relative to one another, in both years.

Supplementary data from Svalof, Sweden concerning grain protein, milling and baking, and other grain quality characteristics are presented in Table 84.

Test Weight

Individual location test weight data are presented in Tables 4–64. Cultivar test weight means averaged over 24 locations are listed in Table 67. The grand mean summed over varieties and locations was 77.4 kg/hl. Bezostaya 1, Iulia, and Bordenave Puan Sag each had the high test weight value of 79.6 kg/hl. Blueboy and WA5829 possessed the smallest volume weight values.

In the regional assessment (Tables 70–75), the Middle East averaged 79.0 kg/hl (highest), while Northern Europe averaged 76.3 kg/hl (lowest). In the Southern Hemisphere, Bordenave Puan Sag had the highest test weight. This variety, along with Bezostaya 1, shared the high value in the Middle East. Bezostaya 1 and Lindon were the top two in North America. Iulia had the heaviest volume weight in Northern Europe, while in Southern Europe it was Probstdorfer Karat.

Table 93 presents the two-year test weight means for 16 cultivars by location. The location means range from 71.4 kg/hl at Bethlehem, South Africa to 80.4 kg/hl at Eskisehir, Turkey. The grand mean over 16 sites was 77.5 kg/hl. Probstdorfer Karat had the highest two-year average value, while WA5829 possessed the lowest value. Several sites are presented in Table 93 which are not represented in the overall analysis. These sites had missing data or uneven numbers of replications.

Of the 16 sites with complete data, 5 sites were shown to have non-significant L.S.D. values. All of the sites had significant year x cultivar interactions. Thus the varieties did not perform the same relative to one another in 1977 as they did in 1976 at any one site. However, when averaged over 16 sites the cultivars did perform comparatively in the two years.

1000-kernel Weight

Twenty-four sites are included in the analysis of 1000-kernel weight in Table 67. Sadovo-1 had the largest seed weight value of 47.0 grams. This was 3.1 grams greater than the second ranked seed weight value of 43.9 displayed by Priboy. The lightest seeds were found in the variety NE68719, which had a 1000-kernel wt. of only 30.3 grams.

Correlation coefficients of .26** and .32** were determined for 1000-kernel weight vs yield and test weight, respectively (Table 69). Even though there was a positive association between these traits there were some varieties having high 1000-kernel weights that did not have high test weights and vice versa. For example, Bordenave Puan Sag ranked 3rd in test weight but 22nd in 1000-kernel weight. In contrast, Priboy and Bezostaya 1 ranked very high in both characteristics, while WA5829 ranked very low in both.

The grand means of Northern Europe, Southern Europe, Middle East, Far East, and Southern Hemisphere were 40.5, 38.2, 35.7, 35.6, and 32.3 grams, respectively (Tables 70–75). Sadovo-1 had the high-

est seed weight values in the Middle East, Far East, and Southern European regions. Priboy was highest in Northern Europe and the Southern Hemisphere.

The two-year means for the 16 varieties tested in 1976 and 1977 are listed by location in Table 94. The location means ranged from 33.8 grams at Bordenave, Argentina to 40.0 at Szeged, Hungary. Averaged over 16 sites, Priboy had the highest two-year 1000-kernel weight mean. WA5829 had the lowest two-year mean over 16 sites. The grand mean was 37.2 grams.

Plant Height and Lodging

Individual location data for these two traits are reported in Tables 4–64. The grand means for plant height and lodging were 90.5 cm and 32.7% based on 40 and 23 sites, respectively (Table 67).

Plant height was positively correlated with yield (.36**) and with lodging (.32**) as presented in Table 69. There also was a positive relationship of plant height with winter survival.

The four tallest and four shortest cultivars with their associative lodging values are given below.

	Plant height		Lodging	
Cultivar	cm	rank	%	rank
Mironovskaya 808	119.0	30	56.0	26
Atlas 66	113.7	29	58.1	29
Probstdorfer Karat	108.8	28	30.2	16
Bordenave Puan Sag	107.6	27	72.6	30
Zg 4240/73	69.6	4	12.2	4
Zg 887/73	69.8	3	18.1	7
GKF-8001	67.5	2	10.0	3
Zg 4293/73	61.7	1	8.5	1

As in the 8th IWWPN, Probstdorfer Karat demonstrates tallness in association with straw strength (moderate lodging). Another example of this is F54-70; ranked 23rd in height, but only 10th in lodging.

Yubiley and Sadovo-1 are both relatively short wheats with high productivity (Table 67). Probstdorfer Karat and Blueboy are tall varieties possessing high productivity. The four shortest varieties shown above were among the "middle-ten" in yield potential.

Zg 4293/73 was the shortest variety in all six regional analyses (Tables 70–75). Mironovskaya 808 was tallest in the Southern Hemisphere, Southern Europe, Northern Europe, and North America. Atlas 66 was tallest in the Middle East and Far East. The grand means for plant height in the six regions were 84.9, 88.4, 91.1, 93.1, 95.1, and 96.8 cm for the Middle East, Southern Hemisphere, Northern Europe, North America, Southern Europe, and the Far East, respectively.

The grand means for lodging were 1.9, 19.2, 26.4, 35.8, and

53.8% for sites in the Middle East, Far East, Northern Europe, North America, and Southern Europe, respectively. The shorter plant heights found at sites in the Middle East were reflected in the reduced incidence of lodging.

Two-year means for plant height are shown in Table 95. Location means ranged from 43.1 cm at Amman, Jordan to 109.1 cm at Davis, California, U.S.A. Corvallis, Oregon, U.S.A. had a grand mean of 127.8 cm based upon one replication in each year.

Averaged over 30 sites GKF-8001 was the shortest cultivar while Atlas 66 was the tallest. Amman, Jordan was the only site which did not have a significant L.S.D. for the means. Only four of the 30 sites had non-significant year x cultivar interactions; however, when averaged over 30 sites the year x cultivar interaction was shown to be statistically non-significant.

Two-year means for lodging are reported in Table 96. At Kabul, Afghanistan, the mean of the 16 cultivars was only 3.2%. The highest incidence of lodging occurred at Szeged, Hungary where the overall mean was 74.0%.

Averaged over 15 sites, GKF-8001 displayed the least amount of lodging while Bordenave Puan Sag lodged most often. The grand mean over 15 sites was 31.1%. Five of the 15 sites had non-significant L.S.D. values for the two-year cultivar means. Averaged over the sites, there were statistically non-significant year x cultivar and location x cultivar interactions.

Winter Survival

Differential readings for winter survival were reported from 31 sites (Tables 4–64) with a grand mean of 81.6% (Table 67). This is 5.9% higher than the 1976 mean of 75.7% averaged over 25 sites. Individual site means were the lowest at Prince Edward Island, Canada; Suwon, Korea; Jokioinen, Finland; and Lincoln, Nebraska, U.S.A. with 42.3, 55.0, 57.0, and 57.1% survival, respectively (Tables 11, 18, 29, 52). Averaged over the 31 sites the cultivar means ranged from a high of 91.7% for Mironovskaya 808 to a low of 37.2% for Galiafen. Winter survival was significantly positively correlated to yield (.62**) as shown in Table 69.

Survival percentages of 71.2, 74.6, 81.0, 93.3, and 96.2% were computed over varieties for the Far East, North America, Northern Europe, Middle East, and Southern Europe, respectively (Tables 70–75).

Winter survival means of 16 cultivars analyzed over 21 sites for the two-year period 1976-1977 are compared in Table 97. Jokioinen, Finland had the lowest average mean of 45.1% while Zagreb, Yugoslavia had the highest average survival of 95.9%. Oasis and Probstdorfer Karat had survival means of 90.3 and 90.2%, respectively, over the 21 sites. Galiafen had the lowest mean survival of 32.4%.

Lerma Rojo 64, the spring check, survived with an average 37.7%. The grand mean was 76.4%. There were four sites at which there were no significant statistical differences among cultivar means. All year x cultivar interactions were statistically significant with the exception of Herat, Afghanistan.

Frost Damage

Frost damage data were reported from eight locations and the results of the combined analyses are presented in Table 67. Reported on a scale of 0-9, the grand mean of cultivars was 1.8. The incidence of frost damage was the highest on the varieties Lerma Rojo 64, Galiafen, Flavio, and Zg 887/73. Frost damage was least on NE68719, Mironovskaya 808, and Krasnodarskaya 39.

Frost damage had correlation coefficients of –.40**, –.38**, –.18**, and –.69** when compared with yield, plant height, flowering data, and winter survival, respectively (Table 69). The more hardy wheats are generally later in maturity and hence are harmed less by frost than those varieties which have an early maturation.

Northern Europe and the Middle East are the only two regions with more than one site reporting damage by frost (Tables 70 and 74). The overall means were 1.8 and 2.0 for the two respective regions.

Only four sites had frost damage data for 1976 and 1977 (Table 101). WA5829, Sage, and NE68719 were affected least by frost, while Galiafen and Lerma Rojo 64 were harmed the most. The overall frost damage mean was 2.8.

Maturity

Individual location data both for days to flowering and days to ripening are given in Tables 4–64. Flowering data for cultivars analyzed over 39 sites are summarized in Table 67. Lerma Rojo 64, the spring check, was the earliest in days to flowering at 161.2 days after January 1. Flavio and the lines from Zagreb, Yugoslavia also were quite early. The latest flowering dates were reported for Probstdorfer Karat and WA5829 with means of 178.9 and 177.3 days after January 1, respectively. The grand mean for days to flowering was 170.9 days.

Table 67 contains ripening data averaged over 29 sites. In general, the varieties which flowered earliest also ripened the earliest. Lerma Rojo 64 was the first variety to achieve maturity, this in 205.6 days after January 1. The correlation coefficient between flowering and ripening dates was .99** (Table 69). In terms of grain-filling time, the earlier varieties had the advantage. Lerma Rojo 64 had a filling period of 44.4 days which was 1.6 days longer than F26-70 with the second longest filling period of 42.8 days. Mironovskaya 808 and Probstdorfer Karat, both late varieties, had the least amount of time for grain-filling, 36.5 and 36.7 days, respectively.

Regional grand means for date of flowering were 129.3, 139.1, 143.9, 152.7, 155.1, and 297.8 days from January 1, 1977 for the Middle East, Southern Europe, North America, Far East, Northern Europe, and the Southern Hemisphere, respectively (Tables 70–75). The mean for the Far East is probably skewed to lateness, since three early varieties did not have reported data due to severe winter injury.

In the tabulated data below, F26-70, Flavio, and the Zagreb cultivars are shown to be early maturing varieties in most geographical regions. Lerma Rojo 64 was not included, because it generally is the earliest variety. Mironovskaya 808, Probstdorfer Karat, and WA5829 stand out as being consistently late in the various regions.

	Days from January 1	
Region	Earliest variety[a]	Latest variety
Northern Europe		
Flowering	F26-70 (150)	Probstdorfer Karat (160) WA5829
Ripening	Zg 4293/73 (200)	Atlas 66 (207) Galiafen
Southern Europe		
Flowering	F26-70 (134) Zg 4240/73 Zg 4293/73	Mironovskaya 808 (145) Probstdorfer Karat WA5829
Ripening	Zg 4240/73 (177)	Mironovskaya 808 (186) Probstdorfer Karat
North America		
Flowering	Zg 4240/73 (137)	Mironovskaya 808 (151) Probstdorfer Karat
Ripening	--------	----------
Southern Hemisphere[b]		
Flowering	Flavio (285)	Probstdorfer Karat (313)
Ripening	Flavio (328)	Mironovskaya 808 (343) F54-70 WA5829
Middle East		
Flowering	Zg 887/73 (124)	Probstdorfer Karat (137)
Ripening	Flavio (167) Zg 887/73 Zg 4240/73	Probstdorfer Karat (175) WA5829
Far East		
Flowering	F26-70 (148)	Bordenave Puan Sag (157) Probstdorfer Karat WA5829
Ripening	F26-70 (183)	WA5829 (194)

[a]Lerma Rojo 64 was omitted from consideration here.

[b]Values for the Southern Hemisphere are approximately 150 days more than the Northern Hemisphere since the wheat crop is planted in April. The dates of flowering and ripening are recorded from January 1 (see Figure 2 for the approximate lengths of growing season for the nursery sites).

Two-year means of flowering and ripening for the 16 cultivars in the 8th and 9th IWWPN are reported in Tables 98 and 99. Based on 30 locations, Lerma Rojo 64 needed 153.6 days to reach flowering; Probstdorfer Karat needed 168.0 days. The grand mean for days to flowering over 30 sites was 162.3 days. Averaged over 20 sites Lerma Rojo 64 was the earliest maturing cultivar (204.2 days) while Probstdorfer Karat and WA5829 were the latest (214.6 days). Five of the 20 sites had no significant statistical differences among cultivar maturity means.

Shattering

Ten sites reported complete sets of shattering data in 1977 (Tables 4–64). The grand mean for shattering reported in Table 67 was 7.4%. Shattering means of varieties ranged from 3.4% for Bezostaya 1 to 23.2% for F54-70.

Shattering grand means for the Southern Hemisphere, Northern Europe, and Middle East were 2.7, 7.0, and 10.5%, respectively. There were no significant statistical differences among cultivar means in these regions. There were significant statistical differences in North America however, where Mironovskaya 808, F53-70, and F54-70 had very high shattering percentages.

Table 100 contains the two-year means and rankings of shattering for the 16 cultivars tested in 1976 and 1977. Averaged over seven sites, the grand mean was 8.7%. Cultivar means ranged from 3.8% to 17.0%, but there were no significant statistical differences among the means.

Diseases

Data are reported for three rusts, including yellow or stripe (*Puccinia striiformis*), stem (*Puccinia graminis tritici*), and leaf (*Puccinia recondita*) in Tables 77–79. Severity and response readings are listed for each cultivar on a location basis. Means and high scores over locations also are reported.

Disease severity means for yellow rust averaged over 16 sites ranged from 8% for Probstdorfer Karat to 51% for Oasis. The highest yellow rust severity reading of 99% was recorded for Atlas 66, WA5829, Oasis, NE73640, Lindon, and Zg 887/73. The reports of highest yellow rust were in Corvallis, Oregon, U.S.A. and Cambridge, England.

Yellow rust was negatively correlated with yield for 8 of the 30 cultivars (Table 82). The relationship between this disease and protein content was negative for all cultivars, being statistically significant for 23 of the 30 (Table 83).

Data for leaf rust are summarized in Table 78. Averaged over 20 sites, cultivar severity means ranged from 3% for Yubiley to 38% for Flavio. The grand mean was 19%. The reports of highest leaf rust

were from Fundulea, Romania; Odessa, U.S.S.R.; Tolbukhin, Bulgaria; and Martonvasar, Hungary.

Leaf rust was negatively correlated with yield for Oasis and Lerma Rojo 64. The rust was positively correlated with yield for Odesskaya 51, F26-70, WA5829, and Lindon. Leaf rust was positively correlated with grain protein for F53-70 and F54-70, but negatively correlated for Sadovo-1.

Eight sites reported stem rust data (Table 79). The severity percentages averaged over these sites ranged from 4% for Zg 4240/73 to 54% for Blueboy. The grand mean was 31.2%.

Stem rust was negatively correlated with yield (Table 82) for Blueboy, WA5829, F54-70, and Iulia. There was a negative effect on protein in Oasis, Sadovo-1, and Zg 4240/73. It is uncertain whether these correlation coefficients are meaningful statistics, or whether they are artifacts of other interrelationships.

Data for powdery mildew infection are listed by location in Table 80. Data were recorded on a scale of 0-9. Averaged over 27 sites, the grand mean was 3.9. Score values ranged from 1 for Zg 4240/73 and Zg 4364/73 to 7 for NE68719.

Powdery mildew was positively correlated with protein in the cultivars Odesskaya 51, Probstdorfer Karat, Zg 4364/73, and Zg 4293/73. The disease was associated with conditions which produced increased yields for Priboy, Flavio, NE73640, Zg 4240/73, and Lerma Rojo 64. At the same time, the disease or the conditions were detrimental to the yields of WA5829, Krasnodarskaya 39, and Sadovo-1.

Severity means for *Septoria* sp. are reported in Table 81. Averaged over nine sites, the grand mean was 4.7, based on a scale of 0-9. The cultivars were all fairly susceptible to the disease. The lowest average infection reading was 4, recorded for 10 cultivars. Lerma Rojo 64 was most susceptible with an average score of seven.

The yields of five cultivars could have been affected by *Septoria* (Table 82). Atlas 66, however, showed a positive correlation between disease severity and yield. Sage and Oasis both had positive correlations between *Septoria* infection and grain protein content (Table 83). Three varieties displayed a negative relationship.

AFGHANISTAN

HERAT

COOPERATOR(S): S. R. Pakdil; M. Nasim.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 22, 1976.

PRECIPITATION DURING CYCLE OF TEST: 39 mm. Precipitation during growing season plus 50 mm. snowfall.

AMOUNT OF IRRIGATION APPLIED: 5 applications (amounts not reported).

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha; K = 40 kg/ha (Urea, Diammonium Phosphate and Muriate of Potash).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Precipitation was well below normal and a seasonal wind was experienced from June to September.

DISEASE DEVELOPMENT: The dry weather was totally unfavorable for disease development.

INSECT, WEED OR PEST PROBLEMS: Weeded twice.

DATE OF HARVEST: June 13, 1977.

AREA HARVESTED FOR YIELD: 2.4 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - June 13, 1977.
Lodging - June 13, 1977.
Shattering - June 26, 1977.

Correlation Coefficients

No. of observations = 120	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
1000-kernel weight	.12							
Protein	-.38**	-.15						
Plant height	-.41**	-.01	.19*					
Lodging	-.09	.04	.12	.23*				
Flowering	-.24**	-.00	.07	.49**	.06			
Ripening	-.18*	-.13	.17	.33**	.13	.57**		
Shattering	-.12	-.04	.05	.22*	.11	-.13	-.06	
Winter survival	.09	-.00	-.12	-.10	.17	-.21*	-.19*	.07

** Significant at the 1% level.

* Significant at the 5% level.

Table 4. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Herat, Afghanistan in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Shattering %	Winter survival %
Blueboy	56.0	41.6	3	14.8	95	0	113	153	21	97
Zg 4293/73	52.7	35.5	4	13.2	60	0	105	150	10	97
Lerma Rojo 64	52.7	41.3	2	13.7	93	0	99	149	47	97
GKF-8001	52.1	38.1	3	14.1	65	0	113	156	16	96
WA5829	51.6	39.8	3	12.6	78	0	121	162	11	97
Zg 887/73	51.2	35.1	3	13.4	65	0	106	153	18	97
Zg 4240/73	50.6	38.3	3	13.4	66	0	103	152	13	97
NE68719	50.4	34.0	3	14.1	86	0	120	160	15	95
Yubiley	49.6	43.0	2	13.5	81	0	108	150	16	97
F53-70	49.5	39.4	2	13.6	100	0	113	157	15	98
Bezostaya 1	48.9	43.3	2	13.9	94	0	112	152	15	97
Sadovo-1	48.6	43.5	3	14.2	86	0	106	150	13	97
Krasnodarskaya 39	47.8	38.3	3	12.8	96	0	123	153	16	94
Lindon	47.4	34.4	3	15.1	90	0	113	157	21	95
Martonvasar 3	47.2	39.5	2	14.9	86	0	113	152	23	95
Zg 4364/73	46.6	34.4	3	14.0	68	0	109	153	15	97
Priboy	45.5	44.1	2	14.2	91	0	113	152	10	96
Flavio	45.4	32.9	3	12.9	83	0	109	149	36	97
F26-70	45.2	39.8	2	14.9	88	1	107	155	14	97
Iulia	44.7	40.9	2	14.4	90	0	119	157	15	97
Sage	44.3	38.8	2	14.4	99	0	116	160	33	96
Odesskaya 51	43.2	40.0	2	14.9	95	0	112	153	13	95
NE73640	42.1	38.3	2	15.9	98	0	115	159	19	95
Galiafen	41.4	39.0	3	14.2	93	0	114	159	28	96
Bordenave Puan Sag	41.2	37.3	2	16.4	111	30	116	159	24	97
Probstdorfer Karat	37.0	40.1	3	14.7	111	0	124	162	14	95
F54-70	36.6	34.8	3	14.5	100	0	113	160	29	96
Mironovskaya 808	36.0	33.6	3	14.6	120	0	124	157	18	96
Oasis	35.8	42.0	3	14.1	96	0	114	152	48	96
Atlas 66	29.5	32.0	4	15.3	115	0	116	156	23	97
Mean	45.7	38.4	2.6	14.2	89.9	1.0	112.9	154.9	20.2	96.3
L.S.D. of cultivar means (.05)	11.4	8.4	0.7	2.3	7.6	5.5	4.8	3.3	12.2	1.7
Coefficient of variation (%)	17.7	15.6	20.4	11.6	6.0	388.0	3.0	1.5	43.0	1.3

AFGHANISTAN

KABUL

COOPERATOR(S): A. Qaume, M. Osmanzai.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 3, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 120 kg/ha; P = 25.8 kg/ha (Urea and Diammonium Phosphate were used).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: No disease of significance was reported.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 3, 1977.

AREA HARVESTED FOR YIELD: 3.2 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 17, 1977.
Heading - April 18, 1977.
Lodging - June 10, 1977.
Date of ripening - June 11-26, 1977.
Height - June 27, 1977.
Shattering - June 27, 1977.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival	Frost damage
1000-kernel weight	.50**								
N	30								
Protein	-.12	.12							
N	25	25							
Plant height	-.12	.49**	.60**						
N	120	30	25						
Lodging	.08	-.11	.19	.27**					
N	120	30	25	120					
Flowering	-.19*	-.10	-.21	.26**	-.05				
N	120	30	25	120	120				
Ripening	.00	-.16	-.39	-.01	-.02	.64**			
N	120	30	25	120	120	120			
Winter survival	.03	.00	.18	.19*	.13	.02	-.04		
N	120	30	25	120	120	120	120		
Frost damage	.08	-.13	-.01	-.17	.09	-.58**	-.33**	.06	
N	120	30	25	120	120	120	120	120	
Mouse damage	-.15	.30	.20	.09	-.12	.15	.19*	-.05	-.20
N	120	30	25	120	120	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 5. **Agronomic and grain quality** data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Kabul, Afghanistan in 1977.

Cultivars	Yield q/ha	1000-kernel weight[a] g	Protein[a] %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Frost damage 0-9	Mouse damage %
Yubiley	60.8	40.0	10.9	99	0	127	172	96	2	7.5
Iulia	56.5	40.0	--	109	0	127	173	99	1	7.0
GKF-8001	55.6	32.0	10.2	85	0	130	174	98	1	15.0
Odesskaya 51	55.1	38.0	12.9	105	0	130	170	97	0	1.3
Zg 4364/73	55.1	28.0	10.9	79	0	128	172	98	2	2.5
Priboy	54.6	38.0	12.1	110	0	131	173	98	1	0.3
F54-70	54.6	36.0	--	111	0	130	175	99	1	2.5
Lindon	54.6	28.0	11.0	103	0	130	173	98	2	0.0
Martonvasar 3	54.4	38.0	12.5	109	0	128	172	96	1	27.5
Flavio	53.8	30.0	12.0	93	3	123	170	98	3	5.0
Lerma Rojo 64	53.1	40.0	11.7	95	1	112	164	98	5	0.3
Sage	52.8	34.0	13.3	118	30	130	170	95	2	1.0
Sadovo-1	52.7	44.0	10.9	105	1	127	171	95	0	23.3
Zg 887/73	52.6	30.0	9.7	80	0	119	170	96	3	0.0
Bordenave Puan Sag	51.9	30.0	14.5	120	31	126	173	100	2	0.0
Krasnodarskaya 39	51.3	36.0	11.7	116	0	133	175	97	0	45.0
Zg 4293/73	50.7	28.0	11.2	73	0	128	173	93	1	3.8
Zg 4240/73	50.7	26.0	--	93	0	128	172	99	1	4.0
Galiafen	50.0	30.0	13.4	108	8	127	173	96	4	2.5
Probstdorfer Karat	49.1	32.0	10.5	109	0	133	174	98	1	9.5
F26-70	48.0	32.0	15.3	101	0	128	171	97	0	13.8
Bezostaya 1	47.5	36.0	12.6	111	0	131	173	95	1	23.8
Blueboy	47.4	32.0	--	115	0	130	174	98	0	0.0
Atlas 66	47.3	30.0	13.3	118	0	132	171	98	1	1.3
Oasis	47.0	30.0	10.9	113	21	128	170	97	2	12.5
F53-70	46.0	32.0	13.7	114	0	129	174	100	1	25.0
Mironovskaya 808	45.9	38.0	--	128	18	132	174	100	0	7.8
NE68719	44.9	22.0	10.6	91	0	132	172	98	1	12.5
NE73640	44.2	30.0	12.6	110	0	128	170	99	0	21.3
WA5829	43.0	26.0	10.2	94	0	134	176	95	2	0.0
Mean	51.0	32.9	11.9	103.7	3.7	128.1	171.9	97.2	1.2	9.2
L.S.D. of cultivar means (.05)	11.4	--	--	16.9	13.1	5.2	4.4	4.9	1.8	21.5
Coefficient of variation (%)	15.8	--	--	11.6	249.6	2.9	1.8	3.6	105.2	166.8

[a] One replication only.

ARGENTINA

BALCARCE

COOPERATOR(S): R. Bedogni; E. Godoy; and H. Delmagro.

DATE OF PLANTING (EFFECTIVE GERMINATION): June 2, 1977.

PRECIPITATION DURING CYCLE OF TEST: 653.5 mm.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 18 kg/ha; P = 46 kg/ha; (Diammonium Phosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Not reported.

INSECT, WEED OR PEST PROBLEMS: There was extensive bird damage in certain plots.

DATE OF HARVEST: January 10, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

P. striiformis - September 14 and November 16, 1977.
P. recondita - October 8, November 16, and December 15, 1977.
P. graminis tritici - November 17 and December 20, 1977.
Septoria tritici - August 3, September 14, and October 8, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering	Ripening
Test weight	-.05						
N	83						
1000-kernel weight	.12	.53**					
N	120	83					
Protein	-.45**	.22*	.04				
N	120	83	120				
Plant height	.39**	-.15	.01	-.29**			
N	120	83	120	120			
Flowering	.64**	-.38**	-.15	-.60**	.57**		
N	120	83	120	120	120		
Ripening	.53**	-.54**	-.05	-.38**	.43**	.55**	
N	120	83	120	120	120	120	
Bird damage	-.83**	.05	-.17	.44**	-.54**	-.75**	-.66**
N	120	83	120	120	120	120	120

** Significant at the 1% level. * Significant at the 5% level.

Table 6. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Balcarce, Argentina in 1977.

Cultivars	Yield	Test weight	1000-kernel weight	Protein	Plant height	Date of Flowering	Date of Ripening	Bird damage	Rust: Stripe sev.	Stripe resp	Leaf sev.	Leaf resp	Stem sev.	Stem resp	Septoria sev.
	q/ha	kg/hl	g	%	cm	days from Jan. 1		%	%		%		%		0-9
NE68719	24.1	69.2	24.8	14.4	85	302	342	4	5	MS	0		0		7
Iulia	23.7	70.7	31.0	14.3	85	295	350	0	20	MR	10	MS	20	MS	6
Blueboy	21.0	70.8	29.8	9.7	85	297	342	0	10	MS	10	MS	30	MS	3
GKF-8001	20.0	71.8	33.3	13.9	65	298	346	0	0		0		13	MS	6
Probstdorfer Karat	19.1	67.1	25.3	11.9	110	310	352	0	0		0		0		3
Bezostaya 1	18.3	73.2	32.8	14.3	88	293	345	8	10	MR	0		50	MS	6
F53-70	18.3	71.8	31.3	14.9	95	294	350	0	0		0		5	MS	4
NE73640	17.9	75.0	29.8	13.9	95	300	340	20	0		10	MS	0		6
Atlas 66	17.7	73.1	30.5	15.2	95	302	342	0	20	MS	20	MS	45	MS	3
Sage	17.5	74.4	32.3	15.2	95	299	342	8	0		10	MS	0		4
Lindon	16.7	76.9	29.3	12.9	90	294	340	19	10	MS	8	0-MS	3	0-MS	3
Odesskaya 51	16.0	73.7	33.5	13.2	90	297	342	10	5	MS	0		13	MS	4
Krasnodarskaya 39	15.4	70.8	32.8	11.5	95	301	346	0	50	MS	0		20	MS	5
Mironovskaya 808	15.0	69.3	26.3	12.8	115	308	346	0	3	0-MR	0		9	MS	4
F54-70	13.7	72.4	32.3	13.9	95	294	351	0	0		0		20	MS	6
Priboy	13.6	73.6	37.3	13.4	80	297	344	0	0		0		8	MS	5
Martonvasar 3	11.2	71.3	32.0	15.0	95	293	342	41	20	MS	0		50	MS	6
Yubiley	10.8	73.3	28.3	15.8	80	292	340	9	0		0		10	MS	6
Bordenave Puan Sag	10.4	72.4	30.3	14.7	105	301	342	0	0		0		6	MS	6
WA5829	9.8	64.8	24.5	9.9	75	308	346	40	10	MR	0		20	MS	6
F26-70	8.8	69.9	33.3	17.5	80	291	344	20	30	MS	0		0		5
Galiafen	8.7	66.9	22.3	14.3	90	292	349	20	0		0		0		4
Oasis	6.2	72.8	31.0	14.8	95	292	340	50	0		60	MS	0		4
Sadovo-1	5.8	67.8	34.5	15.6	85	292	340	63	20	MS	0		0		6
Zg 4364/73	3.7	--	31.0	14.3	75	286	338	94	0		0		0		6
Lerma Rojo 64	2.2	--	35.3	14.2	85	276	338	95	20	MS	90	S	0		7
Zg 887/73	2.1	--	30.5	17.1	65	284	338	96	0		0		8	MS	4
Flavio	1.4	--	24.3	17.7	85	285	340	95	6	MR	0		6	MS	5
Zg 4240/73	1.3	--	26.8	17.9	65	283	338	96	0		0		0		7
Zg 4293/73	1.0	--	23.0	14.4	65	285	338	96	0		0		0		4
Mean	12.4	71.8	30.0	14.3	86.9	294.7	343.1	29.4	8.0		7.3		11.1		5.0
L.S.D. of cultivar means (.05)	4.9	--	1.4	0.3	1.3	0.1	0.7	12.0	--		-		-		-
Coefficient of variation (%)	28.0	--	3.4	1.4	1.1	0.0	0.1	29.1	--		-		-		-

ARGENTINA

BORDENAVE

COOPERATOR(S): S. E. Garbini; J. R. Lopez.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 23, 1977, (emergence June 6, 1977).

PRECIPITATION DURING CYCLE OF TEST: 416.5 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: None

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Drought from planting until the beginning of October. Thereafter abundant rain fell until harvest.

DISEASE DEVELOPMENT: A moderate attack of leaf rust (Puccinia recondita) was present.

INSECT, WEED OR PEST PROBLEMS: A light attack of rose-grain aphid (Metopolophium dirhodum).

DATE OF HARVEST: November 30, to December 22, 1977.

AREA HARVESTED FOR YIELD: 3 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Flowering - October 2-November 4, 1977.
P. recondita - October 15, 1977.
Maturity - November 25-December 17, 1977.
Height - November 25-December 17, 1977.
Lodging - November 25-December 17, 1977.
Shattering - November 25-December 17, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering	Ripening
Test weight	.15						
1000-kernel weight	.15	.54**					
Protein	-.07	.14	.07				
Plant height	.27**	.30	.17	.13			
Flowering	-.01	-.05	-.05	-.19*	.56**		
Ripening	-.10	-.20*	-.20*	-.00	.45**	.71**	
Frost damage	-.09	-.19*	-.18	.05	-.11	-.51**	-.25**

** Significant at the 1% level.

* Significant at the 5% level.

Table 7. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Bordenave, Argentina in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Frost damage 0-9	Leaf rust sev. %	Leaf rust resp.
Bordenave Puan Sag	32.4	82.4	31.9	3	12.3	112	298	341	0	8	R-MR
Blueboy	32.3	74.6	35.8	4	10.2	96	295	336	1	18	MS-S
Sage	31.6	77.8	36.2	3	12.3	109	299	338	0	0	
Priboy	30.4	82.0	39.1	3	11.9	89	295	339	0	8	R
F26-70	28.6	83.0	41.0	3	14.0	87	292	335	0	40	MS-S
Odesskaya 51	28.6	82.4	40.4	3	11.8	90	295	337	0	23	MS-S
Zg 887/73	28.5	76.1	35.3	4	11.7	60	285	333	1	4	R-MR
Lindon	28.0	82.4	29.1	3	12.3	82	292	338	0	15	R-MR
Galiafen	27.7	75.1	30.8	4	11.8	90	293	348	4	9	R
F54-70	27.6	78.9	37.8	4	13.0	93	295	349	0	8	MR-MS
Flavio	26.9	77.6	33.2	4	11.4	72	284	331	3	50	S
WA5829	26.1	74.0	27.7	4	9.6	75	306	349	0	15	MS-S
Zg 4240/73	26.0	74.2	30.2	4	13.5	58	284	333	1	0	
NE73640	25.5	77.3	32.5	4	12.5	89	298	340	0	40	MS-S
Oasis	25.5	80.6	31.8	4	12.1	79	292	334	0	0	
F53-70	25.4	78.4	37.3	4	12.3	89	294	349	0	10	MR-MS
Bezostaya 1	25.3	81.3	35.2	3	12.1	86	295	337	0	8	MR-MS
GKF-8001	25.1	75.5	34.4	4	12.0	62	296	339	0	5	MR
Martonvasar 3	24.8	81.4	44.1	3	12.4	86	293	334	0	43	S
Yubiley	24.7	78.3	39.6	3	11.9	69	292	334	0	0	0-R
Zg 4364/73	24.6	76.7	32.5	4	12.4	63	287	334	0	1	0-R
Mironovskaya 808	24.6	76.2	30.6	5	12.6	113	305	349	0	20	MR-MS
Zg 4293/73	24.6	74.2	28.5	4	12.6	57	284	332	1	4	MR-MS
Iulia	24.6	79.1	35.6	3	12.8	85	295	348	0	20	MS
Krasnodarskaya 39	24.5	78.6	36.2	4	11.0	91	298	339	0	58	S
Sadovo-1	23.9	81.2	41.3	3	11.4	76	292	333	1	50	S
NE68719	23.9	72.7	30.5	4	11.8	78	303	346	0	9	R-MR
Probstdorfer Karat	23.7	80.1	35.4	3	11.8	103	309	349	0	8	R
Lerma Rojo 64	21.4	80.0	34.3	4	13.0	86	280	329	4	70	S
Atlas 66	20.7	75.2	33.4	4	14.9	107	300	346	1	18	MS-S
Mean	26.3	78.2	34.7	3.6	12.2	84.3	294.1	339.2	0.6	18.5	
L.S.D. of cultivar means (.05)	5.0	1.8	2.0	0.4	0.9	5.8	3.0	2.6	0.4	--	
Coefficient of variation (%)	13.6	1.6	4.0	8.2	5.5	4.9	0.7	0.5	56.6	--	

AUSTRIA

VIENNA

COOPERATOR(S): R. Hron; H. Foessleitner.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 12, 1976.

PRECIPITATION DURING CYCLE OF TEST: 454.9 mm. (October 1, 1976 to July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 98 kg/ha; P = 46 kg/ha; K = 175 kg/ha (Preplant - Compound fertilizer. Early spring - Nitro chalk).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Sufficient growth occurred before the winter. A return to winter conditions in late March caused some injury. A spring-early summer drought lasted until June 25.

DISEASE DEVELOPMENT: Powdery mildew (Erysiphe graminis) was fairly severe. No Stem rust (Puccinia graminis f. sp. tritici) was observed,but late in the season Leaf rust (P. recondita) occurred.

INSECT, WEED OR PEST PROBLEMS: None, weeds were controlled.

DATE OF HARVEST: July 19, 1977.

AREA HARVESTED FOR YIELD: 3.3 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - April 6, 1977.
E. graminis - May 4 and May 13, 1977.
Shattering - August 9, 1977.

Correlation Coefficients

No. of observations = 120	Yield	1000-kernel weight	Protein	Plant height	Flowering	Ripening
1000-kernel weight	.30**					
Protein	-.12	.07				
Plant height	.18*	.18*	.49**			
Flowering	-.17	-.29**	-.10	.33**		
Ripening	-.18*	-.08	.16	.42**	.64**	
Mildew	-.16	.13	-.28**	-.00	.32**	.30**

** Significant at the 1% level. * Significant at the 5% level.

Table 8. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Vienna, Austria in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Mildew Sev. 1-9 May 4	Mildew Sev. 1-9 May 13
Yubiley	46.5	37.5	14.3	80	140	183	4	6
NE73640	45.5	33.9	15.4	103	141	183	3	6
Priboy	45.4	40.6	14.5	91	142	185	3	5
Zg 887/73	45.0	29.7	15.3	69	139	182	1	1
Flavio	44.0	35.5	13.9	84	138	183	5	6
Sadovo-1	41.8	45.4	14.6	81	139	182	5	7
Lindon	41.8	25.6	15.3	95	140	182	3	5
Odesskaya 51	41.7	37.0	15.1	95	141	187	4	5
Zg 4240/73	41.3	33.0	15.2	70	134	180	1	1
Zg 4293/73	41.2	32.3	14.6	63	136	180	1	1
Bezostaya 1	41.1	38.1	14.8	91	142	184	4	6
F54-70	39.1	39.8	16.1	91	141	185	4	5
Martonvasar 3	37.9	40.0	15.3	88	141	186	5	6
Probstdorfer Karat	37.2	34.9	15.4	100	147	188	3	3
GKF-8001	36.1	33.8	13.6	60	143	185	4	6
Mironovskaya 808	35.8	31.7	16.4	109	148	183	3	4
Sage	35.4	32.9	15.3	95	140	186	3	5
Bordenave Puan Sag	35.1	30.2	17.7	106	142	188	3	5
F26-70	34.9	40.6	18.0	91	135	186	3	4
Zg 4364/73	34.3	33.4	15.1	69	137	180	1	1
NE68719	34.0	28.1	14.7	73	143	184	6	7
Galiafen	34.0	31.3	15.3	89	143	188	5	5
Oasis	33.5	35.5	17.2	99	140	184	1	2
Lerma Rojo 64	33.3	41.6	16.4	89	134	179	5	7
Krasnodarskaya 39	32.7	35.5	13.8	93	145	185	5	7
F53-70	32.4	37.3	15.5	89	141	183	3	5
Iulia	32.2	39.5	15.2	83	139	183	5	5
Atlas 66	31.4	33.7	18.6	110	144	188	2	5
WA5829	30.8	28.0	13.8	71	147	187	6	7
Blueboy	29.1	32.6	13.7	86	143	186	5	8
Mean	37.5	35.0	15.3	87.0	140.7	184.1	3.4	4.7
L.S.D. of cultivar means (.05)	10.9	3.0	1.4	8.9	1.1	0.8	0.7	-
Coefficient of variation (%)	20.7	6.1	6.3	7.3	0.6	0.3	14.0	-
Local cultivars:								
Probstdorfer Extrem	36.9	32.0						

BULGARIA

TOLBUKHIN

COOPERATOR: I. Govedarov.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 6, 1976.

PRECIPITATION DURING CYCLE OF TEST: 426.0 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 70 kg/ha; P = 130 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally favorable for plant development during the growing season. However, conditions were also excellent for disease development.

DISEASE DEVELOPMENT: Severe attacks of Leaf rust (Puccinia recondita) and Stem rust (P. graminis f. sp. tritici) were noticed on some lines. Also Powdery mildew (Erysiphe graminis) was reporte

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 21, 1977.

AREA HARVESTED FOR YIELD: 5.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering	Ripening
Test weight	.30						
N	30						
1000-kernel weight	.17	.23					
N	30	30					
Protein	-.21*	.59**	.07				
N	115	30	30				
Plant height	-.18	.43*	.32	.32			
N	30	30	30	30			
Flowering	-.19	.09	.14	-.15	.51**		
N	30	30	30	30	30		
Ripening	-.29	-.15	.13	-.13	.34	.78**	
N	30	30	30	30	30	30	
Frost damage	-.54**	-.21	-.15	.23	-.19	-.42*	-.18
N	30	30	30	30	30	30	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 9. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Tolbukhin, Bulgaria in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	1000-kernel weight[a] g	Seed grade 1-9	Protein %	Plant height[a] cm	Date of[a] Flowering (days from Jan. 1)	Date of[a] Ripening (days from Jan. 1)	Frost damage[a] 0-9	Rust[a] Leaf sev. %	Rust[a] Leaf resp.	Rust[a] Stem sev. %	Rust[a] Stem resp.	Mildew[a] sev. 0-9
Zg 4364/73	69.8	74.7	37.2	4	14.2	80	133	186	0	80	VS	0	R	0
Yubiley	68.5	74.8	40.0	3	14.1	75	138	187	0	0	R	80	VS	2
Zg 4240/73	67.0	72.7	35.2	4	14.1	75	129	186	0	5	R	0		0
Zg 887/73	65.8	71.1	35.2	4	13.0	67	129	185	0	0		0		0
Zg 4293/73	65.0	64.0	35.2	3	13.0	63	129	186	0	0		0		-
Iulia	61.5	79.2	43.0	3	14.2	99	136	190	0	65	VS	75	VS	2
Sadovo-1	59.3	71.3	47.6	4	12.6	93	135	186	0	99	VS	80	VS	5
F54-70	58.8	78.3	41.6	3	16.7	105	137	189	0	0	R	80	VS	2
F53-70	57.3	76.5	43.6	3	16.7	110	137	189	0	0	R	80	VS	3
GKF-8001	56.5	71.3	40.4	3	13.1	62	138	191	0	65	VS	99	VS	1
Probstdorfer Karat	56.3	77.0	39.2	3	13.4	108	143	190	0	40	S	90	VS	0
Priboy	56.0	76.0	42.8	4	14.1	111	138	189	0	10	MR	80	S	2
Blueboy	55.3	65.0	38.0	4	12.2	93	139	192	0	0	R	99	VS	8
F26-70	55.0	76.7	40.0	4	15.9	92	133	186	0	99	VS	75	S	3
Flavio	54.5	68.6	36.0	4	12.8	85	132	186	2	99	VS	99	VS	2
Oasis	53.5	77.4	37.2	4	16.6	108	136	186	0	0		0		0
Odesskaya 51	53.0	73.5	40.0	4	13.3	100	137	189	0	99	VS	90	VS	3
Bezostaya 1	52.3	72.9	42.8	3	14.3	93	138	192	0	65	VS	80	VS	3
NE68719	51.3	72.7	32.4	4	13.0	69	139	189	0	50	VS	99	VS	4
Galiafen	49.8	73.5	34.0	4	14.1	101	139	191	3	10	R	99	VS	3
Lindon	49.8	73.0	35.2	4	14.5	93	137	188	0	15	MS	50	S	2
Atlas 66	49.3	73.0	37.6	4	17.1	101	139	192	0	5	MR	15	MR	2
Martonvasar 3	46.5	70.4	39.2	3	14.0	85	138	189	0	99	VS	65	VS	2
Krasnodarskaya 39	44.5	65.1	42.0	4	12.9	97	140	191	0	99	VS	99	VS	4
Mironovskaya 808	43.5	70.4	37.6	4	13.1	120	140	191	0	99	VS	99	VS	0
Sage	42.3	77.7	39.2	3	15.4	95	140	189	0	0	R	0		3
Bordenave Puan Sag	39.8	77.5	35.2	4	16.1	101	138	190	0	0	R	99	VS	4
NE73640	39.3	73.1	35.2	4	14.4	102	137	186	0	80	VS	0		3
WA5829	33.8	61.9	36.0	5	12.0	85	144	193	0	99	VS	65	MS	1
Lerma Rojo 64	19.5	67.9	38.0	4	16.6	73	127	186	8	99	VS	0		3
Mean	52.5	72.6	38.6	3.7	14.2	91.4	136.5	188.7	0.4	46.0		59.9		2.3
L.S.D. of cultivar means (.05)	5.9	--	--	0.2	0.3	--	--	--	-	--		--		-
Coefficient of variation (%)	7.9	--	--	3.4	1.3	--	--	--	-	--		--		-

[a] One replication only.

CANADA

LETHBRIDGE

COOPERATOR: M. N. Grant.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 14, 1976.

PRECIPITATION DURING CYCLE OF TEST: 288 mm. (July 10, 1976-July 10, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 26 kg/ha; P = 26 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally very dry, but not hot.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 14, 1977.

AREA HARVESTED FOR YIELD: 2.3 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - April 25, 1977.
Shattering - August 5, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	.39*								
N	27								
1000-kernel weight	.25	.43*							
N	27	27							
Protein	-.47**	-.24	-.21						
N	108	27	27						
Plant height	.20	--	--	.14					
N	54	0	0	54					
Lodging	0	0	0	0	-				
N	28	27	27	27	0				
Flowering	.45**	-.02	.09	-.35**	.31*	0			
N	108	27	27	108	54	27			
Ripening	.03	-.27	-.12	-.25**	-.23	0	.51**		
N	108	27	27	108	54	27	108		
Shattering	-.04	-.15	-.25	.25**	.20	0	-.19	-.16	
N	111	27	27	108	54	27	108	108	
Winter survival	.89**	.55**	.37	-.01	.40**	0	-.00	-.39**	.06
N	120	27	27	108	54	28	108	108	111

** Significant at the 1% level.

* Significant at the 5% level.

Table 10. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Lethbridge, Alberta, Canada in 1977.

Cultivars	Yield q/ha	Test[a] weight kg/hl	1000-kernel[a] weight g	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Shattering %	Winter survival %
GKF-8001	47.7	81.1	35.6	13.6	59	154	189	0	100
Bezostaya 1	47.6	82.4	39.6	14.5	83	153	188	0	100
Probstdorfer Karat	47.1	81.6	36.8	14.2	83	156	190	1	100
Yubiley	46.3	79.8	34.0	14.4	70	153	188	1	100
Krasnodarskaya 39	42.9	81.1	34.4	13.5	75	154	188	0	100
Priboy	42.5	82.7	39.6	14.0	82	155	190	0	100
Mironovskaya 808	42.5	75.0	32.8	15.0	89	154	188	3	100
Martonvasar 3	42.0	81.3	38.8	15.8	75	153	186	0	100
WA 5829	41.2	80.4	30.8	14.0	68	155	194	0	100
Blueboy	41.1	74.8	33.6	14.5	66	154	191	1	100
Odesskaya 51	41.0	81.0	36.0	14.9	80	154	188	0	100
Sadovo-1	40.3	81.4	43.2	14.6	68	151	188	0	100
NE 68719	39.6	80.1	28.4	15.7	67	152	186	1	100
NE 73640	38.9	80.9	29.6	16.1	79	150	186	0	100
Lindon	38.9	83.4	29.2	15.5	77	152	189	1	100
Zg 4364/73	37.6	78.1	33.2	16.8	60	148	187	0	99
Iulia	36.7	81.5	39.6	16.7	74	148	188	0	100
Sage	36.5	81.0	31.2	15.9	81	151	187	0	100
F54-70	36.0	81.1	38.8	17.3	83	153	190	1	100
Bordenave Puan Sag	35.4	81.8	32.0	16.3	83	151	186	2	100
F53-70	35.2	82.4	37.6	17.0	80	152	187	1	100
Oasis	33.1	79.0	30.0	17.4	81	148	186	30	100
Zg 4240/73	32.5	78.3	30.4	15.5	56	147	189	0	90
Zg 4293/73	30.4	80.4	31.6	16.4	55	148	187	1	96
F26-70	30.0	80.5	37.2	18.2	77	147	188	0	100
Atlas 66	28.4	74.2	28.8	18.3	74	157	194	1	54
Zg 887/73	19.6	77.9	30.4	13.9	52	150	192	0	25
Galiafen	0.0	-	-	-	-	-	-	0	1
Flavio	0.0	-	-	-	-	-	-	-	0
Lerma Rojo 64	0.0	-	-	-	-	-	-	-	0
Mean	34.4	80.1	34.2	15.6	72.9	151.8	188.3	1.5	85.5
L.S.D. of cultivar means (.05)	5.3	-	-	0.7	9.2	2.2	2.4	3.9	6.7
Coefficient of variation (%)	10.9	-	-	3.1	6.2	1.0	0.9	181.3	5.5

[a] One replication only.

[b] Two replications only.

CANADA

PRINCE EDWARD ISLAND

CHARLOTTETOWN

COOPERATOR: H. G. Nass.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 14, 1976.

PRECIPITATION DURING CYCLE OF TEST: 939 mm. rain; 290 cm snow (September 1, 1976-August 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Autumn: N = 20 kg/ha; P = 80 kg/ha; K = 80 kg/ha (5-20-20 compound).
Spring: N = 80 kg/ha (Ammonium Nitrate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A late spring delayed the resumption of growth.

DISEASE DEVELOPMENT: Moderate attacks of Powdery mildew (Erysiphe graminis) and Septoria sp.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 16, 1977.

AREA HARVESTED FOR YIELD: 2.79 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - July 15, 1977. Septoria sp. - July 29, 1977.
E. graminis - July 29, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Lodging	Flowering
Test weight	.49*					
N	21					
Protein	-.36**	.10				
N	100	21				
Plant height	.76**	.48*	-.26			
N	25	21	25			
Lodging	.33**	.14	-.25*	.60**		
N	94	21	93	22		
Flowering	-.06	-.44*	-.21	-.12	.19	
N	25	21	25	25	22	
Winter survival	.85**	.39	-.28**	.55**	.28**	.04
N	120	21	100	25	94	25

** Significant at the 1% level. * Significant at the 5% level.

Table 11. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Prince Edward Island, Canada in 1977.

Cultivars	Yield q/ha	Test[a] weight g	1000-kernel[a] weight g	Seed grade 1-9	Protein %	Plant[a] height cm	Lodging %	Date of Flowering[a] days from Jan. 1	Winter survival %	Mildew[a] sev (0-9)	Septoria[a] sev (0-9)
Mironovskaya 808	42.7	73.3	45.6	3	13.3	119	25	180	85	1	2
Bezostaya 1	30.2	74.3	40.6	3	14.6	100	23	180	74	3	3
Oasis	28.0	76.6	42.8	4	16.0	101	23	179	60	1	1
Probstdorfer Karat	26.1	71.2	38.6	3	15.1	100	13	183	65	5	4
NE 68719	25.7	69.9	30.6	4	15.4	82	13	178	74	5	3
Odesskaya 51	25.7	75.9	43.2	3	14.9	94	28	179	54	2	2
Priboy	24.7	74.6	40.8	3	13.6	107	28	180	64	2	5
NE 73640	22.2	74.9	35.0	3	16.0	96	20	176	70	3	4
F53-70	20.7	74.6	41.6	3	17.0	96	15	180	60	1	4
Krasnodarskaya 39	19.7	74.1	40.9	3	13.4	96	25	182	48	5	1
Sage	17.4	74.1	36.0	3	16.3	97	20	176	53	1	7
Blueboy	16.2	65.1	36.0	4	13.8	94	13	181	49	3	2
Sadovo-1	16.0	72.6	44.8	3	14.3	84	10	179	59	5	3
Martonvasar 3	15.3	73.3	42.8	3	15.8	83	13	180	40	4	2
F54-70	15.0	74.5	43.4	3	17.1	87	10	180	43	1	2
GKF-8001	14.8	67.8	31.2	4	15.1	66	10	182	61	6	4
Lindon	13.6	74.9	30.8	4	14.7	87	25	179	55	2	5
Yubiley	9.7	70.4	34.4	4	14.3	73	10	180	53	2	3
Iulia	9.3	72.5	28.8	3	16.7	76	10	180	48	2	7
WA 5829	8.2	60.1	24.8	5	15.6	76	33	182	58	5	5
F26-70	7.3	73.0	38.4	3	18.0	88	13	176	31	5	7
Zg 4364/73	3.4	-	-	4	15.4	66	10	180	19	0	4
Zg 4240/73	2.3	-	-	4	16.1	60	10	179	20	0	3
Atlas 66	2.1	-	-	4	17.6	80	20	184	14	1	5
Zg 4293/73	2.0	-	-	4	15.1	50	10	180	10	0	2
Bordenave Puan Sag	0.3	-	-	-	-	-	30	-	5	5	7
Galiafen	0.0	-	-	-	-	-	-	-	0	-	-
Flavio	0.0	-	-	-	-	-	-	-	0	-	-
Zg 887/73	0.0	-	-	-	-	-	-	-	0	-	-
Lerma Rojo 64	0.0	-	-	-	-	-	-	-	0	-	-
Mean	14.0	72.3	37.7	3.5	15.4	86.3	17.4	179.8	42.3	2.7	3.7
L.S.D. of cultivar means (.05)	11.0	-	-	-	0.3	-	7.3	-	29.5	-	-
Coefficient of variation (%)	56.0	-	-	-	1.2	-	29.7	-	49.7	-	-

[a] One replication only.

CHILE

CHILLAN

COOPERATOR: L. Aguayo; I. Ramirez.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 19, 1977.

PRECIPITATION DURING CYCLE OF TEST: 1185 mm. (May 1 to December 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: On Planting: N = 50 kg/ha; P = 34.9 kg/ha. On Tillering: N = 50 kg/ha. (Potassium Nitrate and Triple Phosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A wet spring produced conditions favorable for rust development.

DISEASE DEVELOPMENT: A moderate infection of stripe rust (Puccinia striiformis) together with an unusually severe leaf rust (P. recondita) epidemic. Septoria sp. and barley yellow dwarf virus were also noted.

INSECT, WEED OR PEST PROBLEMS: Light infestations of the rose-grain aphid (Metopolophium dirhodum) and the grain aphid (Macrosiphum granarium).

DATE OF HARVEST: January 3, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

P. strifformis - October 31, 1977.
Septoria tritici - October 31, 1977.
Flowering - November 4, 1977.
P. recondita - December 14, 1977.
Shattering - December 28, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	Protein	Plant height	Flowering	Shattering
Test weight	.64**					
Protein	-.22*	-.10				
Plant height	.44**	.65**	.16			
Flowering	.40**	.52**	-.09	.47**		
Shattering	-.50**	-.48**	.18	-.35**	-.40**	
B.Y.D.V.	-.30**	-.37**	.04	-.48**	-.09	-.06

** Significant at the 1% level.

* Significant at the 5% level.

Table 12. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Chillan, Chile in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Shattering %	B.Y.D.V. %	Rust [a] Stripe sev. %	Stripe resp	Leaf sev. %	Leaf resp	Septoria [a] sev. 0-9
Odesskaya 51	45.9	84.0	11.5	119	298	0	11	40	S	0		0
F53-70	43.9	82.9	12.8	128	296	0	33	40	MR	0		0
Mironovskaya 808	43.9	81.5	11.0	140	307	0	7	5	MR	5	MS	0
Probstdorfer Karat	43.5	83.4	12.0	128	311	0	22	0		5	MR-MS	0
Bezostaya 1	42.2	83.5	11.6	116	297	0	35	20	MR	0		0
Priboy	40.9	83.1	10.8	119	300	0	13	0		0		0
Sadovo-1	40.0	81.5	11.1	108	293	1	50	50	MR	0		0
Iulia	37.5	82.9	11.7	106	297	0	33	40	MR	5	S	0
Yubiley	37.3	79.7	12.3	103	294	1	58	0		0		2
NE68719	36.8	78.2	11.3	93	305	0	25	50	S	0		0
Bordenave Puan Sag	36.5	84.1	11.7	131	302	0	14	50	S	0		0
Martonvasar 3	36.4	82.9	11.3	114	296	0	38	40	MR	0		0
WA5829	35.2	79.5	8.8	84	306	0	60	5	MR	20	S	0
Krasnodarskaya 39	34.8	82.5	10.3	115	304	0	43	50	MR	5	S	0
GKF-8001	32.8	82.3	11.8	75	301	0	74	0		0		1
Blueboy	32.3	77.2	9.4	113	296	0	35	70	S	0		0
Sage	32.1	82.9	10.6	118	303	0	15	0		0		0
Zg 887/73	28.9	74.0	10.6	74	283	4	48	80	S	0		3
F54-70	28.1	83.3	12.0	114	297	0	33	50	MR	0		0
F26-70	28.1	82.5	13.3	114	295	0	53	30	S	0		0
Lindon	25.1	79.7	11.8	103	296	0	38	90	S	0		0
Galiafen	24.6	77.9	11.1	108	293	0	75	60	S	0		2
Atlas 66	24.2	81.7	13.4	144	302	5	6	90	S	0		0
Zg 4364/73	23.3	75.4	12.2	78	292	13	55	80	S	0		6
Zg 4240/73	23.0	75.1	11.9	80	287	20	65	70	S	0		4
Lerma Rojo 64	23.0	76.8	12.4	93	262	5	26	80	S	0		6
Flavio	20.3	76.6	10.9	94	280	31	1	60	S	0		0
NE73640	20.2	75.7	13.7	113	302	0	48	80	S	0		0
Zg 4293/73	18.9	73.6	12.3	69	288	14	63	80	S	0		0
Oasis	13.6	75.9	14.7	101	296	9	58	90	S	0		0
Mean	31.8	80.0	11.7	106.3	295.8	3.4	37.6	46.7		1.5		0.8
L.S.D. of cultivar means (.05)	9.2	1.3	1.2	8.4	1.4	9.0	26.2	--		-		-
Coefficient of variation (%)	20.7	1.2	7.5	5.6	0.3	186.6	49.7	--		-		-

[a] One replication only.

CHILE

TEMUCO

COOPERATOR(S): J. Acevedo; I. Ramirez.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 30, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha (Urea and Sodium Nitrate); P = 87.3 kg/ha (Triple Phosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A humid winter and spring gave rise to a dry summer.

DISEASE DEVELOPMENT: Stripe rust (Puccinia striiformis) and various root rot diseases were common.

INSECT, WEED OR PEST PROBLEMS: Severe bird damage.

DATE OF HARVEST: Not harvested.

AREA HARVESTED FOR YIELD: Not harvested.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
P. striiformis - November 27, 1977.

Correlation Coefficients

No. of observations = 120	Seed grade	Protein	Plant height
Protein	.38**		
Plant height	-.18*	-.27**	
Flowering	-.14	-.45**	.69**

** Significant at the 1% level.

* Significant at the 5% level.

Table 13. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Temuco, Chile in 1977.

Cultivars	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Stripe rust[a/] sev.: %	Resp.
Atlas 66	5	16.0	116	325	90	VS
Priboy	4	11.7	101	321	30	MR-MS
Blueboy	5	11.8	108	321	30	MR-MS
Odesskaya 51	4	12.2	101	322	50	MS
F26-70	5	14.7	99	315	50	MS
WA5829	7	12.2	85	332	70	MS
Sage	5	13.4	114	329	1	R
Bezostaya 1	4	13.5	103	320	5	MR
GKF-8001	4	13.0	75	323	1	MR
Martonvasar 3	4	14.4	99	316	60	MS
NE68719	5	13.3	86	327	70	MS
Galiafen	8	15.9	94	321	80	MS
Bordenave Puan Sag	6	14.1	120	328	80	MS
Oasis	7	14.2	90	313	90	S
Flavio	6	16.0	80	304	80	S
Probstdorfer Karat	5	12.8	118	334	5	MR
NE73640	7	14.3	99	327	90	S
Lindon	7	13.0	94	314	90	S
Mironovskaya 808	4	11.8	134	335	5	MR
Krasnodarskaya 39	5	11.6	105	327	60	MS
Sadovo-1	4	12.5	93	314	0	-
F53-70	5	13.8	109	328	30	MS
F54-70	5	15.4	108	330	40	MS
Iulia	4	12.7	96	321	20	MS
Yubiley	4	13.6	83	314	1	R
Zg 4240/73	5	16.3	73	309	20	MS
Zg 887/73	6	15.0	70	309	40	MS
Zg 4364/73	5	12.9	75	314	40	MS
Zg 4293/73	5	14.4	65	306	50	MS
Lerma Rojo 64	6	17.7	90	303	0	-
Mean	5.2	13.8	96.0	319.9	39.6	
L.S.D. of cultivar means (.05)	0.3	1.4	5.5	1.6	-	
Coefficient of variation (%)	4.5	7.0	4.1	0.4	-	

a/ One replication only.

CZECHOSLOVAKIA

MALE RIPNANY

COOPERATOR: D. Michalik.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 8, 1976.

PRECIPITATION DURING CYCLE OF TEST: 499.9 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 50 kg/ha (Ammonium Sulphate), P = 54 kg/ha (Super-phosphate); K = 75 kg/ha (Potassium Chloride).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A damp, warm autumn was followed by a mild winter. Spring was cold and rainfall very heavy. Later, however, hot, dry weather prevailed.

DISEASE DEVELOPMENT: Stripe rust (Puccinia striiformis) was quite severe. Other rusts were present along with a light infection of Powdery Mildew (Erysiphe graminis).

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 16, 1977.

AREA HARVESTED FOR YIELD: 8.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
E. graminis - late May, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Plant height	Lodging	Flowering	Ripening	Winter survival
Test weight	.27**							
1000-kernel weight	.20*	.75**						
Plant height	-.40**	.17	.22*					
Lodging	-.42**	-.07	-.21*	.45**				
Flowering	-.25**	-.20*	-.28**	.39**	.25**			
Ripening	-.41**	-.24**	-.16	.61**	.25**	.74**		
Winter survival	.20*	.10	-.00	.16	.10	-.16	-.01	
Frost damage	-.22*	-.10	.01	-.18*	-.10	.05	-.09	-.79**

** Significant at the 1% level.

* Significant at the 5% level.

Table 14. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Male Ripnany, Czechoslovakia in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter survival %	Rust Stripe sev. %	Rust Stripe resp	Rust Leaf sev. %	Rust Leaf resp	Rust Stem sev. %	Rust Stem resp	Mildew at heading time 0-9	Mildew on ears %
Zg 4240/73	126.2	78.4	36.4	85	0	141	191	100	35	VR-R	0		0		5	37
Zg 887/73	122.2	76.7	33.5	82	0	141	192	100	45	VR	0		0		1	18
Yubiley	119.4	80.1	45.5	90	0	143	193	100	15	VR	0		0		5	35
Zg 4364/73	115.1	78.9	37.4	80	0	142	191	100	60	MR	0		0		1	25
Sadovo-1	113.5	81.2	52.1	98	0	143	194	100	0		20	VR	0		3	45
Zg 4293/73	113.3	77.4	37.3	71	0	143	191	100	45	VR	0		0		1	15
GKF-8001	112.5	80.0	42.3	77	0	143	194	100	0		15	VR	0		4	32
Martonvasar 3	110.5	79.9	43.6	104	0	141	193	100	35	VR	30	VR	0		5	40
Probstdorfer Karat	107.6	80.1	42.5	123	0	151	197	100	0		0		0		4	22
Odesskaya 51	106.0	81.5	46.0	112	26	144	195	100	0		30	VR	0		4	37
Bezostaya 1	104.7	79.5	44.4	108	0	143	194	100	0		0		0		6	47
Priboy	103.9	80.3	49.7	117	21	143	195	100	0		0		10	R	3	27
Iulia	103.3	82.0	48.7	95	0	142	192	100	0		20	VR	0		2	35
F54-70	98.9	80.3	43.2	104	0	143	195	100	0		0		0		4	32
F53-70	98.1	80.1	40.9	110	0	142	195	100	0		0		0		3	40
Mironovskaya 808	97.1	77.8	42.2	130	15	149	195	100	0		10	R	10	R	4	20
Galiafen	93.9	78.1	37.4	92	0	149	196	66	15	VR	0		0		3	27
Lindon	93.2	76.1	28.1	107	26	144	195	100	60	MR	0		0		3	47
NE73640	92.7	79.3	37.2	112	26	142	194	100	60	MR	0		0		5	37
Blueboy	92.4	74.2	34.5	115	24	145	196	100	30	VR	0		10	R	5	40
NE68719	91.4	76.0	30.4	88	0	145	195	100	45	VR	0		0		5	45
Sage	91.2	80.1	40.9	113	40	144	194	100	0		0		0		6	45
Flavio	89.5	78.7	39.2	92	0	141	192	100	30	VR	0		0		3	40
Krasnodarskaya 39	86.5	80.7	38.0	110	0	149	196	100	60	MR	0		10	R	4	25
WA5829	84.4	72.1	25.7	92	18	150	198	100	25	VR	30	VR	0		7	43
Bordenave Puan Sag	82.9	80.2	36.5	108	56	149	195	100	0		0		0		5	42
Atlas 66	77.0	77.5	42.5	120	19	146	197	100	40	VR	30	VR	0		3	27
Oasis	76.0	79.1	36.2	112	38	143	193	100	74	M	0		0		2	18
Lerma Rojo 64	72.2	77.3	43.7	92	10	142	192	75	0		20	VR	0		5	47
F26-70	72.9	77.7	43.8	103	0	140	194	100	15	VR	30	VR	0		5	43
Mean	98.3	78.7	40.0	101.4	10.6	144.1	194.1	98.0	23.0		7.8		1.3		3.9	34.3
L.S.D. of cultivar means (.05)	6.8	0.3	0.9	0.1	8.7	0.1	0.2	5.0	--		-		-		-	4.7
Coefficient of variation (%)	4.9	0.2	1.6	0.1	58.4	0.1	0.1	3.6	--		-		-		-	8.3

CZECHOSLOVAKIA

SEDLEC

COOPERATOR(S): J. Schmidt; J. Maly; A. Vernerova.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 13, 1976 (previous 2 years grew Lucerne) (Medicago sativa).

PRECIPITATION DURING CYCLE OF TEST: 531.1 mm. (October 1, 1976-August 10, 1977) 105.6% of normal.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: October 1, 1976: N = 30 kg/ha (Ammonium sulphate). May 2, 1977: N = 30 kg/ha (Urea - 10% water spray). Fertilization of previous crop: March 1976, P = 123 kg/ha (Super-phosphate). K = 299 kg/ha (Potassium chloride).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Autumn conditions were favorable for germination and emergence was good. Mild weather occurred during the winter with variable snow cover and some winter killing was experienced. Spring came late giving a warm March, cold April, dry May and warm, rainy June. July and August had colder weather; August also being wet. This made harvesting difficult.

DISEASE DEVELOPMENT: A moderate infection of powdery mildew (Erysiphe graminis) was the only disease present.

INSECT, WEED OR PEST PROBLEMS: None. Sprayed with 3.5 kg/ha "Aniten" herbicide (1.4 kg/ha MCPA, 0.35 kg/ha Flurenol) on April 28, 1977.

DATE OF HARVEST: August 4-17, 1977.

AREA HARVESTED FOR YIELD: 7.142 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 18, 1977.
Average number of plants/sq. meter - March 18, 1977.
Promptness of spring growth - April 19, 1977.
Evaluation of tillering - May 3, 1977.
E. graminis - June 6, July 22, 1977.
Average number of ears/sq. meter - June 25 to July 12, 1977.
Height - July 6, 1977.
Lodging - June 8, 23, July 21, August 3, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering	Ripening
Test weight	.58**						
1000-kernel weight	.18*	.25**					
Protein	-.66**	-.17	.06				
Plant height	.17	.39**	.45**	.21			
Flowering	-.04	.23*	-.12	-.14	.48**		
Ripening	-.16	-.10	-.08	-.05	.25**	.53**	
Winter survival	.72**	.49**	.27**	-.17	.40**	-.19*	-.34**

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height
Lodging (July 21)	.07	.34**	.06	.22*	.54**
N	120	120	120	120	120
Plants/m^2	.71**	.50*	.29**	-.16	.42**
N	120	120	120	120	120
Ears/m^2	.55**	.44**	-.20*	-.09	.28**
N	120	120	120	120	120
Seed weight/ear	.68**	.29**	.38**	-.64**	.03
N	120	120	120	120	120
Number of seeds/ear	.60**	.15	-.13	-.70**	-.24**
N	120	120	120	120	120
Grain development	-.54**	-.41**	-.40**	.20*	-.22*
N	120	120	120	120	120
Sprout damage	.01	-.60**	-.22	-.15	-.47**
N	30	30	30	30	30
Promptness of spring growth	.16	.20*	-.29**	-.12	.25**
N	120	120	120	120	120
Tiller rating	-.20*	-.26**	.29**	.15	-.28**
N	120	120	120	120	120
Initial heading date	-.00	.09	-.38**	-.13	.11
N	120	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 15. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Sedlec, Czechoslovakia in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging % Jul. 21	Lodging % Aug. 3	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter survival %	Plants/m^2
Lindon	92.4	77.3	37.8	14.8	88	21	74	162	212	97	304
Probstdorfer Karat	87.1	74.7	51.4	15.1	111	6	24	165	214	95	282
Blueboy	85.4	75.3	46.2	13.6	102	8	43	163	216	92	301
WA5829	83.2	73.0	35.6	12.4	81	5	77	163	215	94	299
Yubiley	83.2	74.2	50.1	15.0	80	0	5	160	208	96	290
Zg 887/73	83.1	71.3	39.7	13.4	69	0	18	161	207	79	248
Priboy	82.8	75.8	52.6	14.7	97	11	50	163	215	95	304
Martonvasar 3	80.5	75.2	49.1	15.8	88	6	23	161	209	95	292
GKF-8001	80.2	75.4	44.1	13.8	65	0	1	163	208	92	277
Iulia	79.8	75.8	49.3	16.8	86	0	10	161	211	97	291
Zg 4293/73	79.6	72.0	38.2	16.0	66	0	6	159	208	84	261
Odesskaya 51	78.0	74.4	51.6	16.0	93	8	29	163	212	94	300
Bezostaya 1	77.4	76.6	51.0	15.8	92	5	36	162	215	96	311
Mironovskaya 808	76.0	74.2	54.7	15.5	122	59	83	165	213	96	299
Sadovo-1	70.3	68.6	55.3	14.9	81	0	8	160	209	95	291
NE68719	67.9	73.6	34.0	15.7	80	0	41	163	209	94	279
Zg 4364/73	66.7	72.7	41.7	16.2	75	0	3	160	208	94	280
Atlas 66	66.4	75.4	41.8	18.5	102	49	74	165	222	77	237
NE73640	65.8	76.1	45.3	18.9	94	24	71	162	209	95	302
Zg 4240/73	65.8	65.5	40.9	16.2	67	0	1	159	214	92	268
Krasnodarskaya 39	63.8	69.8	45.0	16.5	97	13	45	163	212	95	306
Bordenave Puan Sag	62.4	76.7	43.5	18.8	100	88	97	163	208	94	300
Sage	60.2	69.7	42.3	19.0	103	16	53	163	212	94	305
F53-70	53.4	72.7	46.9	18.1	94	0	14	162	211	92	293
F54-70	53.4	73.5	47.5	18.7	97	3	11	161	211	96	289
F26-70	43.6	69.5	46.6	21.0	85	3	6	157	208	97	310
Flavio	42.7	70.0	43.5	16.0	70	0	1	163	212	24	100
Oasis	41.0	71.8	44.5	19.3	103	13	39	163	210	86	260
Lerma Rojo 64	21.8	71.0	47.0	19.3	69	4	33	160	213	17	65
Galiafen	15.8	64.2	36.3	17.0	74	0	26	165	219	5	16
Mean	67.0	72.9	45.1	16.4	87.7	11.3	33.3	161.9	211.6	84.8	265.3
L.S.D. of cultivar means (.05)	8.7	1.3	2.0	0.8	2.1	11.9	20.5	1.3	2.0	7.8	32.0
Coefficient of variation (%)	9.3	1.3	3.1	3.5	1.7	75.2	44.3	0.6	0.7	6.6	8.6

Table 15. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Sedlec, Czechoslovakia in 1977. Concluded.

Cultivars	Ears/m^2	Kernel weight per ear g	Number of kernels/ear	Date of first mildew occurrence on leaves May	Date of first mildew occurrence on ears June	Mildew[a] sev 0-9 July 22	Grain[a] develop-ment 0-9	Sprout-ing[a] damage 0-9	Promptness[a] of spring growth 0-9	Evaluation[a] of tillering 0-9	Initial heading Date days from Jan. 1
Lindon	891	1.04	28	19	20	4	2	1	4	2	124
Probstdorfer Karat	574	1.53	30	13	19	4	2	1	5	2	123
Blueboy	638	1.37	29	10	16	8	3	1	4	3	123
WA5829	854	0.98	27	10	14	7	4	1	6	1	125
Yubiley	585	1.33	29	13	17	6	2	1	3	3	121
Zg 887/73	629	1.33	33	--	25	1	2	6	4	3	123
Priboy	627	1.33	25	16	17	4	2	2	3	3	122
Martonvasar 3	561	1.44	29	13	14	6	2	0	3	4	121
GKF-8001	654	1.23	28	10	15	6	2	1	3	4	123
Iulia	650	1.24	25	11	17	6	2	1	5	2	123
Zg 4293/73	670	1.19	31	--	22	1	2	4	4	3	124
Odesskaya 51	622	1.27	25	15	17	4	3	1	4	3	123
Bezostaya 1	624	1.25	25	13	15	6	1	2	2	4	121
Mironovskaya 808	582	1.31	24	17	23	3	2	1	5	2	124
Sadovo-1	574	1.23	22	12	13	6	2	3	1	5	120
NE68719	785	0.87	26	10	12	8	3	1	5	2	124
Zg 4364/73	712	0.95	23	--	24	1	2	4	4	2	123
Atlas 66	681	0.99	24	18	17	5	2	0	3	3	122
NE73640	842	0.79	18	18	18	5	2	1	3	2	122
Zg 4240/73	612	1.08	27	22	23	1	1	8	3	4	121
Krasnodarskaya 39	692	0.93	21	12	22	6	2	3	4	3	124
Bordenave Puan Sag	828	0.76	17	21	23	3	2	0	4	3	124
Sage	850	0.71	17	23	16	3	4	3	4	2	123
F53-70	638	0.84	18	14	14	6	2	2	2	4	122
F54-70	588	0.91	19	13	17	5	2	1	3	4	122
F26-70	604	0.72	16	20	16	4	4	2	2	4	121
Flavio	442	0.96	22	18	17	5	3	1	3	3	124
Oasis	787	0.52	12	26	15	2	2	1	6	2	125
Lerma Rojo 64	248	0.74	16	15	23	7	4	2	3	4	121
Galiafen	203	0.87	25	16	17	6	6	2	3	3	124
Mean	641.3	1.06	23.5	15.2	17.6	4.5	2.4	1.9	3.5	2.9	122.7
L.S.D. of cultivar means (.05)	94.2	0.21	5.6	3.8	2.6	-	0.6	-	1.3	0.8	1.6
Coefficient of variation (%)	10.5	14.3	16.9	17.6	10.5	-	18.3	-	25.4	19.0	0.9

[a] 0= no occurrence of mildew, good grain development, no pre-harvest sprouting of seeds, very quick growth, abundant tillering.
9= high incidence of mildew, poorly developed grain, complete sprouting of seeds, very slow spring growth, no tillering.

EAST GERMANY

BOHNSHAUSEN

COOPERATOR: A. Meinel.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 15, 1976.

PRECIPITATION DURING CYCLE OF TEST: 548.9 mm (October 11, 1976-August 20, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: September 9, 1976: P = 52 kg/ha; K = 199 kg/ha (Potasium Super-phosphate).
March 16, 1977: N = 30 kg/ha.
June 2, 1977: N = 40 kg/ha (Calcium Ammonium Nitrate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Heavy thunderstorms in early June produced significant early lodging. Extremely high moisture during the harvest period caused excessive sprouting.

DISEASE DEVELOPMENT: A little Leaf rust (Puccinia recondita) was observed. More serious problems were Powdery mildew (Erysiphe graminis) and various ear diseases such as Ear blight (Fusarium culmorum).

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 18, 1977.

AREA HARVESTED FOR YIELD: 7.43 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
F. culmorum - August 4, 1977.

Correlation Coefficients

No. of bservations = 120	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flower-ing	Ripen-ing	Shat-tering	Winte surviv
.000-kernel weight	.28**								
rotein	-.40**	.22*							
lant height	-.07	.32**	.28**						
odging	-.51**	-.06	.50**	.45**					
lowering	-.07	-.10	-.18*	.57**	.32**				
ipening	-.04	.32**	.04	.47**	.18*	.47**			
hattering	.01	-.24**	-.07	.03	.06	.06	-.05		
inter survival	.13	.11	.02	-.03	.04	-.14	-.09	.02	
rost damage	-.11	-.08	-.05	-.22*	-.21*	-.11	-.01	.02	-.37*

** Significant at the 1% level. * Significant at the 5% level.

Table 16. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Boehnshausen, East Germany in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter survival %	Frost damage 0-9	Rust Stripe sev. %	Rust Stripe resp:	Rust Leaf sev. %	Rust Leaf resp:	Mildew sev. 0-9	Septoria sev. 0-9	Fusarium sev. 0-9
Zg 4364/73	67.8	38.8	15.2	79	0	165	211	85	2	0		1	0-MR	2	2	9
F54-70	65.2	47.9	17.8	98	13	167	214	86	2	0		1	0-MR	6	3	7
Yubiley	62.4	49.3	15.4	78	4	166	214	83	2	0		3	MR	5	3	9
Priboy	61.2	51.1	15.7	92	33	168	215	85	2	0		1	0-MS	3	2	5
Iulia	59.7	47.0	16.8	83	25	167	214	85	2	3	0-MR	4	MR	7	2	5
Sadovo-1	59.7	52.4	14.8	81	1	164	212	88	2	2	0-MR	3	R-MR	6	4	9
Flavio	57.6	41.8	14.5	81	3	166	214	85	2	0		6	R-MS	4	6	9
F53-70	56.8	46.6	17.9	98	19	166	214	89	1	2	0-MR	1	R-MR	3	2	7
GKF-8001	56.7	39.0	14.4	67	0	167	212	84	2	0		2	0-MR	4	3	9
Mironovskaya 808	56.0	49.7	16.6	109	84	173	214	80	2	0		2	MR	1	2	3
Probstdorfer Karat	55.2	47.1	15.6	113	36	174	214	88	2	0		2	R-MR	2	2	6
Martonvasar 3	55.1	44.7	17.2	82	58	167	212	89	2	6	MR-MS	3	MR	5	3	4
Blueboy	53.7	43.3	13.8	105	28	169	215	80	2	4	MR-MS	1	0-MR	8	4	6
Zg 887/73	50.3	37.4	14.2	71	0	167	214	84	3	0		2	MR	1	3	9
Zg 4240/73	49.3	40.7	16.7	71	1	165	212	84	3	1	0-MR	2	0-MR	4	4	9
Zg 4293/73	46.8	35.1	15.3	63	0	164	210	81	3	0		1	R-MR	1	4	9
Odesskaya 51	45.7	47.2	16.7	86	50	167	214	88	2	1	0-MR	5	MR	4	4	4
Bezostaya 1	45.4	48.9	17.0	82	66	168	214	85	2	1	0-MR	2	R-MR	5	3	2
Lindon	44.9	38.6	15.9	86	94	167	214	88	2	4	MR	4	R-MR	4	3	2
NE68719	43.5	29.5	15.6	83	48	168	211	91	1	4	MR-MS	3	MR	8	3	3
Lerma Rojo 64	42.9	49.8	16.6	86	26	164	213	84	3	1	0-R	4	MR-MS	5	5	7
WA5829	42.5	37.0	13.8	84	5	174	215	84	2	0		2	0-MR	7	5	8
Galiafen	41.6	39.7	15.5	88	3	169	215	65	4	2	0-MR	4	MR-MS	4	4	7
F26-70	41.0	48.3	20.8	86	23	163	213	80	2	0	0-R	6	MR-MS	3	3	7
Krasnodarskaya 39	39.4	42.9	15.3	90	51	166	214	83	2	4	R-MR	3	R-MR	5	2	3
Atlas 66	39.3	41.4	18.8	99	83	172	216	81	3	10	MS-S	3	MR-MS	4	4	2
Oasis	38.6	41.1	17.9	92	93	168	213	85	2	6	R-MS	2	0-MR	2	4	3
Bordenave Puan Sag	37.6	38.3	17.8	94	96	168	214	81	2	2	0-MR	3	R-MR	4	3	1
NE73640	30.5	44.6	19.1	90	73	166	214	88	1	13	R-MS	2	MR	6	4	3
Sage	26.1	38.8	19.3	95	95	168	212	79	2	0		0		3	4	3
Mean	49.1	43.2	16.4	87.0	36.9	167.2	213.4	83.8	1.9	2.2		2.4		4.2	3.3	5.7
L.S.D. of cultivar means (.05)	11.2	3.5	0.9	4.7	17.8	1.1	1.3	6.3	0.8	-		-		-	-	-
Coefficient of variation (%)	16.2	5.8	3.8	3.8	34.4	0.5	0.4	5.3	30.1	-		-		-	-	-

ENGLAND

CAMBRIDGE

COOPERATOR: F. G. H. Lupton.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 23, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Not reported.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Winter and early spring were fairly mild and wet. Summer was warm and humid providing conditions suitable for disease development.

DISEASE DEVELOPMENT: A severe Stripe rust (Puccinia striiformis) infection developed early in the season and was followed by Powdery mildew (Erysiphe graminis).

INSECT, WEED OR PEST PROBLEMS: Birds damaged almost half the plots. Also, bibionid fly larvae (Bibio hortulanus) were serious on some plots.

DATE OF HARVEST: Not reported.

AREA HARVESTED FOR YIELD: Yield plots were not harvested; only small samples were taken.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Flowering - June 9, 1977.
E. graminis - June 30, 1977.
P. striiformis - June 30, 1977.
Height - July 6, 1977.
B. hortulanus - August 3, 1977.
Lodging - August 3, 1977.
Bird damage - August 3, 1977.

Correlation Coefficients

N = No. of observations	Seed grade	Protein	Plant height	Lodging
Protein	.45*			
N	30			
Plant height	-.29	-.40*		
N	30	30		
Lodging	-.35	-.05	.32*	
N	30	30	60	
Flowering	-.40*	-.70**	.53**	.13
N	30	30	60	60

** Significant at the 1% level.

* Significant at the 5% level.

Table 17. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Cambridge, England in 1977.

Cultivars	1000-kernel weight[a/] g	Seed grade[a/] 1-9	Protein[a/] %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Bibionid fly damage %	Bird damage %	Stripe rust sev. %	Mildew sev. 0-9
Atlas 66	45.8	4	15.0	115	55	160	25	0	61	3
Priboy	53.8	4	12.0	91	25	160	5	0	33	2
Blueboy	44.9	4	10.6	113	20	160	14	5	44	8
Odesskaya 51	39.5	4	12.1	99	15	158	13	0	61	3
F26-70	42.6	6	19.6	85	15	150	3	70	83	3
WA5829	31.9	5	10.7	85	10	159	5	0	44	5
Sage	39.3	4	15.9	109	10	156	5	0	22	2
Bezostaya 1	43.3	4	14.4	96	20	156	0	10	44	7
GKF-8001	43.5	4	14.4	73	30	158	3	65	66	8
Martonvasar 3	47.8	4	13.4	89	10	159	30	0	88	4
NE68719	29.5	5	12.9	86	20	158	5	0	28	9
Galiafen	32.3	4	12.1	96	20	157	9	0	44	8
Bordenave Puan Sag	37.1	4	13.8	107	50	153	3	0	33	2
Oasis	40.3	5	12.4	100	10	157	10	50	88	3
Flavio	41.6	6	16.3	84	10	152	5	88	83	6
Probstdorfer Karat	47.0	5	13.3	119	15	165	4	0	22	3
NE73640	42.1	4	13.2	98	25	157	9	0	44	3
Lindon	25.7	4	10.5	96	10	156	15	0	33	2
Mironovskaya 808	54.9	6	12.7	127	25	160	8	0	22	3
Krasnodarskaya 39	35.7	6	11.2	102	15	160	17	0	50	6
Sadovo-1	34.4	6	16.3	82	15	147	6	55	39	7
F53-70	43.3	6	14.2	100	20	155	5	0	22	3
F54-70	39.6	6	15.4	100	15	156	10	0	44	6
Iulia	41.5	5	13.8	95	20	149	0	5	61	2
Yubiley	38.4	5	18.4	82	10	148	3	85	33	4
Zg 4240/73	35.6	6	16.6	71	10	147	4	93	77	2
Zg 887/73	38.8	7	14.7	77	10	157	3	90	99	2
Zg 4364/73	40.4	5	13.9	73	15	152	5	83	94	3
Zg 4293/73	22.4	6	17.5	63	10	152	25	90	88	2
Lerma Rojo 64	33.6	6	17.3	91	25	145	8	90	28	9
Mean	39.6	5.0	14.2	93.2	18.7	155.3	8.3	29.3	52.4	4.2
L.S.D. of cultivar means (.05)	--	-	--	7.3	16.7	0.5	19.7	20.0	--	-
Coefficient of variation (%)	--	-	--	3.8	43.8	0.1	115.7	33.3	--	-

[a/] One replication only.

FINLAND

JOKIOINEN

COOPERATOR: R. Manner.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 14, 1976.

PRECIPITATION DURING CYCLE OF TEST: 483.8 mm.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 150 kg/ha; P = 100 kg/ha; K = 75 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The summer was more wet and cloudy than normal.

DISEASE DEVELOPMENT: A number of diseases occurred during the winter. Seedling blight and foot rot (Fusarium nivale) being the most serious.

INSECT, WEED OR PEST PROBLEMS: Birds and rabbits (Oryctolagus cuniculus) were troublesome.

AREA HARVESTED FOR YIELD: 2.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Frost damage - May 6, 1977.
Winter survival - May 6, 1977.
Date of ripening - August 15-30, 1977.
Height - August 26, 1977.
Lodging - August 26, 1977.
Shattering - August 26, 1977.

Correlation Coefficients

N = No. of observations	Yield	Seed grade	Protein	Plant height	Ripening	Winter survival
Seed grade	-.41**					
N	61					
Protein	-.27*	.28*				
N	61	61				
Plant height	.49**	-.19	-.24			
N	118	61	61			
Ripening	-.23*	.10	-.01	-.07		
N	118	61	61	118		
Winter survival	.31**	-.10	.08	.24**	-.33**	
N	120	61	61	118	118	
Frost damage	-.26**	.20	-.09	-.16	.33**	-.90**
N	120	61	61	118	118	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 18. **Agronomic and grain quality** data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Jokioinen, Finland in 1977.

Cultivars	Yield q/ha	Seed grade[a] 1-9	Protein[a] %	Plant height cm	Date of Ripening days from Jan. 1	Winter survival %	Frost damage 0-9
Iulia	3.7	5	18.2	44	229	65	3
Probstdorfer Karat	3.6	5	18.1	46	236	50	5
F53-70	3.5	6	19.3	43	233	62	3
NE68719	3.4	5	19.5	41	229	72	1
Martonvasar 3	2.9	5	18.3	42	232	77	2
Krasnodarskaya 39	2.8	5	17.6	44	233	61	3
Mironovskaya 808	2.4	6	18.3	52	235	79	2
NE73640	2.2	5	19.4	41	229	67	3
F54-70	2.2	5	19.5	47	230	75	3
Lindon	2.1	4	16.6	43	232	56	2
Blueboy	2.1	5	18.6	50	233	74	2
Sage	1.9	7	22.3	42	231	58	4
F26-70	1.8	5	22.0	39	228	84	1
Zg 887/73	1.8	5	16.1	36	228	57	5
Yubiley	1.7	5	17.4	35	232	69	3
Odesskaya 51	1.7	6	17.5	42	232	62	3
WA5829	1.5	5	17.3	37	234	59	3
Bezostaya 1	1.4	6	17.8	47	232	78	2
Sadovo-1	1.4	6	16.7	42	229	54	3
Oasis	1.3	6	17.8	37	230	82	1
GKF-8001	1.2	4	17.4	32	232	50	4
Zg 4293/73	1.0	5	18.1	33	238	48	3
Bordenave Puan Sag	1.0	5	20.4	36	234	55	4
Zg 4364/73	0.9	6	19.1	39	229	55	4
Priboy	0.7	7	17.6	42	231	55	3
Zg 4240/73	0.6	6	19.5	31	230	58	3
Lerma Rojo 64	0.5	-	--	38	237	8	8
Flavio	0.4	6	18.0	33	238	10	8
Galiafen	0.1	-	--	45	236	10	8
Atlas 66	0.1	-	--	43	234	25	7
Mean	1.7	5.5	18.6	40.6	232.1	57.0	3.4
L.S.D. of cultivar means (.05)	3.0	1.1	1.8	9.9	3.9	22.3	2.2
Coefficient of variation (%)	122.6	9.7	4.6	17.4	1.2	27.8	45.6

[a] The number of replications were variable because there were many missing samples.

FRANCE

PARIS

(ORGERUS)

COOPERATOR(S): P. Benoist; J. P. Hardouin.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 13, 1976.

PRECIPITATION DURING CYCLE OF TEST: 530 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 160 kg/ha; P = 44 kg/ha; K = 44 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Winter and spring were normal, but were followed by a wet summer.

DISEASE DEVELOPMENT: Powdery mildew (Erysiphe graminis) and Leaf rust (Puccinia recondita) were reported.

INSECT, WEED OR PEST PROBLEMS: Aphids.

DATE OF HARVEST: August 20, 1977.

AREA HARVESTED FOR YIELD: 11.25 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
E. graminis - May 24, 1977.

Correlation Coefficients

N = No. of observations	Yield	Protein
Protein	-.16	
N	120	
Flowering	-.53**	-.21
N	30	30

** Significant at the 1% level.

Table 19. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Orgerus, France in 1977.

Cultivars	Yield q/ha	Seed grade (1-9)	Protein %	Date of heading[a] days from Jan. 1	Mildew[a] sev 0-9
Zg 4364/73	80.5	4	14.6	143	1
Flavio	80.3	4	13.4	144	2
Yubiley	78.6	4	14.4	145	3
Sadovo-1	77.6	4	14.2	145	6
Iulia	74.1	3	15.3	145	5
Zg 4240/73	71.8	4	14.6	142	1
F26-70	69.5	4	18.1	141	1
Bezostaya 1	69.0	4	14.8	148	5
Martonvasar 3	68.4	4	15.1	147	4
Zg 887/73	67.7	5	14.4	148	1
Priboy	67.5	4	14.1	147	3
Odesskaya 51	66.8	5	14.0	147	9
Zg 4293/73	66.4	4	14.7	142	1
Lindon	66.0	4	14.8	146	4
F53-70	65.1	4	17.2	147	3
GKF-8001	63.9	4	13.5	149	5
Probstdorfer Karat	60.3	3	14.1	154	3
F54-70	59.8	4	16.4	149	3
Blueboy	58.9	4	12.0	149	6
Galiafen	58.7	5	14.0	147	9
Lerma Rojo 64	56.8	3	15.7	139	7
NE73640	55.3	4	16.3	149	3
Oasis	54.6	4	15.3	146	2
Mironovskaya 808	52.8	4	15.7	153	3
Sage	51.9	4	16.3	149	4
Atlas 66	50.6	4	17.8	149	2
NE68719	47.9	5	14.6	149	7
Bordenave Puan Sag	46.6	4	17.1	150	2
WA5829	46.4	5	12.2	154	7
Krasnodarskaya 39	45.7	4	14.5	150	6
Mean	62.7	4.1	15.0	147.1	3.8
L.S.D. of cultivar means (.05)	7.4	0.2	0.9	-	-
Coefficient of variation (%)	8.4	3.4	4.4	-	-

[a] One replication only.

HUNGARY

MARTONVASAR

COOPERATOR(S): S. Rajki; L. Balla.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 28, 1976.

PRECIPITATION DURING CYCLE OF TEST: 480 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha and 70 kg/ha (2 applications); P = 170 kg/ha; K = 170 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A mild winter preceded an early, warm spring. May became cold and a combination of rain and strong winds during June and July resulted in heavy lodging.

DISEASE DEVELOPMENT: Fairly severe infections of Powdery mildew (Erysiphe graminis), Leaf rust (Puccinia recondita) and Stem rust (P. graminis f. sp. tritici) were observed.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20, 1977.

AREA HARVESTED FOR YIELD: 5 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
E. graminis - May 10, 1977.
Lodging - June 21, 1977.
P. recondita - June 27, 1977.
P. graminis f. sp. tritici - July 5, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering
Test weight	.27**						
N	120						
1000-kernel weight	.17	.65**					
N	120	120					
Protein	.01	.57**	.44**				
N	120	120	120				
Plant height	.10	.28*	.17	.08			
N	60	60	60	60			
Lodging	-.09	.08	.06	.03	.70**		
N	120	120	120	120	60		
Flowering	-.24**	-.17	-.26**	-.26**	.50**	.44**	
N	120	120	120	120	60	120	
Ripening	-.26**	-.19*	-.16	-.32**	.57**	.51**	.88**
N	120	120	120	120	60	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 20. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Martonvasar, Hungary in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height[a] cm	Lodging %	Date of Flowering: days from Jan. 1	Date of Ripening: days from Jan. 1	Rust[a] Leaf sev. %	Rust[a] Stem sev. %	Mildew sev. 0-9
Zg 887/73	71.7	70.6	31.5	5	14.4	76	75	142	183	28	22	1
Lindon	69.7	77.9	28.5	4	14.7	94	96	144	186	61	33	6
Zg 4240/73	67.1	73.9	34.5	5	15.1	72	49	139	183	28	17	1
Priboy	66.2	78.7	45.3	4	14.2	104	95	144	190	55	61	5
Mironovskaya 808	65.9	74.6	40.8	4	15.0	119	94	152	192	72	77	3
Zg 4364/73	65.9	75.4	35.5	5	16.7	68	8	142	183	22	22	1
NE73640	65.1	77.9	34.5	4	16.7	99	94	145	186	33	50	6
Yubiley	63.1	76.3	40.3	5	14.6	81	49	142	185	11	22	6
Zg 4293/73	62.2	74.7	32.8	4	15.7	65	3	139	183	33	33	1
Sadovo-1	62.2	75.8	44.3	4	14.1	82	81	140	184	44	66	6
Oasis	62.1	77.8	38.5	5	17.3	100	98	144	187	17	11	1
Sage	62.1	78.5	36.5	4	16.0	104	96	146	188	28	28	7
Probstdorfer Karat	61.8	78.5	37.8	4	14.8	104	94	151	193	72	55	2
Odesskaya 51	61.0	72.0	31.0	5	13.1	99	95	145	189	72	72	5
Atlas 66	60.3	75.5	37.3	5	18.0	115	92	143	187	22	11	4
Iulia	59.4	78.8	43.5	4	16.2	87	76	143	187	55	55	5
F53-70	58.6	77.5	40.5	4	16.5	90	86	143	187	39	33	5
Flavio	57.9	75.0	36.5	4	14.3	78	45	142	183	61	61	6
F54-70	57.6	77.0	41.0	5	16.8	90	93	143	186	44	55	5
Galiafen	56.6	75.1	31.0	4	14.9	88	94	147	191	22	28	5
Lerma Rojo 64	54.7	75.5	41.0	4	17.0	88	95	139	183	28	50	7
F26-70	54.5	78.2	42.0	4	18.6	85	84	142	185	33	50	7
Martonvasar 3	54.2	75.7	41.5	5	15.8	88	91	144	190	66	83	6
Bordenave Puan Sag	53.8	79.0	34.3	4	16.3	111	95	147	188	44	50	7
Blueboy	52.9	68.6	30.0	5	12.5	106	90	146	192	72	50	8
Bezostaya 1	52.7	76.7	41.0	4	14.8	92	95	144	186	50	39	6
GKF-8001	49.8	74.1	34.0	5	13.8	64	18	144	186	55	44	6
NE68719	49.6	72.7	27.8	5	14.2	78	38	146	186	33	55	8
WA5829	40.4	64.5	23.3	6	12.6	77	91	151	193	66	50	8
Krasnodarskaya 39	39.8	75.6	37.3	5	15.3	93	90	148	190	39	61	6
Mean	58.6	75.4	36.4	4.5	15.3	89.6	78.2	144.1	187.0	43.3	44.6	5.0
L.S.D. of cultivar means (.05)	8.3	1.1	2.5	0.1	0.9	7.7	15.7	0.8	0.4	--	--	-
Coefficient of variation (%)	10.1	1.0	4.9	2.4	4.1	4.2	14.3	0.4	0.2	--	--	-

[a] Two replications only.

HUNGARY

SZEGED

COOPERATOR: I. Szaniel.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 21, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha; P = 100 kg/ha; K = 100 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Typical weather conditions for this location were experienced during the season with no pronounced extremes.

DISEASE DEVELOPMENT: Powdery mildew (Erysiphe graminis) infection was noted along with all the rusts - Leaf rust (Puccinia recondita) being the most severe.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20, 1977.

AREA HARVESTED FOR YIELD: 2.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
E. graminis - July 17, 1977.
Rusts - July 17, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Lodging	Flowering
Test weight	-.03					
1000-kernel weight	.10	.58**				
Protein	-.09	.29**	.13			
Lodging	-.07	.24	.14	.36**		
Flowering	-.39**	-.03	-.25**	-.08	.06	
Plant density	.10	.08	.11	.03	.08	.07

** Significant at the 1% level. * Significant at the 5% level.

Table 21. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Szeged, Hungary in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Lodging %	Date of Flowering days from Jan. 1	Growth density 1-10	Leaf rust Sev. %	Leaf rust Resp.	Mildew sev. 0-9
Zg 4240/73	78.9	75.6	35.5	15.2	53	137	9	19	VR-MR	3
Flavio	73.4	78.3	38.6	14.3	68	138	9	43	MR-S	6
Lerma Rojo 64	72.5	79.6	42.0	15.8	97	126	8	35	MR-MS	7
Atlas 66	71.6	78.0	37.4	19.1	87	141	9	14	VR-S	3
Zg 887/73	70.8	75.4	30.6	14.6	80	139	8	88	VR-R	1
Probstdorfer Karat	70.5	81.0	42.0	15.5	95	140	9	64	VR-MR	4
Zg 4364/73	68.3	77.1	33.0	14.7	40	138	9	28	VR-R	2
Priboy	65.6	80.4	44.2	14.7	78	140	9	30	R-MS	4
Martonvasar 3	65.4	78.5	42.0	15.9	83	140	8	68	S	7
Yubiley	65.3	79.5	42.7	15.2	73	140	9	21	VR-R	5
Zg 4293/73	65.0	74.8	29.7	14.9	33	136	8	60	VR-R	1
Lindon	64.5	80.5	32.0	15.4	95	140	9	38	R-MS	7
Sadovo-1	63.4	80.4	49.2	13.9	58	139	7	60	MR-S	7
F53-70	62.3	79.2	40.6	17.6	80	140	7	18	VR-MR	5
Iulia	62.0	80.2	42.3	16.1	90	138	9	18	MR-S	6
F26-70	61.9	80.0	42.6	17.0	73	135	8	53	MS	7
Odesskaya 51	60.5	81.2	43.3	15.7	88	140	9	43	MR-VS	5
Galiafen	60.3	79.5	38.7	14.9	94	140	8	39	R-MR	5
Bezostaya 1	59.1	80.3	42.6	15.6	90	140	9	23	MR-S	5
Blueboy	58.6	75.0	36.5	13.9	85	140	9	30	R-S	7
Mironovskaya 808	57.5	75.5	39.9	15.6	90	139	8	38	MS-S	4
Sage	56.8	79.3	38.1	17.0	90	140	8	29	R-MS	7
NE73640	55.6	80.0	35.9	17.2	97	140	8	26	R-MS	7
WA5829	54.6	75.3	30.7	14.0	82	145	10	55	R-S	7
Oasis	53.4	79.5	38.7	17.6	99	140	9	18	VR	3
F54-70	53.3	81.2	41.4	17.9	95	140	9	26	VR-R	5
NE68719	49.9	77.2	29.8	15.3	99	146	8	48	R-MS	8
GKF-8001	49.5	79.0	36.7	14.4	23	140	9	15	VR-R	6
Bordenave Puan Sag	46.1	80.3	35.8	17.3	87	140	8	30	R-MR	7
Krasnodarskaya 39	45.0	80.6	38.1	14.7	60	145	8	45	R-S	6
Mean	61.4	78.7	38.3	15.7	78.5	139.3	8.4	37.2		5.0
L.S.D. of cultivar means (.05)	15.7	2.1	3.0	0.6	16.5	2.0	1.9	-		-
Coefficient of variation (%)	18.2	1.9	5.5	2.7	15.0	1.0	16.5	-		-

IRAN

HAMADAN

COOPERATOR: M. R. Eslampour.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 23, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha; (Urea and Diammonium Phosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Warm conditions prevailed. The year was exceptional for this location.

DISEASE DEVELOPMENT: Not reported.

INSECT, WEED OR PEST PROBLEMS: Bird damage.

DATE OF HARVEST: July 25, 1977.

AREA HARVESTED FOR YIELD: 3 square meters.

DATE WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 120	Yield	Protein	Plant height	Flowering	Ripening
Protein	-.45**				
Plant height	.43**	-.09			
Flowering	.22*	-.12	.28**		
Ripening	-.15	.14	-.00	-.25**	
Winter survival	.08	.10	.10	.06	.02

** Significant at the 1% level * Significant at the 5% level.

Table 22. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Hamadan, Iran in 1977.

Cultivars	Yield q/ha	Seed grade (1-9)	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter survival %
WA5829	42.8	3	10.5	65	141	186	85
Blueboy	38.4	3	12.5	83	140	187	85
F53-70	35.2	2	15.1	81	134	191	88
Sage	35.1	3	15.4	83	136	185	84
Iulia	34.0	2	15.0	74	135	188	86
Bezostaya 1	33.1	2	14.5	77	137	188	90
Odesskaya 51	33.0	3	14.6	76	136	188	90
Krasnodarskaya 39	32.5	3	12.7	86	136	191	90
Bordenave Puan Sag	32.2	3	16.0	78	138	193	88
Probstdorfer Karat	32.2	2	14.3	91	141	185	90
Atlas 66	31.6	4	16.9	109	138	188	91
Zg 887/73	31.3	4	12.4	58	134	188	86
Mironovskaya 808	30.5	3	14.7	96	141	193	90
GKF-8001	30.3	3	12.6	55	139	187	89
Martonvasar 3	30.1	2	14.7	71	136	193	85
Galiafen	29.6	4	14.6	78	136	191	78
F54-70	29.5	2	14.9	79	136	188	89
Zg 4364/73	29.5	4	14.4	60	135	188	84
NE68719	29.0	4	16.3	56	138	191	84
Yubiley	29.0	3	12.7	69	136	189	85
Zg 4293/73	28.0	4	13.8	57	133	192	83
Lindon	27.7	3	14.3	67	136	188	89
F26-70	27.1	3	14.6	76	133	192	85
Priboy	26.8	2	13.5	76	137	185	85
NE73640	26.5	3	16.6	56	137	190	89
Sadovo-1	25.9	2	15.0	62	133	193	90
Oasis	23.6	4	14.9	67	134	193	86
Lerma Rojo 64	18.7	3	17.6	73	140	188	70
Zg 4240/73	17.7	4	15.0	57	133	185	86
Flavio	16.1	4	15.8	66	133	193	85
Mean	29.6	3.0	14.5	72.7	136.3	189.2	86.1
L.S.D. of cultivar means (.05)	8.5	0.4	2.1	13.9	4.0	1.9	7.3
Coefficient of variation (%)	20.4	9.2	10.4	13.6	2.1	0.7	6.0
Local cultivars:							
Omid	33.8	-	-	111	139	187	86
Karaj 2	41.8	-	-	104	137	188	84

IRAN

KARAJ

COOPERATOR: H. Kaveh.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 9, 1976.

PRECIPITATION DURING CYCLE OF TEST: 249.05 mm.

AMOUNT OF IRRIGATION APPLIED: 6 applications (amounts not reported).

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha (Urea and Ammonium Phosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The spring was dry and warm. Later, however, it became cooler before finally warmer conditions returned. The plants were short and matured early causing a reduction in yield.

DISEASE DEVELOPMENT: A disease showing symptoms similar to those produced by barley yellow dwarf virus caused severe yellowing and dwarfing, finally resulting in yield reduction.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 15, 1977.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Seed grade	Protein	Plant height	Flowering
Seed grade	-.12				
N	120				
Protein	-.28**	-.04			
N	120	128			
Plant height	-.18	-.20*	.35**		
N	120	120	120		
Flowering	-.12	.19*	-.13	.19*	
N	120	120	120	120	
Ripening	-.17	.17	-.12	.32**	.61**
N	120	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 23. **Agronomic and grain quality** data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Karaj, Iran in 1977.

Cultivars	Yield q/ha	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)
Sadovo-1	84.3	2	12.7	89	118	165
Zg 887/73	78.3	4	11.1	74	117	164
Zg 4240/73	75.8	3	12.5	71	116	164
Martonvasar 3	74.0	2	13.2	94	120	165
Krasnodarskaya 39	71.1	3	12.4	100	123	170
GKF-8001	70.6	3	11.9	69	123	171
Blueboy	70.0	3	11.6	99	121	169
Odesskaya 51	69.0	3	13.1	95	120	165
Yubiley	68.6	3	12.6	85	118	164
Lindon	67.4	3	13.1	91	120	171
Iulia	67.4	2	14.5	91	120	169
Zg 4364/73	65.9	4	12.3	70	118	164
Flavio	65.6	4	12.9	84	119	165
Bezostaya 1	64.9	3	12.5	96	120	171
WA5829	64.7	4	11.1	75	122	179
Probstdorfer Karat	64.2	3	13.0	113	129	180
Zg 4293/73	63.6	4	13.6	63	118	164
Bordenave Puan Sag	62.9	4	14.3	115	114	171
Priboy	60.7	3	12.8	94	121	169
Sage	60.3	3	14.0	105	114	170
Mironovskaya 808	59.4	3	13.0	124	123	171
NE73640	59.3	3	14.0	100	123	171
F53-70	58.1	3	13.7	98	119	168
F26-70	57.6	3	15.7	89	118	165
Galiafen	57.5	4	13.4	96	123	179
Lerma Rojo 64	57.5	2	14.8	91	114	164
Atlas 66	57.4	4	15.8	123	124	168
F54-70	54.6	3	14.1	100	119	169
NE68719	53.7	4	13.2	78	127	171
Oasis	50.4	3	13.5	95	119	165
Mean	64.5	3.1	13.2	92.1	120.0	168.7
L.S.D. of cultivar means (.05)	13.0	0.4	1.1	6.5	--	--
Coefficient of variation (%)	14.4	9.5	6.0	5.0	--	--

IRAQ

SULAIMANIYA

COOPERATOR(S): M. M. Said; B. J. Isaa.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 26, 1976.

PRECIPITATION DURING CYCLE OF TEST: 562.3 mm. Total annual precipitation (dates not specified).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 600 kg/ha; P = 200 kg/ha (Ammonium Sulphate and Super phosphate were used). A second application of Ammonium Sulphate took place on February 28, 1977 (amount not reported).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A dry autumn failed to provide sufficient precipitation for germination. This occurred on December 23, 1976; approximately 40 days later than normal. The winter was mild, with light rain and a short frost period. Finally spring was wet but sunshine became abundant towards maturity.

DISEASE DEVELOPMENT: Light infections of Stripe rust (Puccinia striiformis), Leaf rust (P. recondita) and Stem rust (P. graminis f. sp. tritici) were noticed. Slight incidence of Powdery mildew (Erysiphe graminis) was seen also.

INSECT, WEED OR PEST PROBLEMS: Hard weeded twice (March 30, 1977 and May 20, 1977).

DATE OF HARVEST: July 7, 1977.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Diseases - May, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering
Test weight	.50**					
N	30					
1000-kernel weight	.51**	.70**				
N	30	30				
Protein	-.58**	-.11	-.05			
N	120	30	30			
Plant height	-.35**	.04	.05	.54**		
N	120	30	30	120		
Flowering	-.70**	-.58**	-.51**	.41**	.34**	
N	120	30	30	120	120	
Ripening	-.69**	-.59**	-.52**	.40**	.34**	.98**
N	120	30	30	120	120	120

** Significant at the 1% level. * Significant at the 5% level.

Table 24. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Sulaimaniya, Iraq in 1977.

Cultivars	Yield	Test weight[a]	1000-kernel weight[a]	Seed grade	Protein	Plant height	Date of Flowering	Date of Ripening	Rust: Stripe sev.	Stripe resp	Leaf sev.	Leaf resp	Stem sev.	Stem resp
	q/ha	kg/hl	g	1-9	%	cm	days from Jan. 1		0-9		0-9		0-9	
Sadovo-1	57.5	80.0	41.3	3	15.4	101	120	154	0		1	0-R	0	
Lerma Rojo 64	54.1	81.0	37.3	3	16.8	108	109	148	0		0		0	
Flavio	52.4	79.0	31.8	3	15.0	89	121	153	0		1	0-MR	2	0-MS
Yubiley	51.6	79.0	33.0	3	15.8	94	122	156	0		0		0	
Zg 887/73	49.2	75.0	23.5	4	14.9	83	123	157	2	0-MR	1	0-MR	0	
Bezostaya 1	47.9	81.0	34.9	3	15.9	109	124	157	0		1	0-R	0	
Zg 4240/73	47.3	75.0	27.2	4	15.6	75	116	152	0		1	0-R	0	0-MS
GKF-8001	46.7	79.0	29.9	3	15.1	71	126	159	0		1	0-MR	1	0-MS
F26-70	46.0	81.0	36.3	3	18.9	105	121	156	0		2	MR	2	0-MS
Zg 4364/73	45.0	76.0	29.1	4	15.6	74	123	156	1	0-MS	1	0-MR	0	
Priboy	44.8	79.0	34.5	3	15.5	113	124	158	0		1	0-MR	1	0-MS
Odesskaya 51	43.1	80.0	33.4	3	16.9	110	124	157	1	0-MR	0		0	
Blueboy	42.8	73.0	26.0	4	15.7	115	125	158	0		0	0-MR	2	MS
Martonvasar 3	41.9	78.0	34.2	3	18.0	101	124	157	0		1	R	0	
Zg 4293/73	39.8	77.0	30.0	4	16.7	68	122	155	0	0-MR	1	0-R	1	0-MS
Lindon	39.4	79.0	23.0	3	15.9	103	124	157	0		0	0-R	1	0-MS
F53-70	39.0	76.0	30.5	4	17.4	118	132	163	0		0		1	0-MS
Sage	37.7	78.0	26.7	3	17.3	130	130	161	0		0	0-MR	0	
F54-70	37.3	78.0	30.2	3	17.9	116	131	162	0		0		0	
Oasis	36.9	79.0	30.0	3	17.0	120	122	155	2	0-MR	0		0	
Iulia	36.2	78.0	32.5	3	17.4	104	126	159	0		2	0-MS	2	0-MS
NE73640	35.3	78.0	26.2	3	18.2	119	128	159	0		0	0-MR	1	0-MS
Krasnodarskaya 39	33.4	77.0	30.6	3	16.8	116	128	159	0	0-MR	1	0-MR	0	0-MS
NE68719	31.5	74.0	21.1	5	17.0	91	134	163	0		1	R	1	0-MS
Bordenave Puan Sag	31.3	77.0	25.5	4	19.9	134	129	160	1	0-MR	0		0	
WA5829	31.1	68.0	18.6	5	16.5	81	136	165	1	0-MR	3	MR-S	2	MS
Galiafen	30.8	74.0	22.9	5	16.8	106	127	160	0		0	0-R	0	
Atlas 66	29.7	75.0	25.6	4	19.4	135	133	163	1	0-MS	1	0-MR	1	0-MR
Probstdorfer Karat	29.5	74.0	28.0	3	18.9	120	136	165	0		1	R	0	
Mironovskaya 808	28.1	68.0	27.8	5	18.6	129	134	163	0		1	0-R	0	
Mean	40.6	76.9	29.4	3.5	16.9	104.5	125.6	158.2	0.2		0.7		0.5	
L.S.D. of cultivar means (.05)	7.4	--	--	-	1.0	6.3	1.6	1.1	-		-		-	
Coefficient of variation (%)	12.9	--	--	-	4.3	4.3	0.9	0.5	-		-		-	

[a] One replication only.

ITALY

MILANO

COOPERATOR: B. Borghi.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 20, 1976.

PRECIPITATION DURING CYCLE OF TEST: 800 mm. (approximately).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 110 kg/ha, (Ammonium Nitrate); P = 80 kg/ha; K = 100 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Not reported.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 11, 1977.

AREA HARVESTED FOR YIELD: 7.5-8.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - June 20, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering
Test weight	-.05					
N	120					
1000-kernel weight	.30**	.49**				
N	120	120				
Protein	-.36**	.23*	.12			
N	119	119	119			
Plant height	.26**	.43**	.26**	-.22*		
N	120	120	120	119		
Flowering	.09	.21*	-.14	-.45**	.49**	
N	120	120	120	119	120	
Grain shriveling	-.03	-.18*	.17	.08	-.14	-.18
N	120	120	120	119	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 25. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Milano, Italy in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Shrivelled grain %	Protein %	Plant height cm	Date of Flowering days from Jan. 1
Yubiley	41.7	79.2	43.5	11.3	11.9	79	137
Mironovskaya 808	40.7	77.6	42.6	15.0	10.4	136	148
Blueboy	39.8	74.1	41.1	8.3	9.0	104	138
Flavio	39.0	77.4	40.7	7.5	11.3	86	132
Odesskaya 51	36.8	81.1	46.2	12.3	11.4	95	138
Sadovo-1	36.3	78.8	50.0	18.5	12.2	86	133
Zg 4240/73	36.2	74.9	38.1	9.5	12.6	64	129
Bezostaya 1	35.7	80.7	44.8	5.5	11.6	94	138
F54-70	35.2	81.1	43.0	12.3	13.9	100	137
Sage	34.7	81.3	40.8	10.5	12.4	108	141
Galiafen	34.2	76.7	37.3	16.0	12.0	96	138
Lindon	34.0	79.6	36.3	4.3	11.7	90	136
Iulia	33.6	82.0	45.6	18.3	12.8	90	134
F53-70	33.2	81.6	43.9	10.8	13.6	95	136
GKF-8001	32.5	77.4	42.9	17.5	11.8	66	140
Zg 4364/73	32.5	75.0	36.4	17.8	11.9	71	131
Oasis	32.2	79.8	41.6	10.5	12.7	99	138
NE68719	32.1	77.3	33.5	13.8	11.6	80	151
Bordenave Puan Sag	31.3	83.3	38.0	4.8	11.8	105	142
Atlas 66	30.8	79.3	37.1	3.8	12.9	114	142
Martonvasar 3	30.7	80.3	45.1	13.5	12.4	91	138
Priboy	30.7	80.4	45.3	15.3	11.4	98	139
Probstdorfer Karat	30.5	81.4	43.4	6.0	11.4	110	152
Zg 887/73	30.4	76.8	40.1	11.8	12.1	68	135
Krasnodarskaya 39	30.2	77.5	38.7	18.0	10.9	103	141
WA5829	29.7	76.5	34.5	6.8	10.4	79	148
NE73640	29.4	80.7	38.7	6.0	12.9	98	140
Lerma Rojo 64	27.2	79.2	44.9	8.0	13.8	89	127
F26-70	26.4	80.3	44.6	16.0	16.5	86	128
Zg 4293/73	24.4	73.9	31.2	12.8	13.9	60	128
Mean	33.1	78.8	41.0	11.4	12.1	91.3	137.7
L.S.D. of cultivar means (.05)	4.1	1.4	1.6	7.7	1.0	6.0	3.2
Coefficient of variation (%)	8.8	1.2	2.8	48.0	5.7	4.7	1.7

ITALY

RIETI

COOPERATOR(S): G. Zitelli; E. Biaucolatte.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 28, 1976.

PRECIPITATION DURING CYCLE OF TEST: 795 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 70 kg/ha; K = 50 kg/ha (in the Phosphate and Nitrate form).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Severe attacks of Stripe rust (Puccinia striiformis) and Stem rust (P. graminis f. sp. tritici) were experienced along with a light Leaf rust (P. recondita) infection.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20, 1977.

AREA HARVESTED FOR YIELD: 10.2 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Seed grade	Protein	Plant height	Flowering
Test weight	.31**						
1000-kernel weight	.45**	.63**					
Seed grade	-.43**	-.60**	-.59**				
Protein	.08	.24**	.09	-.18			
Plant height	.18	.40**	.14	-.23*	-.04		
Flowering	-.22*	.18	-.13	-.08	-.22*	.56**	
Ripening	-.09	.28**	.04	-.23*	-.01	.56**	.82**

** Significant at the 1% level.

* Significant at the 5% level.

Table 26. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Rieti, Italy in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Rust Stripe sev %	Rust Leaf sev %	Rust Stem sev %
Atlas 66	38.8	78.9	41.6	3	11.3	108	135	185	53	15	40
Mironovskaya 808	38.4	79.6	42.9	2	11.2	116	141	188	20	5	55
NE68719	36.3	77.0	39.7	3	11.2	72	133	184	35	10	18
Lindon	36.3	76.3	38.8	3	11.5	74	128	181	35	0	8
Zg 4293/73	33.7	77.1	42.6	3	11.2	71	128	181	25	0	8
Probstdorfer Karat	33.2	79.6	42.4	3	11.2	82	132	184	25	0	20
F54-70	32.6	78.8	42.8	3	12.6	87	132	186	28	0	43
Priboy	32.4	78.6	41.0	3	11.8	104	136	186	50	0	10
Galiafen	32.2	76.1	38.1	3	11.6	71	130	181	38	8	8
Sadovo-1	31.9	77.8	45.4	2	10.8	93	133	185	28	3	35
Bezostaya 1	31.8	78.9	43.7	3	10.9	76	131	181	45	0	13
Blueboy	31.6	77.3	40.3	3	11.2	105	136	185	38	5	43
GKF-8001	29.9	77.3	42.8	3	10.6	81	134	186	35	0	20
NE73640	29.5	75.9	39.9	3	11.4	90	134	183	35	3	5
Oasis	29.3	77.8	38.2	4	10.8	88	137	185	53	8	30
F53-70	29.1	77.8	44.5	3	12.4	80	131	185	25	0	33
Zg 4240/73	27.7	73.0	37.9	4	10.6	71	131	183	53	0	18
Yubiley	27.7	77.4	41.9	4	11.0	81	131	180	45	0	23
F26-70	27.6	79.1	45.6	3	12.1	71	129	182	20	15	25
Odesskaya 51	27.5	78.0	39.3	3	12.0	95	132	184	60	0	10
Sage	27.2	78.6	37.2	3	11.2	91	136	185	35	0	28
Martonvasar 3	26.9	77.8	40.4	3	10.3	90	135	185	45	0	40
Krasnodarskaya 39	26.5	77.5	39.3	3	11.2	86	137	185	58	0	33
Lerma Rojo 64	26.5	76.8	39.9	3	11.0	99	133	184	43	0	28
Iulia	26.3	75.0	39.8	3	10.3	83	137	186	43	0	45
WA5829	26.2	73.5	37.1	3	10.4	63	131	182	48	3	33
Zg 887/73	25.0	74.3	41.8	4	10.3	90	133	184	28	5	33
Zg 4364/73	24.4	74.2	35.9	4	11.0	86	135	183	60	0	28
Flavio	24.0	75.5	36.1	3	11.6	81	133	183	58	8	8
Bordenave Puan Sag	23.7	77.2	37.9	4	11.0	89	130	182	35	5	33
Mean	29.8	77.1	40.5	3.0	11.2	85.7	132.9	183.6	39.8	3.0	25.5
L.S.D. of cultivar means (.05)	12.2	5.5	9.6	0.9	1.7	25.2	8.9	5.9	--	-	--
Coefficient of variation (%)	29.1	5.1	16.9	21.3	10.8	21.0	4.8	2.3	--	-	--

JAPAN

MORIOKA

COOPERATOR(S): T. Gotoh; H. Fujiwara.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 24, 1976.

PRECIPITATION DURING CYCLE OF TEST: 607 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha; P = 128 kg/ha; K = 96 kg/ha (Autumn, 10-16-12 compound at 800 kg/ha. Spring, Ammonium Sulphate at 100 kg/ha).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The duration of snow cover was normal (85 days), but it was deeper than usual.

DISEASE DEVELOPMENT: Leaf rust (Puccinia recondita) was reported to be less severe than normal. Powdery mildew (Erysiphe graminis) was also seen.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 21, and 22, 1977.

AREA HARVESTED FOR YIELD: 1.98 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - April 1, 1977.
E. graminis - July 2, 1977.
P. recondita - July 3, 1977.
Lodging - July 20, 1977.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
1000-kernel weight	.45**						
N	120						
Protein	-.46**	.09					
N	120	120					
Plant height	.60**	.37**	.11				
N	120	120	120				
Lodging	.29**	.20*	.20*	.54**			
N	120	120	120	120			
Flowering	.24**	-.16	-.27**	.40**	.19*		
N	120	120	120	120	120		
Ripening	-.06	-.32**	-.05	.17	-.18	.45**	
N	120	120	120	120	120	120	
Winter survival	.88**	.34**	-.38**	.56**	.34**	.23	-.19
N	60	60	60	60	60	60	60

** Significant at the 1% level.

* Significant at the 5% level.

Table 27. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Morioka Iwate, Japan in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter survival[a/] %	Leaf rust sev. %	Leaf rust resp	Mildew sev. 0-9
Blueboy	56.0	37.0	4	15.1	133	5	160	201	100	39	MS-S	5
Mironovskaya 808	52.4	44.5	3	15.1	133	35	162	198	100	15	M-S	2
Lindon	52.1	31.5	4	14.5	110	30	158	198	100	4	0-VR	0
Yubiley	50.2	41.9	4	16.0	100	3	158	196	100	1	0-VR	2
Priboy	49.9	43.7	4	14.8	115	57	159	198	100	7	0-VR	2
Bezostaya 1	48.7	43.0	3	15.6	111	30	158	198	100	5	VR-M	4
Martonvasar 3	48.2	44.6	3	16.8	110	43	157	197	100	19	M-MS	2
Sadovo-1	47.0	50.0	3	15.0	106	8	156	196	100	25	M-MS	3
GKF-8001	46.9	40.2	3	14.1	85	0	159	200	100	4	0-R	4
Odesskaya 51	46.8	40.6	4	16.3	113	73	159	197	100	9	0-MS	1
F53-70	46.4	40.5	3	17.7	116	30	158	199	100	8	VR	3
Iulia	45.7	43.7	3	16.8	106	23	156	195	100	50	S-VS	3
Krasnodarskaya 39	45.4	38.8	3	15.9	113	53	163	197	100	33	M-S	5
F54-70	43.9	40.1	3	17.9	119	15	157	199	100	3	0-VR	3
WA5829	43.5	26.7	5	14.1	100	5	162	205	100	28	S	4
Probstdorfer Karat	41.9	39.2	3	15.6	128	0	162	201	100	14	R-M	2
NE73640	40.1	37.3	4	17.1	110	35	157	195	100	1	0-R	0
NE68719	39.9	27.3	4	15.4	100	13	158	196	100	11	VR-MR	7
Bordenave Puan Sag	39.4	38.1	3	16.7	120	63	161	198	91	0		0
Sage	39.1	37.0	4	16.6	119	80	158	196	100	1	0-VR	0
Atlas 66	37.9	36.8	4	19.1	137	65	160	200	97	5	0-S	2
Zg 4364/73	37.8	33.5	4	14.9	85	0	158	196	94	1	0-VR	0
F26-70	37.8	45.6	3	19.7	107	18	155	195	100	13	M-MS	1
Oasis	35.9	35.8	4	17.5	116	78	159	196	100	0		1
Zg 4293/73	34.6	31.9	4	14.9	78	0	156	196	100	2	0-VR	2
Zg 4240/73	29.3	34.1	5	15.3	91	0	157	196	100	2	0-VR	0
Flavio	22.7	38.4	4	15.9	85	0	156	197	36	40	MS-S	2
Zg 887/73	13.2	31.5	4	16.5	74	0	158	199	17	30	M-S	1
Lerma Rojo 64	7.9	37.1	4	19.6	84	0	154	199	15	13	VR-MR	2
Galiafen	6.7	26.9	5	18.6	89	0	160	201	13	3	0-VR	2
Mean	39.6	37.9	3.7	16.3	106.3	25.2	158.2	197.7	88.7	14.9		2.0
L.S.D. of cultivar means (.05)	4.6	1.4	0.1	0.5	4.2	18.4	2.2	1.0	6.1	--		-
Coefficient of variation (%)	8.3	2.6	2.5	2.4	2.8	51.9	1.0	0.4	3.3	--		-
Local cultivars:												
Aobakomugi	33.0	37.8			109	50	154	192	100	33	S	2
Nanbukomugi	40.5	45.3			113	28	154	189	100	65	S	0

a/ Two replications only.

JORDAN

AMMAN

COOPERATOR(S): N. Katkhuda; S. Tahat; I. Jaber; M. H. A. Aziz.

DATE OF PLANTING (EFFECTIVE GERMINATION): December 6, 1976 (emergence - January 3, 1977).

PRECIPITATION DURING CYCLE OF TEST: 268.3 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 40 kg/ha; P = 100 kg/ha (Ammonium Sulphate and Super-phosphate). (Applied on December 6, 1976 and January 25, 1977).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Although the total amount of rain was close to average its distribution was uneven. No snow fell this year. A strong, hot wind blew during the heading and milk stages causing grain shrinkage.

DISEASE DEVELOPMENT: The weather was very dry from March to May, preventing disease establishment.

INSECT, WEED OR PEST PROBLEMS: Birds.

DATE OF HARVEST: July 11, 1977.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering
Test weight	-.22					
N	22					
1000-kernel weight	-.14	.30				
N	30	22				
Protein	-.28**	-.34	.21			
N	120	22	30			
Plant height	.60**	.30	.13	-.01		
N	120	22	30	120		
Flowering	-.49**	.07	.06	.11	-.30**	
N	120	22	30	120	120	
Ripening	-.52**	.21	.17	-.04	-.23*	.71**
N	120	22	30	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 28. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Amman, Jordan in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	1000-kernel[a] weight g	Protein %	Plant height cm	Date of Flowering	Date of Ripening
						days from Jan. 1	
Lerma Rojo 64	20.4	74.0	45.0	22.2	60	131	165
Zg 887/73	18.5	68.0	30.0	19.8	38	133	165
Flavio	17.5	71.0	30.0	20.2	43	134	166
Blueboy	15.4	70.0	35.0	20.0	43	138	169
Yubiley	15.4	70.0	35.0	22.4	40	137	167
Lindon	14.2	76.0	35.0	19.5	38	139	170
Sadovo-1	13.9	72.0	30.0	21.5	38	146	168
F26-70	13.3	73.0	50.0	22.1	43	139	171
Sage	12.7	74.0	40.0	20.7	43	146	171
Bordenave Puan Sag	12.5	75.0	45.0	21.3	53	135	167
Zg 4293/73	12.5	68.0	40.0	21.4	30	134	165
Zg 4240/73	12.1	64.0	25.0	23.3	35	134	165
Martonvasar 3	11.9	72.0	45.0	21.8	40	138	170
Galiafen	11.9	65.0	30.0	21.1	38	137	169
Oasis	11.7	71.0	40.0	22.7	35	135	166
NE73640	11.4	74.0	35.0	21.1	40	137	168
F53-70	11.0	76.0	30.0	20.6	40	138	169
Atlas 66	10.8	70.0	35.0	24.4	48	137	169
Priboy	10.8	74.0	45.0	20.3	35	139	170
Zg 4364/73	10.6	66.0	35.0	22.8	33	136	168
F54-70	8.9	69.0	40.0	21.5	40	140	172
Odesskaya 51	8.8	--	35.0	21.1	40	142	174
Bezostaya 1	8.5	79.0	30.0	20.5	38	136	169
GKF-8001	7.9	--	35.0	21.4	28	142	172
Iulia	7.7	--	30.0	22.4	30	143	173
Probstdorfer Karat	7.3	--	40.0	21.1	38	145	173
Krasnodarskaya 39	6.7	--	45.0	20.4	30	144	173
WA5829	6.0	--	30.0	19.8	33	143	172
Mironovskaya 808	5.8	--	40.0	22.5	38	144	173
NE68719	5.2	--	30.0	20.0	28	140	171
Mean	11.4	71.4	36.3	21.3	38.3	138.6	169.2
L.S.D. of cultivar means (.05)	5.3	--	--	1.6	11.1	8.2	3.9
Coefficient of variation (%)	33.1	--	--	5.2	20.7	4.2	1.6

[a] One replication only.

KOREA

SUWON

COOPERATOR: C. H. Cho

DATE OF PLANTING (EFFECTIVE GERMINATION): October 16, 1976.

PRECIPITATION DURING CYCLE OF TEST: 533 mm. (October 16, 1976 - July 5, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 150 kg/ha; P = 80 kg/ha; K = 70 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A severely cold winter caused above average plant damage.

DISEASE DEVELOPMENT: An attack of Leaf spot (Septoria tritici) was noted.

INSECT, WEED OR PEST PROBLEMS: Hard weeded once.

DATE OF HARVEST: July 5, 1977.

AREA HARVESTED FOR YIELD: 3.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - February 13, 1977.
Septoria tritici - June 20, 1977
Lodging - June 20-July 1, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.49**							
N	99							
1000-kernel weight	.39**	.51**						
N	108	99						
Protein	-.74**	-.23*	-.11					
N	108	99	108					
Plant height	.60**	.29**	.30**	-.49**				
N	108	99	108	108				
Lodging	.14	.08	.03	-.24*	.45**			
N	108	99	108	108	108			
Flowering	-.28**	-.38**	-.39**	.10	.09	.12		
N	108	99	108	108	108	108		
Ripening	-.68**	-.52**	-.43**	.53**	-.27**	-.02	.65**	
N	108	99	108	108	108	108	108	
Winter survival	.91**	.45**	.27**	-.71**	.56**	.02	-.33**	-.71**
N	120	99	108	108	108	108	108	108

** Significant at the 1% level. * Significant at the 5% level.

Table 29. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Suwon, Korea in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Septoria sev. 0-9
Priboy	50.1	77.4	38.5	4	12.3	99	35	146	173	83	4
Odesskaya 51	48.8	79.1	36.8	4	13.3	101	30	146	173	70	3
F53-70	46.5	78.1	35.3	4	14.4	98	0	145	176	85	3
F54-70	44.4	78.1	34.1	4	14.5	92	0	146	175	80	3
Krasnodarskaya 39	43.4	76.8	32.8	4	12.5	100	0	145	173	88	3
Mironovskaya 808	41.6	72.7	33.8	4	13.6	121	10	149	175	88	3
Bezostaya 1	41.4	78.8	35.9	4	13.9	90	0	147	173	88	4
Martonvasar 3	39.9	77.0	36.9	4	14.0	91	0	146	172	78	3
NE68719	39.6	74.2	27.0	4	13.0	72	0	148	175	80	3
Sadovo-1	38.9	77.4	42.3	4	13.7	82	0	144	173	65	4
Probstdorfer Karat	37.8	77.7	32.9	4	14.3	104	0	152	180	68	3
Oasis	36.3	77.2	31.9	4	13.8	93	48	146	174	75	3
Blueboy	35.9	69.9	31.4	4	12.9	93	35	148	178	55	2
Yubiley	35.9	76.5	33.4	4	13.4	73	0	147	173	68	5
GKF-8001	34.3	76.6	34.6	4	14.2	61	0	147	175	73	4
F26-70	33.2	76.6	35.4	4	16.2	89	0	142	171	85	3
Sage	32.8	77.4	31.2	4	13.7	109	50	147	175	65	4
Iulia	32.4	77.6	33.7	4	13.9	81	0	144	173	70	4
Lindon	31.9	78.4	27.2	4	14.1	79	18	146	175	73	4
NE73640	30.4	76.4	30.4	4	14.0	95	0	147	174	63	3
Bordenave Puan Sag	25.6	78.6	33.0	4	15.7	108	38	153	179	33	3
WA5829	24.3	67.5	22.5	5	13.8	69	0	153	182	53	3
Zg 4364/73	21.7	71.3	29.9	4	16.8	54	0	147	178	20	3
Zg 887/73	13.6	73.2	31.6	4	16.7	54	0	148	180	10	2
Atlas 66	10.9	70.8	33.4	5	18.2	96	16	152	185	20	2
Zg 4240/73	9.4	--	31.1	6	18.5	56	0	146	180	10	2
Zg 4293/73	5.3	--	31.6	4	21.2	42	0	147	181	10	1
Galiafen	0.0	--	--	-	--	--	-	--	--	0	-
Flavio	0.0	--	--	-	--	--	-	--	--	0	-
Lerma Rojo 64	0.0	--	--	-	--	--	-	--	--	0	-
Mean	29.5	75.8	32.9	4.1	14.7	85.1	10.3	147.0	175.9	55.0	3.1
L.S.D. of cultivar means (.05)	5.0	2.1	2.0	0.2	1.5	6.1	7.6	2.6	2.4	9.4	-
Coefficient of variation (%)	11.9	1.9	4.3	2.7	7.3	5.1	52.1	1.3	1.0	12.2	-

MEXICO

TOLUCA

COOPERATOR: CIMMYT (Bread Wheat Staff).

DATE OF PLANTING (EFFECTIVE GERMINATION): November 20, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: 12 applications (amounts not reported).

FERTILIZER USED: N = 150 kg/ha; P = 80 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDTIONS DURING TEST: Dry conditions prevailed until May, after which it became wet. A severe frost (-8°C) on April 17, 1977 damaged some varieties flowering at that time.

DISEASE DEVELOPMENT: A typical attack of Stripe rust (Puccinia striiformis) developed.

INSECT, WEED OR PEST PROBLEMS: Birds caused some damage on early developing plots.

DATE OF HARVEST: July 17, 1977.

AREA HARVESTED FOR YIELD: 2.4 square meters (some plots had no yield mainly because of the frost and bird damage).

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Seed grade	Protein	Plant height	Lodging	Flowering	Ripening
Seed grade	-.28*						
N	84						
Protein	-.45**	-.01					
N	84	84					
Plant height	.41*	-.35	.06				
N	30	21	21				
Lodging	-.06	.09	.07	.48**			
N	30	21	21	30			
Flowering	.63**	-.22	-.44*	.59**	.24		
N	30	21	21	30	30		
Ripening	.34	.01	-.36	.07	-.19	.22	
N	30	21	21	30	30	30	
Frost damage	-.47**	.27	-.14	-.49**	-.42*	-.61**	-.13
N	30	21	21	30	30	30	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 30. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Toluca, Mexico, in 1977.

Cultivars	Yield q/ha	Seed grade 1-9	Protein %	Plant height[a] cm	Lodging[a] %	Date of flowering[a] Days from Jan. 1	Date of ripening[a] Days from Jan. 1	Frost damage[a] 0-9	Stripe rust[a] sev. %	Stripe rust[a] resp.	Bird damage[a] %
GKF-8001	41.2	6	13.3	75	0	140	197	3	5	MR-R	0
Iulia	39.7	5	14.1	100	0	133	195	3	20	MR-R	0
NE 68719	38.5	6	14.0	100	0	135	195	2	10	MR-MS	0
F53-70	33.4	5	15.0	115	10	132	193	3	20	MR-MS	0
F54-70	32.8	4	14.8	110	0	132	193	3	20	MR-R	0
WA 5829	31.2	6	10.7	90	0	143	198	4	20	MR-MS	0
Odesskaya 51	28.9	5	14.9	105	30	133	192	2	20	MS	0
Martonvasar 3	28.8	5	14.6	100	0	134	192	3	30	MS	0
F26-70	28.0	5	16.4	100	0	138	190	2	10	MS	0
Mironovskaya 808	26.8	5	13.6	120	10	143	195	2	30	MR-MS	0
Bezostaya 1	26.5	5	14.2	115	0	132	192	3	20	MR-R	0
Sadovo-1	26.2	5	14.5	90	0	129	193	3	30	MS	0
Probstdorfer Karat	25.4	5	14.0	120	0	147	198	2	10	R	0
Lindon	24.2	5	13.6	115	70	141	192	2	50	MS	0
Krasnodarskaya 39	21.8	5	13.6	110	10	147	198	2	40	MR-MS	0
Galiafen	21.2	5	15.3	100	0	128	195	3	10	R	0
Blueboy	20.8	7	14.9	100	0	129	193	3	20	MR	0
Priboy	20.4	6	15.1	115	70	141	195	2	10	R-MR	0
NE 73640	14.7	6	14.7	115	30	130	185	4	50	MS	0
Atlas 66	-- [b]	6	17.6	110	20	128	192	3	40	MS	20
Flavio	--	6	15.5	75	0	102	195	3	20	MS	20
Sage	--	-	--	115	80	130	190	2	20	MR-MS	30
Bordenave Puan Sag	--	-	--	105	0	120	195	5	30	MS	40
Oasis	--	-	--	90	0	128	191	3	40	MR-MS	50
Yubiley	--	-	--	80	0	128	190	4	10	MR	50
Zg 4240/73	--	-	--	70	0	120	193	4	1	R	70
Zg 887/73	--	-	--	70	0	107	193	3	30	MR-MS	40
Zg 4364/73	--	-	--	75	0	128	185	3	10	MR-MS	50
Zg 4293/73	--	-	--	70	0	122	193	4	10	MR-R	50
Lerma Rojo 64	--	-	--	80	0	92	193	5	50	MS	0
Mean	27.9	5.4	14.5	97.8	11.0	129.7	193.0	3.0	22.9		14.0
L.S.D. of cultivar means (.05)	8.4	0.2	0.8								
Coefficient of variation (%)	21.3	2.4	3.7								

a/ One replication only.
b/ Missing yields due to severe bird damage.

NEPAL

KATHMANDU

(LALITPUR)

COOPERATOR: B. B. Silwal; A. N. Bhattarai.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 18, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha; K = 40 kg/ha (20-20-0 compound; Muriate of Potash, Urea).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Light infections of Leaf rust (Puccinia recondita) and Stem rust (P. graminis tritici). A moderate attack of Leaf spot (Helminthosporium tritici repentis) also occurred.

INSECT, WEED OR PEST PROBLEMS: Fat hen (Chenopodium album) was a problem.

DATE OF HARVEST: May 10-June 10, 1977.

AREA HARVESTED FOR YIELD: 3.75 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - May 2, 1977.
Diseases - May 3, 4, 1977.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Seed grade	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
1000-kernel weight	.27								
N	30								
Seed grade	.03	-.57							
N	76	9							
Protein	-.48**	.08	-.17						
N	77	9	76						
Plant height	.20*	.29	-.27*	-.23*					
N	120	30	76	77					
Lodging	-.01	-.06	-.38**	.09	.17				
N	120	30	76	77	120				
Flowering	-.23*	-.04	.11	.28*	.32**	-.01			
N	120	30	76	77	120	120			
Ripening	-.13	.25	.12	.28*	.24**	-.03	.72**		
N	120	30	76	77	120	120	120		
Shattering	-.30**	.12	-.07	-.06	-.06	.15	-.05	-.15	
N	120	30	76	77	120	120	120	120	
Frost damage	.01	.25	.01	.23*	.05	-.03	.09	.11	-.04
N	120	30	76	77	120	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 31. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Kathmandu, Nepal in 1977.

Cultivars	Yield q/ha	1000-kernel weight[a] g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering: days from Jan. 1	Date of Ripening: days from Jan. 1	Shattering %	Frost damage 0-9	Rust: Leaf sev. %	Rust: Leaf resp.	Rust: Stem sev. %	Rust: Stem resp.	Helmintho-sporium leaf spot
Blueboy	30.5	40.0	5	9.5	97	1	72	117	0	1	6	MR-MS	20	S	2
Bordenave Puan Sag	27.8	35.0	4	10.4	108	2	68	108	1	2	0		0	O-R	0
Sage	25.7	38.0	4	11.0	105	2	84	122	1	2	0		0		4
Odesskaya 51	25.6	45.0	4	11.5	91	1	85	123	1	2	0		0	O-MS	3
Sadovo-1	25.3	43.0	4	11.9	72	0	75	114	1	1	2	MS	3	O-MS	6
Galiafen	23.7	34.0	5	11.3	84	1	71	114	1	1	0		0		1
Bezostaya 1	23.7	42.0	4	12.6	89	1	80	129	0	2	0		0		3
F26-70	23.5	42.0	4	13.0	89	1	81	129	1	2	3	R-MS	1	O-MS	3
Martonvasar 3	22.9	43.0	4	12.6	86	1	79	123	0	2	1	R-MS	0		3
Flavio	22.5	38.0	4	10.2	71	1	61	103	2	0	5	MS-S	5	O-MS	0
Mironovskaya 808	21.8	37.0	4	11.4	111	1	86	118	0	1	3	R-MS	8	MS-S	3
NE73640	21.2	35.0	4	12.0	97	1	84	123	0	1	8	R	0	O-R	1
Lindon	21.2	32.0	4	11.1	80	1	86	127	0	1	5	S	0	O-R	1
Zg 4293/73	20.9	28.0	5	12.9	62	0	71	113	1	2	0		0		0
Zg 4240/73	20.6	32.0	4	12.7	63	0	71	108	1	1	0	O-MR	0		0
Oasis	20.0	32.0	4	11.5	87	1	72	115	1	2	0		0		1
Lerma Rojo 64	19.8	41.0	3	11.6	77	3	58	100	1	1	0		0		0
Krasnodarskaya 39	19.6	36.0	4	11.2	97	1	89	131	1	1	23	MR-S	20	MR-S	2
Yubiley	18.9	34.0	4	13.7	72	2	73	117	0	2	0		0		5
Zg 4364/73	18.1	29.0	5	12.4	62	0	76	119	0	2	0		0		1
Atlas 66	17.7	35.0	4	11.8	115	2	70	109	0	2	0	O-MS	0		0
NE68719	17.4	37.0	5	10.2	78	0	82	124	1	1	25	MR-S	13	S	2
Zg 887/73	16.2	41.0	4	10.7	58	0	62	100	3	2	7	MR-MS	0		0
Priboy	15.8	32.0	4	13.7	92	3	86	132	1	2	0		9	S	0
GKF-8001	15.3	35.0	4	13.3	65	1	81	121	1	2	0		0		3
WA5829	14.9	31.0	6	10.4	71	3	88	128	1	1	23	R-MR	18	S	3
Iulia	12.8	32.0	4	14.1	76	2	82	119	1	1	0	O-MS	3	O-S	4
Probstdorfer Karat	12.4	46.0	4	12.1	105	0	91	132	3	2	0		0		1
F53-70	10.8	33.0	4	13.3	85	1	81	116	1	2	0		4	R-S	2
F54-70	8.3	30.0	4	15.0	84	1	83	116	3	2	0	O-MS	5	O-S	0
Mean	19.8	36.3	4.2	12.1	84.1	1.0	77.5	118.3	0.8	1.4	3.7		3.6		1.8
L.S.D. of cultivar means (.05)	5.1	--	-	0.8	6.0	-	4.0	8.1	-	0.9	-		-		-
Coefficient of variation (%)	18.3	--	-	3.8	5.1	-	3.7	4.9	-	47.4	-		-		-

[a] One replication only.

THE NETHERLANDS

WAGENINGEN

COOPERATOR: A. C. Zeven.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 26, 1976.

PRECIPITATION DURING CYCLE OF TEST: 551.6 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 46 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Mild winter conditions followed by a cloudy summer. Poor harvest conditions prevailed.

DISEASE DEVELOPMENT: Mildew was observed.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 1-9, 1977.

AREA HARVESTED FOR YIELD: 3.75 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Winter survival - March 17, 1977.
Plant height - July 1, 1977.
Mildew and lodging - July 5, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	-.08								
1000-kernel weight	-.07	.36**							
Protein	-.67**	.04	.08						
Plant height	-.38**	.29**	.51**	.31**					
Lodging	-.71**	.07	-.01	.53**	.54**				
Flowering	-.31**	.17	.31**	.05	.56**	.39**			
Ripening	-.04	-.11	.14	-.06	.41**	.14	.56**		
Shattering	-.14	-.24**	.01	.14	.07	.11	.06	.17	
Winter survival	.15	.10	.21*	-.11	.02	-.25**	.19*	.09	.11

** Significant at the 1% level.

* Significant at the 5% level.

Table 32. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Wageningen, The Netherlands in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Shattering %	Winter survival %	Mildew sev. 0-9
Zg 887/73	65.7	76.5	30.4	4	11.7	75	0	158	213	13	89	3
Zg 4364/73	63.0	74.5	27.8	4	13.1	81	0	154	214	13	90	3
Blueboy	60.1	76.0	37.8	4	10.5	105	16	159	216	13	90	3
Sadovo-1	59.9	79.0	44.6	4	12.7	90	0	155	213	14	90	3
Zg 4293/73	59.1	75.0	26.0	4	13.3	65	0	153	213	11	88	3
WA5829	59.1	75.5	34.4	4	10.3	88	14	159	219	14	89	3
Flavio	58.1	78.0	32.4	4	12.6	86	0	155	213	11	89	3
Odesskaya 51	55.4	81.0	34.2	3	12.6	94	20	159	214	11	89	2
Probstdorfer Karat	55.4	80.0	40.8	3	13.2	113	49	163	220	11	90	3
Yubiley	54.3	77.5	35.8	4	13.3	85	0	157	213	14	89	5
Zg 4240/73	52.9	72.0	29.4	5	13.9	70	1	154	213	14	88	4
F26-70	52.5	79.5	38.4	4	15.2	90	0	153	213	13	89	3
GKF-8001	51.9	79.0	39.4	4	12.8	71	0	159	213	10	89	2
Iulia	51.1	80.0	35.8	4	14.4	91	35	157	213	14	90	3
Lindon	50.8	78.5	25.8	4	13.2	88	82	159	213	11	89	4
Galiafen	49.6	73.5	32.8	4	13.1	93	60	160	220	21	90	2
Martonvasar 3	49.4	80.0	36.6	3	13.3	93	64	158	213	14	90	2
Bezostaya 1	48.1	79.0	38.8	4	13.4	91	19	159	213	11	91	2
F53-70	47.9	81.0	37.6	4	14.7	104	33	158	214	14	89	4
F54-70	47.6	79.0	34.2	4	15.7	100	33	159	219	14	89	4
Krasnodarskaya 39	43.9	77.5	36.6	4	13.6	95	20	161	218	14	90	4
Mironovskaya 808	43.6	78.0	41.4	4	14.4	114	85	162	216	13	89	4
Oasis	43.3	79.0	33.8	4	14.3	99	67	161	215	9	88	0
NE68719	43.0	78.0	27.8	4	12.5	84	40	160	213	13	89	5
Priboy	41.2	78.0	36.8	3	12.7	94	73	158	213	14	89	2
Atlas 66	39.8	78.5	34.5	3	14.6	110	89	160	216	11	84	2
Lerma Rojo 64	39.1	79.0	29.4	4	13.6	84	70	152	213	14	83	5
Bordenave Puan Sag	35.7	77.5	32.2	4	16.0	105	98	161	216	15	90	3
Sage	29.4	75.5	36.2	5	16.7	101	82	159	214	16	89	3
NE73640	27.0	77.0	36.2	4	17.9	99	97	159	214	15	89	2
Mean	49.3	77.8	34.6	3.9	13.6	91.8	38.1	158.0	214.6	13.0	88.7	2.9
L.S.D. of cultivar means (.05)	6.5	2.1	-	-	1.4	5.0	26.2	1.8	1.6	4.2	3.6	-
Coefficient of variation (%)	9.4	1.9	-	-	7.5	3.8	48.9	0.8	0.5	22.7	2.9	-

NORWAY

VOLLEBEKK

COOPERATOR(S): K. Ringlund; H. A. Magnus.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 7, 1976.

PRECIPITATION DURING CYCLE OF TEST: 274.3 mm. (April 1-July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 96 kg/ha; P = 40 kg/ha; K = 71 kg/ha (16-7-12 compound).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Snowcover was complete from mid-November to late April. Summer was dry.

DISEASE DEVELOPMENT: Powdery mildew (Erysiphe graminis) was fairly widespread.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 19, 1977.

AREA HARVESTED FOR YIELD: 3.375 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Plant cover - October 28, 1976.
Winter survival - May 20, 1977.
E. graminis - July 7, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering
Test weight	-.09					
N	23					
1000-kernel weight	.41*	-.07				
N	25	23				
Protein	-.31	-.44*	-.25			
N	24	23	24			
Plant height	.76**	-.24	.52**	-.30		
N	103	23	25	24		
Flowering	-.04	.05	-.11	.13	-.01	
N	98	18	20	19	98	
Winter survival	.61**	.05	.11	-.13	.35**	.01
N	120	23	25	24	103	98

** Significant at the 1% level.

* Significant at the 5% level.

Table 33. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Vollebekk, Norway in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	1000-kernel weight[a] g	Seed grade[a] 1-9	Protein[a] %	Plant height cm	Date of Flowering days from Jan. 1	Winter survival %	Mildew sev. 0-9
Mironovskaya 808	24.4	81.3	46.2	3	16.9	67	170	89	4
Bezostaya 1	20.5	84.3	40.6	2	14.2	52	172	83	7
F54-70	20.0	83.2	40.5	2	18.6	58	171	90	5
Blueboy	19.3	82.3	40.4	4	14.9	59	172	83	6
Probstdorfer Karat	18.9	83.3	40.7	4	15.8	53	144	78	2
Krasnodarskaya 39	18.7	84.7	38.4	2	14.0	56	173	89	6
Priboy	18.1	84.5	41.1	3	13.7	54	173	85	2
F53-70	17.9	83.1	39.0	3	19.3	51	171	91	6
Sadovo-1	16.1	84.1	45.9	3	15.7	49	171	88	7
Iulia	15.8	85.0	40.6	2	16.6	46	170	85	6
WA5829	15.0	84.8	40.9	3	14.4	40	172	93	6
GKF-8001	14.4	84.0	39.0	3	13.9	36	173	73	7
Yubiley	13.5	83.3	37.4	2	13.9	42	173	70	7
Oasis	8.7	81.9	37.5	4	19.2	37	170	85	2
Odesskaya 51	8.0	85.0	41.6	3	17.2	39	172	90	3
Zg 4364/73	7.2	82.3	34.3	3	17.5	38	172	60	0
Martonvasar 3	6.7	85.0	39.8	2	16.3	39	172	74	5
Lindon	6.7	86.0	32.3	4	16.6	32	173	63	4
NE68719	6.2	83.5	38.8	3	17.1	38	169	73	7
F26-70	5.0	80.8	39.3	3	22.3	42	167	83	6
Sage	3.5	84.2	35.7	4	21.5	35	170	89	5
NE73640	3.3	83.6	36.8	4	20.9	32	169	73	5
Zg 4240/73	2.9	81.7	35.1	3	18.8	34	171	38	0
Atlas 66	2.1	--	41.6	4	19.8	53	172	8	4
Bordenave Puan Sag	0.3	--	39.6	-	--	27	172	18	6
Zg 4293/73	0.0	--	--	-	--	23	174	14	-
Zg 887/73	0.0	--	--	-	--	27	171	6	-
Galiafen	0.0	--	--	-	--	--	--	0	-
Flavio	0.0	--	--	-	--	--	--	0	-
Lerma Rojo 64	0.0	--	--	-	--	--	--	0	-
Mean	9.8	83.6	39.3	3.0	17.0	43.6	170.1	62.1	4.7
L.S.D. of cultivar means (.05)	7.8	--	--	-	--	8.8	17.2	12.6	-
Coefficient of variation (%)	57.0	--	--	-	--	14.3	7.2	14.4	-

[a] One replication only.

POLAND

PRZECLAW

COOPERATOR: E. Bilski.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 7, 1976.

PRECIPITATION DURING CYCLE OF TEST: 493.6 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 40 kg/ha; P = 80 kg/ha; K = 100 kg/ha (Nitro chalk; Superphosphate and Kainite).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally normal except for below average rainfall in June.

DISEASE DEVELOPMENT: Normal development. Leaf rust (Puccinia recondita), Stem rust (P. graminis F. sp. tritici), Powdery mildew (Erysiphe graminis) and Septoria sp. were reported.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20-24, 1977.

AREA HARVESTED FOR YIELD: 6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Frost damage - April 28, 1977.
P. striiformis - June 27, 1977.
E. graminis - June 28, 1977.
Septoria sp. - June 30 and July 14, 1977.
P. graminis f. sp. tritici - July 16, 1977.
Height - July 13, 1977.
Shattering - August 6, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	.02								
1000-kernel weight	.19*	.25**							
Protein	-.29**	.09	.25**						
Plant height	-.26**	.06	.29**	.17					
Lodging	-.35**	.14	.05	.30**	.62**				
Flowering	-.07	-.14	-.17	-.39**	.40**	.05			
Ripening	.06	-.28**	-.21*	-.45**	.17	-.01	.75**		
Shattering	.31**	-.04	.26**	-.07	-.05	-.16	-.00	.00	
Winter survival	.09	.18*	.28**	.10	.20*	-.11	.19*	-.01	-.07

** Significant at the 1% level.

* Significant at the 5% level.

Table 34. Agronomic, grain quality and disease data for the 30 cultiva[illegible]onal Winter Wheat Performance Nursery grown at Przeclaw, Poland in 1977.

Cultivars	Yield: q/ha	Test weight: kg/hl	1000-kernel weight: g	Protein: %	Plant height: cm	Lodging: %	Date of Flowering: days from Jan.1	Date of Ripening: days from Jan.1	Shattering: %	Winter survival: %	Leaf rust sev: %	Leaf rust resp.:	Stem rust sev: %	Stem rust resp:	Mildew seva/: 0-9	Mildew sevb/: %	Septoria seva/: 0-9	Septoria sevb/: %
Zg 887/73	52.9	73.9	39.9	11.3	73	0	161	199	2	96	13	MS	0		5	0	8	20
Lindon	48.4	77.4	38.0	11.8	93	80	160	198	0	99	11	MR	1	0-R	7	0	8	9
Zg 4240/73	45.2	74.5	38.3	12.5	74	0	158	195	2	97	2	MR	0		4	0	8	3
Flavio	45.1	73.8	41.9	11.9	83	0	159	195	3	95	18	MS	0		6	0	6	4
Iulia	44.2	76.9	49.9	13.5	93	1	158	194	2	100	11	MS	0		7	0	8	3
Sadovo-1	44.1	74.2	48.7	12.1	84	1	159	195	1	98	48	S	1	R-MR	8	0	8	11
Yubiley	44.0	74.7	46.5	12.1	83	0	160	198	2	99	5	MR	0		7	0	8	1
Probstdorfer Karat	43.7	71.0	45.1	11.7	115	10	164	201	1	99	25	MS	2	MR	6	0	8	6
Zg 4364/73	43.4	71.9	40.3	13.1	72	3	160	196	2	98	88	MR	0		5	0	8	10
Odesskaya 51	42.2	76.7	46.8	12.2	100	44	160	197	0	99	18	S	1	R	6	0	8	10
Bezostaya 1	42.2	73.7	46.8	13.0	95	18	159	201	2	98	4	MR	1	0-R	8	1	8	20
Martonvasar 3	41.4	75.2	42.8	12.2	93	18	161	198	0	100	39	VS	2	MR	9	11	8	4
Priboy	41.3	76.4	48.8	11.9	97	40	161	198	2	98	13	MR	1	0-R	6	0	8	5
GKF-8001	40.8	75.4	45.3	12.4	66	0	162	201	1	98	8	MR	0		7	0	8	8
Atlas 66	40.5	71.3	43.3	14.7	119	86	161	200	2	98	18	MS-S	1	R	6	0	6	5
F53-70	40.3	77.3	45.5	13.5	99	9	161	195	2	100	4	MR	1	0-R	5	0	8	14
F54-70	40.3	74.8	46.2	14.0	98	6	161	196	2	100	55	MR	0		5	0	7	3
Mironovskaya 808	40.2	74.8	45.0	12.4	123	96	163	200	2	98	38	S-VS	2	MR	4	0	6	4
Zg 4293/73	39.9	72.4	39.2	13.0	61	0	158	195	2	98	14	MR-MS	0		5	0	8	14
Blueboy	39.0	71.5	43.6	10.6	102	16	162	200	2	98	11	MR	2	R-MR	9	10	7	8
NE73640	38.9	76.5	42.5	13.3	103	68	158	194	0	98	13	MR	1	0-R	7	0	7	4
Oasis	37.9	73.1	44.5	14.1	101	80	161	197	1	98	3	MR	0		3	0	5	3
WA5829	36.9	72.5	36.0	9.9	88	9	164	202	0	100	33	S-VS	2	R-MR	7	0	7	10
Krasnodarskaya 39	36.0	76.5	43.9	11.8	104	56	162	199	2	98	35	S	2	MR	7	0	8	6
F26-70	35.7	75.6	47.2	15.2	91	3	157	194	0	100	35	S	0		7	0	8	10
Sage	33.7	72.9	41.9	14.1	106	78	160	194	1	99	14	MR	0		7	0	7	18
Galiafen	32.5	72.8	35.2	12.6	94	8	162	202	0	95	10	MR	1	0-R	7	0	8	23
Lerma Rojo 64	31.9	73.4	44.9	13.8	86	88	156	194	1	94	25	S	0	0-R	9	8	8	13
NE68719	31.1	74.3	33.6	12.3	79	6	161	197	1	97	28	S	1	0-R	9	9	8	10
Bordenave Puan Sag	29.3	77.5	42.4	14.2	111	97	162	196	0	99	4	MR	2	MR	8	0	7	30
Mean	40.1	74.4	43.1	12.7	92.7	30.6	160.2	197.2	1.2	98.0	16.9		0.7		6.3	1.3	7.4	9.5
L.S.D. of cultivar means (.05)	2.5	1.6	0.8	1.0	3.4	11.1	0.6	0.7	1.1	1.5	--		-		-	0.8	-	3.6
Coefficient of variation (%)	4.4	1.6	1.3	5.8	2.6	25.9	0.3	0.3	66.5	1.1	--		-		-	44.9	-	27.6

a/ Disease readings on leaves.

b/ Disease readings on ears.

POLAND

WARSAW

(RADZIKOW)

COOPERATOR: S. Starzycki.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 18, 1976.

PRECIPITATION DURING CYCLE OF TEST: 548.4 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 80 kg/ha; K = 60 kg/ha. (Ammonium nitrate, Super-phosphate, Potassium chloride).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: No winter killing occurred even though snowfall was light. Spring was rather cold and wet. Summer was also wet.

DISEASE DEVELOPMENT: Most cultivars were attacked by Powdery mildew (Erysiphe graminis), Leaf rust (Puccinia recondita) and Septoria sp.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 9, 1977.

AREA HARVESTED FOR YIELD: 8.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - March 19, 1977.
Flowering - June 4-15, 1977.
E. graminis - June 21, 1977.
P. recondita - June 30, 1977.
Septoria sp. - July 3, 1977
Height - July 4, 1977.
Ripeness - July 22-August 1, 1977.
Lodging - July 27, 1977.
Shattering - August 25, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	.61**								
1000-kernel weight	.47**	.50**							
Protein	-.28**	-.08	.16						
Plant height	.10	.45**	.11	.19*					
Lodging	-.06	.16	-.22*	.06	.63**				
Flowering	.12	.19*	-.19*	-.29**	.43**	.43**			
Ripening	.36**	.38**	.21*	-.04	.42**	.16	.50**		
Shattering	-.12	.07	.07	.26	-.05	-.18	-.18*	-.24**	
Winter survival	.40**	.30**	.14	.00	.10	.08	.04	.08	-.01

** Significant at the 1% level.

* Significant at the 5% level.

Table 35. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Warsaw, Poland in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Shattering %	Winter survival %	Sprouting on head %	Leaf rust sev. %	Leaf rust resp:	Mildew sev. 0-9	Septoria sev. 0-9
Iulia	35.9	75.5	45.8	15.9	88	6	162	207	18	74	4	58	S	5	6
Priboy	32.1	76.4	44.8	14.8	97	23	161	209	8	73	9	5	R-MR	3	6
Yubiley	29.5	73.4	42.7	15.2	83	0	161	208	8	80	13	0		7	7
Martonvasar 3	29.2	74.8	41.7	16.4	93	5	161	209	11	75	8	70	S	8	9
Mironovskaya 808	29.0	76.3	42.5	15.2	125	55	165	209	10	70	5	53	MS-S	3	5
F54-70	27.8	76.2	41.3	18.2	101	18	162	210	30	71	10	30	MR-MS	5	5
Probstdorfer Karat	27.7	75.3	38.3	15.4	111	45	165	210	6	78	5	4	R-MR	5	6
Zg 4240/73	27.7	70.3	37.2	16.5	73	0	160	209	8	73	100	0		0	5
Zg 4364/73	27.2	72.4	38.0	16.5	76	0	160	208	9	80	19	0		0	7
Lindon	26.8	75.7	32.0	14.3	97	38	160	206	9	76	3	0		3	8
Odesskaya 51	26.3	76.2	43.1	15.6	104	10	163	209	11	69	23	17	MR-MS	6	7
Blueboy	26.2	72.9	37.3	14.5	96	15	162	211	5	75	9	30	MR-S	8	6
F53-70	26.1	77.4	43.3	17.7	100	5	160	209	25	73	10	33	MS-S	6	7
Bezostaya 1	25.7	75.1	41.8	15.1	92	5	162	209	5	70	8	9	MR-MS	7	8
Atlas 66	24.8	76.2	38.5	17.4	115	73	163	210	14	68	5	63	S	3	4
Sadovo-1	24.0	71.5	47.0	15.0	82	0	158	207	6	69	26	65	S	8	9
GKF-8001	23.5	73.9	36.8	14.1	74	0	163	209	8	70	9	0		7	8
NE73640	23.2	73.6	38.5	17.2	101	33	160	208	13	74	16	0		4	9
Flavio	21.5	72.4	39.6	14.5	80	3	160	206	25	69	18	63	MS-S	6	7
Bordenave Puan Sag	20.5	72.7	32.1	18.5	109	61	161	207	6	81	13	0		7	9
WA5829	19.9	71.6	27.7	13.0	85	10	165	206	24	78	88	9	0-MS	9	9
Zg 887/73	19.8	70.9	33.5	14.5	75	0	160	207	23	64	48	0		0	7
NE68719	19.2	71.6	29.5	15.6	88	10	161	206	16	76	14	0		9	9
Krasnodarskaya 39	18.9	73.2	36.8	14.5	101	45	163	209	9	69	26	50	MS-S	7	7
Sage	17.8	71.7	38.1	19.7	100	18	162	208	25	74	53	0		8	9
F26-70	17.7	72.1	44.2	20.5	89	0	159	206	26	76	83	55	MS-S	8	9
Zg 4293/73	16.2	71.4	36.2	17.4	68	0	160	206	11	69	75	60	S	0	9
Oasis	14.9	71.0	36.1	18.3	103	23	160	209	16	71	43	0		0	9
Galiafen	10.6	67.8	29.6	15.8	89	23	164	208	6	44	13	4	R-MR	6	9
Lerma Rojo 64	10.2	71.8	37.3	17.3	89	6	156	204	20	58	29	70	S	8	9
Mean	23.3	73.4	38.4	16.1	92.7	17.5	161.1	207.9	13.6	71.4	26.0	26.4		5.0	7.3
L.S.D. of cultivar means (.05)	6.7	2.1	3.0	1.1	6.3	23.3	1.2	1.2	10.8	5.8	14.1	--		-	-
Coefficient of variation (%)	20.3	2.1	5.5	4.7	4.9	94.7	0.5	0.4	56.4	5.8	38.5	--		-	-
Local Cultivar: Grana	31.5	71.1	39.5		99	19	166	211	5	78	3	75	S	6	8

ROMANIA

FUNDULEA

COOPERATOR(S): N. Ceapoiu, N. N. Saulescu; G. H. Ittu.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 10, 1976.

PRECIPITATION DURING CYCLE OF TEST: 622.6 mm (July 1, 1976 to July 1, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 130 kg/ha; P = 30.6 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Adequate precipitation fell in the autumn and was followed by a fairly mild winter. Spring was favorable for good plant development.

DISEASE DEVELOPMENT: Conditions were such that a very heavy infection of Leaf rust (Puccinia recondita) developed. Also, Powdery mildew (Erysiphe graminis) was present.

INSECT, WEED OR PEST PROBLEMS: The nursery was treated with a herbicide.

DATE OF HARVEST: July 15, 1977.

AREA HARVESTED FOR YIELD: 3.75 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Frost damage - February 26, 1977.
Winter survival - March 2, 1977.
Height - June 16, 1977.
E. graminis - June 15, 1977.
P. recondita - June 21, 1977.
Lodging - June 15, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival
Test weight	.52**							
Protein	-.07	.25**						
Plant height	-.13	.37**	.40**					
Lodging	-.16	.28**	.43**	.49**				
Flowering	-.33**	-.17	.08	.51**	.09			
Ripening	-.37**	-.16	.22*	.48**	.02	.88**		
Winter survival	.55**	.24**	-.16	.11	-.09	.36**	.17	
Frost damage	-.13	-.39**	.05	-.34**	-.13	-.52**	-.36**	-.63**

** Significant at the 1% level.

* Significant at the 5% level.

Table 36. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Fundulea, Romania in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Frost damage 0-9	Leaf rust sev. %	Leaf rust resp	Mildew sev. 0-9
Yubiley	53.3	78.5	4	13.7	90	5	138	178	100	1	8	R-MR	7
Lindon	52.6	80.4	4	13.7	100	65	139	179	100	0	6	R	1
Zg 4364/73	52.5	74.2	4	14.1	75	0	137	177	100	5	9	R-MR	1
Zg 4293/73	51.3	74.2	4	14.1	66	0	136	177	100	5	25	MR-MS	1
Zg 4240/73	51.1	74.2	4	13.7	75	0	135	176	100	5	10	R-MR	1
Iulia	50.6	80.2	4	14.1	100	8	137	176	100	1	60	MS-S	4
F53-70	48.9	80.2	3	15.6	113	3	140	182	100	1	15	R	4
F54-70	48.6	80.3	4	15.2	109	0	140	182	100	1	15	R	4
Sadovo-1	47.9	78.5	4	12.7	104	9	137	176	100	4	99	VS	7
Flavio	47.8	75.2	4	12.6	95	20	137	176	94	6	95	VS	2
F26-70	46.2	78.7	4	14.5	96	6	135	177	100	2	83	S	2
NE73640	45.9	79.5	4	14.8	105	97	139	179	100	0	6	R	4
Sage	45.6	78.7	4	14.8	111	92	140	179	100	0	6	R	2
Priboy	45.4	79.0	4	13.7	103	55	140	182	100	0	80	S	4
Odesskaya 51	44.8	78.5	4	13.5	101	75	140	178	100	0	88	VS	5
Zg 887/73	44.8	75.3	4	13.4	75	0	137	177	93	6	28	MR-MS	1
Oasis	44.6	78.9	4	15.2	110	99	140	179	100	1	5	VR	1
Bordenave Puan Sag	43.9	79.6	4	16.4	120	99	141	182	100	4	6	R	1
Bezostaya 1	43.7	79.5	4	14.1	100	13	140	182	100	1	99	VS	7
Martonvasar 3	43.0	77.9	4	13.4	105	23	139	178	100	1	99	VS	7
Atlas 66	42.9	76.2	4	16.5	120	90	142	182	100	5	6	R	2
GKF-8001	41.5	76.3	4	13.0	65	0	140	180	100	2	99	VS	7
Probstdorfer Karat	41.4	79.7	3	14.5	126	0	145	184	100	0	88	S	2
NE68719	40.4	75.1	4	13.8	85	8	141	181	100	0	15	R-MR	8
Blueboy	38.2	72.4	4	12.0	103	8	142	184	100	3	60	S	8
Krasnodarskaya 39	37.5	77.9	4	13.6	110	58	142	180	100	0	99	VS	6
Mironovskaya 808	30.4	72.6	4	14.2	134	63	144	183	100	0	95	VS	2
Galiafen	28.5	70.5	4	14.9	100	5	141	183	68	8	10	MR-MS	3
WA5829	24.2	68.7	5	13.6	80	0	145	183	100	0	99	VS	7
Lerma Rojo 64	23.5	76.7	4	15.1	90	82	132	175	53	8	6	R-MR	6
Mean	43.4	76.9	3.9	14.1	98.8	32.6	139.4	179.6	96.9	2.3	47.2		3.8
L.S.D. of cultivar means (.05)	3.7	1.2	0.2	0.6	2.3	20.3	--	--	3.8	0.6	--		-
Coefficient of variation (%)	6.1	1.1	3.7	3.0	1.7	44.2	--	--	2.8	17.5	--		-

REPUBLIC OF SOUTH AFRICA

KROONSTAD

COOPERATOR(S): I. B. J. Smit; K. W. Packendorf; L. A. S. Robinson.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 30, 1977.

PRECIPITATION DURING CYCLE OF TEST: 220 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 10 kg/ha; P = 25 kg/ha (Ammonium Nitrate and Superphosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Initial soil moisture was sufficient for establishment of the stand, but precipitation was inadequate during the later growth phases. Harvest conditions were good.

DISEASE DEVELOPMENT: The nursery was free of disease.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: November 15 - Mid December, 1977.

AREA HARVESTED FOR YIELD: 7 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - November 10, 1977.
Lodging - November 10, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	Plant height	Flowering
Test weight	.24**			
Plant height	.07	.26**		
Flowering	.14	.30**	.43**	
Ripening	.16	.12	.34**	.88**

** Significant at the 1% level. * Significant at the 5% level.

Table 37. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Kroonstad, South Africa in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)
Lindon	21.9	82.6	55	289	319
GKF-8001	20.9	78.5	56	289	318
Odesskaya 51	20.8	80.2	70	287	317
Bordenave Puan Sag	20.1	80.3	79	284	318
WA5829	20.0	78.5	58	299	330
NE68719	19.9	76.8	59	295	323
Bezostaya 1	19.8	80.1	75	286	318
Martonvasar 3	19.8	79.3	69	285	317
Priboy	19.8	79.6	74	287	319
Sadovo-1	19.7	78.2	61	282	317
Krasnodarskaya 39	19.6	77.8	71	292	321
Blueboy	19.3	73.5	71	279	318
Zg 4364/73	19.3	74.4	49	281	317
Galiafen	19.1	74.5	64	275	317
Yubiley	18.9	77.5	59	280	312
Sage	18.6	79.5	75	295	323
NE73640	18.3	80.1	68	294	320
Iulia	17.9	79.2	55	292	330
F26-70	17.8	78.7	63	284	318
Zg 887/73	17.7	76.4	48	271	305
Zg 4293/73	17.6	75.1	41	275	310
Mironovskaya 808	17.3	74.8	80	305	331
Probstdorfer Karat	17.1	79.0	76	305	332
Zg 4240/73	17.0	74.8	49	275	311
Flavio	16.7	76.7	48	272	305
Oasis	16.3	77.3	61	278	311
F53-70	16.2	77.9	61	293	329
F54-70	16.2	77.8	63	292	330
Atlas 66	15.5	75.3	78	285	320
Lerma Rojo 64	12.6	79.0	68	268	295
Mean	18.4	77.8	63.3	285.7	318.2
L.S.D. of cultivar means (.05)	2.9	0.9	4.2	2.5	2.2
Coefficient of variation (%)	11.1	0.8	4.7	0.6	0.5

REPUBLIC OF SOUTH AFRICA

BETHLEHEM
(DRYLAND PLANTING)

COOPERATOR(S): I. B. J. Smit; K. W. Packendorf; G. M. French.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 26, 1977.

PRECIPITATION DURING CYCLE OF TEST: 285 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 54 kg/ha; P = 36 kg/ha (Ammonium Nitrate and Superphosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Moisture was sufficient until the seed setting stage later it became dry and hot.

DISEASE DEVELOPMENT: Disease was first seen at the flowering stage and resulted in a severe stem rust (Puccinia graminis F. sp. tritici) infection towards maturity. Leaf rust (P. recondita) and Septoria sp. were also seen.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: December 15, 1977.

AREA HARVESTED FOR YIELD: 5.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Diseases - November 25 and December 6, 1977. Lodging - December 14, 1977.
Height - December 14, 1977. Shattering - December 14, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	Protein	Plant height	Flowering	Ripening
Test weight	.57**					
Protein	-.07	.06				
Plant height	-.25**	.27**	.29**			
Flowering	-.40**	-.12	-.09	.47**		
Ripening	-.46**	-.33**	-.19*	.28**	.83**	
Shattering	-.23*	-.04	-.19*	.01	.01	.11

** Significant at the 1% level. * Significant at the 5% level.

Table 38. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Bethlehem, South Africa (dryland) in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Shattering %	Leaf rust sev. %	Leaf rust resp.	Stem rust sev. %	Stem rust resp.
Zg 887/73	44.8	72.0	4	14.2	63	285	336	0	0		0	
Odesskaya 51	43.4	77.0	4	15.4	97	291	333	0	3	0-S	15	S
GKF-8001	43.4	76.0	4	13.9	68	291	333	0	1	0-S	19	S
Zg 4364/73	42.8	70.0	4	14.9	65	284	331	0	0		0	
Yubiley	42.2	74.6	4	14.1	76	286	329	0	0		28	S
Priboy	41.7	77.5	3	14.5	100	291	335	0	1	0-S	65	S
Bezostaya 1	41.5	78.3	3	15.5	97	290	333	0	0	0-MS	18	S
Martonvasar 3	40.9	76.5	4	15.8	93	290	332	0	3	0-MS	24	S
F26-70	40.1	75.6	4	16.4	92	288	329	0	3	0-S	45	S
Lindon	39.4	77.3	3	14.6	91	290	329	0	11	MS-S	50	S
Sage	38.2	76.6	4	15.2	99	292	337	0	1	MR	0	0-S
Zg 4240/73	36.8	70.6	5	15.7	63	282	331	0	0		0	
Flavio	36.0	71.4	4	13.3	71	279	329	18	9	0-S	60	S
Sadovo-1	35.7	77.1	3	13.6	82	285	334	0	4	0-S	53	S
Oasis	35.3	76.3	4	15.2	93	285	331	0	0		0	
Lerma Rojo 64	35.2	74.0	4	16.2	94	274	319	0	0		23	S
NE73640	35.1	75.4	3	16.2	99	291	333	0	9	0-MR	33	S
Probstdorfer Karat	33.2	77.0	4	14.2	105	303	341	0	1	0-MS	35	S
Bordenave Puan Sag	32.8	77.0	4	16.9	103	285	329	0	13	MR-MS	55	S
Galiafen	32.8	69.0	4	15.4	91	288	336	0	4	0-S	25	S
Zg 4293/73	32.6	68.9	4	15.7	55	283	330	0	24	0-S	0	
Blueboy	31.4	64.1	4	12.6	95	287	335	0	4	0-S	87	S
Krasnodarskaya 39	29.9	74.2	3	13.2	105	296	339	0	4	MS-S	97	S
Mironovskaya 808	29.8	69.3	4	16.8	120	303	342	0	17	S	68	S
Iulia	29.5	75.0	4	14.4	90	293	335	0	9	S	99	S
F53-70	28.7	73.5	4	14.4	95	294	337	23	2	0-S	92	S
Atlas 66	27.2	72.2	4	18.1	108	290	336	0	4	R-S	45	S
F54-70	27.1	73.1	4	14.7	99	295	340	21	3	0-S	97	S
NE68719	21.8	63.4	5	15.6	88	300	342	0	6	MS-S	99	S
WA5829	20.9	63.1	5	13.2	75	300	343	0	5	S	97	S
Mean	35.0	73.2	3.9	15.0	89.0	289.6	333.8	2.1	4.7		44.2	
L.S.D. of cultivar means (.05)	4.4	1.4	-	1.0	4.1	2.1	2.6	2.1	-		-	
Coefficient of variation (%)	9.0	1.4	-	4.7	3.3	0.5	0.5	71.6	-		-	

REPUBLIC OF SOUTH AFRICA

BETHLEHEM
(IRRIGATED PLANTING)

COOPERATOR(S): I. B. J. Smit; K. W. Packendorf; G. M. French.

DATE OF PLANTING (EFFECTIVE GERMINATION): June 30, 1977.

PRECIPITATION DURING CYCLE OF TEST: 393 mm.

AMOUNT OF IRRIGATION APPLIED: 225 mm.

FERTILIZER USED: N = 66 kg/ha; P = 54 kg/ha. (Ammonium Nitrate and Superphosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Hot and dry conditions prevailed from flowering onwards.

DISEASE DEVELOPMENT: This commenced prior to flowering and progressed rapidly. Stem rust (Puccinia graminis f. sp. tritici) infection became severe during the dough and maturation stages.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: January 11, 1978.

AREA HARVESTED FOR YIELD: 5.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
P. recondita - December 7, and December 12, 1977.
P. graminis tritici - December 7 and December 12, 1977.
Septoria sp. - December 7 and December 12, 1977.
Height - January 9, 1978.
Lodging - January 9, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Seed grade	Protein	Plant height	Flowering
Test weight	.71**					
N	118					
Seed grade	-.78**	-.77**				
N	120	118				
Protein	-.15	.02	.08			
N	120	118	120			
Plant height	-.30**	.13	.01	.33**		
N	120	118	120	120		
Flowering	-.53**	-.25**	.44**	.28**	.40**	
N	120	118	120	120	120	
Ripening	-.18	-.09	.15	.06	.11	.23*
N	120	118	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 39. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Bethlehem, South Africa, (irrigated) in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Leaf rust sev. %	Leaf rust resp.	Stem rust sev. %	Stem rust resp.
Zg 887/73	60.4	69.2	5	13.3	70	292	335	1	O-R	0	
Zg 4364/73	58.2	69.3	5	12.9	72	302	341	0	O-MR	0	
Zg 4240/73	54.3	63.6	4	13.6	67	293	332	0		0	
Martonvasar 3	52.3	70.3	4	14.4	97	305	345	2	O-S	38	S
Bezostaya 1	50.4	72.8	4	12.8	96	306	349	2	MR-S	40	S-VS
Zg 4293/73	46.6	58.2	4	13.8	61	298	335	50	S	0	
Sage	45.4	75.0	4	15.3	102	312	349	6	O-R	13	O-R
Lerma Rojo 64	45.1	71.7	4	13.4	93	285	323	18	O-S	58	S
GKF-8001	43.7	68.6	4	12.2	66	308	349	0	O-S	63	S
Odesskaya 51	42.9	71.0	5	13.5	100	305	348	4	O-S	55	S
Yubiley	42.4	67.1	5	12.1	80	300	336	0		97	S
Oasis	41.5	74.0	4	14.7	109	303	344	0		0	
Flavio	41.4	66.7	4	11.5	83	291	337	4	O-S	99	S
Lindon	41.3	69.8	4	13.5	104	306	339	14	MS-S	87	S
Galiafen	40.4	66.5	5	13.2	95	300	349	8	MS-S	18	MR-S
NE73640	38.8	71.2	4	13.9	106	310	344	9	R-MR	36	MR
Bordenave Puan Sag	37.9	73.8	4	17.2	109	305	343	11	MS-S	44	MS
Probstdorfer Karat	36.2	75.3	4	14.4	107	322	333	0		3	S
Sadovo-1	35.8	67.0	5	13.2	84	301	335	0		99	S
Priboy	30.4	63.2	5	12.8	100	308	347	4	O-S	99	S
F26-70	30.3	64.8	6	15.1	98	304	346	4	O-S	99	S
Atlas 66	28.3	67.8	5	16.6	112	307	347	10	S	80	S
F53-70	22.0	61.6	5	12.4	100	303	344	1	O-S	92	S
Mironovskaya 808	18.2	54.2	7	17.0	119	323	347	15	S	60	S
F54-70	18.2	60.4	5	14.2	98	307	344	3	S	97	S
Blueboy	16.9	50.9	6	12.2	104	302	344	19	O-S	99	S
Iulia	14.7	57.4	6	12.6	95	311	346	3	O-S	97	S
WA5829	8.4	41.6	8	12.5	74	315	348	5	O-S	99	S
Krasnodarskaya 39	7.1	51.8	8	13.2	109	312	341	5	S	99	S
NE68719	3.5	43.3	9	16.0	77	317	347	18	S	99	S
Mean	34.1	64.9	5.1	13.8	92.8	305.0	342.1	7.2		58.9	
L.S.D. of cultivar means (.05)	6.0	6.4	-	2.0	5.7	4.3	17.5	-		--	
Coefficient of variation (%)	12.3	7.0	-	10.2	4.3	1.0	3.6	-		--	

SWEDEN

SVALOF

COOPERATOR(S): T. Denward; B. Kristiansson.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 24, 1976.

PRECIPITATION DURING CYCLE OF TEST: 756 mm. (September 1, 1976-August 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P= 28 kg/ha; K = 52 kg/ha (Calcium Nitrate and 0-7-13 compound).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was cold with above average snowcover.

DISEASE DEVELOPMENT: Stripe rust (Puccinia striiformis) and Powdery mildew (Erysiphe graminis) were present in small amounts.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 8-15, 1977.

AREA HARVESTED FOR YIELD: 6.5 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
E. graminis - June 29, 1977.
P. striiformis - July 14, 1977.
Lodging - August 5, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival
Test weight	.56**								
N	116								
1000-kernel weight	.46**	.42**							
N	120	116							
Protein	-.33**	-.34**	-.07						
N	119	115	119						
Plant height	.27**	.14	.39**	.29**					
N	116	116	116	115					
Lodging	.06	.01	-.03	.15	.39**				
N	116	116	116	115	116				
Flowering	.37**	.35**	.19*	-.59**	.20*	.01			
N	116	116	116	115	116	116			
Ripening	.09	.07	.19*	-.19*	.35**	.08	.57**		
N	116	116	116	115	116	116	116		
Winter survival	.59**	.37**	.35**	-.13	.17	.05	.06	-.19*	
N	120	116	120	119	116	116	116	116	
Pearling resistance	.08	-.01	-.19	.05	.14	.30*	-.05	-.01	.32*
N	60	58	60	60	58	58	58	58	60

** Significant at the 1% level.

* Significant at the 5% level.

Table 40. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Svalof, Sweden in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Pearling[a] resistance value	Stripe rust sev. 0-9	Mildew sev. %
WA5829	53.1	80.5	47.6	14.5	76	0	169	216	90	5.9	1	1
Blueboy	48.2	79.9	47.1	14.8	96	5	169	219	86	5.5	0	13
Probstdorfer Karat	46.2	81.7	50.7	16.2	99	2	169	222	78	5.9	0	0
Lindon	45.1	82.3	43.2	14.7	75	0	167	218	95	6.3	1	0
Mironovskaya 808	45.0	81.0	56.2	14.9	99	9	168	215	76	5.6	0	0
Priboy	44.8	79.1	51.1	14.7	90	43	168	220	85	6.0	0	0
Zg 887/73	43.6	78.5	45.6	14.5	60	0	167	215	79	6.2	0	0
Atlas 66	43.0	80.4	44.5	18.5	98	48	166	219	79	6.2	0	1
Yubiley	42.5	79.9	52.6	15.3	70	0	167	217	89	5.4	0	6
Martonvasar 3	41.8	79.6	53.1	17.8	86	4	168	221	77	5.3	1	7
Zg 4364/73	41.1	79.5	44.3	15.9	63	0	166	213	86	5.6	1	0
Zg 4240/73	39.3	77.8	43.9	15.8	63	1	166	215	85	5.7	0	0
GKF-8001	39.2	80.6	47.2	14.9	64	0	170	219	84	6.0	0	3
Odesskaya 51	38.8	78.7	48.6	16.9	85	28	168	219	80	5.9	0	0
Iulia	38.6	81.4	51.4	16.9	78	0	165	215	85	5.8	0	1
Bezostaya 1	37.3	79.7	50.2	16.9	86	5	167	220	84	5.9	0	2
NE68719	37.3	78.2	39.4	17.6	73	0	165	216	77	6.0	3	19
Sadovo-1	36.7	78.4	56.9	15.6	78	0	166	219	91	5.8	0	13
F53-70	36.5	79.0	50.4	18.8	85	2	165	216	86	5.8	0	1
Krasnodarskaya 39	36.3	77.6	44.3	15.8	91	14	169	218	84	6.1	5	7
Oasis	34.7	76.9	44.1	18.2	84	13	165	215	79	5.7	3	0
Zg 4293/73	33.8	79.1	41.0	16.3	55	0	166	212	72	5.7	0	0
Sage	33.1	75.0	43.8	19.1	91	0	166	216	86	6.2	0	0
Bordenave Puan Sag	32.6	78.3	45.4	19.1	88	58	165	213	83	6.3	0	1
NE73640	32.5	79.1	44.4	19.8	85	1	165	215	81	5.8	1	4
F54-70	31.6	79.0	49.7	19.2	85	2	166	216	82	5.8	0	3
F26-70	30.8	77.4	50.2	21.6	83	0	164	216	77	6.0	2	1
Flavio	28.6	78.2	45.3	15.6	69	0	165	215	60	5.4	1	2
Galiafen	10.9	74.4	36.1	15.8	64	0	167	221	16	5.7	0	8
Lerma Rojo 64	0.9	--	41.0	18.5	--	-	--	--	5	5.5	-	-
Mean	36.8	79.0	47.0	16.8	79.8	8.0	166.7	216.8	77.1	5.8	0.6	3.1
L.S.D. of cultivar means (.05)	6.5	1.0	2.7	0.9	4.7	16.0	0.7	1.3	15.3	0.2	-	-
Coefficient of variation (%)	12.5	0.9	4.0	3.7	4.2	142.5	0.3	0.4	14.1	1.8	-	-

[a] Two replication only.

SWITZERLAND

ZURICH

COOPERATOR(S): G. Popow; F. Weilenmann.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 13, 1976.

PRECIPITATION DURING CYCLE OF TEST: 980 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 90 kg/ha; K = 180 kg/ha (In Nitrate, Phosphate and Potassium Oxide forms).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A normal winter gave rise to a late, cool spring. Normal development occurred in early summer.

DISEASE DEVELOPMENT: A severe attack of Leaf rust (Puccinia recondita) was present together with lesser amounts of Stripe rust (P. striiformis) and Powdery mildew (Erysiphe graminis).

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 2, 1977.

AREA HARVESTED FOR YIELD: 4.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - July 8, 1977.
P. striiformis - July 14, 1977.
Lodging - July 22, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Seed grade	Protein	Plant height	Lodging	Flowering	Korn note
Test weight	.29**								
1000-kernel weight	.60**	.79**							
Seed grade	-.44**	-.52**	-.60**						
Protein	-.13	.28**	.14	.05					
Plant height	.10	.62**	.47**	-.27**	.31**				
Lodging	.08	.37**	.17	-.22*	.25**	.70**			
Flowering	-.19*	.38**	.13	.05	.08	.46**	.26**		
Korn note	-.57**	-.73**	-.89**	.57**	-.01	-.46**	-.18*	-.20*	
Zeleny	-.06	.54**	.26**	.03	.50**	.35**	.23*	.33**	-.25**

** Significant at the 1% level.

* Significant at the 5% level.

Table 41. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Zurich, Switzerland in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of heading days from Jan. 1	Korn note[a] 1-9	Zeleny[b] value	Stripe rust sev. %	Stripe rust resp.	Mildew[c] sev. 0-9	Septoria[c] sev. TKW %[d]
Zg 4240/73	48.7	72.4	30.2	13.6	73	6	145	5	49	16	M-MS	3	57.1
Sadovo-1	46.8	79.5	46.3	12.6	90	0	147	3	47	5	O-M	6	61.8
Bezostaya 1	45.1	81.5	41.4	13.4	101	8	154	3	64	16	M-MS	5	65.4
Mironovskaya 808	45.0	79.5	42.5	13.3	136	67	158	3	60	4	O-M	3	60.4
Yubiley	44.4	78.0	39.0	13.0	81	10	151	4	41	13	O-MS	5	61.9
Iulia	43.6	81.5	42.1	14.0	96	13	149	3	50	16	M-MS	5	66.7
Blueboy	42.2	75.3	35.1	11.4	108	14	154	4	22	13	O-MS	6	64.3
F53-70	42.0	81.3	42.5	15.4	106	13	153	3	65	5	O-M	5	70.5
Zg 4364/73	41.6	73.8	30.0	12.7	74	3	147	5	44	18	M-MS	3	60.9
Atlas 66	41.5	80.3	40.2	15.1	131	55	155	4	41	15	M	5	72.5
Priboy	41.4	81.5	42.5	13.3	105	15	154	3	63	16	M	5	58.4
Odesskaya 51	39.8	79.9	41.1	13.1	103	16	153	3	63	14	O-MS	5	68.0
F54-70	38.7	81.8	42.8	15.3	105	8	152	3	63	11	O-M	5	60.6
F26-70	37.9	78.8	39.5	14.9	90	3	145	4	55	13	O-MS	5	74.2
Flavio	36.8	75.5	28.4	11.9	86	0	147	6	35	20	MS	5	82.2
Zg 887/73	36.3	73.7	24.2	13.6	75	3	150	7	34	31	MS-S	2	73.3
GKF-8001	36.0	79.0	34.6	13.0	66	0	158	4	57	13	O-MS	5	60.0
Sage	35.9	80.4	37.3	14.7	114	38	155	3	66	0		6	66.9
Bordenave Puan Sag	35.8	82.0	33.5	14.3	124	85	153	5	68	36	S	6	64.3
Probstdorfer Karat	34.6	79.6	42.8	15.3	120	11	160	3	61	11	O-M	5	55.8
NE73640	33.9	78,4	31.6	14.3	109	25	153	5	69	26	M-S	6	76.1
Martonvasar 3	33.7	79.1	38.4	13.6	98	6	153	4	64	25	MS-S	5	72.4
Galiafen	33.2	75.8	29.4	14.1	101	11	152	5	44	19	M-MS	6	64.9
Krasnodarskaya 39	31.1	79.6	37.2	12.8	108	10	156	3	61	30	MS-S	5	69.8
Zg 4293/73	30.8	71.0	24.9	13.8	64	3	146	7	42	18	M-MS	-	--
Oasis	27.7	76.4	29.8	13.9	110	25	153	5	43	60	VS	4	87.6
WA5829	27.6	77.1	28.1	13.1	83	10	160	5	39	8	O-M	6	50.0
Lerma Rojo 64	26.5	76.3	33.1	14.3	91	20	143	6	39	0		7	71.9
NE68719	22.9	74.6	23.4	14.2	86	0	156	7	62	11	O-M	7	75.7
Lindon	22.8	75.7	20.5	13.8	96	14	153	7	68	48	S-VS	4	73.6
Mean	36.8	78.0	35.1	13.7	97.6	16.3	152.1	4.4	52.5	17.6		5.0	64.9
L.S.D. of cultivar means (.05)	5.1	0.7	1.6	0.8	3.4	11.0	1.1	0.9	5.4	--		-	--
Coefficient of variation (%)	9.9	0.6	3.3	4.0	2.5	48.0	0.5	15.2	7.3	--		-	--

[a] Seed grade; 1 = good, 9 = poor.
[b] Higher values indicate higher protein with strong gluten.
[c] One replication only.
[d] Plots innoculated with Septoria nodorum; evaluated via method described in the Proc. of the 2nd IWW Conference, p. 442, 1975.

SYRIA

ALEPPO

COOPERATOR: J. Srivastava.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 8, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: Not reported.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Not reported.

INSECT, WEED OR PEST PROBLEMS: European wheat stem sawfly (Cephus pygmaeus).

DATE OF HARVEST: Not reported.

AREA HARVESTED FOR YIELD: 2.70 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Protein	Plant height	Flowering	Ripening
Protein	-.30				
N	30				
Plant height	-.01	.60**			
N	30	30			
Flowering	-.17	.79**	.42*		
N	30	30	30		
Ripening	-.19	.51**	.06	.67**	
N	30	30	30	30	
Agronomic score	-.55**	.00	-.32	.11	.39*
N	120	30	30	30	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 42. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Aleppo, Syria, in 1977.

Cultivars	Yield	Protein[a]	Plant height[a]	Date of flowering[a]	Date of ripening[a]	Stripe rust[a] sev.	Stripe rust[a] resp.	Stem rust[a] sev.	Stem rust[a] resp.	*Cephus pygmoeus* sev.	Agronomic[b] score
	q/ha	%	cm	Days from Jan. 1		%		%		%	1-9
Sadovo-1	31.5	15.5	87	165	200	0		0		6	6.6
Lerma Rojo 64	29.6	14.1	95	151	193	5	S	0		8	6.0
Priboy	28.6	16.3	95	180	207	1	S	20	S	8	7.4
Yubiley	27.9	17.3	90	180	200	0		0		13	6.8
Zg 887/73	27.0	11.9	70	162	196	20	S	0		1	6.9
Blueboy	26.9	16.0	105	180	207	1	S	30	S	5	6.9
Bezostaya 1	26.7	17.4	100	187	221	0		0		9	7.1
Zg 4240/73	23.8	13.3	80	156	195	0		0		1	6.8
Iulia	23.1	18.6	100	190	203	0		0		6	7.0
Zg 4364/73	23.1	13.8	73	161	198	0		0		3	7.3
GKF-8001	22.9	17.7	66	185	221	0		0		0	8.0
NE 73640	22.5	17.1	102	185	202	1	S	0		9	6.9
Flavio	22.4	16.5	90	165	199	0		0		5	7.5
Martonvasar 3	22.2	17.9	100	187	211	1	S	5	S	10	7.1
Galiafen	21.0	17.4	100	180	217	0		0		10	6.5
Probstdorfer Karat	20.6	17.6	100	180	205	0		0		3	6.4
Bordenave Puan Sag	19.2	21.1	110	185	211	0		0		1	6.8
Odesskaya 51	19.1	17.5	105	188	203	5	S	10	S	5	7.5
Sage	18.5	17.8	107	180	210	0		0		14	7.4
F54-70	18.3	19.3	100	185	202	0		1	S	8	7.1
F26-70	17.4	20.0	105	180	205	0		0		11	7.5
F53-70	16.8	18.7	95	180	202	0		0		9	7.3
Zg 4293/73	16.7	14.2	68	159	196	0		0		1	8.3
NE 68719	16.4	19.4	80	195	216	5	S	0		0	7.6
Lindon	16.3	17.0	90	190	209	0		0		5	6.8
Krasnodarskaya 39	16.0	15.3	90	178	211	10	S	1	S	13	8.3
Atlas 66	11.8	20.2	125	187	205	50	S	0		9	7.9
Mironovskaya 808	11.0	18.5	115	178	210	5	S	0		8	6.9
Oasis	10.0	18.2	103	180	205	10	S	0		6	8.0
WA 5829	6.4	17.8	68	180	220	70	S	0		0	8.8
Mean	20.5	17.1	93.8	178	206	6.1		2.2		6.1	7.2
L.S.D. of cultivar means (.05)	8.1									5.2	0.9
Coefficient of variation (%)	28.1									61.9	9.2

a/ One replication only.
b/ High score = poor appearance.

TURKEY

ANKARA

COOPERATOR(S): A. Bayraktar; K. Yakar; H. H. Gecit.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 18, 1976.

PRECIPITATION DURING CYCLE OF TEST: 310.5 mm (October 1, 1976-August 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 60 kg/ha; P = 26.2 kg/ha (Diammonium Phosphate and Ammonium Nitrate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The poor condition of the soil adversely affected yield.

DISEASE DEVELOPMENT: A severe infection of Stripe rust (Puccinia striiformis) together with Helminthosporium sp. occurred at the site.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: August 2, 1977.

AREA HARVESTED FOR YIELD: 6.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Helminthosporium sp. - June 1, 1977.
P. striiformis - June 15, 1977.
P. recondita - June 20, 1977.
Height - July 15, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein
Test weight	-.20		
N	30		
Protein	-.37**	.18	
N	120	30	
Flowering	-.22*	-.42*	-.01
N	112	28	112

** Significant at the 1% level. * Significant at the 5% level.

Table 43. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Ankara, Turkey in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Stripe rust sev. %	Stripe rust resp.	Helminthosporium sev. 0-9
Blueboy	33.2	70.2	4	13.6	95	155	6	R-MS	3
Bordenave Puan Sag	26.4	75.6	3	15.2	90	153	15	MR-MS	2
Odesskaya 51	26.1	73.0	3	14.2	85	155	28	MR-S	3
NE73640	25.7	74.8	3	15.0	65	149	75	MS-S	3
Atlas 66	24.6	69.2	5	15.7	105	156	99	S	3
Iulia	23.7	75.6	3	15.5	55	152	10	O-MS	3
Priboy	23.6	73.7	4	12.8	90	154	20	O-MS	4
GKF-8001	23.4	69.8	4	13.3	Short	156	0		3
Probstdorfer Karat	22.6	76.3	3	15.4	90	152	3	O-S	3
Zg 4364/73	22.2	74.5	3	14.1	Short	152	18	O-S	3
Sage	22.0	74.0	3	14.8	75	153	13	MS	3
Bezostaya 1	21.9	72.5	3	14.0	85	156	5	O-MR	4
Mâronovskaya 808	21.7	70.8	4	12.6	85	156	80	S	2
Flavio	21.4	76.3	4	13.6	55	152	5	O-MS	3
NE68719	21.0	74.0	4	15.1	55	153	80	S	3
Zg 4240/73	19.8	71.9	3	14.5	Short	151	10	O-S	4
Lindon	18.9	79.0	3	14.0	55	154	8	O-S	2
WA5829	17.9	74.6	5	12.2	Short	--	85	S	3
F53-70	17.6	71.5	3	14.8	70	154	23	O-MS	3
F54-70	17.3	73.8	3	16.4	65	156	20	O-MS	3
Lerma Rojo 64	16.7	78.7	3	16.0	65	147	65	MS-S	3
Oasis	15.8	75.8	4	14.3	85	152	99	S	3
Yubiley	14.8	74.4	3	13.6	55	155	13	O-MS	4
Zg 887/73	14.1	71.3	3	11.8	55	153	80	S	3
Martonvasar 3	13.1	72.8	4	16.6	65	156	18	MR-MS	4
F26-70	12.6	74.4	3	17.5	70	150	30	MS-S	3
Sadovo-1	12.2	74.2	3	14.4	55	153	20	MS-S	3
Krasnodarskaya 39	11.8	72.9	3	13.1	65	--	38	MS-S	3
Zg 4293/73	11.0	70.6	4	14.7	Short	159	15	MS-S	3
Galiafen	8.3	69.6	4	18.0	65	157	5	O-MS	3
Mean	19.4	73.5	3.5	14.5	--	153.4	32.7		3.1
L.S.D. of cultivar means (.05)	11.1	--	0.1	1.5	--	4.4	--		-
Coefficient of variation (%)	40.7	--	2.6	7.4	--	2.0	--		-

[a] One replication only.

TURKEY

ERZURUM

COOPERATOR(S): F. Tosun; C. Koycu.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 21, 1976 (emergence October 8-12, 1976).

PRECIPITATION DURING CYCLE OF TEST: 593.6 mm. (September 1, 1976-August 14, 1977).

AMOUNT OF IRRIGATION APPLIED: 40 mm. (on July 13, 1977).

FERTILIZER USED: N = 60 kg/ha (Ammonium Sulphate); P = 60 kg/ha (Super-phosphate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Stripe rust (Puccinia striiformis) infection was fairly severe.

INSECT, WEED OR PEST PROBLEMS: None of importance.

DATE OF HARVEST: August 14, 1977.

AREA HARVESTED FOR YIELD: 2.56 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Flowering - June 25-30, 1977.
Diseases - July 4-14, 1977.
Ripening - August 1-5, 1977.
Height - August 2, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Seed grade	Protein	Plant height	Flowering	Ripening
Test weight	.45**							
1000-kernel weight	.63**	.74**						
Seed grade	-.39**	-.61**	-.63**					
Protein	-.14	.28**	.21*	-.16				
Plant height	-.31**	-.03	-.03	-.20*	.42**			
Flowering	-.32**	-.46**	-.40**	.25**	-.23*	.30**		
Ripening	.18*	.05	.19*	.06	-.16	-.11	.41**	
Winter survival	.13	.43**	.13	-.14	.07	-.16	-.41**	-.23*

** Significant at the 1% level.

* Significant at the 5% level.

Table 44. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Erzurum, Turkey in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Stripe rust sev. %	Stripe rust resp
GKF-8001	60.0	81.0	36.6	2	13.7	77	179	215	95	0	
Yubiley	59.3	80.4	37.5	3	14.7	93	177	215	95	1	O-MR
Zg 4240/73	55.8	77.7	31.4	4	15.2	73	177	215	95	0	O-MR
Bezostaya 1	55.0	80.7	36.5	2	15.2	115	178	214	95	0	
Iulia	53.3	80.9	38.2	3	16.7	102	177	215	95	0	
NE68719	53.2	73.4	26.6	4	14.9	96	178	213	95	10	MS-S
Zg 887/73	52.6	75.8	29.4	3	12.8	76	178	214	95	73	S
Sadovo-1	52.4	80.1	41.2	2	14.6	103	177	214	95	0	
F53-70	51.5	80.5	36.0	3	16.6	112	178	215	95	1	O-MR
Lerma Rojo 64	51.1	79.3	35.1	4	16.1	111	176	214	95	0	
Blueboy	50.8	74.0	29.7	4	14.4	116	180	215	95	0	
Probstdorfer Karat	50.6	80.8	34.7	3	15.2	131	182	217	95	5	MS
Martonvasar 3	50.2	79.6	36.6	3	16.1	111	178	214	95	0	
Lindon	48.9	77.9	25.4	3	13.9	108	178	213	95	0	
Flavio	48.5	80.0	33.7	3	14.3	94	179	215	95	0	
Odesskaya 51	47.1	80.8	34.8	3	15.5	114	179	214	95	0	
Zg 4364/73	46.4	78.2	32.2	4	15.7	81	178	215	95	0	
Zg 4293/73	45.3	77.9	30.2	4	15.4	67	178	215	95	0	
F54-70	43.8	80.0	34.6	3	16.9	114	179	215	95	1	O-MR
Priboy	43.2	80.2	35.5	3	15.6	118	179	214	95	0	O-VR
Galiafen	43.0	73.6	29.7	4	14.9	104	182	216	70	10	S
F26-70	41.5	79.5	35.6	3	17.9	104	176	214	95	0	
Bordenave Puan Sag	40.2	79.9	29.0	3	17.7	121	179	215	95	5	R
Krasnodarskaya 39	39.3	79.0	29.8	3	15.5	124	182	215	95	20	MS-S
Mironovskaya 808	38.1	70.5	28.8	3	15.1	141	182	214	80	5	R-MR
Sage	36.8	79.5	29.1	3	16.1	120	177	213	95	10	R
NE73640	35.6	78.6	29.1	3	16.7	112	177	213	95	40	MS
Oasis	30.0	75.1	25.1	4	14.8	111	179	213	95	20	MR-MS
Atlas 66	29.0	73.8	25.5	4	17.4	139	181	214	95	40	S
WA5829	26.9	70.5	19.3	5	11.3	83	182	215	95	99	S
Mean	46.0	78.0	31.9	3.3	15.3	105.6	178.6	214.3	93.7	11.3	
L.S.D. of cultivar means (.05)	6.5	2.2	2.9	-	0.9	5.6	1.5	1.3	--	-	
Coefficient of variation (%)	10.0	2.0	6.4	-	4.3	3.8	0.6	0.4	--	-	

TURKEY

ESKISEHIR

COOPERATOR(S): H. Kutluk; E. Karma; F. Altay.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 5, 1976.

PRECIPITATION DURING CYCLE OF TEST: 246.6 mm. (September 1976-August 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 60 kg/ha; P = 60 kg/ha (Diammonium Phosphate and Ammonium Nitrate were used).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A wet October produced good germination. A mild, wet winter with some snow gave rise to a dry spring.

DISEASE DEVELOPMENT: Stripe rust (Puccinia striiformis), Leaf rust (P. recondita) and Stem rust (P. graminis f. sp. tritici) were observed. These attacks were both mild and late, causing little damage.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 3, 1977.

AREA HARVESTED FOR YIELD: 8.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter Survival - February 10, 1977.
Date of flowering - June 2, 1977.
P. striiformis - July 5, 1977.
P. recondita - July 18, 1977.
Lodging - July 20, 1977.
P. graminis f. sp. tritici - July 23, 1977.
Date of ripening - July 30, 1977.
Shattering - August 7, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Seed grade	Protein	Plant height	Flowering	Ripening
Test weight	.05							
1000-kernel weight	.01	.44**						
Seed grade	.02	-.57**	-.51**					
Protein	-.13	-.00	.11	-.34**				
Plant height	.19*	.33**	.30**	-.27**	.04			
Flowering	-.08	-.05	.05	.11	-.17	.37**		
Ripening	-.11	.09	.26**	-.15	.15	.41**	.53**	
Frost damage	.05	-.32**	-.34**	.04	.12	-.17	-.44**	-.20*

** Significant at the 1% level.

* Significant at the 5% level.

Table 45. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Eskisehir, Turkey in 1977.

Cultivars	Yield	Test weight	1000-kernel weight	Seed grade	Protein	Plant height	Date of Flowering	Date of Ripening	Frost damage	Rust: Stripe sev.	Rust: Stripe resp	Rust: Leaf sev.	Rust: Leaf resp	Rust: Stem sev.	Rust: Stem resp
	q/ha	kg/hl	g	1-9	%	cm	days from Jan. 1		0-9	%		%		%	
F54-70	25.4	80.7	39.5	3	14.4	80	146	191	2	3	0-S	0	0-MR	14	S
Blueboy	24.3	76.3	37.4	4	10.5	84	149	190	3	1	0-MS	2	0-S	12	MR-S
Bordenave Puan Sag	23.8	83.2	34.9	2	13.4	89	145	188	4	1	0-MR	0	0-R	2	0-MS
Yubiley	23.5	80.7	40.4	4	12.4	63	146	188	2	0		1	0-MR	4	R-S
Mironovskaya 808	23.0	78.3	40.5	3	11.7	104	149	190	3	28	MS-S	1	0-MS	4	0-S
Iulia	22.0	82.2	41.4	2	14.6	75	144	190	3	1	0-MR	2	0-MS	8	0-S
Flavio	21.5	79.3	33.9	3	12.6	64	145	187	8	3	0-S	15	MR-S	9	MR-S
Lindon	21.3	83.5	32.8	3	12.7	71	147	189	2	0		5	0-MS	7	MS-S
F26-70	20.3	81.5	39.0	3	13.8	73	141	188	2	0	0-MR	2	0-S	2	0-MS
F53-70	20.3	80.6	39.4	3	14.0	75	147	189	2	4	0-S	3	0-MS	4	0-S
Zg 4364/73	19.6	76.6	31.8	4	13.5	55	145	188	4	29	MS-S	0		0	
Atlas 66	19.6	80.4	32.5	4	13.5	108	149	190	5	25	S	0	0-MS	0	
Sage	19.1	81.6	37.6	4	12.6	83	146	189	2	3	R-MR	0		0	
Zg 4240/73	18.6	77.8	31.9	4	12.9	55	143	188	6	6	0-S	0	0-R	2	0-S
Zg 4293/73	18.5	77.3	30.7	4	13.9	44	143	186	4	0		3	0-S	0	0-MR
Zg 887/73	17.8	76.8	31.7	4	12.1	50	141	189	6	46	MR-S	0	0-R	0	
WA5829	17.8	78.2	33.9	5	9.9	59	150	189	2	43	MS-S	0	0-MS	3	0-S
Probstdorfer Karat	17.8	81.6	40.6	3	12.8	89	150	192	2	23	0-S	3	0-S	9	MS-S
Oasis	17.4	80.4	34.3	4	12.7	81	145	189	3	20	S	0		0	
Martonvasar 3	16.9	80.9	39.3	2	13.9	76	148	190	3	4	0-S	3	0-S	3	0-S
Galiafen	16.6	78.9	32.2	3	12.9	76	148	191	7	0		2	0-MS	0	
Sadovo-1	15.4	80.8	45.6	2	13.5	66	144	189	3	16	0-S	5	0-S	6	MS-S
Priboy	15.4	81.5	41.6	3	12.3	80	147	191	2	0	0-MR	4	0-S	4	0-S
Lerma Rojo 64	15.3	80.5	37.8	3	14.0	68	139	187	8	31	MS-S	1	0-MS	3	0-S
Odesskaya 51	15.2	81.7	41.9	3	13.5	75	148	190	2	28	0-S	2	0-MS	3	0-MS
Bezostaya 1	15.2	82.4	41.4	3	13.1	80	148	191	2	3	0-S	2	0-MS	7	MR-S
NE68719	15.2	76.4	28.8	4	13.3	64	150	189	2	34	MS-S	2	0-MS	4	0-S
GKF-8001	14.0	81.6	36.9	3	11.5	54	149	190	2	0		3	0-S	7	R-S
Krasnodarskaya 39	13.9	81.1	35.5	3	10.8	77	150	189	2	16	R-S	2	0-MS	8	MS-S
NE73640	12.8	80.5	36.4	3	14.9	74	146	190	3	46	S	0	0-MS	0	0-S
Mean	18.6	80.1	36.7	3.3	12.9	72.9	146.2	189.0	3.3	13.7		2.0		4.0	
L.S.D. of cultivar means (.05)	4.7	1.4	2.9	-	1.8	5.8	2.2	2.2	0.8	--		-		-	
Coefficient of variation (%)	18.1	1.3	5.6	-	9.7	5.7	1.1	0.8	16.3	--		-		-	

UNITED STATES

CALIFORNIA

DAVIS

COOPERATOR(S): C. O. Qualset; H. E. Vogt; C. C. Jan.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 15, 1976.

PRECIPITATION DURING CYCLE OF TEST: 580 mm.

AMOUNT OF IRRIGATION APPLIED: 430 mm.

FERTILIZER USED: N = 95 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Very dry conditions were experienced during the whole growing season. The flowering and grain filling periods were without frost.

DISEASE DEVELOPMENT: A severe infection of Stripe rust (Puccinia striiformis) was observed on some entries. Barley yellow dwarf virus was also present.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20, 1977.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Barley yellow dwarf virus - June 1, 1977.
P. striiformis - June 1. 1977.
Height - July 10, 1977.
Lodging - July 10, 1977.
Shattering - July 10, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	-.02							
N	120							
Protein	-.20*	.29**						
N	120	120						
Plant height	-.50**	.15	.46**					
N	120	120	120					
Lodging	-.01	.30**	.30**	.29**				
N	120	120	120	120				
Flowering	-.32**	-.17	.06	.60**	.06			
N	120	120	120	120	120			
Ripening	-.10	-.12	.12	.39**	.06	.74**		
N	60	60	60	60	60	60		
Shattering	-.50**	-.20*	.22*	.51**	-.05	.40**	.54**	
N	120	120	120	120	120	120	60	
B.Y.D.V.	-.04	.10	.18	-.23	.02	-.58**	-.57**	-.23
N	60	60	60	60	60	60	60	60

** Significant at the 1% level.

* Significant at the 5% level.

Table 46. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Davis, California, USA in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening [a] (days from Jan. 1)	Shattering %	B.Y.D.V. [a] sev. 0-9	Stripe rust sev. %
Lerma Rojo 64	75.9	84.8	11.9	101	24	150	199	0	5	23
WA5829	75.2	80.7	8.7	84	0	168	206	0	1	13
Zg 887/73	70.9	77.6	10.3	69	0	157	201	0	5	8
Zg 4240/73	66.8	78.7	10.2	72	0	153	198	1	5	18
Yubiley	65.9	81.0	10.8	83	0	157	200	1	5	8
Lindon	63.4	83.1	10.7	94	0	160	202	3	4	70
Zg 4293/73	62.7	82.0	11.0	60	0	154	200	0	5	10
Sadovo-1	62.1	82.4	11.3	91	0	157	200	0	5	5
Flavio	62.0	80.9	10.7	90	1	155	195	3	5	3
NE68719	61.4	79.6	10.5	91	0	165	202	1	4	50
Galiafen	59.6	79.3	11.1	110	0	160	202	4	4	3
Zg 4364/73	59.1	79.4	10.3	68	0	156	199	0	5	23
Priboy	58.3	82.7	10.3	99	0	162	200	1	4	1
Bezostaya 1	57.6	82.1	11.3	100	0	161	201	0	5	5
GKF-8001	57.1	80.9	10.5	69	0	162	201	0	4	6
Blueboy	57.1	76.8	10.1	106	0	162	200	8	4	18
Probstdorfer Karat	55.9	81.4	12.2	122	0	172	205	2	4	1
Krasnodarskaya 39	54.7	81.7	10.4	107	0	165	201	1	3	8
Iulia	53.3	83.1	12.0	101	0	159	202	0	5	45
Martonvasar 3	52.8	83.0	11.4	98	0	158	198	0	5	10
Odesskaya 51	52.7	84.1	10.7	97	0	160	199	0	5	5
Bordenave Puan Sag	52.2	84.2	12.1	125	90	164	202	4	4	5
NE73640	51.9	83.0	12.3	111	18	164	202	5	4	65
F26-70	50.9	82.7	13.0	97	0	155	197	1	5	0
Sage	48.8	82.3	11.2	115	11	162	199	10	4	1
F53-70	48.7	82.4	12.6	107	0	160	202	20	4	4
F54-70	47.6	81.6	13.1	111	0	163	204	45	4	3
Oasis	45.4	81.7	10.6	96	0	160	199	23	5	35
Mironovskaya 808	37.6	78.9	11.0	137	0	171	209	75	3	1
Atlas 66	36.5	79.7	12.6	130	1	166	198	21	4	3
Mean	56.8	81.4	11.2	97.9	4.8	160.5	200.5	7.5	4.1	14.5
L.S.D. of cultivar means (.05)	8.4	1.2	1.1	7.1	13.6	2.0	2.8	11.8	1.4	--
Coefficient of variation (%)	10.5	1.0	7.0	5.1	200.4	0.9	0.7	112.4	17.0	--
Local cultivars:										
WW33	80.5	82.7	--	88	0	154	201	0	2	5
Anza	87.2	82.9	--	85	0	154	198	0	-	-

a/ Two replications only.

UNITED STATES

COLORADO

AKRON

COOPERATOR(S): G. Hinze; J. R. Welsh.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 20, 1976.

PRECIPITATION DURING CYCLE OF TEST: 305 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 56.1 kg/ha (Ammonium Nitrate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Very dry in general.

DISEASE DEVELOPMENT: The nursery was free of disease.

INSECT, WEED OR PEST PROBLEMS: Weeds were a problem.

DATE OF HARVEST: July 15, 1977.

AREA HARVESTED FOR YIELD: 7.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - April 15, 1977.
Height - July 15, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein
Test weight	.54**		
N	24		
Protein	-.69**	-.25	
N	99	24	
Winter survival	.92**	-.03	-.55**
N	30	24	25

** Significant at the 1% level. * Significant at the 5% level.

Table 47. Agronomic, and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Akron, Colorado, USA in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	Protein %	Winter survival[a] %
Martonvasar 3	16.1	74.2	17.3	95
NE73640	15.8	74.9	17.3	95
Sage	15.7	74.1	17.3	95
GKF-8001	15.3	74.2	16.8	95
Probstdorfer Karat	15.1	74.9	18.1	100
Krasnodarskaya 39	14.3	75.0	16.8	95
Lindon	14.2	75.5	17.3	95
NE68719	13.5	70.6	18.7	100
WA5829	13.3	69.3	16.8	100
Priboy	13.2	73.7	16.7	75
Iulia	13.2	74.3	18.6	95
F53-70	12.7	74.3	18.3	95
Bezostaya 1	12.6	75.3	17.8	100
F26-70	12.5	72.0	18.8	90
Odesskaya 51	12.3	74.9	17.9	85
Sadovo-1	12.1	71.6	16.9	100
Mironovskaya 808	10.5	69.0	18.5	95
Yubiley	10.3	70.3	18.9	95
F54-70	9.5	73.7	19.4	95
Blueboy	9.3	67.2	19.0	100
Oasis	9.1	71.9	18.2	90
Bordenave Puan Sag	6.7	74.1	19.0	60
Zg 4364/73	6.3	64.5	18.2	90
Zg 4240/73	4.1	64.5	18.1	85
Atlas 66	3.8	--	21.2	5
Zg 4293/73	2.7	--	17.0	20
Galiafen	0.0	--	--	0
Flavio	0.0	--	--	0
Zg 887/73	0.0	--	--	30
Lerma Rojo 64	0.0	--	--	0
Mean	9.8	72.3	18.1	75.8
L.S.D. of cultivar means (.05)	3.8	--	1.4	--
Coefficient of variation (%)	27.8	--	5.5	--

[a] One replication only.

UNITED STATES

COLORADO

FORT COLLINS

COOPERATOR: J. R. Welsh.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 16, 1976 (seeded on a summer fallow).

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None (adequate soil moisture supplied by natural water table).

FERTILIZER USED: None.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The season was very dry compared to normal.

DISEASE DEVELOPMENT: Disease incidence was very low even though the nursery was artifically inoculated with Stem rust (Puccinia graminis f. sp tritici) in May.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 1, 1977.

AREA HARVESTED FOR YIELD: 3.8 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Height - July 15, 1977.
Lodging - July 15, 1977.
P. graminis f. sp. tritici - July 20, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Lodging	Flowering
Test weight	.43*					
N	26					
Protein	-.58**	-.29				
N	103	26				
Plant height	.75**	.46*	-.21			
N	52	26	52			
Lodging	.08	.13	.01	.31*		
N	52	26	52	52		
Flowering	.08	-.08	-.21*	.23	-.01	
N	103	26	103	52	52	
Winter survival	.88**	.52**	-.45**	.67**	.09	-.06
N	120	26	103	52	52	103

** Significant at the 1% level.

* Significant at the 5% level.

Table 48. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Fort Collins, Colorado, USA in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	Protein %	Plant height[b] cm	Lodging[b] %	Date of Flowering days from Jan. 1	Winter survival %	Stem rust sev. %
Mironovskaya 808	48.4	77.9	15.5	108	5	152	98	0
Blueboy	47.9	76.0	14.9	90	0	150	93	6
Yubiley	47.7	78.1	15.1	72	0	149	86	0
Priboy	47.1	80.8	14.8	93	5	150	96	0
Bezostaya 1	46.8	80.4	15.4	92	0	149	95	0
Krasnodarskaya 39	44.0	80.2	15.5	92	0	152	96	0
Odesskaya 51	43.5	81.4	16.9	98	0	148	95	3
NE68719	42.5	75.5	17.2	69	0	147	99	0
Probstdorfer Karat	40.4	77.7	15.8	89	0	152	96	1
NE73640	38.6	78.9	17.0	94	0	145	96	0
Sage	36.6	80.0	17.7	93	5	148	98	0
F54-70	35.4	78.3	17.9	89	0	148	95	0
F53-70	34.3	78.8	17.6	80	0	148	93	1
Martonvasar 3	33.7	78.8	16.6	76	0	149	89	0
WA5829	32.9	75.7	14.8	68	0	152	93	1
Lindon	32.9	81.4	16.1	83	0	147	89	1
Sadovo-1	31.9	79.2	15.6	69	0	148	73	0
GKF-8001	31.0	79.7	14.4	61	0	149	90	0
Oasis	27.6	77.8	17.3	79	5	147	90	0
Iulia	26.6	78.9	17.7	61	0	147	80	0
Atlas 66	23.8	73.7	19.9	81	0	153	51	0
Bordenave Puan Sag	23.2	79.5	18.5	79	6	149	48	0
F26-70	21.9	77.3	19.9	75	0	146	88	0
Zg 4364/73	19.1	73.1	17.5	47	0	148	46	0
Zg 4240/73	18.6	75.2	17.0	54	0	146	48	0
Zg 4293/73	9.3	76.4	17.9	45	0	145	36	0
Zg 887/73	0.0	--	--	--	-	--	2	-
Flavio	0.0	--	--	--	-	--	0	-
Galiafen	0.0	--	--	--	-	--	0	-
Lerma Rojo 64	0.0	--	--	--	-	--	0	-
Mean	29.5	78.1	16.7	78.2	1.0	148.5	71.8	0.4
L.S.D. of cultivar means (.05)	10.6	--	0.5	17.9	-	1.7	16.6	-
Coefficient of variation (%)	25.5	--	2.3	11.1	-	0.8	16.4	-

[a] One replication only.

[b] Two replications only.

UNITED STATES

INDIANA

BROOKSTON

COOPERATOR: North American Plant Breeders.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 12, 1976.

PRECIPITATION DURING CYCLE OF TEST: Not reported, little rain in May and June.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 26.4 kg/ha; P= 105.6 kg/ha; K = 105.6 kg/ha (6-24-24 compound).
Early spring: N = 66 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Autumn was dry; a very cold winter, but with adequate snow cover. The flowering and seed filling stages were very hot and dry.

DISEASE DEVELOPMENT: Little disease occurred.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: June 29, 1977.

AREA HARVESTED FOR YIELD: 8.36 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 30, 1977.
Height - June 28, 1977.
Lodging - June 28, 1977.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Flowering
1000-kernel weight	.17				
N	60				
Protein	-.45**	.02			
N	120	60			
Plant height	.37**	.45**	.17		
N	116	58	116		
Flowering	.32**	-.06	-.33**	.49**	
N	116	58	116	116	
Winter survival	.63**	.04	-.31**	.20*	.11
N	120	60	120	116	116

** Significant at the 1% level. * Significant at the 5% level.

Table 49. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Brookston, Indiana, U.S.A. in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Winter survival %
Priboy	61.3	43.2	12.1	96	132	92
Blueboy	60.2	39.0	11.8	95	133	100
NE68719	54.7	30.2	11.5	81	138	94
Kradnodarskaya 39	54.6	36.0	11.4	99	132	98
Bezostaya 1	50.9	39.8	12.7	91	132	96
GKF-8001	50.7	35.5	11.7	65	132	98
Mironovskaya 808	50.3	39.6	12.1	113	140	100
WA5829	50.2	31.7	10.5	75	139	94
Oasis	48.8	35.8	12.1	91	132	99
NE73640	48.5	33.3	12.5	96	134	96
Probstdorfer Karat	48.0	40.2	12.0	104	140	98
Bordenave Puan Sag	47.8	36.4	13.1	102	135	100
Lindon	47.1	29.2	12.3	89	133	98
Sadovo-1	46.9	44.4	12.0	86	131	100
Sage	45.6	36.1	12.6	99	134	96
Yubiley	45.4	34.6	11.9	77	131	99
Martonvasar 3	45.2	41.6	13.6	86	132	93
F53-70	45.1	38.1	13.0	93	133	100
Odesskaya 51	44.8	34.9	12.9	92	133	97
Iulia	44.2	39.8	12.9	82	133	100
F54-70	44.1	39.5	12.9	92	133	100
Zg 887/73	43.7	31.2	11.2	62	131	96
Atlas 66	42.8	30.4	16.2	111	136	100
F26-70	40.3	41.0	16.3	84	127	100
Flavio	39.0	32.6	12.3	75	132	41
Zg 4240/73	38.9	29.4	13.0	61	129	100
Zg 4364/73	36.7	27.9	12.8	63	131	98
Zg 4293/73	34.1	28.0	13.0	57	130	93
Lerma Rojo 64	30.0	36.1	14.6	82	130	71
Galiafen	2.2	36.8	15.6	-	-	1
Mean	44.7	35.7	12.7	86.0	133.0	91.5
L.S.D. of cultivar means (.05)	7.4	2.8	0.9	4.8	1.3	10.2
Coefficient of variation (%)	11.8	3.8	5.1	4.0	0.7	7.9

UNITED STATES

KANSAS

HUTCHINSON

COOPERATOR(S): E. G. Heyne, G. Paulsen, W. Moore.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 8, 1976.

PRECIPITATION DURING CYCLE OF TEST: 673.5 mm (October 1, 1976 to June 30, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 32 kg/ha; P = 40 kg/ha.
April: N = 44.8 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Generally conditions were very poor. Emergence was satisfactory, but cold air temperatures and lack of snow cover contributed to severe winter kill on some lines. Some rain fell in April but then drought until late May. After this time rain fell in excess.

DISEASE DEVELOPMENT: Leaf rust (Puccinia recondita), Stem rust (P. graminis f. sp. tritici), Powdery mildew (Erysiphe graminis) and Septoria sp. were present.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: June 30, 1977.

AREA HARVESTED FOR YIELD: 3.57 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 30, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Seed grade	Protein	Plant height	Lodging	Flowering
Test weight	.61**						
N	27						
Seed grade	-.61**	-.75**					
N	108	27					
Protein	-.31**	.12	.05				
N	108	27	108				
Plant height	.44**	.71**	-.63**	.22*			
N	108	27	108	108			
Lodging	.08	.34	-.08	.02	.49**		
N	108	27	108	108	108		
Flowering	-.28**	-.17	.18	.32**	.37**	.15	
N	108	27	108	108	108	108	
Winter survival	.76**	-.04	-.14	-.12	.21*	.05	-.11
N	120	27	108	108	108	108	108

** Significant at the 1% level. * Significant at the 5% level.

Table 50. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Hutchinson, Kansas, in 1977.

Cultivars	Yield	Test weight[a/]	Seed grade	Protein	Plant height	Lodging	Date of flowering	Winter survival
	q/ha	kg/hl	1-9	%	cm	%	Days from Jan. 1	%
Sadovo-1	37.3	71.0	4	14.4	91	12	120	100
Blueboy	36.4	66.2	4	13.6	99	23	126	100
Odesskaya 51	36.2	75.9	4	15.9	105	78	123	100
Iulia	35.3	74.8	4	16.5	98	25	122	100
NE 73640	35.3	73.9	4	16.7	108	64	127	100
F53-70	33.5	73.9	4	17.8	106	28	125	100
Yubiley	33.4	69.8	4	14.7	88	11	124	100
Oasis	33.4	73.5	4	15.9	105	45	123	100
F26-70	32.9	73.9	4	17.3	96	23	119	100
Bezostaya 1	32.2	72.6	4	15.7	98	42	125	100
F54-70	32.2	75.0	4	17.2	102	17	125	100
Krasnodarskaya 39	32.1	72.9	4	14.9	104	69	127	98
Lindon	31.6	74.3	4	14.8	99	61	123	100
Probstdorfer Karat	30.2	71.0	4	17.0	111	14	133	100
NE 68719	29.8	66.6	4	15.7	83	6	127	100
Priboy	28.7	73.7	4	16.4	105	75	124	100
Martonvasar 3	28.2	71.9	5	16.4	98	78	123	100
Mironovskaya 808	25.0	68.4	4	16.7	121	31	132	100
Zg 4364/73	24.7	63.7	5	15.4	69	9	123	98
Sage	24.4	72.4	4	16.7	113	78	127	100
Bordenave Puan Sag	22.7	72.2	4	17.9	110	61	129	98
GKF-8001	21.3	63.5	6	15.5	67	6	126	100
Zg 4293/73	20.2	61.3	5	16.9	57	6	121	95
Atlas 66	19.8	69.5	5	20.1	107	34	133	75
Zg 4240/73	19.6	58.8	5	17.1	67	6	121	95
WA 5829	19.3	51.9	7	15.8	75	72	131	100
Zg 887/73	12.2	64.2	5	15.8	65	9	126	43
Galiafen	0.0	--	-	--	-	-	-	0
Flavio	0.0	--	-	--	-	-	-	0
Lerma Rojo 64	0.0	--	-	--	-	-	-	0
Mean	25.6	69.5	4.4	16.2	94.1	36.2	125.3	86.7
L.S.D. of cultivar means (.05)	5.3		0.3	0.8	4.8	20.8	1.6	20.8
Coefficient of variation (%)	14.7		4.9	3.7	3.6	40.8	0.9	17.1

a/ One replication only.

UNITED STATES

MONTANA

BILLINGS

COOPERATOR(S): DeKalb Hybrid Wheat Inc., P. Salm.

DATE OF PLANTING (EFFECTIVE GERMINATION) September 24, 1976.

PRECIPITATION DURING CYCLE OF TEST: 254.5 mm. (September 1, 1976-August 31, 1977).

AMOUNT OF IRRIGATION APPLIED: 76.2 mm.

FERTILIZER USED: Preplant: N = 90.8 kg/ha; P = 90.8 kg/ha; K = 68.1 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Above normal temperatures were experienced in spring, while those in summer were normal.

DISEASE DEVELOPMENT: Powdery mildew (Erysiphe graminis) was seen.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 3, 1977.

AREA HARVESTED FOR YIELD: 2.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 10, 1977.
E. graminis - June 23, 1977.
Lodging - July 29, 1977.
Shattering - August 3, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Lodging % plot	Flowering	Shattering % plot	Winter survival	Shattering % head
Test weight	.10								
N	120								
Protein	-.33**	.38**							
N	117	117							
Plant height	.20*	.33**	.44**						
N	120	120	117						
Lodging % Plot	.12	-.15	.23*	.54**					
N	120	120	117	120					
Flowering	-.08	-.08	-.24*	.40**	.23*				
N	120	120	117	120	120				
Shattering % plot	-.16	.20*	.31**	.11	-.16	-.08			
N	120	120	117	120	120	120			
Winter survival	.76**	.15	.02	.36**	.34**	-.14	.16		
N	120	120	117	120	120	120	120		
Shattering % head	-.68**	-.11	-.02	-.07	-.41	.14	.47	.01	
N	14	14	14	14	14	14	14	14	
Lodging angle from vertical	-.14	-.05	.31**	.19*	.24**	.09	.52**	.09	-.29
N	120	120	117	120	120	120	120	120	14

** Significant at the 1% level.

* Significant at the 5% level.

Table 51. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Billings, Montana, USA in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Seed grade 1-9	Protein %	Plant height cm	Lodging % of plot	Lodging angle from vertical	Date of flowering days from Jan. 1	Shattering % of plot	Shattering % of head	Winter survival %	Mildew sev 0-9
Probstdorfer Karat	100.7	79.6	3	14.6	118	23	18	154	0	0	100	1
Zg 887/73	98.8	75.4	3	13.8	78	0	0	148	0	0	95	1
Martonvasar 3	93.7	79.9	2	15.9	101	3	5	151	15	5	100	4
Lindon	86.5	79.0	3	14.9	108	80	70	151	0	0	100	3
Zg 4293/73	84.9	75.0	3	14.5	67	0	0	146	0	0	98	0
Odesskaya 51	84.7	78.5	4	16.0	110	56	58	151	0	0	100	1
GKF-8001	84.4	78.9	3	13.3	84	25	30	153	0	0	100	3
Blueboy	84.3	71.7	4	14.3	112	83	68	152	0	0	100	5
Bezostaya 1	84.3	80.7	3	15.0	105	45	45	152	0	0	100	2
Zg 4364/73	84.3	76.0	3	14.4	86	0	0	149	0	0	100	1
Sadovo-1	83.0	79.1	3	14.3	98	0	0	150	25	15	100	4
Zg 4240/73	81.7	75.3	3	14.3	76	0	0	146	20	15	94	1
WA5829	81.2	70.7	4	13.2	89	75	75	154	10	10	100	3
Priboy	80.7	79.1	4	14.8	106	80	73	151	0	0	100	2
Mironovskaya 808	79.3	76.9	3	15.8	121	83	73	154	10	10	100	1
Krasnodarskaya 39	78.8	79.1	3	14.6	108	53	50	153	0	0	100	5
Yubiley	78.6	78.4	3	14.4	88	0	0	151	15	3	99	3
Iulia	77.0	81.1	3	15.6	94	0	0	147	45	23	100	2
Sage	76.5	77.7	3	16.8	103	78	68	148	15	5	100	1
NE73640	74.1	77.0	3	16.1	98	83	60	147	0	0	100	3
NE68719	73.2	72.9	4	15.0	87	58	70	150	0	0	100	5
F26-70	72.4	79.2	3	17.6	96	20	20	146	13	5	100	2
Bordenave Puan Sag	72.1	78.9	2	16.7	109	83	65	150	5	5	100	8
Oasis	70.2	78.0	3	16.6	101	83	65	150	33	10	100	1
Atlas 66	62.4	77.9	4	17.8	113	70	65	151	13	15	89	2
F53-70	61.2	78.5	3	16.7	102	25	22	151	65	33	100	2
F54-70	58.5	78.9	3	17.1	104	9	23	151	88	45	100	1
Flavio	42.9	77.1	3	14.0	70	0	0	151	0	0	20	2
Lerma Rojo 64	33.1	77.5	3	16.8	87	0	0	149	0	0	4	2
Galiafen	30.1	74.6	4	14.7	85	0	0	154	0	0	3	0
Mean	75.1	77.4	3.1	15.3	96.7	37.0	34.1	150.1	12.3	6.6	90.0	2.3
L.S.D. of cultivar means (.05)	10.8	1.3	0.4	0.4	7.5	20.8	21.4	1.3	25.7	16.2	2.1	-
Coefficient of variation (%)	10.2	1.2	8.1	1.9	5.5	39.9	45.3	0.6	148.3	177.6	1.7	-

UNITED STATES

NEBRASKA

LINCOLN

COOPERATOR(S): V. A. Johnson; K. D. Wilhelmi.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 15, 1976.

PRECIPITATION DURING CYCLE OF TEST: 400 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 20 kg/ha; P = 40 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Autumn and winter were extremely dry, however, rain in March was sufficient for plant development.

DISEASE DEVELOPMENT: Summer conditions were too dry to allow significant disease development.

INSECT, WEED OR PEST PROBLEMS: Since much of the nursery suffered severe winter kill, weeds quickly became established and presented serious problems.

DATE OF HARVEST: July 5, 1977.

AREA HARVESTED FOR YIELD: Grain yields are not meaningful because of severe winter kill and subsequent weed competition.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - April 20, 1977.
Flowering - May-June, 1977.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Flowering
1000-kernel weight	.41**				
N	84				
Protein	-.54**	.03			
N	83	83			
Plant height	.41**	.27*	.01		
N	83	83	83		
Flowering	-.32**	-.47**	.08	.01	
N	84	83	83	83	
Winter survival	.96**	.30**	-.55**	.46**	-.22*
N	120	84	83	83	84

** Significant at the 1% level.

* Significant at the 5% level.

Table 52. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Lincoln, Nebraska, U.S.A. in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Winter survival %
Krasnodarskaya 39	40.6	34.8	4	16.6	76	133	100
Sage	39.7	31.2	4	17.9	76	135	99
NE68719	38.8	24.0	4	17.7	66	135	100
Martonvasar 3	35.7	36.7	4	18.7	71	133	90
Odesskaya 51	35.3	35.4	4	17.9	72	133	94
NE73640	33.8	28.5	4	17.9	70	136	100
Lindon	32.9	26.4	4	16.6	66	131	99
Bezostaya 1	31.7	35.0	4	18.1	76	134	94
Priboy	30.9	36.1	4	17.0	69	134	89
Probstdorfer Karat	30.1	29.4	4	18.9	86	141	98
F53-70	29.9	33.5	3	19.2	67	136	84
GKF-8001	28.5	28.5	4	17.3	52	134	89
Mironovskaya 808	28.2	32.2	4	18.9	85	137	98
F54-70	26.9	33.0	4	19.6	69	134	86
F26-70	25.8	33.4	4	20.2	71	130	84
Oasis	23.1	31.0	4	18.4	69	132	94
Yubiley	20.3	29.9	4	19.4	55	136	54
Sadovo-1	18.5	35.5	4	18.5	59	134	34
WA5829	18.4	22.3	5	17.8	59	145	70
Blueboy	18.1	28.6	4	18.9	72	138	53
Iulia	5.3	27.2	4	21.6	61	136	6
Zg 4364/73	0.0	-	-	-	-	136	1
Galiafen	0.0	-	-	-	-	-	0
Bordenave Puan Sag	0.0	-	-	-	-	-	0
Flavio	0.0	-	-	-	-	-	0
Zg 4240/73	0.0	-	-	-	-	-	0
Zg 887/73	0.0	-	-	-	-	-	0
Atlas 66	0.0	-	-	-	-	-	0
Zg 4293/73	0.0	-	-	-	-	-	0
Lerma Rojo 64	0.0	-	-	-	-	-	0
Mean	19.7	31.1	4.0	18.4	68.9	134.9	57.1
L.S.D. of cultivar means (.05)	4.5	1.6	-	0.6	6.6	2.1	8.4
Coefficient of variation (%)	16.3	3.7	-	2.3	6.7	1.1	10.4

UNITED STATES

NEW YORK

ITHACA

COOPERATOR: N. F. Jensen.

DATE OF PLANTING (EFFECTIVE GERMINATION): August 24, 1976.

PRECIPITATION DURING CYCLE OF TEST: 909 mm. (August 1, 1976-July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Autumn: N = 33.6 kg/ha; P = 67.2 kg/ha; K = 67.2 kg/ha (10-20-20 compound).
Topdress: N = 19.6 kg/ha (Ammonium Nitrate).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A very cold winter was followed by a normal summer.

DISEASE DEVELOPMENT: Little disease occurred.

INSECT, WEED OR PEST PROBLEMS: Thrips (Thysanoptera).

DATE OF HARVEST: July 13, 1977.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - April 18, 1977.
Heading - May-June, 1977.
Height - Early July, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Flowering
Test weight	.19				
N	25				
Protein	-.31**	-.06			
N	75	25			
Plant height	.26*	.52**	.09		
N	79	25	75		
Flowering	-.43*	-.24	.00	-.06	
N	27	25	25	27	
Winter survival	.89**	.47*	-.24*	.27*	-.49**
N	90	25	75	79	27

** Significant at the 1% level.

* Significant at the 5% level.

Table 53. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Ithaca, New York, U.S.A. in 1977.

Cultivars	Yield q/ha	Test[a] weight kg/hl	Seed grade 1-9	Protein %	Plant height cm	Date of Flowering[a] days from Jan. 1	Winter survival %
Yubiley	38.8	75.9	4	11.8	69	149	87
Zg 4364/73	31.1	72.8	4	13.7	52	146	88
Blueboy	30.8	72.1	4	11.2	82	150	81
Lindon	29.7	75.0	4	12.7	68	147	93
Iulia	29.5	78.3	4	13.2	72	145	89
Priboy	27.6	77.6	3	12.4	78	148	85
Sadovo-1	27.3	76.9	4	12.0	68	146	81
Odesskaya 51	27.0	76.9	4	12.0	74	146	82
Probstdorfer Karat	26.5	76.4	4	13.8	84	152	91
F26-70	26.2	76.5	4	14.6	75	143	86
Mironovskaya 808	25.9	71.9	4	13.1	95	150	87
GKF-8001	25.4	76.3	3	12.7	57	151	79
F54-70	25.2	77.9	3	14.4	78	150	79
Martonvasar 3	24.8	75.8	4	13.1	75	149	82
Bezostaya 1	24.3	78.5	3	13.6	71	148	79
WA5829	24.2	72.3	4	11.7	66	152	79
NE73640	23.9	76.0	4	12.9	79	143	84
Zg 4240/73	22.2	70.4	4	12.7	52	146	75
Sage	22.0	74.5	4	13.9	80	147	81
Krasnodarskaya 39	22.0	74.2	3	12.9	78	151	83
F53-70	21.6	75.6	4	13.7	72	150	83
NE68719	21.5	72.6	5	13.4	63	152	81
Atlas 66	21.0	76.5	4	15.8	86	152	73
Zg 4293/73	20.5	69.4	4	14.3	44	150	73
Oasis	18.9	75.8	4	14.2	71	146	85
Bordenave Puan Sag	0.0	-	-	-	66	153	5
Zg 887/73	0.0	-	-	-	58	152	5
Galiafen	0.0	-	-	-	-	-	1
Flavio	0.0	-	-	-	-	-	0
Lerma Rojo 64	0.0	-	-	-	-	-	0
Mean	21.3	75.0	3.8	13.2	71.0	148.7	69.3
L.S.D. of cultivar means (.05)	7.9	-	-	1.2	10.4	-	8.4
Coefficient of variation (%)	22.7	-	-	5.7	8.9	-	7.4

[a] One replication only.

UNITED STATES

NORTH CAROLINA

ROWAN COUNTY

COOPERATOR: C. F. Murphy.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 28, 1976.

PRECIPITATION DURING CYCLE OF TEST: 835 mm (October 1, 1976 - June 30, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha; P = 100 kg/ha; K = 100 kg/ha (10-10-10 granular compound).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: An extremely severe winter was followed by a dry period from flowering nearly to maturity. Four days before harvest rain, high winds, 'golf ball' size hail caused an estimated 20% shattering.

DISEASE DEVELOPMENT: This was minimal.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: June 16, 1977.

AREA HARVESTED FOR YIELD: 1.484 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 17, 1977.
Height - May 22, 1977.
Lodging - June 16, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Seed grade	Protein	Plant height	Lodging	Flowering
Test weight	.08						
N	29						
Seed grade	-.56**	-.57**					
N	119	28					
Protein	-.36**	.31	.21*				
N	120	29	119				
Plant height	.22*	.68**	-.23*	.43**			
N	120	29	119	120			
Lodging	.43**	.67**	-.43**	.06	.71**		
N	120	29	119	120	120		
Flowering	-.07	.49**	.05	.49**	.51**	.09	
N	120	29	119	120	120	120	
Winter survival	.76**	.26	-.58**	-.24**	.25**	.42**	-.05
N	120	29	119	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 54. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Rowan County, North Carolina, U.S.A. in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Winter survival %
Yubiley	36.2	74.2	4	13.5	80	84	116	78
Blueboy	35.7	71.0	4	12.8	94	66	122	73
Martonvasar 3	33.3	75.1	4	14.0	87	81	119	73
Sadovo-1	33.1	74.6	4	13.2	83	74	114	70
Mironovskaya 808	32.4	74.3	4	14.8	107	80	130	68
Priboy	31.9	76.6	4	13.1	91	90	121	73
Lindon	31.9	76.6	4	13.5	82	81	120	68
Probstdorfer Karat	31.7	78.8	3	15.0	97	76	126	78
Krasnodarskaya 39	31.0	76.1	4	13.4	92	84	122	70
GKF-8001	30.7	74.3	4	13.5	62	35	120	68
Bezostaya 1	30.3	75.7	4	14.0	87	80	120	75
Zg 4364/73	30.0	69.1	4	13.8	61	18	116	65
Iulia	29.6	76.8	4	15.9	84	69	124	65
Odesskaya 51	29.4	76.4	4	13.6	90	85	121	73
Sage	28.8	77.9	4	14.4	101	88	126	68
NE68719	28.2	71.7	4	15.1	69	38	127	68
WA5829	28.2	74.4	4	13.1	70	55	128	73
Oasis	28.0	75.7	4	13.7	88	83	116	70
NE73640	27.6	75.0	4	16.1	95	84	124	70
F26-70	27.6	75.0	4	14.6	86	76	116	78
F53-70	26.4	76.1	4	15.5	92	64	125	68
F54-70	24.7	76.1	4	16.1	90	64	125	70
Zg 4293/73	23.8	69.1	4	14.2	53	23	115	63
Zg 887/73	23.4	70.8	4	12.5	64	49	114	60
Bordenave Puan Sag	22.9	78.2	4	15.6	105	92	126	73
Zg 4240/73	22.8	66.2	5	13.5	63	34	114	68
Atlas 66	21.7	72.5	4	18.6	112	79	127	65
Lerma Rojo 64	17.4	74.4	4	15.0	81	92	116	38
Flavio	11.6	71.5	4	14.1	67	35	119	23
Galiafen	5.3	-	6	17.3	79	13	129	5
Mean	27.2	74.3	4.1	14.4	83.6	65.6	121.1	64.9
L.S.D. of cultivar means (.05)	4.2	-	-	0.8	4.5	17.3	2.7	10.2
Coefficient of variation (%)	11.1	-	-	4.0	3.8	18.8	1.6	11.1

[a] One replication only.

UNITED STATES

OKLAHOMA

STILLWATER

COOPERATOR: E. L. Smith.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 1, 1976.

PRECIPITATION DURING CYCLE OF TEST: 491.25 mm. (October 1, 1976 to June 30, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant (September 23, 1976): N = 20.2 kg/ha; P = 51.5 kg/ha.
Topdress (February 24, 1977): N = 38 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally good for crop development except for a period giving rise to slight drought stress in March.

DISEASE DEVELOPMENT: A slight attack of Leaf rust (Puccinia recondita) was the only disease worth noting.

INSECT, WEED OR PEST PROBLEMS: These were minor.

DATE OF HARVEST: June 14, 1977.

AREA HARVESTED FOR YIELD: 4.08 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March, 1977.
Heading - April, 1977.
Date of ripening - May-June, 1977.
Height - Just before harvest.
Lodging - Just before harvest.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Seed grade	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.49**							
N	106							
Seed grade	-.04	-.51**						
N	108	106						
Protein	-.50**	-.23*	-.05					
N	108	106	108					
Plant height	.10	.16	-.11	.05				
N	52	52	52	52				
Lodging	.19*	.40**	-.33**	-.17	.40**			
N	107	106	107	107	52			
Flowering	.06	-.15	.22*	.04	.56**	.09		
N	107	105	107	107	52	106		
Ripening	-.05	-.19	.31**	.27**	.51**	-.05	.82**	
N	104	104	104	104	52	104	104	
Winter survival	.93**	.22*	-.05	-.23*	-.23	.12	-.02	-.34**
N	120	106	108	108	52	107	107	104

** Significant at the 1% level.

* Significant at the 5% level.

Table 55. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Stillwater, Oklahoma, USA in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	Seed grade 1-9	Protein %	Plant height[a] cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Leaf rust sev. %	Leaf rust resp
Priboy	43.6	79.5	3	13.1	86	25	110	145	100	1	0-S
Blueboy	43.1	74.7	4	13.6	87	10	109	147	100	4	S
WA5829	41.7	71.8	6	13.3	73	1	119	156	100	13	S
Sadovo-1	41.7	76.9	4	13.2	76	11	107	142	100	6	S
Odesskaya 51	41.2	79.8	4	14.2	82	20	109	143	100	2	0-S
Martonvasar 3	41.0	78.2	3	14.4	79	11	108	141	100	3	S
Krasnodarskaya 39	40.7	77.5	4	13.4	87	28	111	144	100	3	S
GKF-8001	40.6	77.9	3	13.6	59	3	111	145	100	1	0-S
F54-70	40.3	78.2	4	15.9	89	4	111	152	100	0	0-S
Bezostaya 1	40.2	79.2	3	14.3	81	18	109	147	100	2	0-S
Lindon	40.2	79.8	4	14.5	76	23	108	145	100	6	S
F53-70	39.8	77.2	4	15.8	86	9	111	152	100	0	0-S
NE68719	39.7	75.9	4	14.9	76	3	115	149	100	2	S
Oasis	38.7	79.2	4	15.6	74	13	106	142	100	1	0-S
Yubiley	38.2	75.6	4	15.0	69	3	109	143	100	3	S
Probstdorfer Karat	38.0	77.2	3	15.1	95	8	119	154	100	2	S
NE73640	37.4	78.2	3	15.3	87	18	112	147	100	2	S
Sage	36.1	77.5	3	14.0	98	43	113	147	100	1	0-S
Iulia	35.1	79.5	4	16.0	77	9	108	150	100	2	S
F26-70	34.2	78.2	3	16.7	79	8	106	140	100	4	S
Mironovskaya 808	32.6	68.2	5	15.8	104	13	118	153	100	0	
Zg 4364/73	30.9	73.4	4	15.4	65	2	107	144	100	0	
Bordenave Puan Sag	29.0	77.9	3	16.1	91	28	114	151	94	1	0-S
Zg 4240/73	26.9	67.6	4	16.0	58	2	104	143	100	0	
Zg 4293/73	26.3	71.5	4	15.2	51	2	106	142	100	3	S
Atlas 66	22.6	73.7	4	18.3	92	11	116	154	80	0	0-S
Zg 887/73	3.9	71.5	4	15.8	--	3	109	--	5	2	S
Galiafen	0.0	--	-	--	--	--	--	--	0	-	
Flavio	0.0	--	-	--	--	--	--	--	0	-	
Lerma Rojo 64	0.0	--	-	--	--	--	--	--	0	-	
Mean	32.1	76.2	3.8	15.0	79.7	12.0	110.5	146.8	86.0	2.2	
L.S.D. of cultivar means (.05)	4.2	1.8	0.2	0.8	9.0	8.9	1.1	1.6	2.2	-	
Coefficient of variation (%)	9.3	1.7	3.7	3.9	5.5	52.5	0.7	0.8	1.8	-	

[a] Two replications only.

UNITED STATES

OREGON

CORVALLIS

COOPERATOR(S): W. E. Kronstad; W. L. McCuistion; F. Cholick.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 25, 1976.

PRECIPITATION DURING CYCLE OF TEST: 950 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 224.2 kg/ha (a split application in autumn and spring of granular Ammonium Sulphate and Urea).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Although rainfall was less than normal, crop development was satisfactory.

DISEASE DEVELOPMENT: A severe infection of stripe rust (Puccinia striiformis) developed after artifical inoculation. A trace of leaf rust (P. recondita) was reported along with well developed powdery mildew (Erysiphe graminis) and Septoria sp. infections.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: September 1, 1977.

AREA HARVESTED FOR YIELD: 6.04 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Heading - progressively from May 1, 1977.
P. striiformis - June 15 and July 15, 1977.
Septoria sp. - June 15 and July 15, 1977.
E. graminis - June 15 and July 15, 1977.
Lodging - September 1, 1977.
Height - September 1, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Seed grade	Protein	Plant height	Lodging
Test weight	.46*					
N	29					
Seed grade	-.54**	-.76**				
N	30	29				
Protein	-.47**	.21	.08			
N	30	29	30			
Plant height	-.44*	.07	.00	.40*		
N	30	29	30	30		
Lodging	-.73**	-.06	.23	.45*	.65**	
N	30	29	30	30	30	
Flowering	-.33	.10	.12	.08	.48**	.31
N	30	29	30	30	30	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 56. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Corvallis, Oregon, USA in 1977.

Cultivars	Yield q/ha	Test weight[a] kg/hl	Seed grade[a] 1-9	Protein[a] %	Plant height[a] cm	Lodging[a] %	Date of heading[a] days from Jan. 1	Stripe rust[a] sev. %	Stripe rust[a] resp	Mildew[a] sev 0-9	Septoria[a] sev 0-9
Probstdorfer Karat	63.9	32.4	2	14.2	145	35	148	20	MR	5	4
Yubiley	59.2	76.7	2	15.2	105	0	138	40	MR-MS	8	6
F26-70	57.3	79.2	3	19.2	125	0	130	20	S	6	5
Zg 4364/73	56.3	76.5	4	14.3	95	0	133	60	S	8	8
Iulia	55.5	78.4	2	16.7	125	0	134	40	R	8	7
Bezostaya 1	54.5	78.7	2	16.8	125	0	140	30	S	9	7
Zg 4240/73	54.3	76.3	3	15.4	95	0	127	60	MR-MS	6	6
Flavio	50.3	75.4	3	15.5	120	80	132	80	S	8	6
Martonvasar 3	49.0	77.6	3	15.8	120	0	137	80	S	9	5
Zg 887/73	47.0	74.9	3	16.1	100	0	129	60	S	7	8
F54-70	43.8	74.4	4	17.9	140	70	140	20	MR	4	5
Sadovo-1	43.0	73.7	3	15.0	120	0	133	60	S	9	7
Zg 4293/73	42.4	74.4	4	14.7	80	5	127	80	S	-	7
Galiafen	42.1	75.4	4	14.8	115	45	140	30	MR-MS	9	7
GKF-8001	37.9	76.6	3	15.0	85	0	141	40	MR	9	7
Priboy	35.4	79.0	2	17.5	150	99	140	40	MS	3	5
F53-70	35.2	74.7	3	17.6	135	65	138	20	MR	7	8
Krasnodarskaya 39	35.1	76.8	3	14.6	130	20	143	80	S	8	5
NE68719	34.9	69.3	5	15.8	115	0	141	60	MS	8	5
Blueboy	33.4	66.7	4	14.8	140	70	140	80	S	5	6
WA5829	32.5	69.9	4	14.6	110	55	143	60	S	9	7
Mironovskaya 808	32.3	76.5	4	16.1	160	95	148	20	MR	3	6
Lerma Rojo 64	32.1	74.5	4	16.8	130	99	122	40	S	8	8
Odesskaya 51	30.7	76.6	3	16.6	125	85	139	80	S	3	7
Atlas 66	26.3	78.9	3	17.6	140	85	140	80	S	3	5
Sage	25.0	75.4	4	17.9	135	75	141	60	S	7	6
NE73640	18.5	72.3	4	17.5	140	75	138	99	S	-	7
Lindon	17.6	68.1	5	16.5	130	35	135	99	S	-	5
Bordenave Puan Sag	14.7	78.5	3	19.9	120	95	142	20	MR	3	8
Oasis	9.7	--	6	18.5	130	80	150	80	S	3	7
Mean	39.0	75.4	3.4	16.3	122.8	42.3	137.6	54.6		6.5	6.3
L.S.D. of cultivar means (.05)	9.7	--	-	--	--	--	--	--		-	-
Coefficient of variation (%)	17.7	--	-	--	--	--	--	--		-	-

[a] One replication only.

UNITED STATES

WASHINGTON

PULLMAN

COOPERATOR(S): C. J. Peterson; R. E. Allan.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 6, 1976 (the nursery was planted on a summe fallow).

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 67.3 kg/ha and 134.6 kg/ha (two applications); P = 50.5 kg/ha (Ammonium Nitrate and Super-phosphate were used).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was a severe moisture shortage during the growing season.

DISEASE DEVELOPMENT: A mild occurrance of Powdery mildew (Erysiphe graminis) was noticed.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 8, 1977.

AREA HARVESTED FOR YIELD: 2.97 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients[a/]

N = No. of observations	Yield	Test weight	Protein	Plant height
Test weight	.29**			
N	240			
Protein	-.47**	-.24**		
N	240	240		
Plant height	.14*	.23**	.18**	
N	240	240	240	
Flowering	.34**	.09	-.56**	.10
N	232	232	232	232

** Significant at the 1% level. * Significant at the 5% level.

a/ Correlation coefficients are calculated on both experiments combined. Consequently, there are 240 observations.

Table 37a. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Pullman, Washington, U.S.A. in 1977.[a/]

Cultivars	Yield q/ha	Test weight kg/hl	Grain Protein %	Plant height cm	Date of heading days from Jan. 1	Shattering %	Winter survival %	Mildew sev 0-9
GKF-8001	51.2	78.9	13.3	75	161	0	100	3
Probstdorfer Karat	51.1	78.6	13.6	116	157	0	100	2
WA5829	50.7	74.8	12.6	83	161	0	100	3
Martonvasar 3	45.4	76.3	14.7	102	153	0	100	3
Bezostaya 1	44.9	78.7	13.7	105	158	0	100	2
Sadovo-1	43.8	75.1	14.8	93	152	0	100	2
Blueboy	43.2	73.9	14.2	106	158	0	100	2
Krasnodarskaya 39	43.1	74.7	13.8	107	156	0	100	4
Lindon	42.8	79.4	13.8	102	155	3	100	1
Yubiley	42.0	77.3	13.4	88	153	0	100	3
Priboy	40.7	78.7	13.5	109	160	0	100	2
Iulia	40.4	77.1	16.5	95	152	3	100	3
NE68719	38.5	72.7	15.2	85	152	0	100	3
Odesskaya 51	37.7	77.1	14.8	104	155	3	100	2
Zg 4364/73	36.9	71.3	15.8	77	152	0	100	2
Zg 4240/73	34.3	73.5	16.0	71	152	0	100	2
F53-70	34.1	76.9	16.6	105	153	8	100	2
F54-70	33.3	75.5	16.7	105	153	8	100	3
Zg 4293/73	32.3	75.1	16.2	60	154	0	100	1
Sage	32.3	77.4	16.1	109	151	3	100	1
Zg 887/73	31.6	74.2	12.7	60	152	0	90	2
NE73640	30.9	77.4	16.1	102	150	3	100	1
Bordenave Puan Sag	29.8	77.9	15.7	110	151	3	100	2
Galiafen	28.0	74.2	13.9	81	161	0	78	2
F26-70	27.8	75.6	18.8	97	149	0	100	1
Atlas 66	25.7	74.2	17.9	116	155	20	100	2
Mironovskaya 808	21.1	74.0	14.4	126	159	48	100	2
Oasis	14.0	72.9	18.3	105	153	48	100	2
Flavio	9.6	75.8	14.5	64	152	0	30	-
Lerma Rojo 64	7.3	76.3	15.3	75	-	0	6	-
Mean	34.8	75.8	15.1	94.3	154.4	4.8	93.5	2.1
L.S.D. of cultivar means (.05)	5.3	1.7	0.5	4.8	3.0	8.4	8.3	-
Coefficient of variation (%)	10.9	1.6	2.4	3.6	1.4	127.0	6.4	-
Local cultivars:								
Luke	54.3	77.6	12.2	161	84	0	100	3
Nugaines	53.4	76.6	12.4	162	85	0	100	3

a/ No additional nitrogen added in spring.

Table 57b. Agronomic and grain quality data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Pullman, Washington, U.S.A. in 1977.[a/]

Cultivars	Yield q/ha	Test weight kg/hl	Seed grade 1-9	Protein %	Plant height cm	Shattering %
WA5829	56.8	76.0	4	12.8	84	0
Bezostaya 1	52.8	80.2	3	14.2	104	0
GKF-8001	52.8	79.3	3	13.2	76	0
Blueboy	49.8	74.8	4	14.0	106	0
Probstdorfer Karat	49.1	80.2	3	14.0	115	0
Lindon	47.6	80.3	3	14.5	101	8
Yubiley	47.5	77.9	4	13.9	86	0
Martonvasar 3	47.4	78.4	3	15.3	101	0
Priboy	45.1	78.5	3	13.7	104	0
Sadovo-1	44.7	76.1	3	15.2	93	0
Iulia	44.1	78.4	4	16.7	93	3
Krasnodarskaya 39	44.0	77.8	3	14.3	107	0
Zg 4364/73	43.2	71.9	4	16.3	78	0
NE68719	41.5	74.0	4	15.5	84	0
F53-70	41.2	77.9	3	16.8	104	13
Odesskaya 51	40.2	78.7	3	14.8	104	5
Zg 4240/73	38.8	76.6	4	16.2	73	0
Sage	38.5	78.9	3	16.5	106	8
Zg 887/73	37.2	75.6	4	13.3	61	0
NE73640	36.1	78.7	3	16.6	101	5
Zg 4293/73	35.9	75.8	4	16.6	65	0
F54-70	35.3	77.8	4	17.0	100	13
Bordenave Puan Sag	33.9	79.2	3	15.9	110	8
Galiafen	31.0	75.5	4	14.2	85	0
F26-70	29.9	77.1	3	18.7	96	0
Atlas 66	29.2	75.3	4	18.1	118	40
Mironovskaya 808	24.4	73.5	3	14.9	123	60
Oasis	14.6	73.0	5	18.6	105	68
Flavio	13.2	75.3	4	14.7	69	0
Lerma Rojo 64	4.3	76.5	4	15.7	69	0
Mean	38.3	77.0	3.5	15.4	94.0	7.6
L.S.D. of cultivar means (.05)	6.8	1.5	-	0.5	4.5	10.8
Coefficient of variation (%)	12.7	1.4	-	2.3	3.4	102.8
Local cultivars:						
Luke	59.5	78.5	4	12.5	84	0
Nugaines	54.3	75.8	4	12.9	83	0

a/ 27.2 kg additional nitrogen applied in spring.

USSR

KRASNODAR

COOPERATOR: Y. M. Puchkov.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 9, 1976.

PRECIPITATION DURING CYCLE OF TEST: 420 mm. (October 1, 1976-June 1, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 90 kg/ha; K = 45 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: An early, cool and wet autumn gave rise to a late, cold (-24°C) winter. Spring arrived early and was also wet. Moderately warm conditions prevailed through the summer.

DISEASE DEVELOPMENT: Abundant moisture in spring favored stripe rust (Puccinia striiformis) development. Moderate attacks of leaf rust (P. recondita) and powdery mildew (Erysiphe graminis) were also observed.

INSECT, WEED OR PEST PROBLEMS: Some bird damage by sparrows (Passer sp.). Also, stink bugs (Eurygaster integriceps), European wheat stem sawfly (Cephus pygmaeus) and cereal leaf beetle (Oulema melanopus).

DATE OF HARVEST: July 6, 1977.

AREA HARVESTED FOR YIELD: 6.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - February 22, 1977.
E. graminis - May 11, 23, 1977.
P. recondita - June 2, 13, 1977.
P. striiformis - June 16, 1977.
Lodging - June 21, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.21*							
N	120							
1000-kernel weight	.30**	.63**						
N	120	120						
Protein	-.26**	.33**	.16					
N	120	120	120					
Plant height	-.38**	.23*	.10	.43**				
N	120	120	120	120				
Lodging	.32**	-.14	.14	-.39**	-.80**			
N	120	120	120	120	120			
Flowering	-.42**	-.12	-.46**	-.03	.49**	-.47**		
N	120	120	120	120	120	120		
Ripening	-.30**	.04	-.26**	.03	.12	-.16	.63**	
N	120	120	120	120	120	120	120	
Winter survival	.08	-.06	-.14	.00	.09	-.10	.22	.06
N	60	60	60	60	60	60	60	60

** Significant at the 1% level.

* Significant at the 5% level.

Table 58. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Krasnodar, USSR in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter survival[a] %	Stripe rust sev. %	Leaf rust sev. %	Leaf rust resp	Mildew sev. 0-9
Zg 887/73	69.9	75.4	35.5	12.4	77	99	134	172	98	0	3	O-MR	0
Zg 4240/73	64.5	73.1	35.3	13.6	75	99	128	169	100	1	1	R-MR	0
Zg 4364/73	60.9	76.1	35.3	13.4	79	99	134	172	100	7	8	R-MS	0
Priboy	60.7	80.3	43.7	13.6	109	43	136	174	100	2	7	MR-MS	6
Zg 4293/73	58.8	75.5	32.5	13.2	62	99	131	179	88	6	1	O-MR	0
Yubiley	58.7	77.8	36.4	13.8	90	99	135	173	100	0	1	O-MR	7
Odesskaya 51	58.4	79.0	37.9	13.7	110	54	136	174	100	13	19	M-S	5
Probstdorfer Karat	57.1	79.6	38.0	14.1	127	60	145	180	100	1	9	R-M	3
Sadovo-1	56.6	78.1	49.1	12.9	98	99	134	174	100	1	28	M-S	7
Flavio	54.8	77.4	37.6	12.4	86	99	134	171	72	0	23	MR-S	5
Iulia	53.6	80.1	41.8	14.6	102	82	134	178	100	0	19	MR-MS	6
GKF-8001	52.6	79.4	36.9	13.5	66	99	138	177	100	1	28	MS-S	7
Blueboy	52.6	75.0	33.8	12.7	113	73	137	176	100	0	4	R-MS	9
Bezostaya 1	52.5	79.8	41.1	14.0	104	80	137	174	100	7	25	M-S	8
F26-70	52.0	80.0	41.9	17.4	100	99	131	171	100	1	21	M-S	5
Atlas 66	51.9	78.5	35.1	16.8	128	48	138	176	100	1	2	O-M	4
Sage	51.2	78.3	34.8	15.0	120	43	139	174	100	0	1	O-MR	6
F53-70	49.5	80.1	39.1	15.7	113	65	137	179	100	0	2	R-M	7
Martonvasar 3	49.2	78.3	40.5	14.0	102	92	135	175	100	22	35	MS-S	7
F54-70	47.8	79.8	38.5	16.2	111	55	136	178	100	1	2	O-M	6
Lerma Rojo 64	47.5	79.3	45.3	15.4	99	70	128	171	60	0	6	R-MS	5
NE73640	47.3	77.2	29.8	13.9	113	58	139	173	100	67	9	M-MS	4
Lindon	46.2	75.2	26.2	13.3	106	53	137	173	100	51	2	O-R	5
Bordenave Puan Sag	45.1	77.5	31.0	16.3	123	43	141	175	100	3	0		4
Mironovskaya 808	44.7	75.8	35.8	14.2	140	43	144	177	89	0	30	MS-S	3
NE68719	44.6	71.5	26.1	14.2	87	78	142	177	100	7	7	R-S	8
Krasnodarskaya 39	42.8	78.9	37.0	13.5	112	70	141	176	100	19	10	MR-MS	7
WA5829	42.7	71.3	23.7	12.7	84	87	144	182	100	2	31	M-S	8
Oasis	42.3	71.3	36.6	14.3	123	60	136	171	100	57	0		0
Galiafen	39.8	76.7	34.2	14.5	106	78	140	179	64	0	2	R-MR	5
Mean	51.9	77.2	36.4	14.2	102.1	74.0	136.7	175.0	95.7	8.9	11.0		4.8
L.S.D. of cultivar means (.05)	7.7	1.9	2.1	0.6	3.8	8.0	--	--	7.5	-	--		-
Coefficient of variation (%)	10.5	1.7	4.2	2.9	2.7	7.7	--	--	3.8	-	--		-

[a] Two replications only.

USSR

MIRONOVSKI

COOPERATOR(S): V. N. Remeslo; A. F. Melnikov.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 5, 1976 on a black fallow (emergence - September 12-14, 1976).

PRECIPITATION DURING CYCLE OF TEST: 555 mm. (September 1, 1976 to July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 60 kg/ha; P = 90 kg/ha; K = 90 kg/ha (Ammonium nitrate; Superphosphate and Potassium chloride).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally favorable for wheat development. Autumn was fairly warm with normal precipitation. Winter produced alternating warm and cold periods with high rainfall providing excellent conditions for overwintering the plants. Spring was early but of short duration with twice the normal rainfall. The summer was moderately warm, again with above average rainfall. Excessive rainfall in July contributed to the lodging observed.

DISEASE DEVELOPMENT: Plants were infected with leaf rust (Puccinia recondita) and powdery mildew (Erysiphe graminis) to a moderate degree.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20-25, 1977.

AREA HARVESTED FOR YIELD: 5.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Resumption of spring growth - March 21, 1977.
E. graminis - May 16, and July 23, 1977.
Heading - May 20-June 1, 1977.
P. recondita - June 28, 1977.
Ripeness - July 11-18, 1977.

Correlation Coefficients

N = No. of observations	Yield	Seed grade	Protein	Plant height	Lodging	Flowering	Ripening
Seed grade	-.39**						
N	104						
Protein	-.32**	-.13					
N	104	104					
Plant height	.15	-.17	.20*				
N	104	104	104				
Lodging	-.17	.23*	.19	.68**			
N	104	104	104	104			
Flowering	.17	-.14	-.39**	.32**	.22*		
N	104	104	104	104	104		
Ripening	-.02	-.12	-.16	.35**	.34**	.58**	
N	104	104	104	104	104	104	
Winter survival	.83**	-.02	-.22*	.00	-.14	.12	-.07
N	115	104	104	104	104	104	104

** Significant at the 1% level.

* Significant at the 5% level.

Table 59. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Mironovski, U.S.S.R., in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of flowering (Days from Jan. 1)	Date of ripening (Days from Jan. 1)	Winter survival %	Leaf rust sev. 0-9	Mildew sev. 0-9
Probstdorfer Karat	41.2	44.4	2	15.1	128	40	152	199	88	4	2
Iulia	35.9	48.7	3	16.3	99	25	141	195	88	4	2
Odesskaya 51	35.5	46.3	4	15.1	109	65	143	197	74	4	2
Sadovo-1	34.6	51.2	4	14.6	98	24	142	193	84	4	3
F53-70	34.6	46.3	3	17.7	110	42	142	196	85	1	2
Yubiley	34.0	44.2	3	15.4	87	16	144	195	85	1	3
Bezostaya 1	33.8	50.3	2	15.9	109	24	143	198	78	3	3
F54-70	33.3	46.5	3	18.0	112	40	143	196	71	2	2
Zg 4240/73	33.0	37.0	4	15.8	73	8	140	193	79	0	2
Zg 4364/73	32.5	33.2	4	15.5	77	18	142	194	96	3	1
Lindon	32.4	34.3	3	15.4	106	70	143	197	71	1	3
WA 5829	32.4	31.6	4	12.5	96	53	150	198	80	4	3
Priboy	32.0	46.7	4	14.7	113	59	144	197	87	4	2
Mironovskaya 808	32.0	40.7	3	15.8	137	62	146	197	96	4	2
F26-70	31.3	45.4	3	17.5	90	28	139	193	80	4	3
NE 73640	31.2	37.9	3	17.0	112	50	142	194	79	1	4
Blueboy	30.9	38.1	4	14.0	118	57	144	198	83	4	4
Martonvasar 3	30.5	47.3	2	16.0	103	31	144	194	79	4	3
Oasis	29.3	39.2	4	18.2	116	79	143	197	76	1	2
Krasnodarskaya 39	28.9	40.9	4	15.1	110	59	147	197	91	4	3
NE 68719	25.9	31.3	4	15.2	96	57	143	195	83	3	4
Sage	25.5	38.1	4	17.6	114	64	143	194	90	0	4
GKF-8001	25.1	48.2	3	14.9	79	10	145	198	92	1	2
Bordenave Puan Sag	23.8	37.3	3	18.0	120	83	143	195	65	1	2
Zg 4293/73	23.1	32.0	4	16.0	67	9	142	193	74	0	0
Atlas 66	21.8	39.9	4	18.9	122	69	143	198	64	1	2
Galiafen	0.0	--	-	--	-	-	-	-	0	-	-
Flavio	0.0	--	-	--	-	-	-	-	0	-	-
Zg 887/73	0.0	--	-	--	-	-	-	-	0	-	-
Lerma Rojo 64	0.0	--	-	--	-	-	-	-	0	-	-
Mean	26.8	41.4	3.4	16.0	103.7	43.8	143.4	195.7	70.5	2.4	2.5
L.S.D. of cultivar means (.05)	3.1	3.1	0.3	0.7	9.9	15.9	1.5	2.1	13.5		
Coefficient of variation (%)	8.1	5.3	6.8	2.9	6.8	25.8	0.7	0.8	13.7		

USSR

ODESSA

COOPERATOR: A. A. Sozinov.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 5, 1976 (seeded on a black fallow). Effective germination - October 29, 1976.

PRECIPITATION DURING CYCLE OF TEST: 457.4 mm. (October 1, 1976-July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: None.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Generally these were favorable. Heavy rainfall in August and September allowed normal plant development, but caused N leaching leading to a deficiency. A cool spring and summer with heavy rain hindered maturation and harvest by 10 days.

DISEASE DEVELOPMENT: An epidemic of Leaf rust (Puccinia recondita) along with Powdery mildew (Erysiphe graminis).

INSECT, WEED OR PEST PROBLEMS: Stink bugs (Eurygaster integriceps) and sparrows (Passer sp.) were problems.

DATE OF HARVEST: July 20-21, 1977.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - March 25-26, 1977.
Diseases - May 30, July 10 and 20, 1977.
Lodging - May 30, June 22, July 6, 1977.
Height - July 6, 1977.
Shattering - July 27, 1977.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.30**							
1000-kernel weight	.25**	.47**						
Protein	-.12	.37**	.06					
Plant height	.19*	.58**	.22*	.35**				
Lodging	.05	.29**	-.12	.16	.49**			
Flowering	.09	.04	-.22*	-.21*	.35**	.15		
Ripening	.08	.07	-.04	-.10	.20*	.11	.40**	
Winter survival	.62**	.23**	-.00	-.21*	.19*	.11	.08	.04

** Significant at the 1% level.

* Significant at the 5% level.

Table 60. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Odessa, USSR in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Leaf rust sev. %	Leaf rust resp	Mildew sev. 0-9
Yubiley	48.4	79.2	41.6	13.7	75	0	144	185	97	5	O-VS	3
Lindon	47.4	81.4	34.4	13.3	104	0	146	188	99	17	O-VS	1
Bezostaya 1	46.0	81.6	43.1	14.0	111	0	145	186	96	72	VS	3
Blueboy	45.7	77.0	39.5	12.5	113	0	148	189	98	65	VS	4
WA5829	45.1	75.7	33.0	11.1	86	0	153	189	96	77	S-VS	2
Martonvasar 3	44.3	80.4	40.9	13.8	112	0	144	179	96	84	VS	4
Odesskaya 51	44.2	81.4	44.1	13.7	106	0	145	186	82	58	R-VS	1
GKF-8001	43.6	80.1	40.2	12.7	70	0	148	185	97	72	VS	3
Sadovo-1	43.1	79.8	48.9	12.7	97	0	142	186	91	99	VS	4
F26-70	42.9	80.5	41.2	15.6	104	0	141	177	97	67	VS	1
Iulia	42.7	79.9	44.0	14.2	102	0	142	186	91	66	R-VS	4
Atlas 66	42.3	80.0	35.6	16.4	127	28	148	189	85	17	O-VS	1
Probstdorfer Karat	42.2	82.8	40.3	14.1	121	0	155	192	96	99	VS	1
F53-70	42.1	80.7	40.9	15.6	111	0	143	187	95	1	R	4
Krasnodarskaya 39	42.0	78.6	37.4	12.9	107	0	149	186	98	81	VS	3
Oasis	41.7	80.8	36.4	13.7	118	48	144	186	97	17	O-VS	0
Zg 4364/73	41.1	75.6	32.7	12.6	71	0	143	184	94	3	O-S	0
Zg 887/73	41.1	78.1	37.8	12.1	76	0	143	184	92	29	R-VS	0
Bordenave Puan Sag	41.0	82.5	35.4	14.7	126	45	148	186	96	7	R-VS	0
Zg 4240/73	41.0	74.0	35.9	12.9	76	0	142	178	96	23	R-VS	0
Mironovskaya 808	40.8	79.7	43.7	12.3	133	30	150	189	98	74	O-VS	1
NE68719	40.8	77.0	31.4	13.8	82	0	146	185	95	54	VS	6
F54-70	40.2	80.7	40.9	15.9	108	0	144	187	96	25	O-VS	3
Sage	40.2	80.6	36.6	15.2	121	25	146	186	95	34	R-VS	2
Priboy	38.7	80.4	39.1	13.2	112	3	147	188	98	44	S-VS	1
NE73640	35.0	80.1	36.7	15.3	106	0	143	179	96	45	VS	1
Zg 4293/73	32.5	76.5	33.1	13.5	63	0	142	183	87	41	O-VS	0
Lerma Rojo 64	31.8	79.2	43.4	15.6	84	0	141	181	65	8	R-VS	2
Galiafen	28.2	75.5	33.7	13.8	96	0	151	189	68	51	S-VS	2
Flavio	24.9	78.1	36.1	12.8	87	0	144	183	84	66	R-VS	0
Mean	40.7	79.3	38.6	13.8	100.1	5.9	145.5	185.2	92.3	46.7		1.9
L.S.D. of cultivar means (.05)	2.3	1.4	2.3	0.6	10.0	9.1	1.8	8.1	3.1	--		-
Coefficient of variation (%)	4.1	1.2	4.2	3.1	7.1	109.6	0.9	3.1	2.4	--		-

WEST GERMANY

MONSHEIM

COOPERATOR: K. Brunckhorst.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 26, 1976.

PRECIPITATION DURING CYCLE OF TEST: 427 mm. (October 1, 1976 to July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha ("Nitrophos" was used).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Powdery mildew (Erysiphe graminis) became serious in the spring. 0.5 kg/ha "Bayleton" fungicide was used on May 23, 1977 to control the outbreak.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 9, 1977.

AREA HARVESTED FOR YIELD: 4.725 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
Winter survival - February 18, 1977.
E. graminis - May 20, 1977.

Correlation Coefficients

No. of observations = 120	Yield	1000-kernel weight	Protein	Plant height	Flowering
1000-kernel weight	.31**				
Protein	-.64**	-.00			
Plant height	-.06	.39**	.42**		
Flowering	.39**	.10	-.26**	.30**	
Winter survival	.36**	.13	-.13	-.09	-.10

** Significant at the 1% level. * Significant at the 5% level.

Table 61. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Monsheim, West Germany in 1977.

Cultivars	Yield q/ha	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Winter survival %	Mildew sev. 0-9
WA5829	58.9	39.9	12.8	70	154	100	6
Zg 887/73	58.6	41.2	12.5	56	149	100	1
Priboy	58.4	49.3	13.9	76	153	100	3
Sadovo-1	58.3	53.8	14.0	71	148	100	3
Yubiley	56.9	46.7	13.4	70	156	100	3
Iulia	56.5	48.4	16.1	78	149	100	3
Mironovskaya 808	56.1	49.3	14.2	96	154	100	2
Martonvasar 3	55.4	47.8	14.7	77	154	100	4
Lindon	55.4	37.2	14.4	73	150	100	4
Zg 4364/73	54.9	38.8	14.4	59	148	100	1
Odesskaya 51	54.8	47.6	14.4	80	155	100	3
Krasnodarskaya 39	54.1	45.0	13.9	78	152	100	4
GKF-8001	53.6	44.1	13.1	47	154	100	4
Bezostaya 1	52.9	46.8	14.2	76	156	100	4
Probstdorfer Karat	52.4	47.3	14.5	91	156	100	4
Blueboy	51.4	42.9	13.9	83	152	100	5
Sage	50.4	41.5	16.8	84	153	100	3
F53-70	49.7	45.8	17.0	86	156	100	3
F54-70	49.3	46.1	17.1	84	155	100	4
NE68719	49.1	34.5	15.4	62	152	100	6
Flavio	48.4	43.2	14.6	63	151	95	3
Zg 4240/73	46.9	38.6	14.2	60	148	100	1
NE73640	46.6	41.3	17.8	79	154	100	3
F26-70	43.7	44.7	18.9	78	146	100	2
Bordenave Puan Sag	43.4	40.0	17.0	82	152	100	3
Oasis	41.7	42.0	16.2	78	151	100	1
Galiafen	41.4	42.1	14.7	73	155	95	5
Zg 4293/73	40.7	36.5	14.6	50	147	100	1
Atlas 66	37.7	41.1	18.1	94	153	94	2
Lerma Rojo 64	35.2	48.6	18.7	71	138	100	6
Mean	50.4	43.7	15.2	74.1	151.6	99.5	3.2
L.S.D. of cultivar means (.05)	3.3	1.6	0.3	4.1	3.3	1.2	-
Coefficient of variation (%)	4.7	2.6	1.6	4.0	1.5	0.9	-

WEST GERMANY

WEIHENSTEPHAN

COOPERATOR: G. Fischbeck.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 5, 1976, emergence October 17-20, 1976.

PRECIPITATION DURING CYCLE OF TEST: 635 mm. (October 1, 1976 to July 31, 1977).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 60 kg/ha; P = 80 kg/ha; K = 220 kg/ha (Calcium-Ammonium Nitrate and 0-10-25 compound).

GENERAL DESCRIPTION OF CLIMATIC CONDTIONS DURING TEST: A dry, cool, early spring preceeded a cool, wet summer.

DISEASE DEVELOPMENT: Generally little disease occurred except for Powdery mildew (Erysiphe graminis

INSECT, WEED OR PEST PROBLEMS: None, The herbicides "Certrol" at 4.0 l/ha and "CCC" at 1.25 l/ha were used on March 24, 1977.

DATE OF HARVEST: August 3-11, 1977.

AREA HARVESTED FOR YIELD: 1.76 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:
E. graminis - June 24, 1977.
Lodging - June 24, and July 21, 1977.
Height - July 20, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.14							
N	120							
1000-kernel weight	.03	.01						
N	30	30						
Protein	-.67**	.09	-.18					
N	120	120	30					
Plant height	-.61**	.09	.10	.52**				
N	120	120	30	120				
Lodging	-.67**	-.08	-.15	.67**	.68**			
N	120	120	30	120	120			
Flowering	-.48**	-.22*	.06	.14	.52**	.31**		
N	120	120	30	120	120	120		
Ripening	-.45*	-.50**	.26	.17	.54**	.39*	.77**	
N	30	30	30	30	30	30	30	
Ears/m^2	-.25**	-.06	-.65**	.38**	.19*	.48**	.09	.04
N	120	120	30	120	120	120	120	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 62. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Weihenstephan, West Germany in 1977.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight[a] g	Seed grade 1-9	Protein %	Plant height cm	Lodging %	Date of Flowering[a] days from Jan. 1	Date of Ripening[a] days from Jan. 1	Winter survival[b] %	Ears/ m^2	Mildew sev. 0-9
Zg 887/73	81.9	78.0	38.1	5	11.2	87	5	151	215	60	623	1
Zg 4240/73	75.7	76.6	35.3	5	12.2	80	8	149	215	50	674	1
Zg 4293/73	74.5	77.1	36.3	4	13.3	73	0	149	215	55	826	1
Flavio	71.4	80.0	40.7	4	11.1	91	0	149	215	25	691	4
Zg 4364/73	70.9	79.4	37.6	5	12.9	86	0	151	215	55	689	2
Sadovo-1	67.1	79.0	51.2	4	11.6	93	0	151	217	80	624	6
Iulia	65.6	82.0	46.1	4	13.0	96	8	151	215	75	588	4
Martonvasar 3	65.2	78.5	45.4	4	12.6	98	23	154	223	85	700	5
Priboy	65.2	78.6	46.4	4	12.4	104	38	156	223	90	669	4
Yubiley	64.9	79.5	41.8	4	12.0	88	0	151	215	80	552	6
Odesskaya 51	63.0	79.3	46.8	4	13.0	104	40	155	223	90	713	3
F26-70	62.4	81.2	46.0	4	14.7	94	13	149	215	80	653	4
Lindon	62.3	81.9	32.4	4	12.4	98	55	154	217	65	820	4
Galiafen	62.0	80.2	38.6	4	12.1	101	10	153	217	20	684	3
GKF-8001	60.4	78.3	41.7	4	12.0	78	0	156	223	70	587	4
Bezostaya 1	59.6	79.2	44.2	4	13.1	102	33	156	223	65	624	5
Oasis	55.1	80.5	39.3	4	15.1	109	60	153	217	60	874	1
WA5829	54.4	76.9	41.6	5	12.0	92	3	160	223	70	667	4
F54-70	53.2	79.6	42.3	4	14.2	112	10	154	223	80	645	3
Mironovskaya 808	52.6	79.5	46.7	4	13.9	125	63	159	223	60	828	1
Probstdorfer Kmrat	50.7	80.2	48.9	4	13.9	120	40	160	223	90	539	3
F53-70	50.1	82.3	42.6	4	15.3	109	28	154	217	80	645	3
Blueboy	49.6	75.8	42.6	4	11.8	109	33	157	223	60	666	7
Lerma Rojo 64	48.0	79.1	43.3	4	14.0	95	50	144	215	20	627	7
Atlas 66	47.2	77.3	36.3	4	15.4	124	63	156	223	25	665	4
NE68719	46.0	78.8	31.8	4	13.4	89	15	158	217	80	757	7
Krasnodarskaya 39	45.3	75.6	43.8	5	13.7	104	48	158	223	70	628	5
Sage	44.8	75.6	35.8	6	15.3	108	68	155	223	90	902	3
NE73640	44.7	80.7	36.7	4	15.5	101	68	152	217	75	851	5
Bordenave Puan Sag	39.3	78.6	34.6	5	15.7	117	68	157	223	70	976	5
Mean	58.4	79.0	41.2	4.3	13.3	99.4	28.1	153.7	219.2	65.8	699.4	3.6
L.S.D. of cultivar means (.05)	6.3	1.0	--	-	1.0	4.8	15.3	0.6	--	--	85.1	-
Coefficient of variation (%)	7.7	0.9	--	-	5.3	3.4	38.6	0.3	--	--	8.7	-

[a] One replication only.

[b] Freezing test; no winter damage in field trial.

YUGOSLAVIA

NOVI SAD

COOPERATOR: S. Borojevic.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 22, 1976.

PRECIPITATION DURING CYCLE OF TEST: 457 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 28 kg/ha; P = 28 kg/ha; K = 28 kg/ha (14:14:14 compound).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: A severe attack of Leaf rust (Puccinia recondita) was observed on some varieties. Powdery mildew (Erysiphe graminis) also occurred.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 5, 1977.

AREA HARVESTED FOR YIELD: 4.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 120	Yield	Test weight	Protein	Plant height	Lodging	Flowering
Test weight	.11					
Protein	-.41**	.27**				
Plant height	-.40**	.26**	.50**			
Lodging	-.40**	.14	.43**	.75**		
Flowering	-.42**	-.14	.22*	.44**	.46**	
Ripening	-.45**	-.05	.21*	.44**	.41**	.71**

** Significant at the 1% level.

* Significant at the 5% level.

Table 63. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Novi Sad, Yugoslavia, in 1977.

Cultivars	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Date of flowering	Date of ripening	Leaf rust sev.	Leaf rust resp.	Mildew sev.
	q/ha	kg/hl	g	%	cm	%	Days from Jan. 1		%		0-9
Zg 887/73	83.4	74.2	29.4	13.2	72	75	136	176	33	MR-MS	1
Zg 4293/73	80.1	74.6	31.2	13.0	62	0	132	176	19	MS-VS	1
Zg 4240/73	76.0	73.4	35.5	13.5	72	15	133	176	5	MS-VS	1
Yubiley	73.9	79.0	42.9	13.3	82	18	135	182	4	MS-VS	6
Zg 4364/73	71.4	77.7	33.0	13.1	76	23	135	176	5	MS-VS	2
Probstdorfer Karat	68.4	79.3	40.4	14.8	110	89	143	180	40	MS	2
F53-70	67.6	80.4	41.4	15.6	104	99	136	178	10	O-VS	4
Priboy	66.1	79.9	42.8	13.8	97	99	138	181	23	MR-VS	5
Flavio	65.7	77.6	35.7	11.7	88	35	133	175	63	VS	6
Odesskaya 51	64.9	79.5	38.9	13.9	100	99	137	178	50	VS	3
F54-70	64.4	79.7	41.7	15.8	104	97	136	178	14	O-VS	4
GKF-8001	64.3	78.7	38.5	12.6	67	10	138	181	5	MR-VS	6
Lindon	63.5	78.8	28.9	13.7	98	99	135	179	15	O-MR	6
Iulia	63.2	79.8	42.8	14.3	90	87	134	179	18	MS-VS	5
Galiafen	63.0	77.0	34.2	13.9	99	99	140	180	25	O-MR	3
Bezostaya 1	61.8	79.7	41.8	13.9	93	99	137	179	21	MS	6
Martonvasar 3	61.3	77.9	39.6	14.0	94	92	136	179	65	VS	7
Sadovo-1	59.8	77.4	38.4	12.4	90	65	135	177	55	VS	8
Mironovskaya 808	59.7	75.0	36.3	14.2	117	99	141	185	43	VS	2
F26-70	59.3	79.3	41.1	15.4	93	40	133	175	38	VS	8
Oasis	58.8	77.9	34.3	15.6	98	99	137	179	10	--	1
Lerma Rojo 64	58.3	78.4	41.9	14.7	92	72	126	177	38	VS	9
Blueboy	58.1	72.0	31.8	12.3	102	99	140	180	23	O-VS	7
Krasnodarskaya 39	53.8	78.7	36.5	13.4	102	99	140	182	50	VS	7
NE 68719	52.9	75.8	27.8	14.0	85	99	140	181	20	MR-MS	5
NE 73640	51.5	78.1	33.6	15.8	97	99	139	180	18	O-VS	6
Atlas 66	51.0	76.9	34.2	17.5	108	99	140	182	20	O-VS	3
Sage	44.6	78.5	34.5	15.9	100	99	141	182	6	O-VS	7
WA 5829	40.4	71.4	23.1	12.9	81	65	141	182	73	VS	6
Bordenave Puan Sag	38.6	77.0	30.0	17.1	101	99	141	180	13	O-MR	6
Mean	61.5	77.4	36.1	14.2	92.4	75.5	136.9	179.2	27.3		4.8
L.S.D. of cultivar means (.05)	8.8	1.9	3.4	0.6	4.0	19.7					
Coefficient of variation (%)	10.1	1.7	6.7	2.9	3.1	18.5					

YUGOSLAVIA

ZAGREB

COOPERATOR(S): J. Potocanac, R. Mlinar.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 6, 1976.

PRECIPITATION DURING CYCLE OF TEST: 724.1 mm. (November 1, 1976 to July 20, 1977).

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 200 kg/ha; P = 90 kg/ha; K = 90 kg/ha (9-18-18 compound and KAN-a nitrogenous fertilizer containing 27% Ammonium Nitrate, 24% Calcium Carbonate and 4% Magnesium Oxide).

GENERAL DESCRIPTION OF CLIMATIC CONDTIONS DURING TEST: A relatively wet autumn was followed by a mild winter. Spring was dry but rain developed at harvest time.

DISEASE DEVELOPMENT: Stripe rust (Puccinia striiformis), Leaf rust (P. recondita), Powdery mildew (Erysiphe graminis) and Septoria sp. were problems.

INSECT, WEED OR PEST PROBLEMS: No serious problems.

DATE OF HARVEST: July 14, 1977.

AREA HARVESTED FOR YIELD: 4.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Emergence - November 30, 1976.
P. striiformis - May 13, 1977.
P. recondita - May 13, 1977.
E. graminis - May 21, 1977.
P. graminis f. sp. tritici - May 26, 1977.
Septoria sp. - June 13, 1977.
Lodging - June 24, 1977.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	-.02							
N	30							
1000-kernel weight	.28	.41*						
N	30	30						
Protein	-.26**	.42*	.24					
N	120	30	30					
Plant height	-.21*	.34	.35	.35**				
N	120	30	30	120				
Lodging	-.27**	.24	-.17	.16	.51**			
N	120	30	30	120	120			
Flowering	-.59**	-.07	-.29	.08	.44*	.24		
N	30	30	30	30	30	30		
Ripening	.13	-.28	-.15	.20	-.04	-.13	.20	
N	30	30	30	30	30	30	30	
Winter survival	.17	.08	-.20	.19*	.08	-.00	-.12	.18
N	120	30	30	120	120	120	30	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 64. Agronomic, grain quality and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Zagreb, Yugoslavia in 1977.

Cultivars	Yield	Test weight[a]	1000-kernel weight[a]	Seed grade	Protein	Plant height	Lodging	Date of Flowering	Date of Ripening	Winter survival	Rust Stripe sev.	Rust Stripe resp.	Rust Leaf sev.	Rust Leaf resp.	Mildew sev.	Septoria sev.
	q/ha	kg/hl	g	1-9	%	cm	%	days from Jan. 1		%	%		%		0-9	0-9
Zg 887/73	61.2	74.0	32.0	4	12.7	81	0	136	184	100	0		10	R	1	4
Yubiley	59.3	77.0	36.3	4	13.6	87	13	139	186	100	0		0		8	4
Sadovo-1	58.5	79.4	49.3	3	12.9	93	8	136	179	99	15	R	15	MR	7	5
Flavio	56.4	78.0	34.8	4	12.4	90	0	138	179	100	0		60	MS	5	5
Zg 4293/73	55.9	76.2	31.5	4	13.8	66	20	136	183	100	20	MR	40	MS	1	6
Iulia	55.1	81.0	42.0	3	14.7	99	6	137	183	99	10	R	20	MS	5	5
Zg 4240/73	54.0	73.8	31.8	4	13.6	75	3	133	185	100	0		0		2	4
Zg 4364/73	51.9	74.9	32.3	4	14.3	75	0	137	185	100	0		20	R	1	3
F53-70	51.3	79.8	43.3	3	15.5	107	10	141	184	100	5	MR	0		5	4
F54-70	49.8	78.0	40.8	3	15.9	106	9	140	184	100	10	MS	10	MR	4	5
Priboy	46.4	77.6	39.8	4	13.3	102	65	141	185	100	2	R	0		3	5
F26-70	45.7	78.5	41.4	4	16.2	100	5	135	186	100	15	S	10	MR	6	6
Galiafen	45.6	77.8	34.8	4	14.2	101	33	142	180	100	0		0		4	4
Lindon	45.5	78.2	30.0	4	14.1	91	59	141	184	99	5	MR	0		2	5
Blueboy	45.1	73.2	35.0	5	12.1	101	15	142	183	99	10	MS	20	R	6	6
Oasis	44.4	79.9	35.3	4	14.1	104	80	140	183	99	0		0		2	6
Martonvasar 3	43.7	78.2	37.0	3	14.1	98	23	140	182	99	25	MR	0		5	6
Bezostaya 1	43.6	75.6	40.4	3	14.6	99	28	140	184	99	20	MS	0		4	6
NE68719	40.3	79.1	29.8	4	14.2	82	20	143	184	100	10	MR	0		5	5
Sage	39.4	79.1	35.5	3	14.6	106	70	143	182	100	0		0		4	5
Mironovskaya 808	38.8	74.4	39.8	4	14.3	119	68	146	185	100	10	MR	20	MS	2	4
NE73640	38.7	79.2	32.5	4	15.1	99	73	142	184	100	0		0		5	6
Probstdorfer Karat	38.2	74.4	29.3	4	13.7	110	20	147	186	100	10	MR	30	MR	2	5
Lerma Rojo 64	37.8	78.0	38.3	4	13.1	93	60	133	177	100	0		15	MR	6	5
Krasnodarskaya 39	37.6	79.2	35.3	4	13.6	105	48	144	185	99	45	S	0		5	4
Odesskaya 51	37.2	80.7	40.5	3	14.7	102	55	141	182	100	30	MS	0		3	5
GKF-8001	35.9	76.6	37.3	3	13.6	70	0	141	185	99	20	S	0		4	4
Atlas 66	34.6	77.6	35.3	4	16.3	117	80	143	183	100	5	R	0		2	4
Bordenave Puan Sag	27.5	79.6	30.3	3	15.6	111	95	144	180	100	15	MS	0		3	5
WA5829	26.6	72.4	29.5	4	11.9	77	0	146	182	98	40	S	85	MS	5	3
Mean	44.9	77.4	36.0	3.7	14.1	95.4	32.0	140.2	183.1	99.5	10.7		11.8		3.9	4.8
L.S.D. of cultivar means (.05)	7.4	--	--	-	1.2	3.9	32.6	--	--	1.2	--		--		-	-
Coefficient of variation (%)	11.8	--	--	-	6.0	2.9	72.4	--	--	0.8	--		--		-	-

[a] One replication only.

Table 65. Summary of average yield in quintals per hectare for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivars	Kabul[a]	Herat	Balcarce[b]	Bordenave	Vienna, Austria	Tolbukhin, Bulgaria	Lethbridge, Alberta Canada	Prince Edward Island, Canada	Chillan, Chile
	Afghanistan		Argentina						
Yubiley	60.8	49.6	10.8	24.7	46.5	68.5	46.3	9.7	37.3
Sadovo-1	52.7	48.6	5.8	23.9	41.8	59.3	40.3	16.0	40.0
Priboy	54.6	45.5	13.6	30.4	45.4	56.0	42.5	24.7	40.9
Bezostaya 1	47.5	48.9	18.3	25.3	41.1	52.3	47.6	30.2	42.2
Probstdorfer Karat	49.1	37.0	19.1	23.7	37.2	56.3	47.1	26.1	43.5
Odesskaya 51	55.1	43.2	16.0	28.6	41.7	53.0	41.0	25.7	45.9
Blueboy	47.4	56.0	21.0	32.3	29.1	55.3	41.1	16.2	32.3
Martonvasari 3	54.4	47.2	11.2	24.8	37.9	46.5	42.0	15.3	36.4
Zg 4364/73	55.1	46.6	3.7	24.6	34.3	69.8	37.6	3.4	23.3
Lindon	54.6	47.4	16.7	28.0	41.8	49.8	38.9	13.6	25.1
GKF-8001	55.6	52.1	20.0	25.1	36.1	56.5	47.7	14.8	32.8
Iulia	56.5	44.7	23.7	24.6	32.2	61.5	36.7	9.3	37.5
Zg 4240/73	50.7	50.6	1.3	26.0	41.3	67.0	32.5	2.3	23.0
Zg 887/73	52.6	51.2	2.1	28.5	45.0	65.8	19.6	0.0	28.9
F53-70	46.0	49.5	18.3	25.4	32.4	57.3	35.2	20.7	43.9
Mironovskaya 808	45.9	36.0	15.0	24.6	35.8	43.5	42.5	42.7	43.9
F54-70	54.6	36.6	13.7	27.6	39.1	58.8	36.0	15.0	28.1
Zg 4293/73	50.7	52.7	1.0	24.6	41.2	65.0	30.4	2.0	18.9
F26-70	48.0	45.2	8.8	28.6	34.9	55.0	30.0	7.3	28.1
Krasnodarskaya 39	51.3	47.8	15.4	24.5	32.7	44.5	42.9	19.7	34.8
NE 68719	44.9	50.4	24.1	23.9	34.0	51.3	39.6	25.7	36.8
Sage	52.8	44.3	17.5	31.6	35.4	42.3	36.5	17.4	32.1
NE 73640	44.2	42.1	17.9	25.5	45.5	39.3	38.9	22.2	20.2
WA 5829	43.0	51.6	9.8	26.1	30.8	33.8	41.2	8.2	35.2
Oasis	47.0	35.8	6.2	25.5	33.5	53.5	33.1	28.0	13.6
Flavio	53.8	45.4	1.4	26.9	44.0	54.5	0.0	0.0	20.3
Bordenave Puan Sag	51.9	41.2	10.4	32.4	35.1	39.8	35.4	0.3	36.5
Atlas 66	47.3	29.5	17.7	20.7	31.4	49.3	28.4	2.1	24.2
Galiafen	50.0	41.4	8.7	27.7	34.0	49.8	0.0	0.0	24.6
Lerma Rojo 64	53.1	52.7	2.2	21.4	33.3	19.5	0.0	0.0	23.0
Means	51.0	45.7	12.4	26.3	37.5	52.5	34.4	14.0	31.8

[a] Differential mouse damage occurred. Site not included in overall means.
[b] Differential bird damage occurred. Site not included in overall means.

Table 65. Summary of average yield in quintals per hectare for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Male Ripnany, Czechoslovakia	Sedlec, Czechoslovakia	Boehnshausen, East Germany	Jokioinen, Finland	Orgerus, France	Martonvasar, Hungary	Szeged, Hungary	Hamadan, Iran	Karaj, Iran
Yubiley	119.4	83.2	62.4	1.7	78.6	63.1	65.3	29.0	68.6
Sadovo-1	113.5	70.3	59.7	1.4	77.6	62.2	63.4	25.9	84.3
Priboy	103.9	82.8	61.2	0.7	67.5	66.2	65.6	26.8	60.7
Bezostaya 1	104.7	77.4	45.4	1.4	69.0	52.7	59.1	33.1	64.9
Probstdorfer Karat	107.6	87.1	55.2	3.6	60.3	61.8	70.5	32.2	64.2
Odesskaya 51	106.0	78.0	45.7	1.7	66.8	61.0	60.5	33.0	69.0
Blueboy	92.4	85.4	53.7	2.1	58.9	52.9	58.6	38.4	70.0
Martonvasari 3	110.5	80.5	55.1	2.9	68.4	54.2	65.4	30.1	74.0
Zg 4364/73	115.1	66.7	67.8	0.9	80.5	65.9	68.3	29.5	65.9
Lindon	93.2	92.4	44.9	2.1	66.0	69.7	64.5	27.7	67.4
GKF-8001	112.5	80.2	56.7	1.2	63.9	49.8	49.5	30.3	70.6
Iulia	103.3	79.8	59.7	3.7	74.1	59.4	62.0	34.0	67.4
Zg 4240/73	126.2	65.8	49.3	0.6	71.8	67.1	78.9	17.7	75.8
Zg 887/73	122.2	83.1	50.3	1.8	67.7	71.7	70.8	31.3	78.3
F53-70	98.1	53.4	56.8	3.5	65.1	58.6	62.3	35.2	58.1
Mironovskaya 808	97.1	76.0	56.0	2.4	52.8	65.9	57.5	30.5	59.4
F54-70	98.9	53.4	65.2	2.2	59.8	57.6	53.3	29.5	54.6
Zg 4293/73	113.3	79.6	46.8	1.0	66.4	62.2	65.0	28.0	63.6
F26-70	72.9	43.6	41.0	1.8	69.5	54.5	61.9	27.1	57.6
Krasnodarskaya 39	86.5	63.8	39.4	2.8	45.7	39.8	45.0	32.5	71.1
NE 68719	91.4	67.9	43.5	3.4	47.9	49.6	49.9	29.0	53.7
Sage	91.2	60.2	26.1	1.9	51.9	62.1	56.8	35.1	60.3
NE 73640	92.7	65.8	30.5	2.2	55.3	65.1	55.6	26.5	59.3
WA 5829	84.4	83.2	42.5	1.5	46.4	40.4	54.6	42.8	64.7
Oasis	76.0	41.0	38.6	1.3	54.6	62.1	53.4	23.6	50.4
Flavio	89.5	42.7	57.6	0.4	80.3	57.9	73.4	16.1	65.6
Bordenave Puan Sag	82.9	62.4	37.6	1.0	46.6	53.8	46.1	32.2	62.9
Atlas 66	77.0	66.4	39.3	0.1	50.6	60.3	71.6	31.6	57.4
Galiafen	93.9	15.8	41.6	0.1	58.7	56.6	60.3	29.6	57.5
Lerma Rojo 64	74.2	21.8	42.9	0.5	56.8	54.7	72.5	18.7	57.5
Means	98.3	67.0	49.1	1.7	62.7	58.6	61.4	29.6	64.5

Table 65. Summary of average yield in quintals per hectare for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Sulaimaniya, Iraq	Milano, Italy	Rieti, Italy	Morioka, Iwate, Japan	Amman, Jordan	Suwon, Korea	Toluca,[b/] Mexico	Kathmandu, Nepal	Wageningen, The Netherlands	Vollebekk, Norway	Przeclaw, Poland	Warsaw, Poland
Yubiley	51.6	41.7	27.7	50.2	15.4	35.9	0.0	18.9	54.3	13.5	44.0	29.5
Sadovo-1	57.5	36.3	31.9	47.0	13.9	38.9	26.2	25.3	59.9	16.1	44.1	24.0
Priboy	44.8	30.7	32.4	49.9	10.8	50.1	20.4	15.8	41.2	18.1	41.3	32.1
Bezostaya 1	47.9	35.7	31.8	48.7	8.5	41.4	26.5	23.7	48.1	20.5	42.2	25.7
Probstdorfer Karat	29.5	30.5	33.2	41.9	7.3	37.8	25.4	12.4	55.4	18.9	43.7	27.7
Odesskaya 51	43.1	36.8	27.5	46.8	8.8	48.8	28.9	25.6	55.4	8.0	42.2	26.3
Blueboy	42.8	39.8	31.6	56.0	15.4	35.9	20.8	30.5	60.1	19.3	39.0	26.2
Martonvasari 3	41.9	30.7	26.9	48.2	11.9	39.9	28.8	22.9	49.4	6.7	41.4	29.2
Zg 4364/73	45.0	32.5	24.4	37.8	10.6	21.7	0.0	18.1	63.0	7.2	43.4	27.2
Lindon	39.4	34.0	36.3	52.1	14.2	31.9	24.2	21.2	50.8	6.7	48.4	26.8
GKF-8001	46.7	32.5	29.9	46.9	7.9	34.3	41.2	15.3	51.9	14.4	40.8	23.5
Iulia	36.2	33.6	26.3	45.7	7.7	32.4	39.7	12.8	51.1	15.8	44.2	35.9
Zg 4240/73	47.3	36.2	27.7	29.3	12.1	9.4	0.0	20.6	52.9	2.9	45.2	27.7
Zg 887/73	49.2	30.4	25.0	13.2	18.5	13.6	0.0	16.2	65.7	0.0	52.9	19.8
F53-70	39.0	33.2	29.1	46.4	11.0	46.5	33.4	10.8	47.9	17.9	40.3	26.1
Mironovskaya 808	28.1	40.7	38.4	52.4	5.8	41.6	26.8	21.8	43.6	24.4	40.2	29.0
F54-70	37.3	35.2	32.6	43.9	8.9	44.4	32.8	8.3	47.6	20.0	40.3	27.8
Zg 4293/73	39.8	24.4	33.7	34.6	12.5	5.3	0.0	20.9	59.1	0.0	39.9	16.2
F26-70	46.0	26.4	27.6	37.8	13.3	33.2	28.0	23.5	52.5	5.0	35.7	17.7
Krasnodarskaya 39	33.4	30.2	26.5	45.4	6.7	43.4	21.8	19.6	43.9	18.7	36.0	18.9
NE68719	31.5	32.1	36.3	39.9	5.2	39.6	38.5	17.4	43.0	6.2	31.1	19.2
Sage	37.7	34.7	27.2	39.1	12.7	32.8	0.0	25.7	29.4	3.5	33.7	17.8
NE73640	35.3	29.4	29.5	40.1	11.4	30.4	14.7	21.2	27.0	3.3	38.9	23.2
WA5829	31.1	29.7	26.2	43.5	6.0	24.3	31.2	14.9	59.1	15.0	36.9	19.9
Oasis	36.9	32.2	29.3	35.9	11.7	36.3	0.0	20.0	43.3	8.7	37.9	14.9
Flavio	52.4	39.0	24.0	22.7	17.5	0.0	4.1	22.5	58.1	0.0	45.1	21.5
Bordenave Puan Sag	31.3	31.3	23.7	39.4	12.5	25.6	0.0	27.8	35.7	0.3	29.3	20.5
Atlas 66	29.7	30.8	38.8	37.9	10.8	10.9	14.5	17.7	39.8	2.1	40.5	24.8
Galiafen	30.8	34.2	32.2	6.7	11.9	0.0	21.2	23.7	49.6	0.0	32.5	10.6
Lerma Rojo 64	54.1	27.2	26.5	7.9	20.4	0.0	0.0	19.8	39.1	0.0	31.9	10.2
Means	40.6	33.1	29.8	39.6	11.4	29.5	18.3	19.8	49.3	9.8	40.1	23.3

[b/] Differential bird damage occurred. Site not included in overall means.

Table 65. Summary of average yield in quintals per hectare for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Fundulea, Romania	Bethlehem, South Africa (dryland)	Bethlehem, South Africa (irrigated)	Kroonstad, South Africa	Svalof, Sweden	Zurich, Switzerland	Aleppo, Syria	Ankara, Turkey	Erzurum, Turkey	Eskisehir, Turkey	Davis, California, U.S.A.	Akron, Colorado, U.S.A.	Fort Collins, Colorado, U.S.A.
Yubiley	53.3	42.2	42.4	18.9	42.5	44.4	27.9	14.8	59.3	23.5	65.9	10.3	47.7
Sadovo-1	47.9	35.7	35.8	19.7	36.7	46.8	31.5	12.2	52.4	15.4	62.1	12.1	31.9
Priboy	45.4	41.7	30.4	19.8	44.8	41.4	28.6	23.6	43.2	15.4	58.3	13.2	47.1
Bezostaya 1	43.7	41.5	50.4	19.8	37.3	45.1	26.7	21.9	55.0	15.2	57.6	12.6	46.8
Probstdorfer Karat	41.4	33.2	36.2	17.1	46.2	34.6	20.6	22.6	50.6	17.8	55.9	15.1	40.4
Odesskaya 51	44.8	43.4	42.9	20.8	38.8	39.8	19.1	26.1	47.1	15.2	52.7	12.3	43.5
Blueboy	38.2	31.4	16.9	19.3	48.2	42.2	26.9	33.2	50.8	24.3	57.1	9.3	47.9
Martonvasari 3	43.0	40.9	52.3	19.8	41.8	33.7	22.2	13.1	50.2	16.9	52.8	16.1	33.7
Zg 4364/73	52.5	42.8	58.2	19.3	41.1	41.6	23.1	22.2	46.4	19.6	59.1	6.3	19.1
Lindon	52.6	39.4	41.3	21.9	45.1	22.8	16.3	18.9	48.9	21.3	63.4	14.2	32.9
GKF-8001	41.5	43.4	43.7	20.9	39.2	36.0	22.9	23.4	60.0	14.0	57.1	15.3	31.0
Iulia	50.6	29.5	14.7	17.9	38.6	43.6	23.1	23.7	53.3	22.0	53.3	13.2	26.6
Zg 4240/73	51.1	36.8	54.3	17.0	39.3	48.7	23.8	19.8	55.8	18.6	66.8	4.1	18.6
Zg 887/73	44.8	44.8	60.4	17.7	43.6	36.3	27.0	14.1	52.6	17.8	70.9	0.0	0.0
F53-70	48.9	28.7	22.0	16.2	36.5	42.0	16.8	17.6	51.5	20.3	48.7	12.7	34.3
Mironovskaya 808	30.4	29.8	18.2	17.3	45.0	45.0	11.0	21.7	38.1	23.0	37.6	10.5	48.4
F54-70	48.6	27.1	18.2	16.2	31.6	38.7	18.3	17.3	43.8	25.4	47.6	9.5	35.4
Zg 4293/73	51.3	32.6	46.6	17.6	33.8	30.8	16.7	11.0	45.3	18.5	62.7	2.7	9.3
F26-70	46.2	40.1	30.3	17.8	30.8	37.9	17.4	12.6	41.5	20.3	50.9	12.5	21.9
Krasnodarskaya 39	37.5	29.9	7.1	19.6	36.3	31.1	16.0	11.8	39.3	13.9	54.7	14.3	44.0
NE 68719	40.4	21.8	3.5	19.9	37.3	22.9	16.4	21.0	53.2	15.2	61.4	13.5	42.5
Sage	45.6	38.2	45.4	18.6	33.1	35.9	18.5	22.0	36.8	19.1	48.8	15.7	36.6
NE 73640	45.9	35.1	38.8	18.3	32.5	33.9	22.5	25.7	35.6	12.8	51.9	15.8	38.6
WA 5829	24.2	20.9	8.4	20.0	53.1	27.6	6.4	17.9	26.9	17.8	75.2	13.3	32.9
Oasis	44.6	35.3	41.5	16.3	34.7	27.7	10.0	15.8	30.0	17.4	45.4	9.1	27.6
Flavio	47.8	36.0	41.4	16.7	28.6	36.8	22.4	21.4	48.5	21.5	62.0	0.0	0.0
Bordenave Puan Sag	43.9	32.8	37.9	20.1	32.6	35.8	19.2	26.4	40.2	23.8	52.2	6.7	23.2
Atlas 66	42.9	27.2	28.3	15.5	43.0	41.5	11.8	24.6	29.0	19.6	36.5	3.8	23.8
Galiafen	28.5	32.8	40.4	19.1	10.9	33.2	21.0	8.3	43.0	16.6	59.6	0.0	0.0
Lerma Rojo 64	23.5	35.2	45.1	12.6	0.9	26.5	29.6	16.7	51.1	15.3	75.9	0.0	0.0
Means	43.4	35.0	35.1	18.4	36.8	36.8	20.5	19.4	46.0	18.6	56.8	9.8	29.5

Table 65. Summary of average yield in quintals per hectare for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Brookston, Indiana, U.S.A.	Hutchinson, Kansas, U.S.A.	Billings, Montana, U.S.A.	Lincoln, Nebraska, U.S.A.	Ithaca, New York, U.S.A.	Rowan County, North Carolina, U.S.A.	Stillwater, Oklahoma, U.S.A.	Corvallis, Oregon, U.S.A.	Pullman, Washington, U.S.A.	Krasnodar, U.S.S.R.	Mironovski, U.S.S.R.
Yubiley	45.4	33.4	78.6	20.3	38.8	36.2	38.2	59.2	42.0	58.7	34.0
Sadovo-1	46.9	37.3	83.0	18.5	27.3	33.1	41.7	43.0	43.8	56.6	34.6
Priboy	61.3	28.7	80.7	30.9	27.6	31.9	43.6	35.4	40.7	60.7	32.0
Bezostaya 1	50.9	32.2	84.3	31.7	24.3	30.3	40.2	54.5	44.9	52.5	33.8
Probstdorfer Karat	48.0	30.2	100.7	30.1	26.5	31.7	38.0	63.9	51.1	57.1	41.2
Odesskaya 51	44.8	36.2	84.7	35.3	27.0	29.4	41.2	30.7	37.7	58.4	35.5
Blueboy	60.2	36.4	84.3	18.1	30.8	35.7	43.1	33.4	43.2	52.6	30.9
Martonvasari 3	45.2	28.2	93.7	35.7	24.8	33.3	41.0	49.0	45.4	49.2	30.5
Zg 4364/73	36.7	24.7	84.3	0.0	31.1	30.0	30.9	56.3	36.9	60.9	32.5
Lindon	47.1	31.6	86.5	32.9	29.7	31.9	40.2	17.6	42.8	46.2	32.4
GKF-8001	50.7	21.3	84.4	28.5	25.4	30.7	40.6	37.9	51.2	52.6	25.1
Iulia	44.2	35.3	77.0	5.3	29.5	29.6	35.1	55.5	40.4	53.6	35.9
Zg 4240/73	38.9	19.6	81.7	0.0	22.2	22.8	26.9	54.3	34.3	64.5	33.0
Zg 887/73	43.7	12.2	98.8	0.0	0.0	23.4	3.9	47.0	31.6	69.9	0.0
F53-70	45.1	33.5	61.2	29.9	21.6	26.4	39.8	35.2	34.1	49.5	34.6
Mironovskaya 808	50.3	25.0	79.3	28.2	25.9	32.4	32.6	32.3	21.1	44.7	32.0
F54-70	44.1	32.2	58.5	26.9	25.2	24.7	40.3	43.8	33.3	47.8	33.3
Zg 4293/73	34.1	20.2	84.9	0.0	20.5	23.8	26.3	42.4	32.3	58.8	23.1
F26-70	40.3	32.9	72.4	25.8	26.2	27.6	34.2	57.3	27.8	52.0	31.3
Krasnodarskaya 39	54.6	32.1	78.8	40.6	22.0	31.0	40.7	35.1	43.1	42.8	28.9
NE 68719	54.7	29.8	73.2	38.8	21.5	28.2	39.7	34.9	38.5	44.6	25.9
Sage	45.6	24.4	76.5	39.7	22.0	28.8	36.1	25.0	32.3	51.2	25.5
NE 73640	48.5	35.3	74.1	33.8	23.9	27.6	37.4	18.5	30.9	47.3	31.2
WA 5829	50.2	19.3	81.2	18.4	24.2	28.2	41.7	32.5	50.7	42.7	32.4
Oasis	48.8	33.4	70.2	23.1	18.9	28.0	38.7	9.7	14.0	42.3	29.3
Flavio	39.0	0.0	42.9	0.0	0.0	11.6	0.0	50.3	9.6	54.8	0.0
Bordenave Puan Sag	47.8	22.7	72.1	0.0	0.0	22.9	29.0	14.7	29.8	45.1	23.8
Atlas 66	42.8	19.8	62.4	0.0	21.0	21.7	22.6	26.3	25.7	51.9	21.8
Galiafen	12.7	0.0	30.1	0.0	0.0	5.3	0.0	42.1	28.0	39.8	0.0
Lerma Rojo 64	30.0	0.0	33.1	0.0	0.0	17.4	0.0	32.1	7.3	47.5	0.0
Means	44.7	25.6	75.1	19.7	21.3	27.2	32.1	39.0	34.8	51.9	26.8

Table 65. Summary of average yield in quintals per hectare for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Concluded.

Cultivars	Odessa, U.S.S.R.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia	Cultivar yield mean 56 sites	
						q/ha	% of Bezostaya 1
Yubiley	48.4	56.9	64.9	73.9	59.3	45.0	105.4
Sadovo-1	43.1	58.3	67.1	59.8	58.5	43.2	101.2
Priboy	38.7	58.4	65.2	66.1	46.4	42.7	100.0
Bezostaya 1	46.0	52.9	59.6	61.8	43.6	42.7	100.0
Probstdorfer Karat	42.2	52.4	50.7	68.4	38.2	42.1	99.4
Odesskaya 51	44.2	54.8	63.0	64.9	37.2	41.9	98.1
Blueboy	45.7	51.4	49.6	58.1	45.1	41.7	97.7
Martonvasari 3	44.3	55.4	65.2	61.3	43.7	41.5	97.2
Zg 4364/73	41.1	54.9	70.9	71.4	51.9	41.1	96.3
Lindon	47.4	55.4	62.3	63.5	45.5	40.9	95.8
GKF-8001	43.6	53.6	60.4	64.3	35.9	40.8	95.6
Iulia	42.7	56.5	65.6	63.2	55.1	40.5	94.9
Zg 4240/73	41.0	46.9	75.7	76.0	54.0	40.3	94.4
Zg 887/73	41.1	58.6	81.9	83.4	61.2	39.6	92.7
F53-70	42.1	49.7	50.1	67.6	51.3	38.9	91.1
Mironovskaya 808	40.8	56.1	52.6	59.7	38.8	38.6	90.4
F54-70	40.2	49.3	53.2	64.4	49.8	37.7	88.3
Zg 4293/73	32.5	40.7	74.5	80.1	55.9	37.1	86.9
F26-70	42.9	43.7	62.4	59.3	45.7	36.5	85.5
Krasnodarskaya 39	42.0	54.1	45.3	53.8	37.6	36.4	85.3
NE 68719	40.8	49.1	46.0	52.9	40.3	36.3	85.0
Sage	40.2	50.4	44.8	44.6	39.4	36.1	84.5
NE 73640	35.0	46.6	44.7	51.5	38.7	35.9	84.1
WA 5829	45.1	58.9	54.4	40.4	26.6	35.5	83.1
Oasis	41.7	41.7	55.1	58.8	44.4	33.7	78.9
Flavio	24.9	48.4	71.4	65.7	56.4	32.9	77.1
Bordenave Puan Sag	41.0	43.4	39.3	38.6	27.5	32.6	76.4
Atlas 66	42.3	37.7	47.2	51.0	34.6	32.2	75.4
Galiafen	28.2	41.4	62.0	63.0	45.6	27.4	64.2
Lerma Rojo 64	31.8	35.2	48.0	58.3	37.8	26.9	63.0
Means	40.7	50.4	58.4	61.5	44.9	38.0	88.9

Table 66. Summary of yield rankings for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivars	Kabul, Afghanistan	Herat, Afghanistan	Balcarce, Argentina	Bordenave, Argentina	Vienna, Austria	Tolbukhin, Bulgaria	Lethbridge: Alberta, Canada	Prince Edward Island, Canada	Chillan, Chile
Yubiley	1	9	18	20	1	2	4	18	9
Sadovo-1	13	12	24	26	6	7	12	13	7
Priboy	6	17	16	4	3	12	6	7	6
Bezostaya 1	22	11	6	17	11	18	2	2	5
Probstdorfer Karat	20	26	5	28	14	11	3	4	4
Odesskaya 51	4	22	12	5	8	17	11	5	1
Blueboy	23	1	3	2	30	13	10	12	16
Martonvasari 3	9	15	17	19	13	23	8	14	12
Zg 4364/73	4	16	25	21	20	1	16	22	24
Lindon	6	14	11	8	6	20	14	17	21
GKF-8001	3	4	4	18	15	10	1	16	15
Iulia	2	20	2	21	27	6	17	19	8
Zg 4240/73	17	7	29	13	9	3	23	23	25
Zg 887/73	14	6	27	7	4	4	27	27	18
F53-70	26	10	6	16	26	9	21	9	2
Mironovskaya 808	27	28	14	21	16	25	6	1	2
F54-70	6	27	15	10	12	8	19	15	19
Zg 4293/73	17	2	30	21	10	5	24	25	29
F26-70	21	19	21	5	19	14	25	21	19
Krasnodarskaya 39	16	13	13	25	25	24	5	10	14
NE 68719	28	8	1	26	21	19	13	5	10
Sage	12	21	10	3	17	26	18	11	17
NE 73640	29	23	8	14	2	28	14	8	28
WA 5829	30	5	20	12	29	29	9	20	13
Oasis	25	29	23	14	23	16	22	3	30
Flavio	10	18	28	11	5	15	28	27	27
Bordenave Puan Sag	15	25	19	1	18	27	20	26	11
Atlas 66	24	30	9	30	28	22	26	24	23
Galiafen	19	24	22	9	21	20	28	27	22
Lerma Rojo 64	11	2	26	29	24	30	28	27	25

Table 66. Summary of yield rankings for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Male Ripnany, Czechoslovakia	Sedlec, Czechoslovakia	Boehnshausen, East Germany	Jokioinen, Finland	Orgerus, France	Martonvasar, Hungary	Szeged, Hungary	Hamadan, Iran	Karaj, Iran
Yubiley	3	4	3	15	3	8	10	20	9
Sadovo-1	5	15	5	18	4	9	13	26	1
Priboy	12	7	4	25	11	4	8	24	19
Bezostaya 1	11	13	18	18	8	26	19	6	14
Probstdorfer Karat	9	2	11	2	17	13	6	10	16
Odesskaya 51	10	12	17	15	12	14	17	7	8
Blueboy	20	3	13	10	19	25	20	2	7
Martonvasari 3	8	8	12	5	9	23	9	15	4
Zg 4364/73	4	17	1	24	1	5	7	18	12
Lindon	18	1	19	10	14	2	12	22	10
GKF-8001	7	9	9	21	16	27	28	14	6
Iulia	13	10	5	1	5	16	15	5	10
Zg 4240/73	1	19	15	26	6	3	1	29	3
Zg 887/73	2	6	14	13	10	1	5	12	2
F 53-70	15	24	8	3	15	17	14	3	23
Mironovskaya 808	16	14	10	7	24	5	21	13	21
F 54-70	14	24	2	8	18	19	26	17	28
Zg 4293/73	6	11	16	22	13	9	11	21	17
F 26-70	30	26	24	13	7	22	16	23	24
Krasnodarskaya 39	24	21	25	6	30	30	30	8	5
NE 68719	21	16	20	4	27	28	27	19	29
Sage	22	23	30	12	25	11	22	4	20
NE 73640	19	19	29	8	22	7	23	25	22
WA 5829	25	4	22	17	29	29	24	1	15
Oasis	28	28	27	20	23	11	25	27	30
Flavio	23	27	7	28	2	18	2	30	13
Bordenave Puan Sag	26	22	28	22	28	24	29	9	18
Atlas 66	27	18	26	29	26	15	4	11	27
Galiafen	17	30	23	29	20	20	18	16	25
Lerma Rojo 64	29	29	21	27	21	21	3	28	25

Table 66. Summary of yield rankings for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Sulaimaniya, Iraq	Milano, Italy	Rieti, Italy	Morioka: Iwate, Japan	Amman, Jordan	Suwon, Korea	Toluca, Mexico	Kathmandu, Nepal	Wageningen, The Netherlands	Vollebekk, Norway	Przeclaw, Poland	Warsaw, Poland
Yubiley	4	1	17	4	4	13	22	19	10	13	7	3
Sadovo-1	1	6	10	8	7	10	12	5	4	9	6	16
Priboy	11	21	8	5	18	1	18	24	25	7	13	2
Bezostaya 1	6	8	11	6	23	7	11	6	18	2	10	14
Probstdorfer Karat	29	23	6	16	26	11	13	28	8	5	8	7
Odesskaya 51	12	5	20	10	22	2	7	4	8	15	10	11
Blueboy	13	3	12	1	4	13	17	1	3	4	20	12
Martonvasari 3	14	21	22	7	13	8	8	9	17	17	12	4
Zg 4364/73	10	15	28	22	20	23	22	20	2	16	9	9
Lindon	16	12	3	3	6	19	14	12	15	17	2	10
GKF-8001	8	15	13	9	24	15	1	25	13	12	14	17
Iulia	21	13	25	12	25	18	2	27	14	10	5	1
Zg 4240/73	7	7	17	26	12	26	22	15	11	23	3	7
Zg 887/73	5	24	27	28	2	24	22	23	1	26	1	22
F53-70	17	14	16	11	17	3	4	29	19	8	16	13
Mironovskaya 808	30	2	2	2	29	6	10	11	22	1	18	5
F54-70	19	9	7	14	21	4	5	30	20	3	16	6
Zg 4293/73	15	30	5	25	10	27	22	14	5	26	19	27
F26-70	9	29	19	22	8	16	9	8	12	20	25	26
Krasnodarskaya 39	23	25	23	13	27	5	15	18	21	6	24	24
NE 68719	24	18	3	18	30	9	3	22	24	19	29	23
Sage	18	10	21	20	9	17	22	3	29	21	26	25
NE 73640	22	27	14	17	16	20	19	12	30	22	21	18
WA 5829	26	26	26	15	28	22	6	26	6	11	23	21
Oasis	20	17	15	24	15	12	22	16	23	14	22	28
Flavio	3	4	29	27	3	28	21	10	7	26	4	19
Bordenave Puan Sag	25	19	30	19	10	21	22	2	28	25	30	20
Atlas 66	28	20	1	21	18	25	20	21	26	24	15	15
Galiafen	27	11	9	30	13	28	16	6	16	26	27	29
Lerma Rojo 64	2	28	23	29	1	28	22	17	27	26	28	30

Table 66. Summary of yield rankings for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Fundulea, Romania	Bethlehem, South Africa dryland	Bethlehem, South Africa irrigated	Kroonstad, South Africa	Svalof, Sweden	Zurich, Switzerland	Aleppo, Syria	Ankara, Turkey	Erzurum, Turkey	Eskisehir, Turkey	Davis, California, U.S.A.	Akron, Colorado U.S.A.
Yubiley	1	5	11	15	9	5	4	23	2	4	5	18
Sadovo-1	9	14	19	10	18	2	1	27	8	22	8	16
Priboy	14	6	20	9	6	11	3	7	20	23	13	10
Bezostaya 1	19	7	5	7	16	3	7	12	4	26	14	13
Probstdorfer Karat	23	18	18	23	3	20	16	9	12	18	17	5
Odesskaya 51	15	2	10	3	14	12	18	3	16	25	21	15
Blueboy	25	22	26	12	2	7	6	1	11	2	15	20
Martonvasari 3	20	8	4	8	10	22	14	25	13	20	20	1
Zg 4364/73	3	4	2	13	11	9	9	10	17	11	12	23
Lindon	2	10	14	1	4	30	25	17	14	8	6	7
GKF-8001	22	2	9	2	13	17	11	8	1	28	15	4
Iulia	6	25	27	18	15	6	9	6	5	6	19	10
Zg 4240/73	5	12	3	24	12	1	8	16	3	14	4	24
Zg 887/73	15	1	1	20	7	16	5	24	7	16	3	27
F53-70	7	26	23	27	19	8	22	19	9	10	26	12
Mironovskaya 808	27	24	24	22	5	4	28	13	25	5	29	17
F54-70	8	28	24	28	26	13	20	20	19	1	27	19
Zg 4293/73	4	21	6	21	22	25	23	29	18	15	7	26
F26-70	11	9	21	19	27	14	21	26	22	9	24	14
Krasnodarskaya 39	26	23	29	11	20	24	26	28	24	29	18	6
NE 68719	24	29	30	6	16	29	24	15	6	27	10	8
Sage	13	11	7	16	23	18	19	11	26	13	25	3
NE 73640	12	17	16	17	25	21	12	4	27	30	23	2
WA 5829	29	30	28	5	1	27	30	18	30	17	2	9
Oasis	17	15	12	26	21	26	29	22	28	19	28	21
Flavio	10	13	13	25	28	15	13	14	15	7	9	27
Bordenave Puan Sag	18	19	17	4	24	19	17	2	23	3	22	22
Atlas 66	21	27	22	29	8	10	27	5	29	12	30	25
Galiafen	28	19	15	14	29	23	15	30	21	21	11	27
Lerma Rojo 64	30	16	8	30	30	28	2	21	10	24	1	27

Table 66. Summary or yield rankings for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Continued.

Cultivars	Fort Collins, Colorado, U.S.A.	Brookston, Indiana, U.S.A.	Hutchinson, Kansas, U.S.A.	Billings, Montana, U.S.A.	Lincoln, Nebraska: U.S.A.	Ithaca, New York, U.S.A.	Rowan County North Carolina, U.S.A.	Stillwater, Oklahoma, U.S.A.	Corvallis, Oregon, U.S.A.	Pullman, Washington, U.S.A.	Krasnodar, U.S.S.R.
Yubiley	3	16	7	17	17	1	1	15	2	10	6
Sadovo-1	17	14	1	11	18	7	4	3	12	6	9
Priboy	4	1	16	14	9	6	6	1	16	11	4
Bezostaya 1	5	5	10	8	8	15	11	10	6	5	14
Probstdorfer Karat	9	11	14	1	10	9	8	16	1	2	8
Odesskaya 51	7	19	3	6	5	8	14	5	24	14	7
Blueboy	2	2	2	8	20	3	2	2	20	7	12
Martonvasari 3	14	17	17	3	4	14	3	6	9	4	19
Zg 4364/73	24	27	19	8	22	2	12	22	4	15	3
Lindon	15	13	13	4	7	4	6	10	28	9	23
GKF-8001	18	6	22	7	12	12	10	8	15	1	12
Iulia	20	20	4	18	21	5	13	19	5	12	11
Zg 4240/73	25	26	25	12	22	18	26	24	7	16	2
Zg 887/73	27	22	27	2	22	26	24	27	10	21	1
F 53-70	13	18	6	26	11	21	21	12	17	17	18
Mironovskaya 808	1	7	18	15	13	11	5	21	22	27	25
F 54-70	12	21	10	27	14	13	22	9	11	18	20
Zg 4293/73	26	28	23	5	22	24	23	25	13	19	5
F 26-70	23	24	9	22	15	10	19	20	3	25	15
Krasnodarskaya 39	6	4	12	16	1	19	9	7	18	8	27
NE 68719	8	3	15	21	3	22	16	13	19	13	26
Sage	11	15	20	19	2	19	15	18	26	19	17
NE 73640	10	10	4	20	6	17	19	17	27	22	22
WA 5829	15	8	26	13	19	16	17	3	21	3	28
Oasis	19	9	7	24	16	25	18	14	30	28	29
Flavio	27	25	28	28	22	26	29	28	8	29	10
Bordenave Puan Sag	22	12	21	23	22	26	25	23	29	23	24
Atlas 66	21	23	24	25	22	23	27	26	25	26	16
Galiafen	27	30	28	30	22	26	30	28	14	24	30
Lerma Rojo 64	27	29	28	29	22	26	28	28	23	30	21

Table 66. Summary of yield rankings for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Concluded.

Cultivars	Mironovski, U.S.S.R.	Odessa, U.S.S.R.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia
Yubiley	6	1	5	10	4	2
Sadovo-1	4	9	4	6	18	3
Priboy	13	25	3	8	8	11
Bezostaya 1	7	3	14	16	16	18
Probstdorfer Karat	1	13	15	21	6	23
Odesskaya 51	3	7	11	11	10	26
Blueboy	17	4	16	23	23	15
Martonvasari 3	18	6	8	8	17	17
Zg 4364/73	10	17	10	5	5	8
Lindon	11	2	8	13	13	14
GKF-8001	23	8	13	15	12	27
Iulia	2	11	6	7	14	6
Zg 4240/73	9	20	22	2	3	7
Zg 887/73	27	18	2	1	1	1
F53-70	4	14	18	22	7	9
Mironovskaya 808	13	21	7	20	19	21
F54-70	8	23	19	19	11	10
Zg 4293/73	25	27	28	3	2	5
F26-70	15	10	24	12	20	12
Krasnodarskaya 39	20	15	12	27	24	25
NE 68719	21	22	20	26	25	19
Sage	22	24	17	28	28	20
NE 73640	16	26	23	29	26	22
WA 5829	11	5	1	18	29	30
Oasis	19	16	26	17	21	16
Flavio	27	30	21	4	9	4
Bordenave Puan Sag	24	19	25	30	30	29
Atlas 66	26	12	29	25	27	28
Galiafen	27	29	27	14	15	13
Lerma Rojo 64	27	28	30	24	22	24

Table 67. Summary of agronomic, quality and yield data for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivars	Yield		Test weight		1000-kernel weight		Protein		Plant height		Lodging	
	q/ha	% of Bezostaya 1	kg/hl	rank	g	rank	%	rank	cm	rank	%	rank
Number of sites	56		24		24		40		40		23	
Yubiley	45.0	105.4	78.0	16	41.8	7	13.8	22	81.1	9	16.3	6
Sadovo-1	43.2	101.2	78.1	14	47.0	1	13.6	23	86.5	10	18.6	8
Priboy	42.7	100.0	79.5	4	43.9	2	13.6	24	96.9	19	43.1	23
Bezostaya 1	42.7	100.0	79.6	2	42.5	4	14.1	18	94.3	17	33.5	19
Probstdorfer Karat	42.1	99.4	79.3	6	40.9	12	14.2	17	108.8	28	30.2	16
Odesskaya 51	41.9	98.1	79.4	5	41.4	8	14.1	20	96.3	18	41.0	22
Blueboy	41.7	97.7	73.9	29	37.6	16	12.6	29	100.5	25	32.0	17
Martonvasari 3	41.5	97.2	78.7	10	41.9	6	14.6	11	92.7	16	32.4	18
Zg 4364/73	41.1	96.3	75.3	23	34.9	24	14.1	19	71.4	5	9.0	2
Lindon	40.9	95.8	79.1	8	31.9	28	13.8	21	90.7	15	50.0	24
GKF-8001	40.8	95.6	78.2	12	39.0	14	13.2	27	67.5	2	10.0	3
Iulia	40.5	94.9	79.6	1	42.9	3	14.8	10	89.4	12	24.4	11
Zg 4240/73	40.3	94.4	74.1	28	35.2	23	14.4	13	69.6	4	12.2	4
Zg 887/73	39.6	92.7	75.0	24	34.5	25	13.2	28	69.8	3	18.1	7
F53-70	38.9	91.1	79.2	7	41.3	9	15.4	7	98.1	22	26.3	13
Mironovskaya 808	38.6	90.4	76.3	22	40.9	11	14.2	16	119.0	30	56.0	26
F54-70	37.7	88.3	78.9	9	41.1	10	15.7	4	98.2	23	24.0	10
Zg 4293/73	37.1	86.9	74.8	26	32.9	27	14.3	14	61.7	1	8.5	1
F26-70	36.5	85.5	78.7	11	42.4	5	16.7	1	90.1	14	21.1	9
Krasnodarskaya 39	36.4	85.3	77.8	17	38.2	15	13.5	26	98.9	24	39.8	20
NE 68719	36.3	85.0	74.8	26	30.3	30	14.3	15	80.2	8	29.7	15
Sage	36.1	84.5	78.1	14	37.5	17	15.3	8	103.2	26	56.7	28
NE 73640	35.9	84.1	78.2	13	36.8	20	15.6	5	97.0	21	53.7	25
WA 5829	35.5	83.1	73.6	30	31.2	29	12.2	30	78.2	6	27.2	14
Oasis	33.7	78.9	77.2	19	37.0	18	15.2	9	97.0	20	56.7	27
Flavio	32.9	77.1	76.6	21	36.8	21	13.5	25	79.5	7	14.1	5
Bordenave Puan Sag	32.6	76.4	79.6	3	35.6	22	15.8	3	107.6	27	72.6	30
Atlas 66	32.2	75.4	77.1	20	36.8	19	16.6	2	113.7	29	58.1	29
Galiafen	27.4	64.2	74.9	25	33.9	26	14.6	12	90.0	13	25.4	12
Lerma Rojo 64	26.9	63.0	77.5	18	40.6	13	15.5	6	87.1	11	40.4	21
Mean	38.0	88.9	77.4		38.3		14.4		90.5		32.7	
L.S.D. of cultivar means (.05)	3.2		1.0		1.5		0.4		2.5		11.0	
Coefficient of variation (%)	14.1		1.7		6.4		5.6		6.0		37.3	

Table 67. Summary of agronomic, quality and yield data for cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977. Concluded.

Cultivars	Date of Flowering: days from Jan. 1	Date of Flowering: rank	Date of Ripening: days from Jan. 1	Date of Ripening: rank	Shattering: %	Shattering: rank	Winter survival: %	Winter survival: rank	Frost damage: 0-9	Frost damage: rank
Number of sites	39		29		10		31		8	
Yubiley	168.9	9	209.2	7	5.6	14	88.4	18	1.4	18
Sadovo-1	168.0	8	209.3	8	6.0	17	86.8	20	1.8	21
Priboy	172.1	21	212.5	21	3.5	2	90.2	7	1.1	5
Bezostaya 1	171.2	14	212.0	17	3.4	1	91.3	2	1.3	12
Probstdorfer Karat	178.9	30	215.6	29	3.6	5	90.2	6	1.3	16
Odesskaya 51	171.6	17	211.4	15	3.6	4	88.9	14	1.1	5
Blueboy	171.7	18	212.3	19	4.9	10	87.8	19	1.6	20
Martonvasari 3	170.6	12	210.7	11	6.3	19	88.9	15	1.3	12
Zg 4364/73	167.9	7	209.1	6	5.1	11	81.3	22	2.3	24
Lindon	170.7	13	211.0	13	4.5	7	89.3	13	1.1	8
GKF-8001	172.6	23	212.1	18	3.5	3	88.7	16	1.5	19
Iulia	170.5	11	212.3	19	9.4	24	86.4	21	1.3	17
Zg 4240/73	165.1	2	207.6	2	7.8	21	78.8	23	2.5	25
Zg 887/73	166.5	5	208.2	4	6.1	18	60.8	27	3.0	27
F53-70	171.5	15	212.9	25	16.5	29	90.4	4	1.3	12
Mironovskaya 808	177.9	29	214.4	28	12.7	26	91.7	1	0.9	2
F54-70	171.9	19	213.5	26	23.2	30	89.6	10	1.2	10
Zg 4293/73	165.8	3	208.2	5	4.8	9	74.5	25	2.2	23
F26-70	167.1	6	209.9	10	6.7	20	89.6	11	1.1	8
Krasnodarskaya 39	175.0	27	212.9	24	4.2	6	90.4	5	0.9	3
NE 68719	174.9	26	212.6	22	4.6	8	90.5	3	0.7	1
Sage	173.1	24	211.8	16	10.0	25	89.3	12	1.3	12
NE 73640	172.1	22	210.9	12	5.1	12	89.8	8	0.9	3
WA 5829	177.3	28	215.7	30	5.9	15	88.4	17	1.1	7
Oasis	169.7	10	209.8	9	13.9	28	89.8	9	1.2	10
Flavio	166.0	4	207.7	3	12.9	27	47.6	28	3.8	28
Bordenave Puan Sag	172.0	20	211.2	14	5.5	13	76.9	24	2.1	22
Atlas 66	173.4	25	212.8	23	8.8	23	72.0	26	2.9	26
Galiafen	171.5	16	214.1	27	5.9	15	37.2	30	4.5	29
Lerma Rojo 64	161.2	1	205.6	1	8.7	22	42.0	29	4.8	30
Mean	170.9		211.2		7.4		81.6		1.8	
L.S.D. of cultivar means (.05)	1.5		1.6		8.0		8.0		1.0	
Coefficient of variation (%)	1.2		1.5		103.8		8.9		46.6	

Table 68. Yield means and statistics calculated from 56 locations for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivars	Entry	Mean	Standard deviation	Variance	Corrected sum of squares	Low	High	Coefficient of variation
Yubiley	25	45.0	22.29	496.95	110324	0.2	121.9	49.5
Sadovo-1	21	43.2	21.54	464.00	103009	0.0	118.0	49.8
Priboy	2	42.7	20.29	411.88	91439	0.0	108.7	47.4
Bezostaya 1	8	42.7	18.88	356.78	79206	0.0	110.6	44.2
Probstdorfer Karat	16	42.1	21.12	446.14	99045	0.0	113.1	50.1
Odesskaya 51	4	41.9	19.66	386.61	85829	0.0	113.9	46.9
Blueboy	3	41.7	18.97	360.00	79921	0.5	97.4	45.4
Martonvasari 3	10	41.5	20.83	434.16	96385	0.4	116.2	50.1
Zg 4364/73	28	41.1	23.96	574.24	127483	0.0	119.5	58.3
Lindon	18	40.9	20.70	428.68	95167	0.0	99.0	50.6
GKF-8001	9	40.8	20.67	427.29	94859	0.0	127.2	50.7
Iulia	24	40.5	20.91	437.45	97115	0.0	105.2	51.6
Zg 4240/73	26	40.3	25.62	656.41	145724	0.0	129.2	63.5
Zg 887/73	27	39.6	29.10	847.11	188059	0.0	124.2	73.5
F53-70	22	38.9	18.09	327.59	72725	0.1	100.3	46.5
Mironovskaya 808	19	38.6	18.24	332.81	73885	0.0	106.2	47.2
F54-70	23	37.7	17.75	315.12	69959	0.0	105.4	47.1
Zg 4293/73	29	37.1	24.81	615.77	136702	0.0	116.8	66.8
F26-70	5	36.5	17.42	303.56	67392	0.0	79.3	47.7
Krasnodarskaya 39	20	36.4	17.36	301.57	66950	0.2	90.5	47.7
NE 68719	11	36.3	17.80	317.05	70387	0.0	96.0	49.0
Sage	7	36.1	16.60	275.81	61232	0.0	95.5	45.9
NE 73640	17	35.9	17.07	291.42	64697	0.0	96.9	47.5
WA 5829	6	35.5	20.53	421.59	93594	0.0	101.4	57.8
Oasis	14	33.7	16.77	281.30	62451	0.0	77.5	49.7
Flavio	15	32.9	24.75	612.62	136003	0.0	94.2	75.1
Bordenave Puan Sag	13	32.6	17.32	300.08	66618	0.0	92.9	53.1
Atlas 66	1	32.2	18.16	330.04	73270	0.0	97.5	56.4
Galiafen	12	27.4	22.37	500.58	111131	0.0	97.9	81.7
Lerma Rojo 64	30	26.9	21.82	476.28	105735	0.0	83.0	81.2

Mean = quintals/hectare

Table 69. Correlation coefficients for yield, protein, and other agronomic traits combined over 60 nursery sites of the Ninth International Winter Wheat Performance Nursery, 1977.

Trait	Yield	Test weight	1000-kernel weight	Seed grade	Protein	Plant height	Lodging	Flowering	Ripening	Shattering	Winter survival
Test weight	.22**										
N	3775										
1000-kernel weight	.26**	.32**									
N	3399	2431									
Seed grade	-.19**	-.50**	-.27**								
N	6113	3527	3249								
Protein	-.25**	-.12**	.08**	.11**							
N	6115	3528	3249	6278							
Plant height	.36**	.16**	.11**	-.17**	-.14**						
N	5738	3460	3185	5352	5354						
Lodging	.09**	-.01	-.05*	.09**	.21**	.32**					
N	3537	2310	2238	3292	3294	3262					
Flowering	-.21**	-.23**	-.17**	.21**	-.14**	.03	.07**				
N	5952	3739	3387	5625	5627	5649	3433				
Ripening	-.22**	-.32**	-.15**	.22**	-.08**	-.08**	.16**	.99**			
N	4348	2789	2725	3899	3900	4182	2533	4230			
Shattering	.03	-.01	-.24**	-.16**	.12**	.11**	-.08**	-.15**	-.09**		
N	1315	867	657	1265	1266	1258	987	1312	1132		
Winter survival	.62**	.25**	.13**	-.21**	-.24**	.37**	.01	-.13**	-.32**	.05	
N	3600	1693	1929	3067	3068	3158	2513	3054	2368	835	
Frost damage	-.40**	-.08	-.07	.11**	.16**	-.38**	.05	-.18**	-.10**	-.13*	-.69**
N	1020	510	570	693	694	1018	630	900	1018	240	600

*, significant at the .05 probability level.

**, significant at the .01 probability level.

N = Number of paired comparisons.

Table 70. Summary of yield, quality, and agronomic data for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery at sites in Northern Europe, 1977.

Cultivar	Yield		Test weight	1000-kernel weight	Protein	Plant height	Lodging	Days to Flowering	Days to Ripening	Shattering	Winter survival	Frost damage
	q/ha	% of Bezostaya 1	kg/hl	g	%	cm	%	days from Jan. 1		%	%	0-9
Number of sites	15		7	10	11	10	8	10	7	4	11	3
Yubiley	51.7	110.2	76.8	44.6	13.9	82	2	154	202	6	87	1
Sadovo-1	50.1	106.8	76.1	50.2	13.8	85	1	152	202	5	87	2
Zg 4364/73	49.8	106.2	74.8	37.0	14.5	75	1	152	201	6	86	2
Iulia	49.3	105.1	79.1	45.8	15.2	89	12	153	202	8	88	1
Priboy	49.1	104.7	78.1	46.7	13.9	97	36	156	204	6	86	1
Zg 887/73	48.6	103.6	74.4	35.5	13.3	73	3	154	202	9	68	2
Zg 4240/73	48.5	103.4	72.8	36.8	14.7	72	2	151	202	6	81	2
Probstdorfer Karat	48.1	102.6	77.3	44.1	14.6	112	27	160	206	5	86	2
Martonvasari 3	47.2	100.6	77.5	43.7	14.9	91	24	155	203	6	87	1
Bezostaya 1	46.9	100.0	77.8	44.8	14.7	93	23	156	204	5	88	1
Odesskaya 51	46.9	100.0	78.4	44.3	14.5	97	29	156	204	6	86	2
GKF-8001	46.4	98.9	77.3	40.6	13.4	67	0	157	203	5	85	2
Lindon	46.1	98.3	77.5	32.7	14.1	92	58	155	203	5	85	1
Blueboy	45.9	97.9	74.4	40.0	12.8	101	23	157	206	5	87	1
Mironovskaya 808	45.9	97.9	77.1	45.5	14.8	119	68	159	204	6	88	1
Zg 4293/73	44.4	94.7	73.8	34.6	14.7	64	1	151	200	6	75	2
F 54-70	44.0	93.8	77.9	43.8	16.6	99	12	155	204	12	87	1
F 53-70	43.6	93.0	78.9	43.7	16.5	99	15	155	203	10	88	1
WA 5829	43.1	91.9	74.1	34.0	12.5	83	18	160	206	9	88	1
Flavio	41.6	88.7	75.5	39.1	13.6	82	1	153	202	10	57	4
Krasnodarskaya 39	38.9	82.9	76.1	40.5	14.2	98	34	158	205	6	87	1
F 26-70	38.7	82.5	76.3	44.3	18.1	90	6	150	202	10	88	1
NE 73640	38.2	81.5	77.4	39.6	16.9	99	57	155	202	7	86	1
NE 68719	37.9	80.8	75.3	31.0	14.7	81	20	157	202	8	87	1
Atlas 66	37.6	80.2	76.6	40.1	17.0	112	67	157	207	7	71	3
Sage	36.0	76.8	75.1	39.4	16.9	102	59	157	203	11	87	2
Oasis	35.9	76.6	75.8	38.7	16.3	100	53	155	203	7	86	1
Bordenave Puan Sag	35.1	74.8	77.9	37.4	16.9	106	82	157	203	5	79	2
Galiafen	32.3	68.9	73.2	35.0	14.5	89	17	157	207	7	44	5
Lerma Rojo 64	28.1	59.9	75.4	41.6	16.2	85	38	149	201	9	48	4
Mean	43.2	92.1	76.3	40.5	15.0	91.1	26.4	155.1	203.2	7.0	81.0	1.8
L.S.D. of cultivar means (.05)	5.8		2.0	2.2	0.6	3.7	14.6	1.4	1.8	N.S.	11.6	1.5
Coefficient of variation (%)	11.4		1.4	3.8	4.7	3.8	47.9	0.7	0.4	59.2	9.4	53.7

Table 71. Summary of yield, quality, and agronomic data for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery at sites in Southern Europe, 1977.

Cultivar	Yield		Test weight	1000-kernel weight	Protein	Plant height	Lodging	Days to		Winter survival
	q/ha	% of Bezostaya 1	kg/hl	g	%	cm	%	Flowering	Ripening	%
								days from Jan. 1		
Number of sites	10		8	7	10	7	7	8	6	3
Zg 887/73	56.4	117.8	75.0	35.2	12.8	77	47	137	179	95
Zg 4240/73	56.3	117.5	74.0	36.1	13.5	73	31	134	177	99
Yubiley	56.0	116.9	78.3	41.3	13.5	83	36	138	181	99
Zg 4364/73	53.9	112.5	75.6	34.5	13.6	76	24	137	179	98
Zg 4293/73	52.9	110.4	75.1	33.3	13.6	64	22	134	180	95
Sadovo-1	51.9	108.4	78.3	46.5	12.7	94	46	137	180	97
Lindon	50.9	106.3	78.8	32.2	13.6	95	67	138	181	99
Priboy	50.8	106.1	79.7	43.0	13.4	103	62	140	183	99
Iulia	50.8	106.1	79.5	42.8	14.1	95	50	137	182	97
F 53-70	50.0	104.4	79.7	41.6	15.5	103	49	138	183	98
Probstdorfer Karat	50.0	104.4	80.2	40.6	13.7	112	51	145	186	98
Flavio	49.8	104.0	76.8	37.3	12.6	88	38	136	178	92
Odesskaya 51	48.8	101.9	78.8	40.1	13.5	101	66	139	182	94
F 54-70	48.8	101.9	79.8	41.3	15.7	104	50	138	183	99
Bezostaya 1	47.9	100.0	79.7	42.6	13.8	97	58	139	181	99
Blueboy	47.8	99.8	73.9	36.1	12.0	105	53	141	184	99
Atlas 66	47.3	98.8	77.9	36.9	16.1	117	75	141	183	95
F 26-70	47.1	98.3	79.5	42.7	15.9	93	44	134	178	99
Martonvasari 3	46.5	97.1	78.3	41.4	13.8	99	58	139	181	98
Oasis	46.2	96.5	78.0	37.8	14.8	106	83	139	181	99
Mironovskaya 808	46.0	96.0	76.3	40.3	13.4	128	69	145	186	99
GKF-8001	45.6	95.2	77.8	38.8	12.9	69	21	140	182	99
Sage	44.4	92.7	79.2	36.9	14.8	108	73	141	182	98
NE 68719	43.8	91.4	75.5	30.9	13.5	82	56	143	182	98
Galiafen	43.8	91.4	75.9	35.3	13.9	96	57	141	184	78
NE 73640	43.7	91.2	78.7	35.6	14.7	101	74	140	180	99
Krasnodarskaya 39	40.0	83.5	78.2	37.7	13.2	103	61	143	183	99
Lerma Rojo 64	39.9	83.3	78.1	42.6	14.8	92	68	132	178	73
Bordenave Puan Sag	39.1	81.6	79.5	34.6	15.2	111	80	141	182	99
WA 5829	36.4	76.0	72.1	29.3	12.2	78	47	145	185	98
Mean	47.8	99.7	77.6	38.2	13.9	95.1	53.8	139.1	181.6	96.2
L.S.D. of cultivar means (.05)	5.5		1.5	2.6	0.6	6.8	24.8	2.3	2.3	9.7
Coefficient of variation (%)	12.7		2.2	8.1	4.6	8.1	25.1	1.8	1.6	2.1

Table 72. Summary of yield, quality, and agronomic data for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery at sites in North America, 1977.

Cultivars	Yield		Test weight	Protein	Plant height	Lodging	Days to Flowering	Shattering	Winter survival
	q/ha	% of Bezostaya 1	kg/hl	%	cm	%	from Jan. 1	%	%
Number of sites	14		3	4	4	3	3	2	10
Probstdorfer Karat	43.5	102.8	79.8	13.2	113	33	151	1	93
Bezostaya 1	42.3	100.0	80.5	12.9	99	42	144	0	92
Yubiley	40.9	96.7	78.9	12.4	84	28	141	8	85
Priboy	40.7	96.2	80.1	12.3	101	57	145	0	90
Martonvasari 3	40.0	94.6	79.7	13.4	97	28	143	8	87
Blueboy	39.9	94.3	74.1	12.2	104	50	145	4	85
Krasnodarskaya 39	39.9	94.3	78.5	12.2	103	45	146	0	89
NE 68719	39.0	92.2	75.1	13.1	83	32	147	0	92
Odesskaya 51	38.9	92.0	79.9	13.0	100	47	144	0	90
Sadovo-1	38.6	91.3	78.9	12.8	91	25	140	13	82
GKF-8001	38.6	91.3	79.6	12.3	72	20	145	0	89
Lindon	37.5	88.7	80.5	12.6	96	54	143	1	90
WA 5829	37.2	87.9	75.4	11.2	82	43	150	5	87
Mironovskaya 808	36.5	86.3	76.6	13.0	123	54	151	43	94
NE 73640	35.7	84.4	79.1	14.3	101	61	145	2	92
Iulia	35.2	83.2	80.4	14.3	93	23	143	23	79
Sage	34.9	82.5	79.1	13.6	107	59	146	13	90
F53-70	34.4	81.3	79.3	14.4	101	30	145	43	89
F54-70	33.9	80.1	78.6	14.7	102	24	146	66	88
F26-70	33.5	79.2	79.2	15.7	94	32	139	7	87
Zg 4364/73	32.6	77.1	75.6	13.2	73	6	140	0	71
Oasis	30.8	72.8	77.5	13.7	98	55	142	28	87
Zg 4240/73	30.5	72.1	75.8	13.1	70	11	137	11	69
Zg 4293/73	28.1	66.4	77.4	13.6	60	8	138	0	66
Bordenave Puan Sag	26.0	61.5	80.3	14.1	112	88	146	4	64
Zg 887/73	25.5	60.3	75.7	11.7	68	16	140	0	34
Atlas 66	24.1	57.0	77.2	16.3	118	50	148	17	60
Flavio	15.7	37.1	77.9	12.8	73	12	142	1	11
Lerma Rojo 64	14.2	33.6	79.5	14.1	86	39	138	0	12
Galiafen	12.2	28.8	76.0	14.5	89	4	148	2	1
Mean	33.4	78.9	78.2	13.3	93.1	35.8	143.9	9.9	74.6
L.S.D. of cultivar means (.05)	6.8		2.2	1.2	8.3	35.3	4.3	28.6	14.3
Coefficient of variation (%)	15.8		1.3	4.6	4.7	34.7	1.0	143.7	13.5

Table 73. Summary of yield, quality, and agronomic data for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery at sites in the Southern Hemisphere, 1977.

Cultivars	Yield		Test weight	1000-kernel weight	Protein	Plant height	Days to		Shattering
	q/ha	% of Bezostaya 1	kg/hl	g	%	cm	Flowering from Jan. 1	Ripening from Jan. 1	%
Number of sites	5		4	2	6	7	7	5	2
Odesskaya 51	36.3	101.1	80.9	36.9	12.9	95	299	335	0
Zg 887/73	36.1	100.6	74.6	32.9	13.6	64	287	329	2
Bezostaya 1	35.9	100.0	80.8	34.0	13.3	94	298	336	0
Martonvasari 3	34.8	96.9	80.0	38.0	13.9	93	297	334	0
Zg 4364/73	33.6	93.6	74.1	31.8	13.3	68	292	332	6
GKF-8001	33.2	92.5	78.1	33.8	12.8	67	301	337	0
Sage	33.2	92.5	79.2	34.2	13.6	102	304	338	0
Yubiley	33.1	92.2	77.5	33.9	13.3	78	294	330	1
Priboy	32.6	90.8	80.5	38.2	12.5	95	300	337	0
Bordenave Puan Sag	31.9	88.9	81.0	31.1	14.5	109	300	335	0
Zg 4240/73	31.4	87.5	73.7	28.5	14.8	65	287	329	10
Lindon	31.1	86.6	80.5	29.2	13.0	88	297	333	0
Sadovo-1	31.0	86.4	79.5	37.9	12.9	84	294	332	1
Probstdorfer Karat	30.8	85.8	79.9	30.3	12.8	107	313	341	0
F26-70	29.0	80.8	79.9	37.1	15.2	90	296	334	0
Galiafen	28.9	80.5	74.1	26.5	13.6	90	294	340	0
Flavio	28.3	78.8	75.6	28.7	13.5	76	285	328	25
Zg 4293/73	28.1	78.3	73.0	25.8	13.8	59	288	329	7
NE 73640	27.6	76.9	77.1	31.1	14.1	95	303	335	0
Lerma Rojo 64	27.5	76.6	77.4	34.8	14.5	87	278	321	3
F 53-70	27.2	75.8	78.2	34.3	13.4	97	300	342	12
Mironovskaya 808	26.7	74.4	75.4	28.4	13.6	117	312	343	0
Oasis	26.4	73.5	77.5	31.4	14.3	90	294	332	4
Blueboy	26.4	73.5	72.4	32.8	11.0	96	297	335	0
Iulia	24.9	69.4	79.0	33.3	13.1	87	300	342	0
F 54-70	23.4	65.2	78.3	35.0	13.8	96	301	343	10
Krasnodarskaya 39	23.2	64.6	78.3	34.5	11.8	99	304	337	0
Atlas 66	23.2	64.6	76.1	31.9	15.7	108	301	338	3
WA 5829	22.1	61.6	73.8	26.1	11.0	75	309	343	0
NE 68719	21.2	59.1	72.8	27.6	13.7	81	307	340	0
Mean	29.3	81.6	77.3	32.3	13.4	88.4	297.8	335.3	2.7
L.S.D. of cultivar means (.05)	N.S.		3.0	4.8	1.2	5.8	3.0	4.8	N.S.
Coefficient of variation (%)	14.4		1.3	3.8	6.6	4.3	0.6	1.7	169.0

Table 74. Summary of yield, quality, and agronomic data for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery at sites in the Middle East, 1977.

Cultivars	Yield		Test weight	1000-kernel weight	Protein	Plant height	Lodging	Days to Flowering	Days to Ripening	Shattering	Winter survival	Frost damage
	q/ha	% of Bezostaya 1	kg/hl	g	%	cm	%	days from Jan. 1		%	%	0-9
Number of Sites	10		2	3	8	9	3	9	9	2	4	3
Blueboy	38.8	112.1	75.2	36.2	14.1	94	0	130	170	11	94	2
Sadovo-1	36.7	106.1	80.5	43.4	15.1	80	0	127	169	7	94	2
Yubiley	35.9	103.8	80.5	40.3	14.7	77	1	127	169	8	93	2
Zg 887/73	35.6	102.9	76.3	32.1	13.5	65	0	124	167	10	94	4
Bezostaya 1	34.6	100.0	81.6	40.4	14.9	90	0	130	171	8	94	2
GKF-8001	34.3	99.1	81.3	37.2	14.2	63	0	131	172	8	94	2
Zg 4240/73	34.2	98.8	77.8	33.8	15.3	65	0	125	167	7	94	3
Lerma Rojo 64	33.6	97.1	79.9	38.0	16.4	86	1	120	164	24	90	4
Flavio	33.3	96.2	79.7	33.5	14.7	76	1	125	167	19	94	3
Martonvasari 3	33.0	95.4	80.3	38.5	16.1	86	0	129	171	11	93	2
Odesskaya 51	33.0	95.4	81.2	38.9	15.5	89	0	131	170	7	94	1
Zg 4364/73	32.7	94.5	77.4	32.8	15.3	64	0	127	169	8	93	2
Iulia	32.5	93.9	81.5	40.2	16.3	83	1	130	171	8	94	2
Lindon	32.3	93.3	80.7	30.8	14.8	83	0	130	172	11	94	2
Bordenave Puan Sag	31.8	91.9	81.6	33.7	16.8	103	21	128	170	12	95	2
Priboy	31.5	91.0	80.8	40.4	14.6	90	1	131	172	5	94	1
Sage	31.2	90.2	80.6	35.1	15.6	98	11	131	171	17	92	2
F53-70	31.0	89.6	80.6	38.3	15.7	91	0	130	171	8	95	2
Zg 4293/73	30.9	89.3	77.6	32.1	15.3	58	0	126	168	5	92	2
F26-70	30.5	88.2	80.5	38.1	16.9	85	1	127	171	7	94	1
Probstdorfer Karat	29.4	85.0	81.2	38.5	15.7	101	0	137	175	8	94	1
NE68719	29.3	84.7	74.9	29.8	15.5	74	0	133	173	8	93	1
NE73640	29.2	84.4	79.5	34.6	16.5	89	0	130	171	9	95	1
Krasnodarskaya 39	29.2	84.4	80.1	34.5	14.3	94	0	134	173	9	94	1
Galiafen	28.4	82.1	76.2	33.6	15.7	87	3	129	172	14	85	4
WA 5829	28.0	80.9	74.3	31.0	13.0	71	1	135	175	6	93	2
F54-70	28.0	80.9	80.4	36.3	16.3	92	0	131	172	16	95	2
Mironovskaya 808	27.5	79.5	74.4	34.3	15.3	110	6	135	173	9	91	1
Atlas 66	26.2	75.7	77.1	30.0	17.3	112	1	131	170	12	95	3
Oasis	25.2	72.8	77.8	33.8	15.5	89	7	127	169	24	94	2
Mean	31.6	91.3	79.0	35.7	15.4	84.9	1.9	129.3	170.4	10.5	93.3	2.0
L.S.D. of cultivar means (.05)	5.0		3.5	4.4	0.8	6.0	8.4	3.2	3.3	N.S.	N.S.	1.8
Coefficient of variation (%)	19.3		1.7	10.8	7.5	8.1	310.9	2.3	1.5	59.0	3.4	44.9

Table 75. Summary of yield, quality, and agronomic data for the 30 entries grown in the Ninth International Winter Wheat Performance Nursery at two sites in the Far East, 1977.

Cultivars	Yield		1000-kernel weight	Protein	Plant height	Lodging	Days to		Winter survival
	q/ha	% of Bezostaya 1	g	%	cm	%	Flowering: from Jan. 1	Ripening: from Jan. 1	%
Priboy	50.0	111.1	41.1	13.6	107	46	152	185	93
Odesskaya 51	47.8	106.2	38.7	14.8	107	51	152	185	83
Mironovskaya 808	47.0	104.4	39.1	14.3	127	23	156	187	95
F53-70	46.5	103.3	37.9	16.1	107	15	151	187	90
Blueboy	46.0	102.2	34.2	14.0	113	20	154	189	75
Bezostaya 1	45.0	100.0	39.4	14.8	101	15	152	186	93
Krasnodarskaya 39	44.4	98.7	35.8	14.2	106	26	154	185	95
F54-70	44.1	98.0	37.1	16.2	106	8	152	187	90
Martonvasari 3	44.0	97.8	40.8	15.4	100	21	152	184	90
Yubiley	43.0	95.6	37.6	14.7	87	1	152	184	83
Sadovo-1	43.0	95.6	46.2	14.3	94	4	150	184	83
Lindon	42.0	93.3	29.4	14.3	94	24	152	187	88
GKF-8001	40.6	90.2	37.4	14.2	73	0	153	187	88
Probstdorfer Karat	39.9	88.7	36.0	14.9	116	0	157	191	82
NE 68719	39.7	88.2	27.1	14.2	86	6	153	185	88
Iulia	39.1	86.9	38.7	15.4	93	11	150	184	80
Oasis	36.1	80.2	33.9	15.6	104	63	152	185	88
Sage	35.9	79.8	34.1	15.2	114	65	152	185	78
F26-70	35.5	78.9	40.5	18.0	98	9	148	183	93
NE 73640	35.2	78.2	33.8	15.5	102	18	152	185	80
WA 5829	33.9	75.3	24.6	13.9	85	3	157	194	75
Bordenave Puan Sag	32.5	72.2	35.5	16.2	114	50	157	188	63
Zg 4364/73	29.8	66.2	31.7	15.8	69	0	152	187	55
Atlas 66	24.4	54.2	35.1	18.7	116	41	156	193	58
Zg 4293/73	19.9	44.2	31.7	18.0	60	0	151	188	55
Zg 4240/73	19.3	42.9	32.6	16.9	73	0	151	188	55
Zg 887/73	13.4	29.8	31.5	16.6	64	0	153	189	13
Flavio	11.4	25.3	-	-	-	-	-	-	18
Lerma Rojo 64	4.0	8.9	-	-	-	-	-	-	7
Galiafen	3.3	7.3	-	-	-	-	-	-	6
Mean	34.6	76.8	35.6	15.4	96.8	19.2	152.7	186.7	71.2
L.S.D. of cultivar means (.05)	12.7		4.1	3.3	12.9	27.3	2.7	4.2	34.0
Coefficient of variation (%)	9.9		3.4	5.2	3.8	54.4	1.1	0.7	7.6

Table 76. Summary of regional yield means and rankings for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivars	Northern Europe		Southern Europe		Middle East		Far East		North America		Southern Hemisphere		Cultivar mean over 56 sites
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	
Number of sites	15		10		10		2		14		5		
Yubiley	51.7	1	56.0	3	35.9	3	43.0	10	40.9	3	33.1	8	45.0
Sadovo-1	50.1	2	51.9	6	36.7	2	43.0	11	38.6	10	31.0	13	43.2
Priboy	49.1	5	50.8	8	31.5	16	50.0	1	40.7	4	32.6	9	42.7
Bezostaya 1	46.9	10	47.9	15	34.6	5	45.0	6	42.3	2	35.9	3	42.7
Probstdorfer Karat	48.1	8	50.0	11	29.4	21	39.9	14	43.5	1	30.8	14	42.1
Odesskaya 51	46.9	11	48.8	13	33.0	11	47.8	2	38.9	9	36.3	1	41.9
Blueboy	45.9	14	47.8	16	38.8	1	46.0	5	39.9	6	26.4	24	41.7
Martonvasari 3	47.2	9	46.5	19	33.0	10	44.0	9	40.0	5	34.8	4	41.5
Zg 4364/73	49.8	3	53.9	4	32.7	12	29.8	23	32.6	21	33.6	5	41.1
Lindon	46.1	13	50.9	7	32.3	14	42.0	12	37.5	12	31.1	12	40.9
GKF-8001	46.4	12	45.6	22	34.3	6	40.6	13	38.6	11	33.2	6	40.8
Iulia	49.3	4	50.8	9	32.5	13	39.1	16	35.2	16	24.9	25	40.5
Zg 4240/73	48.5	7	56.3	2	34.2	7	19.3	26	30.5	23	31.4	11	40.3
Zg 887/73	48.6	6	56.4	1	35.6	4	13.4	27	25.5	26	36.1	2	39.6
F 53-70	43.6	18	50.0	10	31.0	18	46.5	4	34.4	18	27.2	21	38.9
Mironovskaya 808	45.9	15	46.0	21	27.5	28	47.0	3	36.5	14	26.7	22	38.6
F 54-70	44.0	17	48.8	14	28.0	27	44.1	8	33.9	19	23.4	26	37.7
Zg 4293/73	44.4	16	52.9	5	30.9	19	19.9	25	28.1	24	28.1	18	37.1
F 26-70	38.7	22	47.1	18	30.5	20	35.5	19	33.5	20	29.0	15	36.5
Krasnodarskaya 39	38.9	21	40.0	27	29.2	24	44.4	7	39.9	7	23.2	27	36.4
NE 68719	37.9	24	43.8	24	29.3	22	39.7	15	39.0	8	21.2	30	36.3
Sage	36.0	26	44.4	23	31.2	17	35.9	18	34.9	17	33.2	7	36.1
NE 73640	38.2	23	43.7	26	29.2	23	35.2	20	35.7	15	27.6	19	35.9
WA 5829	43.1	19	36.4	30	28.0	26	33.9	21	37.2	13	22.1	29	35.5
Oasis	35.9	27	46.2	20	25.2	30	36.1	17	30.8	22	26.4	23	33.7
Flavio	41.6	20	49.8	12	33.3	9	11.4	27	15.7	28	28.3	17	32.9
Bordenave Puan Sag	35.1	28	39.1	29	31.8	15	32.5	22	26.0	25	31.9	10	32.6
Atlas 66	37.6	25	47.3	17	26.2	29	24.4	24	24.1	27	23.2	28	32.2
Galiafen	32.3	29	43.8	25	28.4	25	3.3	30	12.2	30	28.9	16	27.4
Lerma Rojo 64	28.1	30	39.9	28	33.6	8	4.0	29	14.2	29	27.5	20	26.9
Mean	43.2		47.8		31.6		34.6		33.4		29.3		38.0
L.S.D. of cultivar means (.05)	5.8		5.5		5.0		12.7		6.8		N.S.		3.2
Coefficient of variation (%)	11.4		12.7		19.3		9.9		15.8		14.4		14.1

Table 77. Reaction of International Winter Wheat Performance Nursery cultivars to yellow rust (Puccinia striiformis) in 1977.

Cultivar	Balcarce, Argentina		Chillan, Chile		Temuco, Chile		Male Ripnany Czechoslovakia		Boehnshausen, East Germany		Cambridge, England	Sulaimaniya, Iraq		Rieti, Italy
	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	sev (0-9)	resp	sev %
Number of replications	4		1		1		4		4		2	4		4
Atlas 66	20	MS	90	S	90	VS	40	VR	10	MS-S	61	1	O-MS	53
Priboy	0		0		30	MR-MS	0		0		33	0		50
Blueboy	10	MS	70	S	30	MR-MS	30	VR	4	MR-MS	44	0		38
Odesskaya 51	5	MS	40	S	50	MS	0		1	O-MR	61	1	O-MR	60
F26-70	30	MS	30	S	50	MS	15	VR	0	O-R	83	0		20
WA5829	10	MR	5	MR	70	MS	25	VR	0		44	1	O-MR	48
Sage	0		0		1	R	0		0		22	0		35
Bezostaya 1	10	MR	20	MR	5	MR	0		1	O-MR	44	0		45
GKF-8001	0		0		1	MR	0		0		66	0		35
Martonvasari 3	20	MS	40	MR	60	MS	35	VR	6	MR-MS	88	0		45
NE68719	5	MS	50	S	70	MS	45	VR	4	MR-MS	28	0		35
Galiafen	0		60	S	80	MS	15	VR	2	O-MR	44	0		38
Bordenave Puan Sag	0		50	S	80	MS	0		2	O-MR	33	1	O-MR	35
Oasis	0		90	S	90	S	74	M	6	R-MS	88	2	O-MR	53
Flavio	6	MR	60	S	80	S	30	VR	0		83	0		58
Probstdorfer Karat	0		0		5	MR	0		0		22	0		25
NE73640	0		80	S	90	S	60	MR	13	R-MS	44	0		35
Lindon	10	MS	90	S	90	S	60	MR	4	MR	33	0		35
Mironovskaya 808	3	O-MR	5	MR	5	MR	0		0		22	0		20
Krasnodarskaya 39	50	MS	50	MR	60	MS	60	MR	4	R-MR	50	0	O-MR	58
Sadovo-1	20	MS	50	MR	0		0		2	O-MR	39	0		28
F53-70	0		40	MR	30	MS	0		2	O-MR	22	0		25
F54-70	0		50	MR	40	MS	0		0		44	0		28
Iulia	20	MR	40	MR	20	MS	0		3	O-MR	61	0		43
Yubiley	0		0		1	R	15	VR	0		33	0		45
Zg 4240/73	0		70	S	20	MS	35	VR-R	1	O-MR	77	0		53
Zg 887/73	0		80	S	40	MS	45	VR	0		99	2	O-MR	28
Zg 4364/73	0		80	S	40	MS	60	MR	0		94	1	O-MS	60
Zg 4293/73	0		80	S	50	MS	45	VR	0		88	0	O-MR	25
Lerma Rojo 64	20	MS	80	S	0		0		1	O-R	28	0		43
Mean	8.0		46.7		42.6		23.0		2.2		52.4	0.2		39.8

Table 77. Reaction of International Winter Wheat Performance Nursery cultivars to yellow rust (Puccinia striiformis) in 1977. Continued.

Cultivar	Toluca, Mexico sev %	resp	Svalof, Sweden sev 0-9	Zurich, Switzerland sev %	resp	Ankara, Turkey sev %	resp	Erzurum, Turkey sev %	resp	Eskisehir, Turkey sev %	resp	Davis, California, U.S.A. sev %	Corvallis, Oregon U.S.A. sev %	resp	Krasnodar, U.S.S.R. sev %	Mironovski, U.S.S.R. sev 0-9
Number of replications	2		4	4		4		4		4		2	1		4	4
Atlas 66	40	MS	0	15	M	99	S	40	S	25	S	3	80	S	1	1
Priboy	10	R-MR	0	16	M	20	0-MS	0	0-VR	0	0-MR	1	40	MS	2	4
Blueboy	20	MR	0	13	0-MS	6	R-MS	0		1	0-MS	18	80	S	0	4
Odesskaya 51	15	R-MS	0	14	0-MS	28	MR-S	0		28	0-S	5	80	S	13	4
F26-70	15	MS	2	13	0-MS	30	MS-S	0		0	0-MR	0	20	S	1	4
WA5829	15	MR	1	8	0-M	85	S	99	S	43	MS-S	13	60	S	2	4
Sage	11	R-MR	0	0		13	MS	10	R	3	R-MR	1	60	S	0	0
Bezostaya 1	30	R-MS	0	16	M-MS	5	0-MR	0		3	0-S	5	30	S	7	3
GKF-8001	8	R-MS	0	13	0-MS	0		0		0		6	40	MR	1	1
Martonvasari 3	30	MS	1	25	MS-S	18	MR-MS	0		4	0-S	10	80	S	22	4
NE68719	15	MR-MS	3	11	0-M	80	S	10	MS-S	34	MS-S	50	60	MS	7	3
Galiafen	10	R-MR	0	19	M-MS	5	0-MS	10	S	0		3	30	MR	0	2
Bordenave Puan Sag	20	R-MS	0	36	S	15	MR-MS	5	R	1	0-MR	5	20	MR	3	1
Oasis	45	MR-MS	3	60	VS	99	S	20	MR-MS	20	S	35	80	S	57	1
Flavio	25	MS	1	20	MS	5	0-MS	0		3	0-S	3	80	S	0	4
Probstdorfer Karat	10	R-MR	0	11	0-M	3	0-S	5	MS	23	0-S	1	20	MR	1	4
NE73640	50	MS	1	26	M-S	75	MS-S	40	MS	46	S	65	99	S	67	1
Lindon	45	MS-S	1	48	S-VS	8	0-S	0		0		70	99	S	51	1
Mironovskaya 808	30	MR-MS	0	4	0-M	80	S	5	R-MR	28	MS-S	1	20	MR	0	4
Krasnodarskaya 39	35	MR-MS	5	30	MS-S	38	MS-S	20	MS-S	16	R-S	8	80	S	19	4
Sadovo-1	20	MS	0	5	0-M	20	MS-S	0		16	0-S	5	60	S	1	4
F53-70	20	MR-MS	0	5	0-M	23	0-MS	1	0-MR	4	0-S	4	20	MR	0	1
F54-70	20	R-MR	0	11	0-M	20	0-MS	1	0-MR	3	0-S	3	20	MR	1	2
Iulia	15	R	0	16	M-MS	10	0-MS	0		1	0-MR	45	40	R	0	4
Yubiley	10	MR-MS	0	13	0-MS	13	0-MS	1	0-MR	0		8	40	MR	0	1
Zg 4240/73	11	R-MS	0	16	M-MS	10	0-S	0	0-MR	6	0-S	18	60	MS	1	0
Zg 887/73	25	MR	0	31	MS-S	80	S	73	S	46	MR-S	8	60	S	0	-
Zg 4364/73	10	MR-MS	1	18	M-MS	18	0-S	0		29	MS-S	23	60	S	7	3
Zg 4293/73	10	R	0	18	M-MS	15	MS-S	0		0		10	80	S	6	0
Lerma Rojo 64	45	MS	-	0		65	MS-S	0		31	MS-S	23	40	S	0	-
Mean	22.1		0.6	17.6		32.7		11.3		13.7		14.5	54.6		8.9	2.3

Table 77. Reaction of International Winter Wheat Performance Nursery cultivars to yellow rust (Puccinia striiformis) in 1977. Concluded.

Cultivar	Zagreb, Yugoslavia sev %	resp	Severity (%) Cultivar mean over 16 sites	High score
Number of replications	1			
Atlas 66	5	R	42	99
Priboy	2	R	13	50
Blueboy	10	MS	23	80
Odesskaya 51	30	MS	27	80
F26-70	15	S	20	83
WA5829	40	S	35	99
Sage	0		10	60
Bezostaya 1	20	MS	15	45
GKF-8001	20	S	12	66
Martonvasari 3	25	MR	32	88
NE68719	10	MR	32	80
Galiafen	0		20	80
Bordenave Puan Sag	15	MS	20	80
Oasis	0		51	99
Flavio	0		28	83
Probstdorfer Karat	10	MR	8	23
NE73640	0		49	99
Lindon	5	MR	40	99
Mironovskaya 808	10	MR	14	80
Krasnodarskaya 39	45	S	39	80
Sadovo-1	15	R	18	60
F53-70	5	MR	12	40
F54-70	10	MS	16	50
Iulia	10	R	20	61
Yubiley	0		11	45
Zg 4240/73	0		24	70
Zg 887/73	0		38	99
Zg 4364/73	0		31	94
Zg 4293/73	20	MR	28	88
Lerma Rojo 64	0		23	80
Mean	10.7		25.0	

Table 78. Reaction of International Winter Wheat Performance Nursery cultivars to leaf rust (Puccinia recondita) in 1977.

Cultivar	Balcarce, Argentina		Bordenave, Argentina		Tolbukhin, Bulgaria		Chillan, Chile		Male Ripnany, Czechoslovakia		Boehnshausen, East Germany		Martonvasar, Hungary	Szeged, Hungary	
	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev 0-9	resp	sev %	sev %	resp
Number of replications	4		4		1		1		4		4		2	4	
Atlas 66	20	MS	18	MS-S	5	MR	0		30	VR	3	MR-MS	22	14	VR-S
Priboy	0		8	R	10	MR	0		0		1	0-MS	55	30	R-MS
Blueboy	10	MS	18	MS-S	0	R	0		0		1	0-MR	72	30	R-S
Odesskaya 51	0		23	MS-S	99	VS	5	S	30	VR	5	MR	72	43	MR-VS
F26-70	0		40	MS-S	99	VS	0		30	VR	6	MR-MS	33	53	MS
WA5829	0		15	MS-S	99	VS	20	S	30	VR	2	0-MR	66	55	R-S
Sage	10	MS	0		0	R	0		0		0		28	29	R-MS
Bezostaya 1	0		8	MR-MS	65	VS	0		0		2	R-MR	50	23	MR-S
GKF-8001	0		5	MR	65	VS	0		15	VR	2	0-MR	55	15	VR-R
Martonvasari 3	0		43	S	99	VS	0		30	VR	3	MR	66	68	S
NE68719	0		9	R-MR	50	VS	0		0		3	MR	33	48	R-MS
Galiafen	0		9	R	10	R	0		0		4	MR-MS	22	39	R-MR
Bordenave Puan Sag	0		8	R-MR	0	R	0		0		3	R-MR	44	30	R-MR
Oasis	60	MS	0		0		0		0		2	0-MR	17	18	VR
Flavio	0		50	S	99	VS	0		0		6	R-MS	61	43	MR-S
Probstdorfer Karat	0		8	R	40	S	5	MS	0		2	R-MR	72	64	VR-MR
NE73640	10	MS	40	MS-S	80	VS	0		0		2	MR	33	26	R-MS
Lindon	8	0-MS	15	R-MR	15	MS	0		0		4	R-MR	61	38	R-MS
Mironovskaya 808	0		20	MR-MS	99	VS	5	MS	10	R	2	MR	72	38	MS-S
Krasnodarskaya 39	0		58	S	99	VS	5	S	0		3	R-MR	39	45	R-S
Sadovo-1	0		50	S	99	VS	0		20	VR	3	R-MR	44	60	MR-S
F53-70	0		10	MR-MS	0	R	0		0		1	R-MR	39	18	VR-MR
F54-70	0		8	MR-MS	0	R	0		0		1	0-MR	44	26	VR-R
Iulia	10	MS	20	MS	65	VS	5	S	20	VR	4	MR	55	18	MR-S
Yubiley	0		0	0-R	0	R	0		0		3	MR	11	21	VR-R
Zg 4240/73	0		0		5	R	0		0		2	0-MR	28	19	VR-MR
Zg 887/73	0		4	R-MR	0		0		0		2	MR	28	88	VR-R
Zg 4364/73	0		1	0-R	80	VS	0		0		1	0-MR	22	28	VR-R
Zg 4293/73	0		4	MR-MS	0		0		0		1	R-MR	33	60	VR-R
Lerma Rojo 64	90	S	70	S	99	VS	0		20	VR	4	MR-MS	28	35	MR-MS
Mean	7.3		18.5		46.0		1.5		7.8		2.4		43.3	37.2	

Table 78. Reaction of International Winter Wheat Performance Nursery cultivars to leaf rust (Puccinia recondita) in 1977. Continued.

Cultivar	Sulaimaniya, Iraq		Rieti, Italy	Morioka, Japan		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania		Bethlehem, So. Africa		Pretoria, So. Africa		Eskisehir, Turkey	
	sev 0-9	resp	sev %	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	resp
Number of replications	4		4	4		4		4		4		4		4		4	
Atlas 66	1	O-MR	15	5	O-S	18	MS-S	63	S	6	R	4	R-S	10	S	0	O-MS
Priboy	1	O-MR	0	7	O-VR	13	MR	5	R-MR	80	S	1	O-S	4	O-S	4	O-S
Blueboy	0	O-MR	5	39	MS-S	11	MR	30	MR-S	60	S	4	O-S	19	O-S	2	O-S
Odesskaya 51	0		0	9	O-MS	18	S	17	MR-MS	88	VS	3	O-S	4	O-S	2	O-MS
F26-70	2	MR	15	13	M-MS	35	S	55	MS-S	83	S	3	O-S	4	O-S	2	O-S
WA5829	3	MR-S	3	28	S	33	S-VS	9	O-MS	99	VS	5	S	5	O-S	0	O-MS
Sage	0	O-MR	0	1	O-VR	14	MR	0		6	R	1	MR	6	O-R	0	
Bezostaya 1	1	O-R	0	5	VR-M	4	MR	9	MR-MS	99	VS	0	O-MS	2	MR-S	2	O-MS
GKF-8001	1	O-MR	0	4	O-R	8	MR	0		99	VS	1	O-S	0	O-S	3	O-S
Martonvasari 3	1	R	0	19	M-MS	39	VS	70	S	99	VS	3	O-MS	2	O-S	3	O-S
NE68719	1	R	10	11	VR	28	S	0		15	R-MR	6	MS-S	18	S	2	O-MS
Galiafen	0	O-R	8	3	O-VR	10	MR	4	R-MR	10	MR-MS	4	O-S	8	MS-S	2	O-MS
Bordenave Puan Sag	0		5	0		4	MR	0		6	R	13	MR-MS	11	MS-S	0	O-R
Oasis	0		8	0		3	MR	0		5	VR	0		0		0	
Flavio	1	O-MR	8	40	MS-S	18	MS	63	MS-S	95	VS	9	O-S	4	O-S	15	MR-S
Probstdorfer Karat	1	R	0	14	R-M	25	MS	4	R-MR	88	S	1	O-MS	0		3	O-S
NE73640	0	O-MR	3	1	O-R	13	MR	0		6	R	9	O-MR	9	R-MR	0	O-MS
Lindon	0	O-R	0	4	O-VR	11	MR	0		6	R	11	MS-S	14	MS-S	5	O-MS
Mironovskaya 808	1	O-R	5	15	M-S	38	S-VS	53	MS-S	95	VS	17	S	15	S	1	O-MS
Krasnodarskaya 39	1	O-MR	0	33	M-S	35	S	50	MS-S	99	VS	4	MS-S	5	S	2	O-MS
Sadovo-1	1	O-R	3	25	M-MS	48	S	65	S	99	VS	4	O-S	0		5	O-S
F53-70	0		0	8	VR	4	MR	33	MS-S	15	R	2	O-S	1	O-S	3	O-MS
F54-70	0		0	3	O-VR	5	MR	30	MR-MS	15	R	3	O-S	3	S	0	O-MR
Iulia	2	O-MS	0	50	S-VS	11	MS	58	S	60	MS-S	9	S	3	O-S	2	O-MS
Yubiley	0		0	1	O-VR	5	MR	0		8	R-MR	0		0		1	O-MR
Zg 4240/73	1	O-R	0	2	O-VR	2	MR	0		10	R-MR	0		0		0	O-R
Zg 887/73	1	O-MR	5	30	M-S	13	MS	0		28	MR-MS	0		1	O-R	0	O-R
Zg 4364/73	1	O-MR	0	1	O-VR	8	MR	0		9	R-MR	0		0	O-MR	0	
Zg 4293/73	1	O-R	0	2	O-VR	14	MR-MS	60	S	25	MR-MS	24	O-S	50	S	3	O-S
Lerma Rojo 64	0		0	13	VR	25	S	70	S	6	R-MR	0		18	O-S	1	O-MS
Mean	0.7		3.0	14.9		16.9		26.4		47.2		4.7		7.2		2.0	

Table 78. Reaction of International Winter Wheat Performance Nursery cultivars to leaf rust (Puccinia recondita) in 1977. Concluded.

Cultivar	Stillwater, Oklahoma, U.S.A.		Krasnodar, U.S.S.R.		Odessa, U.S.S.R.		Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Severity (%)	
	sev %	resp	sev %	resp	sev %	resp	sev %	resp	sev %	resp	Cultivar mean over 20 sites	High score
Number of replications	4		4		4		4		1			
Atlas 66	0	0-S	2	0-M	17	0-VS	20	0-VS	0		13	63
Priboy	1	0-S	7	MR-MS	44	S-VS	23	MR-VS	0		14	80
Blueboy	4	S	4	R-MS	65	VS	23	0-VS	20	R	21	72
Odesskaya 51	2	0-S	19	M-S	58	R-VS	50	VS	0		27	99
F26-70	4	S	21	M-S	67	VS	38	VS	10	MR	30	99
WA5829	13	S	31	M-S	77	S-VS	73	VS	85	MS	37	99
Sage	1	0-S	1	0-MR	34	R-VS	6	0-VS	0		7	34
Bezostaya 1	2	0-S	25	M-S	72	VS	21	MS	0		19	99
GKF-8001	1	0-S	28	MS-S	72	VS	5	MR-VS	0		19	99
Martonvasari 3	3	S	35	MS-S	84	VS	65	VS	0		36	99
NE68719	2	S	7	R-S	54	VS	20	MR-MS	0		16	54
Galiafen	-		2	R-MR	51	S-VS	25	0-MR	0		11	51
Bordenave Puan Sag	1	0-S	0		7	R-VS	13	0-MR	0		7	44
Oasis	1	0-S	0		17	0-VS	10		0		7	60
Flavio	-		23	MR-S	66	R-VS	63	VS	60	MS	38	99
Probstdorfer Karat	2	S	9	R-M	99	VS	40	MS	30	MR	25	99
NE73640	2	S	9	M-MS	45	VS	18	0-VS	0		15	80
Lindon	6	S	2	0-R	17	0-VS	15	0-MR	0		11	61
Mironovskaya 808	0		30	MS-S	74	0-VS	43	VS	20	MS	32	99
Krasnodarskaya 39	3	S	10	MR-MS	81	VS	50	VS	0		31	99
Sadovo-1	6	S	28	M-S	99	VS	55	VS	15	MR	36	99
F53-70	0	0-S	2	R-M	1	R	10	0-VS	0		7	39
F54-70	0	0-S	2	0-M	25	0-VS	14	0-VS	10	MR	9	44
Iulia	2	S	19	MR-MS	66	R-VS	18	MS-VS	20	MS	25	66
Yubiley	3	S	1	0-MR	5	0-VS	4	MS-VS	0		3	21
Zg 4240/73	0		1	R-MR	23	R-VS	5	MS-VS	0		5	28
Zg 887/73	2	S	3	0-MR	29	R-VS	33	MR-MS	10	R	14	88
Zg 4364/73	0		8	R-MS	3	0-S	5	MS-VS	20	R	9	80
Zg 4293/73	3	S	1	0-MR	41	0-VS	19	MS-VS	40	MS	19	60
Lerma Rojo 64	3	0-S	6	R-MS	8	R-VS	38	VS	15	MR	27	99
Mean	2.2		11.0		46.7		27.3		11.8		19.0	

Table 79. Reaction of International Winter Wheat Performance Nursery cultivars to stem rust (Puccinia graminis tritici) in 1977.

Cultivar	Balcarce, Argentina		Tolbukhin, Bulgaria		Male Ripnany, Czechoslovakia		Martonvasar, Hungary	Sulaimaniya, Iraq		Rieti, Italy	Przeclaw, Poland		Bethlehem, So. Africa	
	sev. %	resp.	sev. %	resp.	sev. %	resp.	sev. %	sev. 0-9	resp.	sev. %	sev. 0-9	resp.	sev. %	resp.
Number of replications	4		1		4		2	4		4	4		4	
Atlas 66	45	MS	15	MR	0		11	1	0-MR	40	1	R	45	S
Priboy	8	MS	80	S	10	R	61	1	0-MS	10	1	0-R	65	S
Blueboy	30	MS	99	VS	10	R	50	2	MS	43	2	R-MR	87	S
Odesskaya 51	13	MS	90	VS	0		72	0		10	1	R	15	S
F26-70	0		75	S	0		50	2	0-MS	25	0		45	S
WA5829	20	MS	65	MS	0		50	2	MS	33	2	R-MR	97	S
Sage	0		0		0		28	0		28	0		0	0-S
Bezostaya 1	50	MS	80	VS	0		39	0		13	1	0-R	18	S
GKF-8001	13	MS	99	VS	0		44	1	0-MS	20	0		19	S
Martonvasari 3	50	MS	65	VS	0		83	0		40	2	MR	24	S
NE68719	0		99	VS	0		55	1	0-MS	18	1	0-R	99	S
Galiafen	0		99	VS	0		28	0		8	1	0-R	25	S
Bordenave Puan Sag	6	MS	99	VS	0		50	0		33	2	MR	55	S
Oasis	0		0		0		11	0		30	0		0	
Flavio	6	MS	99	VS	0		61	2	0-MS	8	0		60	S
Probstdorfer Karat	0		90	VS	0		55	0		20	2	MR	35	S
NE73640	0		0		0		50	1	0-MS	5	1	0-R	33	S
Lindon	3	0-MS	50	S	0		33	1	0-MS	8	1	0-R	50	S
Mironovskaya 808	9	MS	99	VS	10	R	77	0		55	2	MR	68	S
Krasnodarskaya 39	20	MS	99	VS	10	R	61	0	0-MS	33	2	MR	97	S
Sadovo-1	0		80	VS	0		66	0		35	1	R-MR	53	S
F53-70	5	MS	80	VS	0		33	1	0-MS	33	1	0-R	92	S
F54-70	20	MS	80	VS	0		55	0		43	0		97	S
Iulia	20	MS	75	VS	0		55	2	0-MS	45	0		99	S
Yubiley	10	MS	80	VS	0		22	0		23	0		28	S
Zg 4240/73	0		0		0		17	0	0-MS	18	0		0	
Zg 887/73	8	MS	0		0		22	0		33	0		0	
Zg 4364/73	0		0	R	0		22	0		28	0		0	
Zg 4293/73	0		0		0		33	1	0-MS	8	0		0	
Lerma Rojo 64	0		0		0		50	0		28	0	0-R	23	S
Mean	11.1		59.9		1.3		44.6	0.5		25.5	0.7		44.2	

Table 79. Reaction of International Winter Wheat Performance Nursery cultivars to stem rust (Puccinia graminis tritici) in 1977. Concluded.

Cultivar	Pretoria, So. Africa		Eskisehir, Turkey		Fort Collins, Colorado, U.S.A.	Severity (%)	
	sev. %	resp.	sev. %	resp.	sev. 0-9	Cultivar mean over 8 sites	High score
Number of replications	4		4		1		
Atlas 66	80	S	0		0	29	80
Priboy	99	S	4	O-S	0	42	99
Blueboy	99	S	12	MR-S	6	54	99
Odesskaya 51	55	S	3	O-MS	3	32	90
F26-70	99	S	2	O-MS	0	37	99
WA5829	99	S	3	O-S	1	46	99
Sage	13	O-R	0		0	8	28
Bezostaya 1	40	S-VS	7	MR-S	0	31	80
GKF-8001	63	S	7	R-S	0	33	99
Martonvasari 3	38	S	3	O-S	0	38	65
NE68719	99	S	4	O-S	0	47	99
Galiafen	18	MR-S	0		-	22	99
Bordenave Puan Sag	44	MS	2	O-MS	0	36	99
Oasis	0		0		0	5	30
Flavio	99	S	9	MR-S	-	43	99
Probstdorfer Karat	3	S	9	MR-S	1	27	90
NE73640	36	MR	0	O-S	0	15	50
Lindon	87	S	7	MS-S	1	30	87
Mironovskaya 808	60	S	4	O-S	0	48	99
Krasnodarskaya 39	99	S	8	MS-S	0	53	99
Sadovo-1	99	S	6	MS-S	0	42	99
F53-70	92	S	4	O-S	1	42	92
F54-70	97	S	14	S	0	51	97
Iulia	97	S	8	O-S	0	50	99
Yubiley	97	S	4	R-S	0	33	97
Zg 4240/73	0		2	O-S	0	4	18
Zg 887/73	0		0		-	8	33
Zg 4364/73	0		0		0	6	28
Zg 4293/73	0		0	O-MR	0	5	33
Lerma Rojo 64	58	S	3	O-S	-	20	58
Mean	58.9		4.0		0.4	31.2	

Table 80. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1977.

Cultivar	Vienna, Austria	Tolbukhin, Bulgaria	Lethbridge, Alberta, Canada	Male Ripnany, Czechoslovakia	Sedlec, Czechoslovakia	Boehnshausen, East Germany	Cambridge, England	Orgerus, France
Number of replications	4	1	1	4	4	4	2	1
Atlas 66	5	2	1	3	5	4	3	2
Priboy	5	2	2	3	4	3	2	3
Blueboy	8	8	3	5	8	8	8	6
Odesskaya 51	5	3	2	4	4	4	3	4
F26-70	4	3	5	5	4	3	3	1
WA5829	7	1	5	7	7	7	5	7
Sage	5	3	1	6	3	3	2	4
Bezostaya 1	6	3	3	6	6	5	7	5
GKF-8001	6	1	6	4	6	4	8	5
Martonvasari 3	6	2	4	5	6	5	4	4
NE68719	7	4	5	5	8	8	9	7
Galiafen	5	3	-	3	6	4	8	9
Bordenave Puan Sag	5	4	5	5	3	4	2	2
Oasis	2	0	1	2	2	2	3	2
Flavio	6	2	-	3	5	4	6	2
Probstdorfer Karat	3	0	5	4	4	2	3	3
NE73640	6	3	3	5	5	6	3	3
Lindon	5	2	2	3	4	4	2	4
Mironovskaya 808	4	0	1	4	3	1	3	3
Krasnodarskaya 39	7	4	5	4	6	5	6	6
Sadovo-1	7	5	5	3	6	6	7	6
F53-70	5	3	1	3	6	3	3	3
F54-70	5	2	1	4	5	6	6	3
Iulia	5	2	2	2	6	7	2	5
Yubiley	6	2	2	5	6	5	4	3
Zg 4240/73	1	0	0	5	1	4	2	1
Zg 887/73	1	0	-	1	1	1	2	1
Zg 4364/73	1	0	0	1	1	2	3	1
Zg 4293/73	1	-	0	1	1	1	2	1
Lerma Rojo 64	7	3	-	5	7	5	9	7
Mean	4.7	2.3	2.7	3.9	4.5	4.2	4.2	3.8

Table 80. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1977. Continued.

Cultivar	Martonvasar, Hungary	Szeged, Hungary	Morioka, Japan	Wageningen, The Netherlands	Vollebekk, Norway	Przeclaw, Poland	Warsaw, Poland	Fundulea, Romania	Svalof, Sweden sev %
Number of replications	4	4	4	4	4	4	4	4	4
Atlas 66	4	3	2	2	4	6	3	2	1
Priboy	5	4	2	2	2	6	3	4	0
Blueboy	8	7	5	3	6	9	8	8	13
Odesskaya 51	5	5	1	2	3	6	6	5	0
F26-70	7	7	1	3	6	7	8	2	1
WA5829	8	7	4	3	6	7	9	7	1
Sage	7	7	0	3	5	7	8	2	0
Bezostaya 1	6	5	4	2	7	8	7	7	2
GKF-8001	6	6	4	2	7	7	7	7	3
Martonvasari 3	6	7	2	2	5	9	8	7	7
NE68719	8	8	7	5	7	9	9	8	19
Galiafen	5	5	2	2	-	7	6	3	8
Bordenave Puan Sag	7	7	0	3	6	8	7	1	1
Oasis	1	3	1	0	2	3	0	1	0
Flavio	6	6	2	3	-	6	6	2	2
Probstdorfer Karat	2	4	2	3	2	6	5	2	0
NE73640	6	7	0	2	5	7	4	4	4
Lindon	6	7	0	4	4	7	3	1	0
Mironovskaya 808	3	4	2	4	4	4	3	2	0
Krasnodarskaya 39	6	6	5	4	6	7	7	6	7
Sadovo-1	6	7	3	3	7	8	8	7	13
F53-70	5	5	3	4	6	5	6	4	1
F54-70	5	5	3	4	5	5	5	4	3
Iulia	5	6	3	3	6	7	5	4	1
Yubiley	6	5	2	5	7	7	7	7	6
Zg 4240/73	1	3	0	4	0	4	0	1	0
Zg 887/73	1	1	1	3	-	5	0	1	0
Zg 4364/73	1	2	0	3	0	5	0	1	0
Zg 4293/73	1	1	2	3	-	5	0	1	0
Lerma Rojo 64	7	7	2	5	-	9	8	6	4
Mean	5.0	5.0	2.0	2.9	4.7	6.3	5.0	3.8	3.1

Table 80. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1977. Continued.

Cultivar	Zurich, Switzerland	Billings, Montana, U.S.A.	Corvallis, Oregon, U.S.A.	Pullman, Washington, U.S.A.	Krasnodar, U.S.S.R.	Mironvoski, U.S.S.R.	Odessa, U.S.S.R.	Monsheim, W. Germany
Number or replications	1	4	1	4	4	4	4	4
Atlas 66	5	2	3	2	4	2	1	2
Priboy	5	2	3	2	6	2	1	3
Blueboy	6	5	5	2	9	4	4	5
Odesskaya 51	5	1	3	2	5	2	1	3
F26-70	5	2	6	1	5	3	1	2
WA5829	6	3	9	3	8	3	2	6
Sage	6	1	7	1	6	4	2	3
Bezostaya 1	5	2	9	2	8	3	3	4
GKF-8001	5	3	9	3	7	2	3	4
Martonvasari 3	5	4	9	3	7	3	4	4
NE68719	7	5	8	3	8	4	6	6
Galiafen	6	0	9	2	5	2	2	5
Bordenave Puan Sag	6	8	3	2	4	2	0	3
Oasis	4	1	3	2	0	2	0	1
Flavio	5	2	8	-	5	0	0	3
Probstdorfer Karat	5	1	5	2	3	2	1	4
NE73640	6	3	-	1	4	4	1	3
Lindon	4	3	-	1	5	3	1	4
Mironovskaya 808	3	1	3	2	3	2	1	2
Krasnodarskaya 39	5	5	8	4	7	3	3	4
Sadovo-1	6	4	9	2	7	3	4	3
F53-70	5	2	7	2	7	2	4	3
F54-70	5	1	4	3	6	2	3	4
Iulia	5	2	8	3	6	2	4	3
Yubiley	5	3	8	3	7	3	3	3
Zg 4240/73	3	1	6	2	0	2	0	1
Zg 887/73	2	1	7	2	0	-	0	1
Zg 4364/73	3	1	8	2	0	1	0	1
Zg 4293/73	-	0	-	1	0	0	0	1
Lerma Rojo 64	7	2	8	-	5	-	2	6
Mean	5.0	2.3	6.5	2.1	4.8	2.4	1.9	3.2

Table 80. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1977. Concluded.

Cultivar	Weihenstephan, W. Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia	Severity (0-9)	
				Cultivar mean over 27 sites	High score
Number of replications	4	4	1		
Atlas 66	4	3	2	3	6
Priboy	4	5	3	3	6
Blueboy	7	7	6	6	9
Odesskaya 51	3	3	3	3	6
F26-70	4	8	6	4	8
WA5829	4	6	5	6	9
Sage	3	7	4	4	8
Bezostaya 1	5	6	4	5	9
GKF-8001	4	6	4	5	9
Martonvasari 3	5	7	5	5	9
NE68719	7	5	5	7	9
Galiafen	3	3	4	4	9
Bordenave Puan Sag	5	6	3	4	8
Oasis	1	1	2	2	4
Flavio	4	6	5	4	8
Probstdorfer Karat	3	2	2	3	6
NE73640	5	6	5	4	7
Lindon	4	6	2	3	7
Mironovskaya 808	1	2	2	2	4
Krasnodarskaya 39	5	7	5	5	8
Sadovo-1	6	8	7	6	9
F53-70	3	4	5	4	7
F54-70	3	4	4	4	6
Iulia	4	5	5	4	8
Yubiley	6	6	8	5	8
Zg 4240/73	1	1	2	2	6
Zg 887/73	1	1	1	1	7
Zg 4364/73	2	2	1	2	8
Zg 4293/73	1	1	1	1	5
Lerma Rojo 64	7	9	6	6	9
Mean	3.6	4.8	3.9	3.9	

Table 81. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to Septoria (Septoria tritici, Septoria nodorum) in 1977.

Cultivar	Balcarce, Argentina	Prince Edward Island, Canada	Chillan, Chile	Boehnshausen, E. Germany	Suwon, Korea	Przeclaw, Poland	Warsaw, Poland	Corvallis, Oregon, U.S.A.	Zagreb, Yugoslavia	Severity (0-9) Cultivar: mean over 9 sites	High score
Number of replications	4	1	1	4	4	4	4	1	1		
Atlas 66	3	5	0	4	2	6	4	5	4	4	6
Priboy	5	5	0	2	4	8	6	5	5	4	8
Blueboy	3	2	0	4	2	7	6	6	6	4	7
Odesskaya 51	4	2	0	4	3	8	7	7	5	4	8
F26-70	5	7	0	3	3	8	9	5	6	5	9
WA5829	6	5	0	5	3	7	9	7	3	5	9
Sage	4	7	0	4	4	7	9	6	5	5	9
Bezostaya 1	6	3	0	3	4	8	8	7	6	5	8
GKF-8001	6	4	1	3	4	8	8	7	4	5	8
Martonvasari 3	6	2	0	3	3	8	9	5	6	5	9
NE68719	7	3	0	3	3	8	9	5	5	5	9
Galiafen	4	-	2	4	-	8	9	7	4	5	9
Bordenave Puan Sag	6	7	0	3	3	7	9	8	5	5	9
Oasis	4	1	0	4	3	5	9	7	6	4	9
Flavio	5	-	0	6	-	6	7	6	5	5	7
Probstdorfer Karat	3	4	0	2	3	8	6	4	5	4	8
NE73640	6	4	0	4	3	7	9	7	6	5	9
Lindon	3	5	0	3	4	8	8	5	5	5	8
Mironovskaya 808	4	2	0	2	3	6	5	6	4	4	6
Krasnodarskaya 39	5	1	0	2	3	8	7	5	4	4	8
Sadovo-1	6	3	0	4	4	8	9	7	5	5	9
F53-70	4	4	0	2	3	8	7	8	4	4	8
F54-70	6	2	0	3	3	7	5	5	5	4	7
Iulia	6	7	0	2	4	8	6	7	5	5	8
Yubiley	6	3	2	3	5	8	7	6	4	5	8
Zg 4240/73	7	3	4	4	2	8	5	6	4	5	8
Zg 887/73	4	-	3	3	2	8	7	8	4	5	8
Zg 4364/73	6	4	6	2	3	8	7	8	3	5	8
Zg 4293/73	4	2	0	4	1	8	9	7	6	5	9
Lerma Rojo 64	7	-	6	5	-	8	9	8	5	7	9
Mean	5.0	3.7	0.8	3.3	3.1	7.4	7.3	6.3	4.8	4.7	

Table 82. Disease readings with correlations versus grain yield for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivar	Stripe rust		Leaf rust		Stem rust		Mildew		Septoria	
	sev %	r	sev %	r	sev %	r	sev 0-9	r	sev 0-9	r
Atlas 66	42	-.11	13	.12	29	-.30	3	.12	4	.59**
Priboy	13	-.20	14	.08	42	-.03	3	.22*	4	-.41*
Blueboy	23	.01	21	.01	54	-.34*	6	-.03	4	.02
Odesskaya 51	27	-.36**	27	.34**	32	.02	3	.04	4	.01
F26-70	20	-.32*	30	.31**	37	.02	4	.07	5	-.26
WA5829	35	-.30*	37	.23*	46	-.44**	6	-.21*	5	-.17
Sage	10	-.17	7	.16	8	.05	4	.04	5	-.15
Bezostaya 1	15	-.21	19	.08	31	-.25	5	-.02	5	-.21
GKF-8001	12	-.15	19	.12	33	-.03	5	-.18	5	-.36
Martonvasari 3	32	.14	36	.21	38	-.24	5	-.05	5	-.29
NE68719	32	.10	16	.15	47	-.37	7	-.12	5	-.74**
Galiafen	20	.22	11	.18	22	.09	4	-.09	5	-.16
Bordenave Puan Sag	20	-.17	7	.20	36	.04	4	.18	5	-.37
Oasis	51	.05	7	-.25*	5	-.02	2	-.04	4	-.30
Flavio	28	-.07	38	.02	43	.03	4	.28*	5	.12
Probstdorfer Karat	8	-.30*	25	.20	27	.04	3	.05	4	-.08
NE73640	49	.16	15	.02	15	.13	4	.24*	5	-.14
Lindon	40	.19	11	.25*	30	-.05	3	.11	5	.28
Mironovskaya 808	14	-.36**	32	.09	48	-.03	2	.02	4	-.44*
Krasnodarskaya 39	39	.15	31	.11	53	-.31	5	-.28**	4	-.36
Sadovo-1	18	-.38**	36	.08	42	-.12	6	-.24*	5	-.30
F53-70	12	-.27*	7	.05	42	-.27	4	-.08	4	-.52**
F54-70	16	-.25	9	.03	51	-.35*	4	.19	4	-.40
Iulia	20	-.24	25	.21	50	-.36*	4	-.04	5	-.29
Yubiley	11	-.01	3	.19	33	-.10	5	.05	5	-.27
Zg 4240/73	24	.20	5	.22	4	-.10	2	.40**	5	.12
Zg 887/73	38	-.07	14	.20	8	-.16	1	-.01	5	.28
Zg 4364/73	31	.21	9	.29	6	-.15	2	.17	5	-.18
Zg 4293/73	28	.37	19	.04	5	.05	1	.03	5	.39
Lerma Rojo 64	23	-.51**	27	-.27*	20	.16	6	.27*	7	-.55*
Overall coefficient		-.08**		.09**		-.15**		-.02		-.17**

* Significant at the .05 probability level.
** Significant at the .01 probability level.

Table 83. Disease readings with correlation coefficients versus grain protein content for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery, 1977.

Cultivar	Stripe rust		Leaf rust		Stem rust		Mildew		Septoria	
	sev %	r	sev %	r	sev %	r	sev 0-9	r	sev 0-9	r
Atlas 66	42	-.35*	13	-.06	29	-.11	3	-.12	4	.03
Priboy	13	-.21	14	.07	42	.09	3	-.16	4	-.09
Blueboy	23	-.31*	21	.09	54	-.09	6	-.01	4	.27
Odesskaya 51	27	-.43**	27	-.14	32	-.16	3	-.26*	4	.13
F26-70	20	-.12	30	-.13	37	-.18	4	-.12	5	.15
WA5829	35	-.29*	37	.09	46	.08	6	.13	5	.01
Sage	10	-.22	7	.08	8	-.26	4	-.01	5	.43*
Bezostaya 1	15	-.45**	19	.01	31	-.04	5	-.11	5	-.01
GKF-8001	12	-.22	19	-.03	33	-.26	5	.04	5	-.11
Martonvasari 3	32	-.51**	36	-.11	38	-.18	5	-.08	5	.06
NE68719	32	-.37**	16	-.09	47	.24	7	.28**	5	.19
Galiafen	20	-.47**	11	-.08	22	.07	4	.07	5	.28
Bordenave Puan Sag	20	-.55**	7	.09	36	.02	4	-.02	5	.39
Oasis	51	-.45**	7	-.02	5	-.38*	2	.05	4	.59**
Flavio	28	-.07	38	-.14	43	-.27	4	-.05	5	.03
Probstdorfer Karat	8	-.28*	25	.09	27	-.04	3	-.26*	4	-.25
NE73640	49	-.44**	15	-.16	15	.12	4	-.09	5	.19
Lindon	40	-.28*	11	.11	30	.13	3	-.01	5	-.05
Mironovskaya 808	14	-.33*	32	-.14	48	.03	2	.09	4	-.00
Krasnodarskaya 39	39	-.52**	31	.01	53	.01	5	-.01	4	-.09
Sadovo-1	18	-.14	36	-.24*	42	-.34*	6	-.03	5	-.06
F53-70	12	-.42**	7	.30*	42	-.30	4	-.17	4	.02
F54-70	16	-.39**	9	.25*	51	-.19	4	-.07	4	-.20
Iulia	20	-.68**	25	.13	50	-.29	4	-.12	5	-.09
Yubiley	11	-.30*	3	.19	33	-.27	5	-.08	5	-.41*
Zg 4240/73	24	-.44**	5	-.05	4	-.40*	2	.02	5	-.42*
Zg 887/73	38	-.31*	14	.10	8	-.33	1	-.19	5	-.42*
Zg 4364/73	31	-.48**	9	.12	6	-.30	2	-.26*	5	-.33
Zg 4293/73	28	-.21	19	.18	5	.15	1	-.29**	5	-.39
Lerma Rojo 64	23	-.31*	27	-.01	20	-.12	6	-.30*	7	-.13
Overall correlation coefficient		-.30**		-.06**		-.11**		-.11**		.02

* Significant at the .05 probability level.
** Significant at the .01 probability level.

Table 84. Protein and dough quality data from Svalof, Sweden for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery.[4/]

Cultivar	Protein in dry matter: Wheat %	Protein in dry matter: Flour %	Gluten content %	Falling number sec.	Pearling resist. grams	Flour yield %	Flour test weight	Dough, g/100 g flour	Bread baking: Weight[1/] g	Bread baking: Volume[1/] ml	Bread baking: Form[2/] 1-7	Bread baking: Porosity[3/] 1-8
Atlas 66	18.6	17.4	54.0	392	6.15	44	349	166	136	930	6	6
Priboy	14.8	13.6	35.0	170	6.01	61	425	165	137	858	5	5
Blueboy	14.5	12.4	34.0 sticky	232	5.44	57	383	164	143	748	4	7
Odesskaya 51	17.2	16.1	38.0	222	5.88	59	411	167	142	969	6	5
F26-70	18.9	18.1	48.1	170	5.93	63	427	168	143	974	6	6
WA5829	14.1	11.7	31.8	261	5.89	56	383	165	140	792	5	6
Sage	19.7	17.9	47.0	124	6.16	60	438	169	145	<550	-	-
Bezostaya 1	16.7	15.9	41.0	171	5.81	64	437	165	137	917	6	5
GKF-8001	14.8	13.9	32.9	193	5.93	68	453	166	144	740	5	5
Martonvasari 3	18.2	17.0	45.2	235	5.32	64	435	168	144	941	6	5
NE68719	17.3	15.7	38.8	251	5.97	67	429	164	139	889	6	6
Galiafen	15.6	14.3	34.6	253	5.72	48	355	164	139	792	5	6
Bordenave Puan Sag	19.1	17.9	44.9	236	6.28	64	456	172	141	1049	6	5
Oasis	18.7	16.7	45.2 sticky	228	5.63	50	354	163	139	727	2	3
Flavio	15.8	13.4	35.3 sticky	201	5.38	50	349	163	135	571	1	4
Probstdorfer Karat	15.9	14.7	36.4	241	5.87	65	443	167	145	695	4	6
NE73640	20.2	18.9	46.2	236	5.80	64	440	166	138	1112	6	6
Lindon	16.1	14.8	39.2	354	6.27	65	417	165	144	875	6	6
Mironovskaya 808	15.8	15.4	38.1	304	5.61	67	441	164	136	853	6	7
Krasnodarskaya 39	16.2	15.0	39.2	178	6.05	65	459	169	147	828	5	5
Sadovo 1	16.0	14.6	40.1	161	5.83	64	440	170	151	612	3	5
F53-70	19.4	18.3	45.9	300	5.76	64	442	168	143	1008	6	6
F54-70	20.0	18.9	45.9	296	5.77	64	443	169	144	1115	6	6
Iulia	17.3	16.1	49.9	269	5.75	66	453	168	139	941	6	5
Yubiley	15.3	13.5	32.2	175	5.40	55	394	165	140	743	4	5
Zg 4240/73	16.1	12.6	39.0	181	5.70	52	355	163	142	799	4	4
Zg 887/73	14.5	13.2	40.1 sticky	242	6.17	69	467	166 sticky	143	623	3	4
Zg 4364/73	16.0	13.9	33.3	236	5.61	50	369	162	139	729	4	6
Zg 4293/73	16.4	14.3	39.2	212	5.66	53	364	161	138	837	4	5

1/ Calculated on 100 g flour
2/ Form: Scale 1-7, 7 is the best value
3/ Porosity acc. to Dallman: Scale 1-8, 8 the smallest pores
4/ Data submitted by Dr. B. Kristiansson

Table 85. Agronomic and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Harrow, Ontario, Canada, 1977.[a]

Cultivar	Yield kg/ha	Test weight kg/hl	Plant height cm	Lodging %	Heading scale	Winter survival %	Mildew 0-9
Probstdorfer Karat	5648	81	101	3	L	100	0
Odesskaya 51	5471	79	82	6	M	100	0
Priboy	5280	79	83	3	M	100	0
Blueboy	5104	72	90	3	M	100	8
NE68719	5070	74	72	1	M	100	6
NE73640	4886	78	85	2	M	100	0
Lindon	4748	79	74	1	M	100	5
Sadovo 1	4740	77	73	1	M	95	4
F53-70	4579	78	80	2	M	100	0
F26-70	4560	79	77	2	M	100	2
Sage	4515	78	92	4	E	100	0
GKF-8001	4504	77	55	0	M	100	1
Bezostaya 1	4463	78	79	4	M	100	0
Krasnodarskaya 39	4421	74	85	5	M	100	6
Yubiley	4313	76	60	0	M	100	1
Oasis	4250	78	85	3	M	100	0
Martonvasari 3	4241	77	77	2	M	100	5
Mironovskaya 808	4226	75	107	4	M	100	0
Iulia	3938	77	75	1	M	100	2
F54-70	3825	78	79	1	M	100	0
Bordenave Puan Sag	3619	80	98	11	E	100	7
WA5829	3413	72	78	1	L	100	9
Zg 4364/73	2501	74	52	0	M	45	0
Atlas 66	2309	72	90	12	M	20	0
Zg 4240/73	2010	72	50	0	M	35	0
Zg 887/73	1500	73	55	1	M	18	0
Zg 4293/73	700	71	54	1	M	32	0
Galiafen	-	-	75	-	-	0	-
Flavio	-	-	-	-	-	0	-
Lerma Rojo 64	-	-	-	-	-	0	-

[a] The data was provided by Dr. A. H. Teich.

Table 86. Agronomic and disease data for the 30 cultivars grown in the Ninth International Winter Wheat Performance Nursery at Guelph, Ontario, Canada, 1977.[b/]

Cultivar	Yield q/ha	Plant height cm	Lodging 1-9	Date of Heading days from Jan. 1	Date of Ripening[a/] 1-9	Winter survival %	Mildew sev 1-9
Krasnodarskaya 39	92.1	114	9	160	4	100	7
Priboy	77.7	107	9	156	5	95	2
F54-70	74.3	102	1	154	1	100	3
Zg 4240/73	72.6	50	1	152	4	60	1
Probstdorfer Karat	72.1	115	2	161	6	99	2
Iulia	71.1	90	1	153	1	99	3
Oasis	68.8	117	7	153	3	100	3
Sadovo-1	68.8	65	1	153	1	98	5
Bezostaya 1	68.4	96	5	156	5	90	3
F53-70	68.0	100	1	154	2	100	3
Zg 4364/73	67.4	63	1	154	3	88	1
Martonvasari 3	64.7	93	3	156	2	88	5
Blueboy	64.6	107	5	156	5	97	2
Odesskaya 51	64.6	100	3	153	2	100	3
Yubiley	63.8	76	1	156	1	100	4
F26-70	61.5	94	1	151	1	99	2
Zg 4293/73	61.2	46	1	152	1	70	1
Mironovskaya 808	61.2	130	9	161	3	100	3
NE73640	60.4	113	9	152	2	100	3
GKF-8001	59.1	70	1	159	7	85	5
Sage	55.9	97	9	154	1	94	1
NE68719	53.9	80	1	151	1	75	9
Lindon	51.7	100	9	153	5	98	5
WA5829	50.0	80	1	160	7	98	7
Bordenave Puan Sag	39.7	112	9	154	5	60	7
Atlas 66	38.9	97	7	155	3	25	4
Galiafen	-	-	-	-	-	1	-
Flavio	-	-	-	-	-	1	-
Zg 887/73	-	-	-	-	-	1	-
Lerma Rojo 64	-	-	-	-	-	1	-

[a/] 1 = extremely early, 5 = medium, 9 = extremely late.

[b/] data provided by Drs. L.A. Hunt and P. Mehta, University of Guelph, Guelph, Ontario.

Table 87. Agronomic and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at the Bet-Dagan Experiement Station, Israel, 1977.[a/]

Cultivar	Plant height cm	Septoria tritici coverage %	Rust: Leaf sev %	Leaf resp	Stem sev %	Stem resp	Yellow sev %	Yellow resp
Atlas 66	145	35	50	S	0		20	S
Priboy	110	60	50	R-S	0		0	
Blueboy	135	67	80	S	10	MS	40	S
Odesskaya 51	105	4	10	MS	10	MS	0	
F26-70	110	23	50	VS	20	VS	0	
WA5829	100	37	60	VS	20	VS	50	S
Sage	125	4	0		0		0	
Bezostaya 1	105	2	40	S	10	S	0	
GKF-8001	80	12	40	S	1	MS	0	
Martonvasari 3	105	4	60	S	10	MS	0	
NE68719	110	23	50	MS	20	S	0	
Galiafen	110	30	20	MS	0		0	
Bordenave Puan Sag	135	8	0		60	S	0	
Oasis	125	40	0		0		60	VS
Flavio	90	73	80	VS	10	MS	0	
Probstdorfer Karat	115	3	10	MS	30	S	0	
NE73640	125	18	0		10	S	10	S
Lindon	125	50	60	MS	1	MR	0	
Mironovskaya 808	137	8	30	S	40	VS	0	
Krasnodarskaya 39	115	4	0		0		10	S
Sadovo-1	95	24	80	VS	30	S	0	
F53-70	110	10	10	MS	10	S	0	
F54-70	110	4	0		1	S	0	
Iulia	100	4	5	MS	1	MS	0	
Yubiley	90	53	40	S	1	MS	0	
Zg 4240/73	82	60	20	S	0		0	
Zg 887/73	84	63	10	S	0		0	
Zg 4364/73	90	33	5	MS	0		0	
Zg 4293/73	74	87	30	S	0		0	
Lerma Rojo 64	102	90	1	MS	0		0	

[a/] data provided by Dr. Zahir Eyal

Table 88. Disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown near Wageningen, The Netherlands.[a/]

Cultivar	Stripe rust sev %	Stripe rust resp	Mildew sev %
Atlas 66	10	VS	0
Priboy	1	VS-VR	0
Blueboy	70	VS	10
Odesskaya 51	20	MS	0
F26-70	80	VS	0
WA5829	20	M-VR	2
Sage	25	VR	0
Bezostaya 1	5	M	10
GKF-8001	1	M	5
Martonvasari 3	70	VS	0
NE68719	50	VS	20
Galiafen	2	M	5
Bordenave Puan Sag	60	MS	2
Oasis	80	VS	0
Flavio	40	M	0
Probstdorfer Karat	1	M	0
NE73640	80	VS	0
Lindon	90	MS	0
Mironovskaya 808	1	VR	0
Krasnodarskaya 39	90	VS	0
Sadovo-1	30	VS	10
F53-70	3	VS-VR	0
F54-70	5	M	0
Iulia	2	M	1
Yubiley	1	M	0
Zg 4240/73	1	VR	0
Zg 887/73	1	MR	0
Zg 4364/73	5	M	0
Zg 4293/73	20	VS	0
Lerma Rojo 64	5	M	30

[a/] data provided by Dr. J. Mesdag

Table 89. Agronomic, quality, and disease data for the 30 cultivars in the Ninth International Winter Wheat Performance Nursery grown at Lincoln, New Zealand, 1977-1978. [c/]

Cultivar	Yield gm	Germination	Plant height	Heading date November, 1977	Leaf rust 0-5	Septoria tritici 0-5	Grinding [b/] test 0-3
Kopara (local check)	513	good	intermediate	20	4	3	3
Iulia	437	"	"	15	1	3	2
Sadovo 1	422	"	"	9	1	5	2
Flavio	414	"	"	9	-	-	1
Mironovskaya 808	412	"	tall	23	0	2	2+
Bordenave Puan Sag	389	"	"	17	2	3	3
Probstdorfer Karat	387	"	"	23	1	5	2
Zg 887/73	375	"	short	12	2	3	3
WA5829	374	"	"	23	2	2	0
Blueboy	365	"	"	17	2	3	1-
Bezostaya 1	352	"	intermediate	14	1	3	2
Zg 4364/73	320	"	short	11	1	3	
Yubiley	316	"	"	12	1	4	
GKF-8001	315	"	"	19	0	4	
F53-70	305	"	intermediate	20	1	4	
Atlas 66	305	"	tall	20	1	1	
F54-70	297	"	intermediate	15	-	-	
Lerma Rojo 64	289	"	tall	1	-	-	
Krasnodarskaya 39	272	"	intermediate	20	2	3	
Lindon	268	"	"	14	3	3	
Galiafen	268	moderate	"	15	0	3	
Martonvasari 3	260	good	"	15	1	2	
Odesskaya 51	245	"	short	15	0	3	
Oasis	241	"	intermediate	16	1	2	
F26-70	227	"	short	7	2	3	
NE73640	222	"	intermediate	16	1	3	
Priboy	201	moderate	short	17	2	3	
NE68719	186	"	"	19	1	3	
Sage	165	poor	"	19	1	2	
Zg 4293/73	158[a/]	good	"	7	5	2	
Zg 4240/73	139[a/]	"	"	7	2	3	

a/ severe bird damage

b/ less than 1+ are unacceptable for milling purposes

c/ data provided by W.B. Griffin and G.M. Wright

Table 90. Two-year means and rankings of grain yield (q/ha) expressed on a regional basis for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Northern Europe		Southern Europe		Middle East		Far East		North America		Southern Hemisphere		Cultivar mean over 46 sites
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha
Number of Sites	13		10		9		2		9		3		
Priboy	52.9	1	52.5	1	35.7	10	43.5	3	42.0	5	33.5	9	45.6
Probstdorfer Karat	51.0	2	51.9	2	36.8	7	37.9	9	44.3	1	32.6	10	45.3
Bezostaya 1	49.8	5	49.0	4	38.3	5	45.1	2	43.8	2	37.2	1	45.2
Blueboy	48.9	6	48.7	5	41.9	1	48.8	1	42.2	4	32.6	11	45.1
Odesskaya 51	50.2	3	50.8	3	38.3	4	43.3	4	41.2	6	36.7	2	45.1
Martonvasari 3	50.1	4	48.4	6	38.8	3	40.3	5	43.7	3	35.8	4	44.9
GKF-8001	47.3	7	45.3	10	39.1	2	40.0	6	39.4	8	35.6	5	42.6
Sage	40.0	11	45.9	9	35.7	9	34.4	11	37.2	10	36.3	3	39.4
WA5829	44.2	8	37.8	15	32.9	13	38.5	8	40.5	7	24.6	15	38.3
NE68719	40.5	10	43.4	11	34.4	12	36.9	10	38.2	9	24.1	16	38.3
Oasis	39.8	12	47.0	7	30.6	15	38.9	7	30.4	11	28.7	13	37.0
Flavio	42.7	9	46.9	8	37.1	6	16.3	14	21.4	14	34.1	8	36.7
Bordenave Puan Sag	38.0	14	40.5	13	34.4	11	34.3	12	27.6	12	35.3	6	35.5
Atlas 66	39.0	13	42.1	12	29.3	16	32.6	13	26.2	13	25.9	14	34.1
Galiafen	32.6	15	38.4	14	31.5	14	6.3	15	17.4	16	34.3	7	29.7
Lerma Rojo 64	29.8	16	35.4	16	36.6	8	5.1	16	19.1	15	31.1	12	29.3
Mean	43.5		45.2		35.7		33.9		34.7		32.4		39.5
L.S.D. of cultivar means (.05)	6.6		8.9		5.0		15.6		9.9		N.S.		3.7
Coefficient of variation (%)	10.8		13.4		17.3		12.8		14.8		11.5		13.5
F test:													
Variety	8.8**		2.9*		3.9**		7.0**		7.2**		1.3^{ns}		17.9**
Year x Variety	1.9*		2.4**		0.8^{ns}		1.2^{ns}		1.6^{ns}		2.5*		1.6^{ns}
Location x Variety	2.9**		1.7**		1.7**		1.7^{ns}		6.4**		1.3^{ns}		3.0**

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Kabul, Afghanistan[a/]		Herat, Afghanistan		Bordenave, Argentina		Vienna, Austria		Tolbukhin, Bulgaria		Male Ripnany, Czechoslovakia		Sedlec Czechoslovakia	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Priboy	56.7	3	40.7	11	30.8	6	55.3	1	60.5	1	100.5	2	67.3	3
Probstdorfer Karat	55.7	6	42.8	8	26.7	11	50.1	5	58.2	3	99.4	4	69.4	1
Bezostaya 1	54.4	9	47.3	5	28.3	8	51.7	4	54.7	5	99.1	5	63.2	7
Blueboy	53.4	11	43.9	7	34.7	2	40.0	12	59.9	2	92.5	7	67.8	2
Odesskaya 51	55.0	8	45.3	6	32.4	4	55.0	2	58.0	4	97.0	6	64.2	6
Martonvasari 3	57.5	2	48.6	4	26.8	10	46.5	8	49.1	9	101.3	1	65.5	4
GKF-8001	61.3	1	51.5	1	25.4	12	42.8	9	54.3	6	100.0	3	63.1	8
Sage	55.7	7	39.7	12	35.2	1	47.3	6	50.6	8	87.3	9	53.3	10
WA5829	42.5	16	34.4	15	25.1	13	36.1	15	34.2	12	86.0	10	64.7	5
NE68719	45.5	15	41.7	9	29.2	7	38.9	14	53.2	7	87.3	8	61.3	9
Oasis	51.8	12	35.5	13	20.3	16	40.6	11	45.1	10	78.9	12	39.4	13
Flavio	56.6	4	49.5	2	31.2	5	54.8	3	32.9	13	84.3	11	31.7	14
Bordenave Puan Sag	54.2	10	35.1	14	32.9	3	46.8	7	43.7	11	73.0	14	52.5	12
Atlas 66	49.1	14	28.8	16	23.3	15	39.1	13	28.9	14	73.0	13	53.3	10
Galiafen	50.5	13	40.9	10	27.6	9	33.4	16	24.9	15	66.2	16	9.7	16
Lerma Rojo 64	56.1	5	49.3	3	25.1	13	41.6	10	12.3	16	67.2	15	17.9	15
Mean	53.5		42.2		28.4		45.0		45.0		87.1		52.8	
L.S.D. of cultivar means (.05)	7.1		N.S.		7.8		10.9		N.S.		21.2		16.2	
Coefficient of variation (%)	14.7		17.0		11.8		15.8		12.4		4.9		12.4	
F test: Cultivars	4.0**		1.2^{ns}		2.7*		3.8**		1.9^{ns}		3.1*		11.9**	
Year x Cultivar	0.7^{ns}		5.5**		4.7**		2.1*		28.0**		21.5**		5.4**	

[a/] This site is not included in the overall means and analyses.

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Boehnshausen, East Germany		Jokioinen, Finland		Orgerus, France		Martonvasar, Hungary		Szeged, Hungary		Hamadan, Iran		Karaj, Iran	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Priboy	59.5	1	1.7	8	64.8	2	68.5	2	66.6	4	29.2	13	65.6	8
Probstdorfer Karat	56.7	2	4.3	1	54.8	9	69.3	1	68.9	2	42.6	3	64.0	10
Bezostaya 1	50.6	9	1.7	7	61.8	4	55.9	8	60.0	8	36.9	8	68.5	5
Blueboy	54.3	6	1.1	11	56.8	8	54.1	11	58.7	11	44.0	2	71.1	2
Odesskaya 51	52.0	7	3.1	2	60.2	5	64.5	3	59.6	9	38.6	6	68.4	6
Martonvasari 3	56.5	3	2.3	3	63.4	3	55.4	9	61.5	6	36.3	10	73.3	1
GKF-8001	54.7	4	1.2	10	57.5	7	45.2	14	45.7	16	36.6	7	70.9	3
Sage	40.7	15	2.0	5	52.1	11	64.1	5	57.4	12	38.8	5	65.2	9
WA5829	46.6	10	0.8	12	45.7	16	43.2	16	51.7	14	49.2	1	62.5	11
NE68719	50.7	8	2.3	4	45.8	15	48.3	12	48.2	15	41.1	4	59.6	14
Oasis	44.0	11	1.8	6	52.4	10	64.1	4	60.6	7	32.1	12	58.3	15
Flavio	54.4	5	0.2	9	70.3	1	55.2	10	71.8	1	19.9	16	69.8	4
Bordenave Puan Sag	42.0	13	0.5	13	48.2	14	58.2	6	53.2	13	36.8	9	61.0	13
Atlas 66	40.3	16	0.1	16	49.7	13	57.6	7	66.8	3	34.0	11	56.4	16
Galiafen	40.8	14	0.1	15	57.6	6	46.3	13	58.9	10	28.8	14	61.6	12
Lerma Rojo 64	42.2	12	0.2	14	51.3	12	44.5	15	64.0	5	21.0	15	66.5	7
Mean	49.1		1.5		55.8		55.9		59.6		35.4		65.2	
L.S.D. of cultivar means (.05)	N.S.		2.1		9.5		15.0		11.9		9.9		N.S.	
Coefficient of variation (%)	12.9		118.6		6.5		9.1		14.0		23.7		13.1	
F test: Cultivars	2.2^{ns}		3.1*		5.0**		3.0*		3.4*		5.7**		2.0^{ns}	
Year x Cultivar	4.0**		1.3^{ns}		6.0**		7.7**		1.8*		1.2^{ns}		1.4^{ns}	

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Sulaimaniya, Iraq		Milano, Italy		Rieti, Italy		Morioka Iwate, Japan		Amman, Jordan		Suwon, Korea		Kathmandu, Nepal	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Priboy	42.5	7	43.5	8	29.7	8	33.4	10	14.1	8	53.5	1	32.4	10
Probstdorfer Karat	34.1	13	40.7	13	32.2	4	36.9	6	11.1	13	38.8	9	29.6	11
Bezostaya 1	43.1	5	44.6	7	31.0	5	38.7	4	9.5	14	51.4	2	34.3	8
Blueboy	41.3	8	46.2	3	33.6	3	51.5	1	19.2	2	46.0	4	36.5	5
Odesskaya 51	44.8	3	45.4	5	30.0	6	36.9	7	13.3	10	49.8	3	37.2	4
Martonvasari 3	44.3	4	46.9	2	29.4	10	36.2	8	15.3	5	44.4	5	35.4	7
GKF-8001	42.6	6	41.0	12	26.4	14	37.0	5	11.9	12	42.9	7	25.2	16
Sage	39.3	9	42.9	10	28.0	12	29.8	13	17.8	3	38.9	8	32.9	9
WA5829	25.2	16	36.9	15	22.1	16	41.8	2	8.3	16	35.2	12	28.2	13
NE68719	29.8	14	45.0	6	27.9	13	30.8	12	9.4	15	43.1	6	28.8	12
Oasis	36.1	10	43.0	9	29.6	9	39.3	3	13.5	9	38.6	10	27.7	14
Flavio	51.5	2	55.4	1	34.4	1	22.4	14	21.3	1	10.2	14	35.6	6
Bordenave Puan Sag	35.0	11	34.0	16	25.3	15	32.4	11	15.0	6	36.1	11	38.2	3
Atlas 66	29.4	15	40.3	14	34.3	2	36.0	9	14.3	7	29.3	13	27.5	15
Galiafen	34.4	12	45.4	4	29.9	7	10.0	15	12.2	11	2.6	15	40.0	2
Lerma Rojo 64	52.4	1	42.0	11	28.4	11	8.4	16	17.4	4	1.9	16	40.9	1
Mean	39.1		43.3		29.5		32.6		14.0		35.2		33.1	
L.S.D. of cultivar means (.05)	9.4		N.S.		N.S.		17.4		6.0		14.7		N.S.	
Coefficient of variation (%)	15.2		12.4		31.7		15.1		36.2		10.3		16.0	
F test:														
Cultivars	6.0**		1.6^{ns}		0.6^{ns}		3.6**		3.3*		11.2**		1.5^{ns}	
Year x Cultivar	2.2*		3.7**		1.6^{ns}		10.9**		1.2^{ns}		14.5**		4.6**	

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Wageningen, Netherlands		Vollebekk, Norway		Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa (irrigated)		Bethlehem, South Africa (dryland)		Svalof, Sweden	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Priboy	48.3	10	25.5	2	45.6	1	51.3	2	33.0	12	36.6	5	46.5	2
Probstdorfer Karat	57.0	2	22.6	4	45.1	2	46.1	7	35.9	11	35.1	6	47.5	1
Bezostaya 1	48.5	9	28.0	1	40.0	5	48.3	5	45.6	1	37.7	2	37.4	7
Blueboy	56.1	3	23.0	3	38.0	6	44.2	12	29.6	13	33.4	10	42.4	3
Odesskaya 51	55.1	4	19.1	7	41.4	4	51.8	1	40.7	5	37.0	3	39.8	5
Martonvasari 3	50.6	8	13.0	9	43.4	3	46.6	6	43.6	2	36.9	4	41.9	4
GKF-8001	50.8	7	22.1	5	30.4	10	45.0	10	42.2	3	39.1	1	36.8	8
Sage	35.5	16	7.9	11	35.0	8	49.2	4	39.9	6	33.9	9	28.7	12
WA5829	57.5	1	21.8	6	27.6	12	31.5	16	21.2	15	27.6	14	38.0	6
NE68719	42.2	12	10.5	10	25.3	13	44.6	11	16.8	16	26.2	15	35.9	9
Oasis	47.7	11	19.0	8	30.0	11	45.3	9	36.1	10	29.6	13	31.5	11
Flavio	55.0	5	0.1	14	23.6	14	50.3	3	38.3	8	32.6	11	14.3	14
Bordenave Puan Sag	38.4	15	0.2	13	33.2	9	45.4	8	38.5	7	34.4	7	27.0	13
Atlas 66	40.9	13	1.0	12	36.0	7	41.1	13	28.6	14	25.8	16	32.4	10
Galiafen	51.7	6	0.0	15	10.6	15	32.7	15	41.1	4	34.3	8	5.5	15
Lerma Rojo 64	39.8	14	0.0	15	5.1	16	38.3	14	38.0	9	30.1	12	0.4	16
Mean	48.4		13.4		31.9		44.5		35.6		33.2		31.6	
L.S.D. of cultivar means (.05)	9.2		11.7		19.7		10.8		N.S.		N.S.		16.0	
Coefficient of variation (%)	8.6		40.5		16.7		7.6		12.8		9.2		11.0	
F test: Cultivars	5.4**		7.3**		3.2*		2.8*		1.3^{ns}		1.1^{ns}		6.8**	
Year x Cultivar	4.2**		4.1**		12.0**		9.1**		18.7**		13.8**		18.5**	

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Zurich, Switzerland		Ankara, Turkey		Erzurum, Turkey		Eskisehir, Turkey		Davis, California USA		Fort Collins, Colorado USA		Billings, Montana USA	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Priboy	49.4	3	28.6	4	39.7	8	28.3	8	55.6	6	49.6	2	75.3	4
Probstdorfer Karat	46.5	8	28.0	5	47.2	5	31.4	2	47.3	13	49.9	1	85.3	1
Bezostaya 1	51.5	2	28.7	3	47.7	4	28.8	6	54.1	10	49.3	3	73.0	7
Blueboy	52.3	1	34.4	1	51.3	2	35.9	1	62.8	4	49.1	4	73.0	6
Odesskaya 51	46.9	7	28.0	6	40.5	7	29.0	4	51.0	11	48.4	5	77.1	3
Martonvasari 3	47.5	5	23.1	13	44.8	6	28.5	7	55.6	7	41.2	9	78.8	2
GKF-8001	43.6	10	29.7	2	54.6	1	28.2	9	54.2	9	36.0	10	68.4	10
Sage	36.1	13	24.4	10	34.1	11	29.2	3	49.2	12	42.1	7	74.0	5
WA5829	38.5	12	24.0	11	38.0	9	26.2	12	72.3	1	41.4	8	67.5	11
NE68719	31.5	16	24.5	9	47.9	3	26.9	11	61.2	5	47.6	6	61.5	12
Oasis	36.1	13	22.3	14	25.0	15	24.9	14	43.6	14	31.8	12	69.0	9
Flavio	48.3	4	27.3	8	29.8	13	28.9	5	66.3	3	10.5	14	27.7	15
Bordenave Puan Sag	39.1	11	27.8	7	33.2	12	28.0	10	44.3	15	34.9	11	71.8	8
Atlas 66	47.1	6	23.8	12	23.4	16	25.9	13	34.8	16	27.5	13	56.5	13
Galiafen	44.1	9	17.0	16	26.2	14	22.9	16	55.1	8	6.8	15	17.7	16
Lerma Rojo 64	34.0	15	21.9	15	35.3	10	24.5	15	68.0	2	2.3	16	42.8	14
Mean	43.3		25.8		38.7		28.0		54.7		35.5		63.7	
L.S.D. of cultivar means (.05)	10.3		N.S.		N.S.		N.S.		12.4		9.4		21.5	
Coefficient of variation (%)	7.4		23.5		8.6		12.3		8.6		19.5		10.8	
F test: Cultivars	3.7**		2.0^{ns}		1.9^{ns}		0.9^{ns}		5.7**		26.2**		7.0**	
Year x Cultivar	9.1**		1.8*		35.4**		6.8**		6.1**		1.6^{ns}		8.5**	

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Lincoln, Nebraska USA		Ithaca, New York USA		Rowan County, North Carolina: USA		Stillwater, Oklahoma USA		Corvallis, Oregon USA		Pullman, Washington USA		Krasnodar, USSR	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Priboy	37.0	5	18.9	6	24.0	4	34.7	9	41.0	7	39.4	7	58.5	2
Probstdorfer Karat	29.2	8	20.3	1	22.8	8	33.4	10	60.6	1	47.1	2	58.2	3
Bezostaya 1	36.4	6	19.3	5	27.0	3	35.7	5	56.0	3	41.4	5	52.7	7
Blueboy	25.9	10	20.0	3	28.6	2	38.3	1	41.0	8	40.0	6	55.1	5
Odesskaya 51	39.7	1	19.3	4	22.9	6	38.1	2	36.9	11	35.6	8	58.6	1
Martonvasari 3	39.3	2	20.2	2	28.7	1	35.6	7	50.2	4	41.5	4	49.3	8
GKF-8001	32.8	7	17.9	7	22.9	7	35.6	6	40.2	9	44.4	3	57.1	4
Sage	39.0	3	14.1	11	19.6	9	37.4	3	24.9	14	32.8	10	54.3	6
WA5829	20.4	11	15.6	8	16.8	12	35.9	4	42.1	6	50.2	1	46.6	12
NE68719	37.1	4	15.0	10	19.3	10	35.0	8	31.4	13	33.5	9	48.7	9
Oasis	27.2	9	12.9	12	23.2	5	32.0	11	13.5	16	18.9	14	47.6	10
Flavio	0.0	13	0.0	14	7.7	15	0.0	14	59.1	2	18.9	15	27.4	15
Bordenave Puan Sag	0.0	13	1.1	13	17.4	11	26.8	12	21.8	15	27.3	12	47.1	11
Atlas 66	0.2	12	15.2	9	13.7	13	23.3	13	36.8	12	27.8	11	40.8	13
Galiafen	0.0	13	0.0	14	6.0	16	0.0	14	47.2	5	21.7	13	28.5	14
Lerma Rojo 64	0.0	13	0.0	14	9.2	14	0.0	14	39.3	10	7.6	16	25.3	16
Mean	22.8		13.1		19.4		27.6		40.1		33.0		47.2	
L.S.D. of cultivar means (.05)	8.7		11.0		8.9		9.0		13.1		12.6		N.S.	
Coefficient of variation (%)	15.1		29.2		16.8		12.1		15.7		16.6		13.7	
F test: Cultivars	33.3**		4.8**		5.9**		22.6**		9.1**		7.9**		1.3^{ns}	
Year x Cultivar	5.7**		5.4**		6.5**		6.4**		3.8**		4.7**		18.5**	

Table 91. Two-year means and rankings of grain yield (q/ha) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Odessa, USSR		Monsheim, West Germany		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Cultivar mean over 46 sites
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha
Priboy	37.5	9	50.1	1	72.8	2	64.8	2	44.7	5	45.6
Probstdorfer Karat	38.3	7	44.1	10	65.2	10	66.0	1	40.7	7	45.3
Bezostaya 1	42.1	2	45.7	5	67.8	5	54.1	10	46.1	4	45.2
Blueboy	39.6	5	44.3	9	66.6	8	57.2	6	38.5	9	45.1
Odesskaya 51	42.9	1	48.3	2	70.2	4	59.6	5	37.4	10	45.1
Martonvasari 3	40.6	3	47.0	3	72.5	3	55.4	8	49.5	2	44.9
GKF-8001	40.0	4	45.0	6	67.0	7	59.7	4	38.5	8	42.6
Sage	36.5	10	44.5	7	50.2	16	45.1	15	30.9	13	39.4
WA5829	37.8	8	46.4	4	65.5	9	47.6	14	26.0	15	38.3
NE68719	34.4	11	40.3	11	54.7	14	48.8	12	35.3	11	38.3
Oasis	38.4	6	38.5	13	57.8	11	54.4	9	42.3	6	37.0
Flavio	21.4	14	44.4	8	74.1	1	62.5	3	57.9	1	36.7
Bordenave Puan Sag	32.6	12	39.4	12	53.2	15	43.1	16	23.0	16	35.5
Atlas 66	30.8	13	36.0	15	57.5	12	48.2	13	31.9	12	34.1
Galiafen	14.1	16	36.5	14	67.8	6	56.6	7	46.8	3	29.7
Lerma Rojo 64	20.6	15	32.2	16	55.1	13	49.3	11	29.6	14	29.3
Mean	34.2		42.7		63.6		54.5		38.7		39.5
L.S.D. of cultivar means (.05)	11.4		8.5		12.1		12.7		12.6		3.7
Coefficient of variation (%)	5.1		5.2		6.9		11.0		14.8		13.5
F test: Cultivars	5.0**		3.1*		3.7**		2.7*		4.8**		17.9**
Year x Cultivar	38.4**		12.7**		6.7**		3.9**		4.3**		1.6^{ns}
Location x Cultivar											3.0**

Table 92. Two-year means and rankings of grain protein (%) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Herat, Afghanistan		Bordenave, Argentina		Vienna, Austria		Temuco, Chile		Sedlec, Czechoslovakia		Boehnshausen, East Germany	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	15.8	1	15.9	1	19.3	1	14.8	2	18.3	1	18.5	1
Bordenave Puan Sag	15.8	2	13.6	5	17.8	2	13.6	5	18.2	2	18.1	2
Lerma Rojo 64	13.4	11	14.6	2	15.6	7	16.0	1	18.1	3	16.9	5
Sage	14.7	4	13.8	3	15.9	5	12.9	9	17.9	4	18.0	3
Oasis	14.2	8	13.2	7	17.2	3	13.9	3	17.7	5	17.4	4
Martonvasari 3	15.0	3	13.7	4	15.9	4	13.2	8	15.6	7	16.7	6
Galiafen	14.4	6	12.7	11	15.6	8	13.5	6	16.4	6	15.5	11
Probstdorfer Karat	14.7	4	12.1	14	15.7	6	11.8	13	15.0	12	15.7	10
NE68719	12.6	13	13.1	8	15.2	10	13.3	7	15.5	10	15.7	9
Odesskaya 51	14.2	7	12.8	10	15.2	9	12.2	12	15.6	8	16.4	7
Bezostaya 1	14.1	9	13.3	6	15.0	11	12.5	10	15.6	8	16.3	8
Priboy	13.0	12	12.6	13	14.9	12	11.4	15	14.5	13	15.1	12
Flavio	12.4	14	12.7	12	14.0	15	13.8	4	15.4	11	14.8	14
GKF-8001	13.5	10	12.9	9	13.8	16	12.3	11	14.0	16	14.8	15
Blueboy	12.3	15	11.0	15	14.2	14	11.2	16	14.1	14	14.5	16
WA5829	11.2	16	10.0	16	14.9	13	11.6	14	14.0	15	14.8	13
Mean	13.8		13.0		15.6		13.0		16.0		16.2	
L.S.D. of cultivar means (.05)	2.5		1.2		1.2		2.2		2.2		1.7	
Coefficient of variation (%)	10.0		4.6		4.7		6.5		3.4		3.4	
F test: Cultivars	2.4*		11.8**		12.9**		3.2*		4.5**		5.2**	
Year x cultivar	2.9**		3.3**		2.2**		5.8**		15.1**		8.8**	

Table 92. Two-year means and rankings of grain protein (%) for 16 cultivars grown in the International Winter Wheat Performance Nursery,1976 and 1977. Continued.

Cultivars	Orgerus, France		Martonvasar, Hungary		Hamadan, Iran		Karaj, Iran		Sulaimaniya, Iraq		Milano, Italy	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	17.4	1	17.8	1	16.7	2	15.4	1	18.8	1	14.9	1
Bordenave Puan Sag	16.3	2	15.8	3	15.9	3	14.3	2	18.6	2	14.1	3
Lerma Rojo 64	15.0	4	15.6	5	17.0	1	13.8	4	15.7	8	13.6	4
Sage	15.5	3	15.6	4	15.4	5	13.9	3	16.6	5	13.6	5
Oasis	14.8	5	16.0	2	15.0	6	13.5	5	15.7	7	14.2	2
Martonvasari 3	14.5	6	14.9	6	14.7	8	13.0	8	16.7	4	13.5	6
Galiafen	13.9	11	14.4	7	14.2	10	13.0	7	16.2	6	12.8	9
Probstdorfer Karat	14.2	8	14.3	8	13.9	12	13.1	6	17.3	3	13.5	7
NE68719	14.1	9	14.0	10	15.0	7	12.8	10	14.9	11	12.6	13
Odesskaya 51	14.1	10	13.5	12	14.5	9	12.8	9	15.2	9	12.6	11
Bezostaya 1	14.3	7	14.3	9	14.1	11	12.2	13	15.1	10	13.1	8
Priboy	13.7	12	13.4	14	12.6	13	12.3	11	14.4	12	12.6	12
Flavio	13.3	13	13.4	13	15.5	4	12.3	12	13.8	15	12.1	14
GKF-8001	13.1	14	13.7	11	12.6	14	11.6	14	14.4	13	12.8	10
Blueboy	12.2	16	11.8	16	12.2	15	11.2	15	13.6	16	11.0	16
WA5829	12.9	15	12.5	15	11.0	16	10.0	16	14.2	14	11.8	15
Mean	14.3		14.4		14.4		12.8		15.7		13.0	
L.S.D. of cultivar means (.05)	1.3		1.3		1.2		1.0		1.7		1.8	
Coefficient of variation (%)	2.1		3.2		9.2		6.5		5.5		6.0	
F test:												
Cultivars	9.8**		11.1**		16.0**		14.3**		8.1**		2.5*	
Year x cultivar	16.0**		7.2**		0.8^{ns}		1.3^{ns}		3.2**		4.7**	

Table 92. Two-year means and rankings of grain protein (%) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Rieti, Italy		Morioka Iwate, Japan		Suwon, Korea [a]		Wageningen, Netherlands		Warsaw, Poland [a]		Fundulea, Romania	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	13.2	3	19.2	2	16.8	1	15.6	3	17.5	3	17.0	1
Bordenave Puan Sag	12.3	6	16.8	6	15.0	2	16.3	2	18.0	2	16.7	2
Lerma Rojo 64	12.6	4	19.7	1	--		14.0	5	--		15.6	4
Sage	13.5	1	17.2	4	13.9	4	16.6	1	18.6	1	15.6	3
Oasis	12.4	5	16.8	7	13.5	8	14.4	4	17.4	4	15.3	5
Martonvasari 3	11.7	12	16.8	5	13.7	7	13.7	6	15.5	5	14.0	10
Galiafen	13.2	2	18.5	3	--		13.0	13	15.3	6	14.6	6
Probstdorfer Karat	12.1	10	15.6	12	14.3	3	13.3	10	14.5	10	14.5	7
NE68719	12.3	7	15.8	11	13.1	10	13.4	7	15.0	7	14.0	10
Odesskaya 51	12.2	9	16.2	8	13.2	9	13.4	8	15.0	8	14.2	9
Bezostaya 1	11.5	13	15.9	10	13.8	5	13.4	8	14.4	11	14.3	8
Priboy	12.2	8	15.4	13	12.4	12	13.0	12	14.2	12	14.0	12
Flavio	12.0	11	16.1	9	--		13.2	11	14.5	9	13.5	14
GKF-8001	11.5	13	14.5	15	13.7	6	12.5	14	13.5	14	13.3	15
Blueboy	10.5	15	15.2	14	12.7	11	11.5	15	13.5	13	12.6	16
WA5829	10.4	16	13.6	16	12.3	13	11.2	16	12.9	15	13.9	13
Mean	12.1		16.5		13.7		13.7		15.3		14.6	
L.S.D. of cultivar means (.05)	N.S.		1.0		1.7		1.3		1.1		0.9	
Coefficient of variation (%)	7.9		2.6		6.6		6.4		3.5		3.6	
F test:												
Cultivars	1.2^{ns}		23.0**		4.9**		12.6**		22.5**		15.3**	
Year x cultivar	5.5**		5.1**		2.9**		1.8*		3.9**		2.7**	

[a] These sites are not included in the overall means and analyses.

Table 92. Two-year means and rankings of grain protein (%) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Bethlehem, South Africa (irrigated)		Bethlehem, South Africa (dryland)		Svalof, Sweden [a/]		Zurich, Switzerland		Ankara, Turkey		Erzurum, Turkey	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	13.7	2	14.7	1	18.1	4	15.8	1	14.4	7	18.3	1
Bordenave Puan Sag	13.8	1	14.0	3	19.4	2	15.3	2	15.4	4	18.0	2
Lerma Rojo 64	12.9	3	14.3	2	--		13.6	10	16.2	1	16.7	4
Sage	12.3	6	12.6	7	19.6	1	14.8	4	14.4	7	16.7	3
Oasis	12.2	7	12.6	8	18.8	3	14.0	6	14.1	9	16.0	6
Martonvasari 3	12.4	4	13.1	4	16.5	6	13.9	8	15.4	3	15.9	8
Galiafen	11.4	10	13.0	5	--		14.0	7	16.1	2	15.9	7
Probstdorfer Karat	11.9	8	12.2	11	15.2	9	14.9	3	14.4	6	15.2	10
NE68719	12.5	5	12.3	10	16.6	5	14.1	5	13.8	11	14.9	13
Odesskaya 51	11.5	9	12.4	9	15.9	7	13.4	11	13.9	10	16.2	5
Bezostaya 1	11.3	11	12.9	6	15.7	8	13.7	9	13.7	12	15.1	11
Priboy	11.0	12	11.6	13	13.8	11	13.3	12	13.1	15	15.3	9
Flavio	10.4	14	11.5	14	--		11.8	16	13.5	13	15.1	12
GKF-8001	10.7	13	11.8	12	14.2	10	13.3	12	12.8	16	13.6	15
Blueboy	10.2	15	10.7	15	13.5	13	11.9	15	15.2	5	14.2	14
WA5829	9.9	16	10.1	16	13.7	12	12.2	14	13.3	14	11.4	16
Mean	11.7		12.5		16.2		13.8		14.3		15.5	
L.S.D. of cultivar means (.05)	N.S.		1.5		2.2		1.5		N.S.		1.5	
Coefficient of variation (%)	8.8		6.9		2.7		3.4		5.3		4.1	
F test:												
Cultivars	2.1^{ns}		5.8**		9.8**		5.5**		1.3^{ns}		10.4**	
Year x cultivar	5.0**		2.9**		20.6**		8.6**		11.2**		5.2**	

[a/] These sites are not included in the overall means and analyses.

Table 92. Two-year means and rankings of grain protein (%) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Eskisehir, Turkey		Fort Collins, Colorado [a] USA		Billings, Montana [a] USA		Rowan County, North Carolina USA		Stillwater, Oklahoma [a] USA		Pullman, Washington USA	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	15.2	1	19.2	1	17.6	1	19.5	1	18.5	1	17.4	1
Bordenave Puan Sag	14.3	3	17.8	2	16.6	2	16.2	5	16.3	2	15.7	3
Lerma Rojo 64	15.1	2	--		16.2	4	16.6	3	--		14.7	5
Sage	13.5	6	17.1	3	16.4	3	16.0	6	14.7	9	15.5	4
Oasis	13.5	7	16.9	4	15.3	5	15.9	8	16.2	3	16.0	2
Martonvasari 3	14.1	4	16.3	5	14.7	8	14.8	11	15.7	4	14.3	6
Galiafen	13.3	9	--		15.0	6	16.8	2	--		13.3	11
Probstdorfer Karat	13.2	12	15.1	9	13.0	14	16.0	6	15.5	5	13.2	13
NE68719	13.5	7	16.0	7	14.0	11	16.3	4	14.9	7	14.2	7
Odesskaya 51	13.9	5	16.2	6	14.9	7	15.1	9	14.7	8	13.6	9
Bezostaya 1	13.3	10	15.2	8	14.4	10	14.5	14	15.0	6	13.8	8
Priboy	12.6	13	14.5	10	13.9	12	14.8	10	14.1	12	13.5	10
Flavio	13.3	10	--		14.7	9	14.7	12	--		13.3	11
GKF-8001	12.1	14	14.4	11	13.8	13	14.7	13	14.4	10	13.0	15
Blueboy	11.7	15	13.7	12	12.9	15	14.1	16	14.3	11	13.2	14
WA5829	11.0	16	13.1	13	12.2	16	14.5	14	13.3	13	11.9	16
Mean	13.3		15.8		14.8		15.6		15.2		14.2	
L.S.D. of cultivar means (.05)	1.3		1.4		1.9		1.9		1.3		1.7	
Coefficient of variation (%)	7.7		3.2		2.3		5.4		3.5		6.1	
F test:												
Cultivars	6.7**		15.0**		5.5**		4.3**		10.1**		6.0**	
Year x cultivar	1.4^{ns}		6.1**		27.2**		4.5**		4.6**		3.4**	

[a] These sites are not included in the overall means and analyses.

Table 92. Two-year means and rankings of grain protein (%) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Krasnodar, USSR [a]		Odessa, USSR [a]		Monsheim, West Germany		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Cultivar means over 28 sites
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%
Atlas 66	17.3	1	17.3	1	18.2	1	14.6	4	18.1	1	15.8	1	16.6
Bordenave Puan Sag	15.8	2	14.9	4	17.4	3	14.8	3	17.3	2	15.5	2	15.8
Lerma Rojo 64	--		16.9	2	17.6	2	13.4	5	15.0	8	13.8	10	15.3
Sage	14.9	3	15.0	3	15.9	5	15.7	1	16.5	4	15.3	3	15.2
Oasis	14.1	5	14.0	7	16.1	4	14.9	2	16.7	3	14.7	4	14.9
Martonvasari 3	14.1	4	13.9	9	15.3	6	12.8	9	15.5	5	13.8	11	14.5
Galiafen	--		--		14.8	11	12.4	11	14.5	12	14.1	7	14.3
Probstdorfer Karat	14.0	6	13.9	10	14.9	10	13.1	6	14.8	9	13.5	12	14.1
NE68719	13.6	9	13.7	11	15.3	6	12.8	8	14.7	10	14.4	6	14.0
Odesskaya 51	13.7	8	14.0	8	14.9	9	12.9	7	15.1	6	14.5	5	14.0
Bezostaya 1	13.9	7	14.0	6	14.7	12	12.7	10	15.1	7	14.1	8	13.9
Priboy	13.4	10	13.1	12	14.3	13	12.1	12	14.5	11	13.4	13	13.4
Flavio	--		14.1	5	15.0	8	11.7	14	13.0	15	12.9	14	13.4
GKF-8001	12.8	11	12.7	14	13.9	16	12.1	13	13.4	13	13.9	9	13.1
Blueboy	12.7	12	12.8	13	14.2	14	11.4	15	13.0	16	12.0	16	12.5
WA5829	12.3	13	11.8	15	14.1	15	11.3	16	13.0	14	12.1	15	12.2
Mean	14.0		14.1		15.4		13.0		15.0		14.0		14.2
L.S.D. of cultivar means (.05)	1.0		1.5		1.7		1.4		1.3		1.2		0.3
Coefficient of variation (%)	3.3		4.2		3.0		4.7		2.7		6.3		5.6
F test:													
Cultivars	17.2**		8.5**		5.1**		8.4**		12.1**		7.4**		108.2**
Year x cultivar	3.8**		5.6**		12.4**		4.4**		9.9**		1.6^{ns}		0.7^{ns}
Location x cultivar													1.4**

[a] These sites are not included in the overall means and analyses.

Table 93. Two-year means and rankings of test weight (kg/hl) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Bordenave, Argentina		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Martonvasar, Hungary		Szeged, Hungary[a/]		Sulaimaniya, Iraq[a/]		Milano, Italy	
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank
Probstdorfer Karat	79.2	4	81.5	4	77.7	7	80.8	3	80.2	1	76.3	11	81.8	2
Bordenave Puan Sag	80.4	1	80.7	8	79.6	2	81.2	1	79.9	3	78.3	10	82.8	1
Bezostaya 1	78.9	6	81.8	2	79.8	1	79.4	6	78.9	6	81.8	2	81.2	6
Odesskaya 51	79.7	3	82.0	1	78.5	4	77.6	8	80.1	2	80.8	3	81.7	3
Priboy	79.8	2	81.6	3	79.0	3	80.8	2	79.1	5	80.0	4	81.4	5
Martonvasari 3	79.1	5	81.2	6	78.4	5	77.9	7	77.4	12	79.0	9	80.5	8
Sage	77.5	7	81.5	5	76.3	10	80.6	4	78.8	7	79.3	7	81.5	4
Oasis	76.5	9	80.9	7	76.7	8	80.3	5	79.6	4	80.0	4	80.0	9
GKF-8001	74.7	12	80.1	10	78.3	6	73.5	14	77.7	10	79.8	6	77.9	12
Lerma Rojo 64	76.5	8	79.2	11	75.4	13	76.9	11	78.4	8	82.0	1	81.1	7
Atlas 66	75.2	11	78.7	12	76.6	9	77.5	9	77.5	11	76.3	11	79.7	11
Flavio	76.0	10	80.2	9	73.5	12	76.5	12	76.3	13	79.3	7	80.0	10
Galiafen	73.3	14	77.4	13	73.2	16	77.3	10	78.0	9	74.5	13	77.8	13
NE68719	72.8	15	77.0	14	75.7	11	73.6	13	76.2	14	73.8	14	76.4	14
Blueboy	74.0	13	74.5	16	74.6	14	68.9	15	72.9	16	73.0	15	74.1	16
WA5829	72.1	16	74.7	15	73.9	15	67.2	16	73.9	15	68.0	16	76.3	15
Mean	76.6		79.6		76.7		76.9		77.8		77.6		79.6	
L.S.D. of cultivar means (.05)	3.6		2.6		N.S.		4.0		2.5		1.9		2.6	
Coefficient of variation (%)	1.5		0.2		1.1		1.2		1.2		--		1.7	
F test: Cultivars	5.1**		8.3**		0.9^{ns}		10.1**		6.7**		37.5**		8.2**	
Year x cultivar	8.4**		184.4**		61.1**		15.4**		3.3**		--		3.0**	

[a/] These sites are not included in the overall means and analyses.

Table 93. Two-year means and rankings of test weight (kg/hl) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Suwon, Korea[a/]		Wageningen, Netherlands		Warsaw, Poland[a/]		Fundulea, Romania		Bethlehem, South Africa (irrigated)		Bethlehem, South Africa (dryland)		Svalof, Sweden[a/]	
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank
Probstdorfer Karat	76.1	9	82.3	1	76.9	4	81.1	2	77.9	1	77.3	4	81.4	1
Bordenave Puan Sag	79.4	2	81.0	5	75.9	7	81.0	3	76.8	2	78.6	1	79.4	8
Bezostaya 1	78.5	4	81.3	4	77.1	2	81.1	1	75.8	4	69.8	13	80.6	2
Odesskaya 51	79.9	1	81.5	3	77.1	2	80.5	6	75.0	6	77.7	2	80.3	4
Priboy	78.6	3	80.8	6	77.2	1	80.8	4	69.7	13	77.3	3	80.4	3
Martonvasari 3	77.7	6	82.0	2	76.2	5	79.4	8	74.5	7	77.2	5	80.1	6
Sage	78.4	5	77.8	13	74.1	10	80.7	5	75.9	3	76.2	8	76.3	13
Oasis	76.5	7	80.0	9	74.3	9	80.3	7	75.5	5	76.8	6	78.1	11
GKF-8001	76.4	8	80.3	8	75.1	8	78.0	11	73.1	9	76.6	7	80.3	5
Lerma Rojo 64	--		79.0	10	--		79.1	9	73.7	8	74.9	9	--	
Atlas 66	73.1	11	78.8	11	75.9	6	78.3	10	71.9	10	74.2	10	79.9	7
Flavio	--		80.5	7	73.5	11	77.7	12	70.2	12	72.9	11	--	
Galiafen	--		76.8	14	70.8	14	74.8	14	70.6	11	71.1	12	--	
NE68719	75.7	10	78.3	12	71.5	13	76.4	13	62.1	14	68.0	15	77.9	12
Blueboy	71.3	12	76.0	15	72.9	12	74.0	15	61.1	15	67.7	16	78.4	10
WA5829	70.0	13	75.8	16	69.8	15	71.0	16	57.1	16	68.0	14	78.8	9
Mean	76.3		79.5		74.6		78.4		71.4		74.0		79.4	
L.S.D. of cultivar means (.05)	3.6		3.7		4.3		2.2		N.S.		N.S.		3.4	
Coefficient of variation (%)	1.6		2.2		1.7		1.0		2.3		8.4		0.8	
F test: Cultivars	6.9**		3.0*		3.0*		16.1**		2.0^{ns}		1.7^{ns}		1.6^{ns}	
Year x cultivar	7.4**		4.0**		9.9**		6.8**		56.7**		1.8*		26.5**	

[a/] These sites are not included in the overall means and analyses.

Table 93. Two-year means and rankings of test weight (kg/hl) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Zurich, Switzerland		Ankara, Turkey [a]		Erzurum, Turkey		Eskisehir, Turkey		Davis, California USA		Billings, Montana USA [a]		Stillwater Oklahoma USA [a]	
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank
Probstdorfer Karat	77.8	3	79.1	2	80.5	2	82.7	1	80.3	8	76.9	5	77.3	7
Bordenave Puan Sag	77.0	6	78.5	4	79.0	8	82.6	3	81.7	3	78.7	1	77.3	6
Bezostaya 1	79.1	1	77.5	9	80.4	3	82.7	2	81.0	6	77.6	2	79.0	2
Odesskaya 51	76.5	8	77.7	7	79.4	6	82.2	4	82.3	1	77.0	4	79.4	1
Priboy	77.8	4	77.6	8	80.1	4	80.2	10	81.1	5	77.6	3	78.4	3
Martonvasari 3	77.5	5	77.1	10	79.7	5	81.5	7	81.0	7	75.8	9	77.3	5
Sage	72.8	14	78.0	6	78.8	9	81.9	6	81.1	4	76.3	6	78.2	4
Oasis	72.4	16	78.4	5	76.6	11	81.1	9	80.1	9	75.9	8	77.2	8
GKF-8001	76.9	7	75.8	13	80.6	1	82.1	5	79.2	11	74.5	11	76.3	9
Lerma Rojo 64	74.4	11	80.5	1	79.2	7	81.3	8	81.8	2	75.5	10	--	
Atlas 66	78.5	2	73.1	16	74.6	14	77.9	13	76.6	15	76.2	7	73.8	12
Flavio	73.0	12	78.8	3	78.6	10	77.6	15	79.4	10	--		--	
Galiafen	75.4	9	73.2	15	72.6	16	79.4	12	76.9	14	--		--	
NE68719	72.9	13	77.0	11	75.6	12	77.7	14	78.2	13	67.4	12	75.5	10
Blueboy	75.1	10	73.6	14	74.8	13	76.3	16	74.9	16	65.9	13	74.1	11
WA5829	72.5	15	76.8	12	74.6	15	79.4	11	78.8	12	65.8	14	72.8	13
Mean	75.6		77.0		77.8		80.4		79.6		74.3		76.7	
L.S.D. of cultivar means (.05)	N.S.		3.4		4.4		3.3		1.8		5.3		2.5	
Coefficient of variation (%)	0.8		--		1.7		1.2		1.6		1.7		1.7	
F test: Cultivars	1.6^{ns}		3.6**		3.2*		3.8**		12.0**		6.6**		6.2**	
Year x cultivar	67.8**		--		9.6**		9.6**		1.9*		15.9**		3.2**	

[a] These sites are not included in the overall means and analyses.

Table 93. Two-year means and rankings of test weight (kg/hl) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Pullman, Washington USA		Krasnodar, USSR [a]		Odessa, USSR [a]		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Zagreb, Yugoslavia [a]		Cultivar means over 16 sites
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl
Probstdorfer Karat	78.4	2	81.0	3	82.9	1	79.6	4	82.1	1	76.1	12	80.1
Bordenave Puan Sag	77.6	5	79.9	5	82.7	2	79.6	3	80.4	5	78.6	3	80.0
Bezostaya 1	78.5	1	81.2	2	82.4	3	80.3	1	81.7	3	77.7	8	79.5
Odesskaya 51	76.8	7	80.9	4	82.2	4	79.4	5	81.6	4	79.5	1	79.5
Priboy	77.6	4	81.2	1	81.6	6	79.7	2	82.0	2	77.9	7	79.4
Martonvasari 3	76.6	8	79.7	7	81.4	9	79.4	6	80.3	7	78.1	4	79.1
Sage	77.0	6	79.8	6	82.0	5	76.8	14	80.3	8	78.0	6	78.5
Oasis	72.7	13	75.6	11	81.5	8	78.9	10	80.2	9	79.1	2	78.0
GKF-8001	77.7	3	79.5	8	81.5	7	79.1	9	80.4	6	77.4	10	78.0
Lerma Rojo 64	--		--		80.0	10	78.5	11	79.2	12	74.3	14	77.9
Atlas 66	75.1	9	78.4	9	78.8	11	79.1	7	79.0	13	77.7	9	77.0
Flavio	74.8	10	--		77.7	15	78.1	12	79.9	10	78.0	5	76.8
Galiafen	74.7	11	--		--		79.1	7	79.3	11	77.4	11	75.6
NE68719	71.2	15	74.4	12	78.0	13	77.4	13	78.1	14	75.1	13	74.6
Blueboy	72.6	14	76.4	10	78.1	12	76.7	15	74.2	16	69.2	15	73.1
WA5829	73.4	12	73.7	13	77.9	14	74.8	16	76.6	15	68.9	16	72.9
Mean	75.6		78.6		80.6		78.5		79.7		76.4		77.5
L.S.D. of cultivar means (.05)	2.2		3.6		2.5		N.S.		2.8		5.9		1.2
Coefficient of variation (%)	2.6		1.8		1.1		0.9		1.5		--		2.5
F test:													
Cultivars	9.5**		5.2**		5.6**		1.2^{ns}		5.1**		2.7*		33.4**
Year x cultivar	1.2^{ns}		5.2**		7.1**		27.1**		4.7**		--		0.8^{ns}
Location x cultivar													1.1^{ns}

[a] These sites are not included in the overall means and analyses.

Table 94. Two-year means and rankings of 1000-kernel weight (grams) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Kabul, Afghanistan[a/]		Herat, Afghanistan		Bordenave, Argentina		Vienna, Austria		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Boehnshausen, East Germany	
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank
Priboy	39.0	2	37.7	5	38.0	3	42.6	1	47.0	1	45.5	2	45.3	1
Bezostaya 1	38.0	5	41.9	1	36.8	4	41.7	3	44.0	2	45.7	1	44.2	3
Martonvasari 3	41.0	1	39.9	3	41.2	1	42.2	2	43.5	4	44.0	4	41.8	5
Odesskaya 51	39.0	2	36.6	6	39.8	2	40.3	5	43.9	3	44.8	3	42.2	4
Probstdorfer Karat	35.0	8	36.2	8	34.8	7	37.8	6	42.3	6	43.3	5	41.1	6
Lerma Rojo 64	39.0	2	39.9	2	35.9	6	40.6	4	43.3	5	42.7	6	45.1	2
GKF-8001	34.0	9	36.4	7	33.5	10	36.1	9	39.5	9	38.2	11	35.8	13
Sage	36.0	6	34.8	10	36.0	5	37.1	8	39.6	8	39.8	8	38.2	9
Oasis	36.0	6	38.1	4	28.6	15	37.2	7	37.3	12	40.6	7	38.4	8
Flavio	32.0	10	33.8	11	34.1	9	35.9	10	39.3	10	39.5	10	39.0	7
Atlas 66	28.0	14	30.0	14	31.4	12	35.0	11	40.3	7	36.3	13	37.1	10
Blueboy	32.0	10	33.3	12	34.2	8	33.0	13	33.9	14	37.4	12	36.1	12
Bordenave Puan Sag	32.0	10	33.3	12	32.4	11	33.8	12	36.6	13	39.7	9	36.9	11
Galiafen	32.0	10	35.4	9	29.3	13	33.0	14	37.8	11	36.3	14	35.7	14
NE68719	23.0	16	25.5	16	29.6	14	29.5	15	28.6	15	30.8	15	28.5	16
WA5829	28.0	14	25.6	15	25.4	16	27.3	16	27.2	16	29.6	16	29.9	15
Mean	34.0		34.9		33.8		36.4		39.0		39.6		38.4	
L.S.D. of cultivar means (.05)	5.4		N.S.		4.4		4.5		3.9		6.6		6.1	
Coefficient of variation (%)	--		13.9		5.0		6.3		0.4		3.6		4.7	
F test: Cultivars	7.5**		1.5^{ns}		8.7**		8.8**		17.8**		4.8**		5.8**	
Year x cultivar	--		4.8**		5.9**		3.4**		509.1**		19.4**		9.8**	

[a/] These sites are not included in the overall means and analyses.

Table 94. Two-year means and rankings of 1000-kernel weight (grams) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Martonvasar, Hungary		Szeged, Hungary		Sulaimaniya, Iraq [a/]		Milano, Italy		Rieti, Italy		Amman, Jordan [a/]		Suwon, Korea [a/]	
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank
Priboy	46.4	1	47.1	1	35.3	4	43.4	2	41.5	2	35.0	2	39.7	2
Bezostaya 1	43.6	2	45.1	3	35.9	3	41.8	6	42.2	1	27.5	12	39.6	3
Martonvasari 3	43.1	3	44.4	4	36.3	2	42.8	3	39.5	4	36.5	1	39.7	1
Odesskaya 51	37.9	9	45.5	2	34.6	5	42.1	4	39.1	5	30.0	9	38.8	4
Probstdorfer Karat	41.6	4	44.0	5	29.3	10	41.9	5	38.3	8	35.0	2	32.5	11
Lerma Rojo 64	40.1	5	42.4	6	39.2	1	43.7	1	40.9	3	35.0	2	--	
GKF-8001	33.7	13	37.8	13	32.0	7	38.4	7	38.8	7	32.5	6	37.2	5
Sage	39.0	8	40.4	7	29.8	9	38.0	9	37.4	9	31.0	7	33.3	9
Oasis	39.9	6	40.2	8	31.2	8	37.7	10	38.9	6	30.0	9	33.0	10
Flavio	36.2	11	38.4	12	33.9	6	38.3	8	34.6	13	27.5	12	--	
Atlas 66	39.0	7	38.6	10	28.0	12	36.8	12	36.3	10	29.5	11	33.6	8
Blueboy	31.2	14	36.4	14	29.2	10	37.4	11	35.9	11	30.5	8	33.9	6
Bordenave Puan Sag	37.1	10	38.9	9	27.2	13	34.8	14	33.7	15	35.0	2	33.8	7
Galiafen	35.0	12	38.5	11	26.4	14	36.0	13	35.0	12	27.0	14	--	
NE68719	27.2	15	30.9	16	20.9	15	31.7	16	34.1	14	25.0	15	28.4	12
WA5829	24.8	16	31.3	15	18.7	16	32.8	15	29.2	16	25.0	15	25.6	13
Mean	37.2		40.0		30.5		38.6		37.2		30.8		34.5	
L.S.D. of cultivar means (.05)	6.0		3.3		3.1		3.6		N.S.		N.S.		3.7	
Coefficient of variation (%)	4.0		4.5		--		4.5		12.9		--		4.7	
F test: Cultivars	8.6**		17.9**		28.5**		9.9**		1.6^{ns}		1.6^{ns}		13.5**	
Year x cultivar	14.3**		3.1**		--		3.7**		2.5**		--		4.3**	

[a/] These sites are not included in the overall means and analyses.

Table 94. Two-year means and rankings of 1000-kernel weight (grams) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Kathmandu, Nepal [a]		Wageningen, Netherlands		Warsaw, Poland [a]		Svalof, Sweden [a]		Zurich, Switzerland		Erzurum, Turkey		Eskisehir, Turkey	
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank
Priboy	35.0	10	38.8	3	47.3	1	47.3	2	44.8	1	40.2	1	43.8	1
Bezostaya 1	41.0	5	39.4	1	45.4	2	46.7	3	44.0	3	39.9	3	41.7	3
Martonvasari 3	41.5	4	38.7	4	44.3	4	48.9	1	42.7	4	40.1	2	41.2	4
Odesskaya 51	44.5	1	36.4	6	44.4	3	45.8	5	42.4	5	38.2	5	42.2	2
Probstdorfer Karat	43.0	2	39.3	2	42.6	5	46.6	4	44.0	2	38.1	6	40.9	5
Lerma Rojo 64	42.5	3	33.4	13	--		--		37.1	10	37.7	7	40.8	6
GKF-8001	33.0	14	38.3	5	39.3	10	43.0	6	40.5	6	39.0	4	37.6	8
Sage	37.5	8	35.5	8	41.5	7	41.2	11	38.0	9	33.1	10	37.7	7
Oasis	32.0	16	34.5	9	40.9	9	42.0	8	34.3	12	30.3	13	35.6	10
Flavio	39.5	6	33.6	12	41.6	6	--		34.1	13	34.6	9	34.8	12
Atlas 66	34.5	12	34.2	11	41.2	8	41.2	10	39.7	7	28.9	14	33.0	13
Blueboy	38.0	7	36.4	7	38.5	12	41.9	9	38.3	8	35.0	8	37.2	9
Bordenave Puan Sag	35.0	10	34.4	10	38.7	11	42.9	7	35.8	11	32.8	11	35.5	11
Galiafen	36.0	9	32.4	14	36.0	13	--		33.4	14	31.2	12	32.4	15
NE68719	33.5	13	27.9	16	31.7	15	35.5	13	28.8	16	29.0	14	30.5	16
WA5829	33.0	14	31.5	15	31.9	14	38.6	12	31.9	15	27.5	16	32.8	14
Mean	37.5		35.3		40.3		43.2		38.1		34.7		37.3	
L.S.D. of cultivar means (.05)	5.7		5.3		5.0		5.4		5.6		5.2		3.1	
Coefficient of variation (%)	--		3.5		4.8		3.6		3.6		4.6		4.7	
F test:														
Cultivars	4.6**		3.3*		7.5**		4.6**		6.7**		6.7**		16.0**	
Year x cultivar	--		16.0**		6.0**		10.4**		14.7**		9.0**		2.6**	

[a] These sites are not included in the overall means and analyses.

Table 94. Two-year means and rankings of 1000-kernel weight (grams) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Lincoln, Nebraska[a/] USA		Krasnodar,[a/] USSR		Odessa,[a/] USSR		Monsheim, West Germany		Weihenstephan,[a/] West Germany		Novi Sad, Yugoslavia		Zagreb,[a/] Yugoslavia		Cultivar means over 16 sites
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank	g
Priboy	32.8	2	45.7	1	41.1	5	42.2	2	48.5	2	43.7	1	37.2	1	43.0
Bezostaya 1	31.7	4	44.3	2	43.5	3	41.2	4	46.5	5	41.6	3	37.2	1	42.2
Martonvasari 3	33.1	1	43.3	3	43.6	2	42.1	3	47.9	3	40.9	4	35.5	4	41.8
Odesskaya 51	31.8	3	41.5	4	43.6	1	41.0	5	47.8	4	40.1	5	36.7	3	40.8
Probstdorfer Karat	24.8	8	41.2	5	39.1	7	40.7	6	48.7	1	42.1	2	30.1	12	40.4
Lerma Rojo 64	--		--		43.4	4	42.7	1	43.3	8	35.5	11	31.5	9	40.1
GKF-8001	26.4	7	39.0	6	40.8	6	38.0	8	43.9	6	37.5	6	34.5	6	37.4
Sage	28.4	6	38.1	7	37.8	9	37.3	9	40.0	11	34.9	12	30.8	10	37.3
Oasis	28.5	5	37.8	8	37.0	10	36.6	10	41.4	10	36.5	7	32.1	8	36.5
Flavio	--		--		35.4	12	39.2	7	41.9	9	35.5	10	34.5	5	36.3
Atlas 66	--		37.0	9	34.0	13	36.1	12	38.7	14	35.7	9	32.5	7	35.5
Blueboy	24.1	9	36.1	10	38.9	8	36.5	11	43.5	7	34.1	13	29.9	13	35.4
Bordenave Puan Sag	--		35.4	11	36.2	11	34.2	14	38.0	15	31.6	14	29.1	14	35.1
Galiafen	--		--		--		35.2	13	39.8	12	36.0	8	30.4	11	34.5
NE68719	21.2	10	28.2	12	31.2	15	30.3	16	33.6	16	28.6	16	27.4	15	29.5
WA5829	19.4	11	27.2	13	32.8	14	33.0	15	38.9	13	29.7	15	26.5	16	29.3
Mean	27.5		38.0		38.6		37.9		42.6		36.5		32.2		37.2
L.S.D. of cultivar means (.05)	2.4		3.2		3.5		3.1		4.8		7.7		5.6		1.8
Coefficient of variation (%)	5.2		2.8		5.5		2.6		--		5.2		--		6.1
F test:															
Cultivars	37.6**		28.2**		12.9**		12.4**		7.7**		2.9*		3.3*		50.7**
Year x cultivar	2.3*		7.7**		2.3**		8.6**		--		14.7**		--		1.5^{ns}
Location x cultivar															0.9^{ns}

[a/] These sites are not included in the overall means and analyses.

Table 95. Two-year means and rankings of plant height (cm) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Kabul,[a] Afghanistan		Herat, Afghanistan		Bordenave, Argentina		Vienna, Austria		Tolbukhin,[a] Bulgaria		Temuco, Chile		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
GKF-8001	68.0	1	65.5	1	63.0	1	66.3	1	64.0	1	76.3	1	73.6	1	61.5	1
WA5829	75.0	2	86.9	3	77.4	3	77.5	2	81.0	3	89.4	3	87.1	3	74.9	6
Flavio	86.3	4	86.6	2	74.5	2	85.6	4	82.0	4	88.1	2	85.0	2	65.4	2
NE68719	78.5	3	92.6	6	81.9	5	78.8	3	72.0	2	91.9	4	89.1	5	74.3	5
Lerma Rojo 64	97.5	5	92.5	5	84.4	6	94.4	6	86.0	6	95.6	5	92.5	6	67.4	3
Galiafen	98.5	6	98.8	9	92.0	11	95.0	7	101.0	12	105.0	7	88.5	4	69.3	4
Martonvasari 3	100.5	8	90.6	4	85.3	7	90.6	5	84.5	5	105.6	8	102.5	7	81.9	7
Bezostaya 1	100.0	7	99.4	10	85.6	8	95.6	8	92.5	7	108.1	9	103.0	8	84.6	8
Odesskaya 51	101.8	9	97.5	7	87.6	9	98.1	11	98.5	9	108.8	11	105.5	9	86.5	9
Priboy	103.8	11	98.6	8	88.3	10	96.3	9	104.5	15	108.1	9	113.0	14	91.3	10
Oasis	103.3	10	100.6	12	78.9	4	102.5	13	103.5	13	100.6	6	109.5	12	91.4	11
Blueboy	105.5	12	100.0	11	95.3	12	96.9	10	94.5	8	114.4	12	106.0	10	93.5	12
Sage	111.3	13	111.9	13	106.4	13	101.9	12	100.0	11	125.6	13	110.9	13	93.5	12
Bordenave Puan Sag	116.3	14	116.0	14	110.5	16	110.6	15	105.0	16	128.1	15	106.6	11	97.1	14
Probstdorfer Karat	117.3	15	118.5	15	107.8	14	108.8	14	104.0	14	126.3	14	119.0	15	103.9	16
Atlas 66	118.8	16	122.6	16	108.3	15	116.9	16	99.0	10	133.8	16	121.1	16	99.9	15
Mean	98.9		98.7		89.2		94.7		91.7		106.6		100.8		83.5	
L.S.D. of cultivar means (.05)	11.9		9.7		7.0		6.7		14.8		11.1		8.7		8.0	
Coefficient of variation (%)	6.1		6.3		5.2		6.0		--		3.8		0.2		1.9	
F test: Cultivars	14.5**		19.2**		33.8**		34.7**		6.4**		19.5**		21.5**		25.0**	
Year x cultivar	1.7^{ns}		2.2*		2.0*		1.2^{ns}		--		6.4**		1604.4**		21.8**	

[a] These sites are not included in the overall means and analyses.

Table 95. Two-year means and rankings of plant height (cm) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Boehn-shausen, East Germany		Cambridge,[a] England		Martonvasar,[a] Hungary		Hamadan, Iran		Karaj,[a] Iran		Sulaimaniya, Iraq		Milano, Italy		Rieti, Italy	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
GKF-8001	64.0	1	72.3	1	65.5	1	61.4	1	67.5	1	70.0	1	65.6	1	67.1	2
WA5829	80.0	3	83.0	3	80.0	3	64.8	3	78.8	2	81.3	2	77.5	2	62.6	1
Flavio	75.4	2	81.8	2	79.0	2	68.5	4	88.8	4	94.4	4	94.0	4	80.6	6
NE68719	81.0	4	83.5	4	81.0	4	64.4	2	81.3	3	87.5	3	80.6	3	69.6	3
Lerma Rojo 64	81.3	5	88.0	5	88.0	5	79.5	7	95.0	5	103.8	5	94.4	5	85.8	8
Galiafen	84.8	6	95.3	9	90.3	6	81.8	10	103.8	11	105.6	8	98.8	7	73.8	4
Martonvasari 3	85.4	7	92.0	6	90.8	7	77.0	6	98.8	6	105.0	7	97.5	6	85.4	7
Bezostaya 1	85.4	7	93.0	7	96.0	8	83.3	11	100.0	7	103.8	5	98.8	7	79.4	5
Odesskaya 51	89.8	9	100.0	11	102.3	9	81.1	9	101.3	8	110.6	10	100.6	9	89.0	10
Priboy	92.6	10	93.3	8	104.0	10	80.1	8	101.3	8	111.3	11	100.6	9	90.3	11
Oasis	92.8	11	98.8	10	104.5	11	75.6	5	101.3	8	110.0	9	103.1	11	86.0	9
Blueboy	99.9	13	106.8	13	107.5	13	88.0	14	105.0	12	111.9	12	103.8	12	96.8	15
Sage	96.4	12	106.0	12	106.5	12	86.3	13	107.5	13	129.4	14	111.3	14	92.0	13
Bordenave Puan Sag	100.8	14	107.8	14	108.5	14	85.4	12	113.8	14	129.4	14	109.4	13	95.9	14
Probstdorfer Karat	109.0	16	114.0	16	111.0	15	94.6	15	118.8	15	123.1	13	111.9	15	90.4	12
Atlas 66	103.9	15	113.3	15	115.8	16	110.1	16	122.5	16	131.3	16	118.8	16	105.6	16
Mean	88.9		95.5		95.7		80.1		99.1		106.8		97.9		84.4	
L.S.D. of cultivar means (.05)	12.1		7.3		6.4		7.3		7.9		11.5		8.0		20.5	
Coefficient of variation (%)	3.6		4.4		3.5		11.5		3.7		6.6		4.5		17.7	
F test:																
Cultivars	8.3**		24.8**		44.9**		25.5**		30.6**		20.6**		26.8**		2.9*	
Year x cultivar	12.8**		1.3^{ns}		1.6^{ns}		0.6^{ns}		2.0^{ns}		2.4**		2.9**		1.7^{ns}	

[a] These sites are not included in the overall means and analyses.

Table 95. Two-year means and rankings of plant height (cm) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Morioka Iwate, Japan		Amman, Jordan		Suwon, Korea [a]		Toluca, Mexico [a]		Kathmandu, Nepal		Wageningen, Netherlands		Warsaw, Poland		Fundulea, Romania	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
GKF-8001	79.8	1	35.1	1	60.3	1	62.5	1	61.0	1	72.3	1	74.4	1	62.5	1
WA5829	93.9	6	38.8	3	67.8	2	85.0	7	67.5	2	88.9	4	87.6	5	77.5	2
Flavio	79.8	1	42.5	8	--		65.0	2	84.9	4	74.3	2	77.5	2	90.6	5
NE68719	89.3	5	36.9	2	72.9	3	85.0	7	74.4	3	86.4	3	88.8	6	78.8	3
Lerma Rojo 64	83.5	3	50.6	15	--		75.0	3	91.8	9	89.9	5	83.4	4	83.8	4
Galiafen	86.0	4	41.9	7	--		85.0	7	92.5	11	94.1	6	82.8	3	91.9	6
Martonvasari 3	101.9	7	43.8	10	93.3	4	80.0	4	86.8	5	95.9	8	96.1	7	98.8	7
Bezostaya 1	105.0	9	39.6	5	93.9	5	87.5	10	89.9	7	95.1	7	96.8	8	100.0	8
Odesskaya 51	105.4	10	45.9	12	101.9	9	90.0	12	91.9	10	100.6	9	103.6	12	102.5	11
Priboy	103.0	8	40.6	6	100.3	8	92.5	13	91.0	8	100.6	9	98.6	9	101.9	9
Oasis	114.8	13	38.8	3	98.1	7	80.0	4	88.4	6	105.4	12	108.8	14	104.4	12
Blueboy	124.6	15	45.6	11	94.8	6	82.5	6	96.4	12	107.8	13	102.1	10	101.9	9
Sage	105.6	11	46.3	13	105.3	12	95.0	14	103.0	14	104.6	11	102.5	11	108.8	13
Bordenave Puan Sag	112.6	12	50.0	14	107.6	13	87.5	10	110.5	15	110.8	14	108.1	13	113.1	14
Probstdorfer Karat	119.3	14	42.9	9	104.3	10	100.0	15	99.3	13	117.4	16	113.9	15	119.6	16
Atlas 66	132.3	16	51.3	16	105.1	11	100.0	15	119.5	16	114.3	15	114.8	16	118.1	15
Mean	102.3		43.1		92.7		84.5		90.5		97.4		96.2		97.1	
L.S.D. of cultivar means (.05)	10.5		N.S.		9.8		18.8		17.9		13.5		10.8		8.6	
Coefficient of variation (%)	4.4		14.3		4.8		--		4.8		8.2		4.9		2.7	
F test: Cultivars	21.2**		1.2^{ns}		23.8**		2.9*		6.1**		8.5**		12.5**		29.7**	
Year x cultivar	4.7**		4.0**		4.1**		--		14.9**		2.5**		4.7**		9.8**	

[a] These sites are not included in the overall means and analyses.

Table 95. Two-year means and rankings of plant height (cm) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Bethlehem, South Africa (irrigated) cm	rank	Bethlehem, South Africa (dryland) cm	rank	Svalof, Sweden [a/] cm	rank	Zurich, Switzerland cm	rank	Erzurum, Turkey cm	rank	Eskisehir, Turkey cm	rank	Davis, California USA cm	rank	Billings, Montana USA cm	rank
GKF-8001	69.0	1	67.3	1	64.4	1	68.8	1	65.5	1	58.8	1	72.6	1	77.4	2
WA5829	76.5	2	73.3	3	73.8	3	83.8	2	74.6	3	63.8	2	86.1	2	90.4	4
Flavio	82.6	4	70.3	2	--		90.6	4	72.0	2	66.9	3	98.9	4	71.5	1
NE68719	81.1	3	81.9	4	73.1	2	86.9	3	79.9	4	70.6	4	91.6	3	90.4	4
Lerma Rojo 64	91.0	5	91.3	8	--		95.6	5	90.1	6	76.9	5	111.4	10	92.6	6
Galiafen	96.5	6	90.8	7	--		100.6	6	83.0	5	78.1	6	116.3	12	82.4	3
Martonvasari 3	97.6	7	90.4	6	85.6	5	101.3	7	99.3	8	82.5	7	105.1	5	100.9	7
Bezostaya 1	99.0	9	93.5	10	84.4	4	102.5	8	101.8	11	85.6	8	108.8	8	104.0	8
Odesskaya 51	99.4	10	92.6	9	86.9	6	106.3	9	99.5	10	85.6	8	107.0	6	110.0	11
Priboy	98.9	8	96.4	12	90.6	9	107.5	10	102.9	13	88.1	10	109.3	9	108.4	10
Oasis	101.3	11	88.3	5	89.4	7	114.4	12	95.9	7	88.1	10	107.9	7	107.6	9
Blueboy	104.3	13	95.3	11	96.3	12	110.0	11	99.3	8	91.3	12	113.3	11	115.5	15
Sage	101.5	12	96.5	13	91.9	10	114.4	12	102.6	12	91.9	12	123.9	13	112.9	12
Bordenave Puan Sag	109.4	14	102.1	14	90.0	8	121.3	15	105.5	14	99.4	14	131.6	15	113.4	14
Probstdorfer Karat	110.0	15	104.0	15	99.4	13	120.6	14	111.0	16	99.4	14	125.3	14	119.8	16
Atlas 66	113.3	16	106.1	16	93.1	11	130.6	16	110.9	15	111.9	16	136.0	16	113.0	13
Mean	95.7		90.0		86.1		103.4		93.4		83.7		109.1		100.6	
L.S.D. of cultivar means (.05)	8.2		5.3		7.5		6.2		14.6		8.2		9.8		11.8	
Coefficient of variation (%)	5.1		3.5		3.9		3.3		3.9		5.1		4.6		6.1	
F test: Cultivars	21.4**		43.5**		16.8**		58.8**		8.6**		27.1**		25.9**		14.2**	
Year x cultivar	2.5**		2.4**		4.3**		3.0**		14.1**		3.3**		3.3**		3.2**	

[a/] These sites are not included in the overall means and analyses.

Table 95. Two-year means and rankings of plant height (cm) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Lincoln, Nebraska [a/] USA		Rowan Co., NorthCarolina USA		Corvallis, Oregon [a/] USA		Pullman, Washington USA		Krasnodar, USSR [a/]		Odessa, USSR [a/]		Monsheim, West Germany		Weihenstephan, West Germany	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
GKF-8001	60.8	1	59.1	2	87.5	1	82.5	5	68.6	1	64.9	1	48.3	1	75.1	1
WA5829	70.8	2	60.9	3	110.0	2	83.6	6	84.6	2	76.1	3	67.1	4	89.3	4
Flavio	--		56.3	1	115.0	4	69.1	1	--		76.3	4	65.4	3	86.1	2
NE68719	80.0	3	61.1	4	112.5	3	81.8	4	87.8	3	77.3	5	62.0	2	87.6	3
Lerma Rojo 64	--		67.3	5	125.0	6	75.8	2	--		74.4	2	73.6	6	93.3	5
Galiafen	--		69.6	6	122.5	5	80.1	3	--		--		74.6	9	98.6	7
Martonvasari 3	85.1	4	78.5	7	127.5	7	96.9	8	101.8	4	98.4	8	74.4	8	97.1	6
Bezostaya 1	89.3	6	79.1	9	127.5	7	101.5	10	104.0	5	97.9	7	73.1	5	100.4	8
Odesskaya 51	90.1	8	78.9	8	127.5	7	96.0	7	110.4	8	96.8	6	76.8	11	103.1	9
Priboy	90.6	9	81.8	12	140.0	11	103.3	11	106.6	6	100.1	10	73.9	7	103.5	10
Oasis	89.1	5	79.1	9	140.0	11	103.3	11	119.1	9	103.8	11	75.9	10	110.9	13
Blueboy	89.5	7	83.6	13	140.0	11	107.0	13	107.3	7	100.0	9	80.9	13	109.8	11
Sage	96.9	10	85.8	14	145.0	14	99.3	9	120.6	10	109.1	12	84.4	14	109.9	12
Bordenave Puan Sag	--		89.8	15	127.5	7	107.0	13	123.1	11	111.4	14	80.6	12	118.3	15
Probstdorfer Karat	103.5	11	79.6	11	150.0	16	110.5	15	123.3	12	110.6	13	87.0	15	117.6	14
Atlas 66	--		98.0	16	147.5	15	115.6	16	123.4	13	111.5	15	92.3	16	124.1	16
Mean	86.1		75.5		127.8		94.6		106.2		93.9		74.4		101.5	
L.S.D. of cultivar means (.05)	12.9		11.3		17.8		13.8		8.0		9.3		6.5		5.7	
Coefficient of variation (%)	5.1		8.0		--		9.5		2.8		4.6		4.0		3.2	
F test: Cultivars	8.9**		10.1**		7.6**		9.2**		43.2**		26.2**		23.7**		48.8**	
Year x cultivar	6.0**		3.1**		--		2.1*		6.1**		4.0**		4.2**		2.7**	

[a/] These sites are not included in the overall means and analyses.

Table 95. Two-year means and rankings of plant height (cm) for 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Cultivar means over 30 sites
	cm	rank	cm	rank	cm
GKF-8001	63.9	1	70.6	1	66.6
WA5829	77.8	2	80.4	2	77.4
Flavio	86.1	4	91.6	5	78.5
NE68719	81.8	3	84.0	3	79.6
Lerma Rojo 64	88.0	5	90.8	4	86.4
Galiafen	91.1	8	100.5	8	88.2
Martonvasari 3	88.9	6	98.3	6	91.4
Bezostaya 1	90.0	7	100.3	7	93.1
Odesskaya 51	94.9	11	100.6	9	95.2
Priboy	92.6	9	102.3	10	95.8
Oasis	93.6	10	104.6	11	96.1
Blueboy	95.1	12	105.4	12	99.8
Sage	96.8	14	106.8	13	102.1
Bordenave Puan Sag	96.5	13	108.5	14	105.9
Probstdorfer Karat	103.9	15	112.3	15	107.5
Atlas 66	104.6	16	116.5	16	113.2
Mean	90.3		98.3		92.3
L.S.D. of cultivar means (.05)	4.8		6.0		2.1
Coefficient of variation (%)	3.1		3.9		6.2
F test:					
Cultivars	39.0**		37.5**		286.7**
Year x cultivar	2.5**		2.2*		0.2^{ns}
Location x cultivar					2.1**

Table 96. Two-year means and rankings of lodging (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Male Ripnany, Czechoslovakia		Boehnshausen, East Germany		Martonvasar, Hungary		Szeged, Hungary		Suwon,[a/] Korea	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
GKF-8001	0.0	1	0.0	1	0.0	1	1.3	1	8.8	1	11.9	1	0.0	1
Flavio	1.3	11	0.0	1	0.0	1	1.3	1	23.1	2	53.8	2	--	
Galiafen	3.8	13	0.6	6	0.0	1	1.3	1	46.9	5	73.4	6	--	
NE68719	0.0	1	0.0	1	0.0	1	25.6	10	43.8	3	64.5	3	0.0	1
Martonvasari 3	0.0	1	0.6	6	0.0	1	28.8	11	45.6	4	78.6	8	0.0	1
Bezostaya 1	0.0	1	0.8	8	0.0	1	33.1	12	48.1	7	72.4	5	0.0	1
Probstdorfer Karat	0.0	1	0.0	1	0.0	1	18.1	8	47.5	6	81.0	10	0.0	1
WA5829	0.0	1	0.0	1	8.8	9	16.3	6	80.6	14	69.9	4	0.0	1
Blueboy	0.0	1	1.3	9	11.9	12	13.8	5	60.0	9	73.8	7	17.5	8
Lerma Rojo 64	1.6	12	4.4	11	5.0	8	13.1	4	78.5	12	81.5	11	--	
Odesskaya 51	0.0	1	1.3	9	16.3	13	25.0	9	68.6	11	78.6	8	16.3	7
Priboy	0.0	1	8.1	13	10.6	11	16.3	6	62.5	10	82.5	12	17.5	8
Atlas 66	0.0	1	7.5	12	9.4	10	42.5	13	48.6	8	86.1	13	21.9	10
Oasis	10.6	14	12.5	14	18.8	14	46.9	14	80.3	13	96.1	16	26.3	11
Sage	15.0	15	23.1	15	20.0	15	56.1	15	87.9	15	88.6	14	30.0	13
Bordenave Puan Sag	19.4	16	45.0	16	43.1	16	62.3	16	88.6	16	90.9	15	26.3	11
Mean	3.2		6.6		9.0		25.1		57.5		74.0		12.0	
L.S.D. of cultivar means (.05)	N.S.		20.7		21.2		N.S.		N.S.		30.0		N.S.	
Coefficient of variation (%)	217.2		153.1		68.4		43.5		17.8		23.9		53.7	
F test: Cultivars	1.5^{ns}		3.1*		2.7*		1.3^{ns}		2.1^{ns}		3.9**		1.6^{ns}	
Year x cultivar	4.2**		3.7**		10.5**		18.3**		18.9**		2.5**		17.9**	

[a/] These sites are not included in the overall means and analyses.

Table 96. Two-year means and rankings of lodging (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Toluca,[a] Mexico		Wageningen, Netherlands		Warsaw, Poland		Fundulea, Romania		Svalof,[a] Sweden		Zurich, Switzerland		Davis, California USA	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
GKF-8001	0.0	1	0.0	1	0.0	1	0.0	1	14.0	1	0.0	1	0.0	1
Flavio	0.0	1	0.0	1	1.3	2	10.0	8	--		0.0	1	5.0	6
Galiafen	0.0	1	29.9	5	11.3	8	2.5	4	--		5.6	6	11.3	8
NE68719	0.0	1	39.9	7	5.0	6	3.8	5	15.6	3	0.0	1	0.0	1
Martonvasari 3	0.0	1	31.8	6	2.5	3	11.3	9	34.5	9	3.1	4	9.4	7
Bezostaya 1	0.0	1	10.6	3	2.5	3	6.3	7	22.4	4	3.8	5	13.8	9
Probstdorfer Karat	2.5	8	46.3	9	22.5	13	0.0	1	33.5	8	9.4	8	1.9	4
WA5829	25.0	13	19.4	4	11.3	8	0.0	1	38.8	11	6.9	7	0.0	1
Blueboy	0.0	1	45.0	8	15.6	11	3.8	5	14.9	2	16.3	12	1.9	4
Lerma Rojo 64	12.5	10	74.4	13	3.1	5	40.9	12	--		15.6	11	38.1	13
Odesskaya 51	15.0	12	46.3	9	6.9	7	37.5	11	29.4	7	10.0	9	25.0	11
Priboy	37.5	15	71.3	12	11.9	10	29.9	10	60.0	13	11.3	10	38.8	14
Atlas 66	12.5	10	74.9	14	39.4	15	45.0	13	35.0	10	47.4	15	18.8	10
Oasis	5.0	9	68.5	11	33.1	14	49.5	15	25.0	5	20.0	13	36.3	12
Sage	45.0	16	78.6	15	18.8	12	46.0	14	27.5	6	25.0	14	48.0	15
Bordenave Puan Sag	30.0	14	89.0	16	70.4	16	89.1	16	51.5	12	73.4	16	66.6	16
Mean	11.6		45.4		16.0		23.5		30.9		15.5		19.7	
L.S.D. of cultivar means (.05)	N.S.		47.7		32.9		N.S.		N.S.		12.1		N.S.	
Coefficient of variation (%)	--		40.1		89.1		58.1		61.4		75.4		81.6	
F test: Cultivars	0.8^{ns}		3.3*		2.9*		1.9^{ns}		0.8^{ns}		23.8**		1.5^{ns}	
Year x cultivar	--		6.1**		4.7**		15.5**		4.9**		0.9^{ns}		8.4**	

[a] These sites are not included in the overall means and analyses.

Table 96. Two-year means and rankings of lodging (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Billings, Montana USA		Corvallis, Oregon USA [a/]		Krasnodar, USSR [a/]		Odessa, USSR [a/]		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Cultivar means over 15 sites
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%
GKF-8001	12.5	6	0.0	1	49.5	9	0.0	1	0.0	1	5.0	1	1.3	1	2.7
Flavio	0.0	1	40.0	8	--		0.0	1	0.0	1	22.5	2	16.3	3	9.0
Galiafen	0.0	1	27.5	5	--		--		6.3	3	52.0	7	18.8	5	17.6
NE68719	31.3	8	0.0	1	38.8	1	0.0	1	7.5	5	49.5	4	16.9	4	19.2
Martonvasari 3	1.3	3	0.0	1	61.0	13	0.0	1	11.3	6	50.9	6	30.0	8	20.3
Bezostaya 1	22.5	7	0.0	1	50.0	10	0.0	1	16.3	7	84.5	10	22.1	6	22.4
Probstdorfer Karat	11.3	4	42.5	9	40.0	2	0.0	1	23.8	8	49.6	5	33.1	9	23.0
WA5829	82.5	15	27.5	5	48.6	8	0.0	1	6.3	3	32.4	3	12.5	2	23.1
Blueboy	41.3	11	35.0	7	46.3	4	0.0	1	26.3	11	79.5	9	29.4	7	28.0
Lerma Rojo 64	12.5	5	84.5	12	--		15.0	12	42.5	14	66.1	8	67.4	11	36.3
Odesskaya 51	41.9	12	87.5	14	51.9	12	9.6	10	25.0	10	99.0	12	69.6	12	36.7
Priboy	40.0	10	99.0	16	46.3	4	1.3	9	23.8	8	99.0	12	58.6	10	37.6
Atlas 66	35.0	9	82.5	11	43.8	3	18.6	13	38.8	12	94.5	11	80.0	13	44.5
Oasis	62.5	13	75.0	10	50.0	10	23.8	14	41.3	13	99.0	12	86.8	15	50.8
Sage	78.8	14	87.0	13	46.3	4	12.5	11	52.5	16	99.0	12	83.3	14	54.7
Bordenave Puan Sag	86.1	16	87.5	14	46.3	4	22.5	15	50.0	15	99.0	12	96.3	16	71.3
Mean	35.0		48.5		47.6		6.9		23.2		67.6		45.1		31.1
L.S.D. of cultivar means (.05)	51.3		45.2		N.S.		N.S.		23.5		56.0		27.2		12.6
Coefficient of variation (%)	43.9		--		9.2		94.6		42.8		14.2		53.6		44.4
F test: Cultivars	3.0*		6.2**		0.1^{ns}		0.8^{ns}		5.0**		2.8*		12.1**		18.2**
Year x cultivar	9.8**		--		145.8**		20.1**		4.9**		30.0**		1.1^{ns}		1.5^{ns}
Location x cultivar															1.1^{ns}

[a/] These sites are not included in the overall means and analyses.

Table 97. Two-year means and rankings of winter survival (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Boehnshausen, East Germany		Jokioinen, Finland		Morioka Iwate,[a] Japan		Suwon, Korea	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Oasis	92.9	7	95.3	9	100.0	1	82.8	11	81.9	4	86.0	1	100.0	1	85.0	4
Probstdorfer Karat	95.1	1	94.5	13	100.0	1	91.4	3	82.5	3	64.9	5	99.8	11	83.8	5
Bezostaya 1	94.5	3	95.6	7	100.0	1	91.9	2	81.3	6	57.6	8	100.0	1	93.8	1
NE68719	94.1	4	94.1	14	100.0	1	92.3	1	86.3	1	72.5	4	100.0	1	90.0	2
Sage	91.0	11	93.9	15	100.0	1	87.3	5	80.0	8	73.0	3	100.0	1	80.0	9
Priboy	89.1	13	95.6	7	100.0	1	86.8	6	76.9	13	61.5	6	100.0	1	88.8	3
Odesskaya 51	88.5	15	93.9	15	100.0	1	85.4	7	81.9	4	78.8	2	100.0	1	82.5	7
Martonvasari 3	91.3	10	94.9	12	100.0	1	85.4	7	80.0	8	61.1	7	100.0	1	83.8	5
WA5829	91.9	9	96.9	1	100.0	1	90.6	4	84.4	2	29.9	11	100.0	1	71.3	10
GKF-8001	92.6	8	95.1	10	100.0	1	84.9	9	79.4	10	43.5	9	100.0	1	81.3	8
Blueboy	93.8	6	96.5	6	100.0	1	81.8	12	78.1	11	39.0	10	100.0	1	68.8	11
Bordenave Puan Sag	94.8	2	96.8	4	100.0	1	83.9	10	81.3	6	27.3	12	95.3	13	56.3	12
Atlas 66	90.6	12	96.9	1	90.0	14	49.1	13	72.5	15	12.3	13	98.3	12	45.0	13
Flavio	89.1	13	96.8	4	91.3	13	18.5	14	77.5	12	5.0	14	46.5	15	17.5	14
Lerma Rojo 64	94.0	5	96.9	1	52.5	15	13.6	15	75.6	14	4.0	16	23.5	16	10.0	16
Galiafen	86.8	16	95.1	10	43.1	16	5.5	16	57.5	16	4.9	15	47.0	14	12.5	15
Mean	91.9		95.5		92.3		70.7		78.6		45.1		88.1		65.6	
L.S.D. of cultivar means (.05)	N.S.		1.2		24.1		19.5		10.2		48.5		26.8		17.6	
Coefficient of variation (%)	5.5		1.2		3.8		8.5		5.7		36.1		3.5		9.4	
F test:																
Cultivars	1.0^{ns}		7.6**		4.9**		22.3**		3.8**		3.1*		7.9**		24.5**	
Year x cultivar	2.1*		0.9^{ns}		41.1**		9.4**		4.5**		7.8**		33.0**		7.2**	

[a] These sites are not included in the overall means and analyses.

Table 97. Two-year means and rankings of winter survival (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Wageningen, Netherlands		Vollebekk, Norway		Warsaw, Poland		Fundulea, Romania		Svalof, Sweden		Erzurum, Turkey		Fort Collins, Colorado USA		Billings, Montana USA	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Oasis	86.3	10	87.5	1	76.9	7	100.0	1	78.4	7	89.4	8	95.0	9	100.0	1
Probstdorfer Karat	87.5	4	66.3	8	80.6	3	100.0	1	87.9	3	90.0	6	98.1	3	100.0	1
Bezostaya 1	90.6	1	80.6	4	77.5	5	100.0	1	75.3	8	94.4	1	97.5	5	100.0	1
NE68719	84.4	13	54.4	11	81.9	1	100.0	1	87.9	3	87.5	12	99.4	1	100.0	1
Sage	86.9	7	60.6	10	76.3	8	100.0	1	92.1	1	88.8	10	98.8	2	100.0	1
Priboy	86.3	10	86.9	2	71.2	11	100.0	1	79.9	6	90.6	5	98.1	3	100.0	1
Odesskaya 51	84.4	13	84.4	3	71.8	10	100.0	1	70.0	10	88.1	11	97.5	5	100.0	1
Martonvasari 3	85.0	12	63.1	9	77.5	5	100.0	1	83.9	5	92.5	2	94.4	11	100.0	1
WA5829	84.4	13	78.1	6	81.9	1	100.0	1	91.9	2	90.0	6	96.3	7	100.0	1
GKF-8001	87.5	4	70.0	7	70.6	12	100.0	1	70.6	9	91.9	3	95.0	9	100.0	1
Blueboy	87.5	4	79.4	5	72.5	9	100.0	1	68.0	11	89.4	8	96.3	7	100.0	1
Bordenave Puan Sag	90.0	2	8.9	12	80.6	3	100.0	1	64.1	12	91.9	3	73.8	12	100.0	1
Atlas 66	86.9	7	4.9	13	62.5	13	100.0	1	43.6	13	87.5	12	63.1	13	73.1	13
Flavio	86.9	7	0.0	14	41.3	14	96.9	14	30.0	14	65.0	15	3.1	14	13.8	15
Lerma Rojo 64	75.6	16	0.0	14	29.5	15	66.3	15	2.6	16	72.5	14	0.0	16	41.1	14
Galiafen	88.1	3	0.0	14	23.0	16	56.3	16	7.9	15	41.3	16	2.5	15	2.6	16
Mean	86.1		51.6		67.2		95.0		64.6		84.4		75.5		83.2	
L.S.D. of cultivar means (.05)	N.S.		25.2		34.9		14.0		40.8		N.S.		19.1		31.9	
Coefficient of variation (%)	2.4		20.8		8.7		2.9		15.9		4.0		10.0		6.7	
F test: Cultivars	2.1^{ns}		17.8**		2.6*		8.2**		4.5**		2.2^{ns}		35.7**		9.8**	
Year x cultivar	10.3**		4.9**		31.3**		22.5**		13.9**		61.3**		5.6**		28.5**	

Table 97. Two-year means and rankings of winter survival (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Lincoln, Nebraska USA		Ithaca, New York USA		Rowan County, North Carolina USA		Stillwater, Oklahoma USA		Krasnodar,[a/] USSR		Odessa, USSR		Zagreb, Yugoslavia		Cultivar means over 21 sites
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%
Oasis	95.6	4	81.3	6	85.0	9	100.0	1	100.0	1	98.3	4	97.5	5	90.3
Probstdorfer Karat	98.1	3	89.3	1	88.8	1	100.0	1	100.0	1	97.9	8	98.8	2	90.2
Bezostaya 1	84.4	8	81.0	7	87.5	2	100.0	1	100.0	1	98.1	5	98.1	3	89.6
NE68719	100.0	1	75.3	9	83.8	10	100.0	1	100.0	1	97.5	9	97.0	8	89.5
Sage	99.4	2	79.0	8	83.8	10	100.0	1	100.0	1	97.5	9	94.8	11	88.8
Priboy	89.4	7	86.0	2	86.3	3	100.0	1	100.0	1	99.1	1	91.4	16	88.6
Odesskaya 51	94.4	5	83.7	4	86.3	3	100.0	1	100.0	1	90.9	12	92.6	14	88.3
Martonvasari 3	91.3	6	82.0	5	86.3	3	100.0	1	100.0	1	98.1	5	97.5	5	88.0
WA5829	80.0	10	71.7	11	86.3	3	100.0	1	100.0	1	98.1	5	97.3	7	86.8
GKF-8001	81.9	9	84.3	3	83.8	10	100.0	1	100.0	1	98.4	3	92.9	13	85.9
Blueboy	70.6	11	75.0	10	86.3	3	100.0	1	100.0	1	98.9	2	97.8	4	84.8
Bordenave Puan Sag	0.0	13	7.7	13	86.3	3	96.9	12	81.6	13	97.5	9	99.4	1	73.6
Atlas 66	0.3	12	46.0	12	82.5	13	90.0	13	100.0	1	84.9	13	94.3	12	65.4
Flavio	0.0	13	0.2	15	26.3	14	0.0	14	28.8	14	44.5	14	96.4	9	43.1
Lerma Rojo 64	0.0	13	0.0	16	22.5	16	0.0	14	24.0	16	34.9	15	96.0	10	37.7
Galiafen	0.0	13	0.3	14	23.6	15	0.0	14	27.6	15	33.8	16	92.6	14	32.4
Mean	61.6		58.9		74.1		80.4		85.1		85.5		95.9		76.4
L.S.D. of cultivar means (.05)	18.3		22.3		24.1		7.7		38.7		45.2		N.S.		11.3
Coefficient of variation (%)	9.2		8.0		9.7		1.9		1.9		2.7		3.9		8.6
F test:															
Cultivars	51.6**		22.8**		9.7**		242.2**		5.2**		2.6*		0.9[ns]		25.7**
Year x cultivar	9.2**		14.6**		10.0**		23.2**		299.5**		338.4**		4.0**		2.0*
Location x cultivar															4.1**

[a/] These sites are not included in the overall means and analyses.

Table 98. Two-year means and rankings of date of flowering (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Bordenave, Argentina		Vienna, Austria		Tolbukhin,[a/] Bulgaria		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	128	1	107	1	283	1	139	1	136	1	146	3	161	1
Flavio	136	2	112	2	287	2	143	2	142	2	144	1	162	7
Oasis	139	3	119	9	296	4	144	3	144	3	147	6	161	3
Martonvasari 3	139	4	118	4	297	6	145	6	145	5	144	2	161	2
Bezostaya 1	140	7	118	3	298	7	146	10	145	6	146	3	161	4
Odesskaya 51	140	7	118	4	299	8	145	5	144	4	147	7	162	7
Bordenave Puan Sag	139	4	121	12	301	11	146	8	146	9	151	13	165	12
Galiafen	140	6	120	10	295	3	148	13	147	12	154	16	167	16
Blueboy	141	10	118	6	296	5	147	12	147	12	148	10	164	11
Sage	140	9	121	13	303	13	145	4	146	9	148	9	162	5
Priboy	141	10	118	7	300	9	146	8	145	6	147	7	164	10
GKF-8001	143	13	119	8	300	10	147	11	145	6	146	5	162	5
Atlas 66	142	12	121	11	302	12	149	14	147	12	149	11	166	15
NE68719	143	13	124	14	305	14	145	7	147	11	149	11	162	9
WA5829	145	16	125	15	309	15	150	16	152	16	152	14	165	13
Probstdorfer Karat	144	15	128	16	312	16	150	15	151	15	154	15	166	14
Mean	139.8		119.2		298.9		145.9		145.4		148.0		163.1	
L.S.D. of cultivar means (.05)	5.0		2.6		2.6		2.2		3.1		2.5		3.3	
Coefficient of variation (%)	2.0		1.3		0.8		0.6		--		--		0.7	
F test:														
Cultivars	5.5**		31.6**		67.5**		15.8**		12.2**		14.2**		3.3*	
Year x cultivar	2.7**		2.7**		1.0^{ns}		5.9**		--		--		6.6**	

[a/] These sites are not included in the overall means and analyses.

Table 98. Two-year means and rankings of date of flowering (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Boehnshausen, East Germany		Cambridge,[a] England		Orgerus,[a] France		Martonvasar, Hungary		Szeged, Hungary		Hamadan, Iran		Karaj,[a] Iran	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	162	1	139	1	136	1	142	1	136	1	144	12	122	1
Flavio	163	2	145	3	141	2	145	2	145	2	141	1	127	3
Oasis	165	5	151	7	145	3	146	3	146	4	141	2	129	5
Martonvasari 3	165	5	153	10	146	5	146	6	146	5	142	3	130	7
Bezostaya 1	165	7	145	2	147	9	146	4	147	8	143	10	130	7
Odesskaya 51	166	9	153	10	146	5	147	7	146	3	142	6	130	6
Bordenave Puan Sag	166	11	150	5	147	12	149	14	147	10	143	8	127	4
Galiafen	167	12	149	4	145	3	149	12	148	11	142	5	130	7
Blueboy	167	13	153	12	147	9	149	12	148	12	145	14	132	11
Sage	165	3	151	6	147	9	147	10	147	6	142	4	126	2
Priboy	165	8	154	13	146	5	147	8	147	7	143	7	131	10
GKF-8001	165	4	152	9	147	12	146	5	147	8	144	13	132	11
Atlas 66	168	14	154	13	147	12	147	9	150	14	143	10	132	11
NE68719	166	9	152	8	146	5	148	11	151	15	143	9	134	14
WA5829	169	15	154	15	153	16	152	15	153	16	145	15	135	15
Probstdorfer Karat	170	16	159	16	152	15	152	16	150	13	146	16	138	16
Mean	165.8		150.6		145.9		147.1		147.0		143.1		130.1	
L.S.D. of cultivar means (.05)	2.6		4.9		2.4		2.7		4.5		N.S.		5.8	
Coefficient of variation (%)	0.4		0.1		--		0.5		1.0		2.0		0.2	
F test:														
Cultivars	5.7**		7.8**		23.1**		7.8**		5.9**		1.5[ns]		3.5*	
Year x cultivar	10.9**		682.1**		--		13.3**		8.3**		1.4[ns]		307.4**	

[a] These sites are not included in the overall means and analyses.

Table 98. Two-year means and rankings of date of flowering (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Sulaimaniya, Iraq		Milano, Italy		Rieti, Italy		Morioka Iwate, Japan		Amman, Jordan		Suwon,[a/] Korea		Toluca,[a/] Mexico	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	117	1	129	1	135	7	154	1	131	1	--		125	1
Flavio	126	2	133	2	138	15	154	2	132	2	--		131	2
Oasis	129	3	139	7	135	8	157	6	132	2	145	2	148	5
Martonvasari 3	131	7	138	3	138	14	157	4	134	7	146	4	157	11
Bezostaya 1	130	5	138	4	134	4	158	7	133	5	146	5	156	10
Odesskaya 51	130	4	139	6	134	6	158	9	136	11	146	3	155	9
Bordenave Puan Sag	134	11	142	13	132	1	158	11	133	4	148	10	140	3
Galiafen	132	9	138	4	134	3	158	8	134	9	--		148	6
Blueboy	130	5	140	8	137	13	158	12	135	10	148	9	149	7
Sage	134	12	140	10	134	5	157	5	137	14	145	1	154	8
Priboy	131	8	140	8	136	11	159	14	134	7	147	6	159	13
GKF-8001	133	10	140	10	139	16	158	12	136	12	147	8	160	14
Atlas 66	135	13	141	12	136	10	158	9	134	6	150	11	147	4
NE68719	139	14	146	15	136	12	157	3	137	13	147	7	158	12
WA5829	140	15	145	14	136	9	161	16	138	15	151	13	164	15
Probstdorfer Karat	140	16	148	16	133	2	161	15	139	16	150	12	168	16
Mean	131.9		139.7		135.3		157.7		134.7		147.3		150.9	
L.S.D. of cultivar means (.05)	4.3		5.9		N.S.		2.6		N.S.		N.S.		11.8	
Coefficient of variation (%)	1.1		1.6		3.5		0.6		3.2		1.2		--	
F test: Cultivars	15.5**		5.1**		0.7^{ns}		5.3**		1.4^{ns}		2.3^{ns}		8.4**	
Year x cultivar	7.5**		6.6**		1.9*		6.4**		1.7^{ns}		4.0**		--	

[a/] These sites are not included in the overall means and analyses.

Table 98. Two-year means and rankings of date of flowering (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Kathmandu, Nepal		Wageningen, Netherlands		Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa (irrigated)		Bethlehem, South Africa (dryland)		Svalof,[a/] Sweden	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	89	1	153	1	159	1	139	1	278	1	270	1	--	
Flavio	95	2	155	2	164	4	143	2	287	2	280	2	--	
Oasis	115	7	161	15	164	4	145	4	295	4	284	4	169	2
Martonvasari 3	122	8	157	3	164	7	145	3	298	7	288	8	170	7
Bezostaya 1	123	9	158	4	166	10	146	7	299	8	289	10	170	5
Odesskaya 51	125	13	160	9	166	11	145	4	299	9	290	11	171	10
Bordenave Puan Sag	109	4	161	14	163	2	146	9	297	6	284	3	168	1
Galiafen	104	3	160	10	167	14	147	12	294	3	285	6	--	
Blueboy	113	6	160	11	166	11	147	12	295	5	285	5	171	8
Sage	125	12	158	6	164	8	145	4	304	13	289	9	169	4
Priboy	126	14	159	7	164	4	146	9	301	11	290	12	171	8
GKF-8001	123	10	158	4	166	9	146	7	301	12	290	12	171	12
Atlas 66	112	5	160	12	166	11	147	14	299	10	288	7	170	5
NE68719	124	11	159	8	163	3	146	9	310	15	295	14	169	2
WA5829	127	15	160	13	167	15	150	15	309	14	295	15	171	11
Probstdorfer Karat	130	16	162	16	168	16	150	15	314	16	300	16	172	13
Mean	116.3		158.7		164.9		145.5		298.6		287.5		169.9	
L.S.D. of cultivar means (.05)	10.7		1.9		2.3		1.6		3.1		5.0		N.S.	
Coefficient of variation (%)	1.7		1.0		0.7		--		0.4		0.5		0.3	
F test:														
Cultivars	11.2**		13.8**		8.2**		21.6**		69.1**		16.6**		1.8^{ns}	
Year x cultivar	24.8**		1.2^{ns}		3.0**		--		7.6**		11.7**		21.1**	

[a/] These sites are not included in the overall means and analyses.

Table 98. Two-year means and rankings of date of flowering (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Zurich, Switzerland		Ankara,[a] Turkey		Erzurum, Turkey		Eskisehir, Turkey		Davis, California USA		Billings, Montana USA		Lincoln,[a] Nebraska USA		Rowan County, North Carolina USA	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	148	1	148	1	175	1	146	1	154	1	155	1	--		114	3
Flavio	151	2	153	3	180	12	151	3	161	2	161	12	--		115	5
Oasis	157	8	153	2	179	8	150	2	167	4	155	2	135	1	111	1
Martonvasari 3	156	4	156	6	178	3	152	5	167	5	158	7	136	2	114	2
Bezostaya 1	156	5	156	7	179	7	152	5	168	7	160	8	138	5	115	4
Odesskaya 51	155	3	156	11	179	8	153	8	168	6	157	4	136	3	117	8
Bordenave Puan Sag	157	9	155	5	178	3	153	9	172	11	157	5	--		118	10
Galiafen	156	5	158	14	180	13	155	13	166	3	163	16	--		122	14
Blueboy	157	12	156	10	180	11	155	14	172	9	161	10	140	9	115	5
Sage	157	7	154	4	177	2	151	4	173	12	156	3	139	8	120	12
Priboy	157	10	156	8	178	6	152	7	170	8	160	9	137	4	117	8
GKF-8001	159	14	157	13	179	8	154	11	172	10	161	11	139	6	116	7
Atlas 66	157	11	159	15	180	13	154	10	174	13	163	14	--		118	11
NE68719	158	13	156	8	178	5	154	12	175	14	158	6	139	7	122	13
WA5829	161	15	--		182	16	156	15	179	15	163	15	148	11	124	16
Probstdorfer Karat	161	15	156	11	181	15	157	16	181	16	162	13	146	10	124	15
Mean	156.4		155.1		179.0		152.8		169.8		159.4		139.3		117.5	
L.S.D. of cultivar means (.05)	3.7		3.5		2.2		3.6		5.3		4.4		2.9		5.7	
Coefficient of variation (%)	0.7		0.8		0.5		1.2		1.0		0.6		0.7		1.7	
F test: Cultivars	7.0**		4.9**		5.1**		5.2**		13.8**		3.5*		17.9**		4.2**	
Year x cultivar	10.2**		6.3**		5.1**		3.5**		7.8**		20.8**		7.7**		7.4**	

[a] These sites are not included in the overall means and analyses.

Table 98. Two-year means and rankings of date of flowering (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Stillwater, Oklahoma [a] USA		Corvallis, Oregon [a] USA		Krasnodar, [a] USSR		Odessa, [a] USSR		Monsheim, West Germany		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Zagreb, [a] Yugoslavia		Cultivar mean over 30 sites
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date fr Jan.1
Lerma Rojo 64	--		125	1	--		146	1	138	1	145	1	135	1	139	1	153.6
Flavio	--		131	2	--		151	8	147	2	149	2	140	2	144	2	157.9
Oasis	106	1	146	14	139	1	147	2	148	3	152	3	143	4	146	3	160.6
Martonvasari 3	107	2	139	3	139	2	148	3	151	14	153	6	142	3	146	3	161.4
Bezostaya 1	109	4	140	5	141	3	148	4	152	12	154	11	143	4	151	8	162.0
Odesskaya 51	109	3	140	4	141	3	150	7	150	9	153	8	143	4	146	5	162.2
Bordenave Puan Sag	116	9	143	13	146	11	152	12	149	6	153	9	145	12	155	14	162.3
Galiafen	--		141	7	--		--		151	11	152	4	145	12	153	9	162.3
Blueboy	110	6	142	9	142	6	152	11	149	5	154	13	145	9	154	12	162.5
Sage	115	8	143	11	143	8	149	5	148	4	152	5	145	9	147	6	162.8
Priboy	110	5	141	6	141	3	151	10	151	10	153	10	143	7	153	9	162.8
GKF-8001	111	7	142	10	142	6	150	6	151	13	154	12	144	8	153	9	163.2
Atlas 66	122	11	141	7	144	9	153	13	150	8	153	7	145	12	154	13	163.5
NE68719	116	10	143	11	144	9	151	9	149	7	155	14	145	9	147	6	164.7
WA5829	122	12	149	15	147	12	155	14	152	15	158	16	147	15	156	15	167.1
Probstdorfer Karat	124	13	152	16	148	13	156	15	154	16	158	15	148	16	157	16	168.0
Mean	113.5		140.8		142.6		150.6		149.4		153.0		143.4		149.8		162.3
L.S.D. of cultivar means (.05)	6.7		6.3		3.7		5.0		3.3		3.2		3.5		9.1		1.7
Coefficient of variation (%)	1.0		--		--		0.7		1.3		0.5		--		--		1.2
F test:																	
Cultivars	8.0**		8.8**		5.3**		2.6*		9.8**		8.8**		6.8**		2.8*		30.2**
Year x cultivar	27.6**		--		--		17.4**		2.8**		18.9**		--		--		1.7*
Location x cultivar																	4.7**

[a] These sites are not included in the overall means and analyses.

Table 99. Two-year means and rankings of date of ripening (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Herat, Afghanistan		Bordenave, Argentina		Vienna, Austria		Tolbukhin,[a] Bulgaria		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Boehnshausen, East Germany	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	152	2	338	1	187	1	192	5	191	4	208	14	204	4
Flavio	151	1	340	2	189	3	194	10	189	1	207	10	204	7
Oasis	155	3	343	3	190	5	189	1	191	4	203	5	204	6
Martonvasari 3	155	4	344	4	188	2	192	3	189	2	203	4	203	3
Bordenave Puan Sag	160	11	347	9	193	13	194	9	193	8	203	3	204	5
Sage	160	12	347	8	190	7	191	2	192	6	204	6	202	2
Odesskaya 51	156	7	346	6	191	10	192	3	194	10	205	7	208	16
Bezostaya 1	156	5	347	9	190	8	195	12	192	7	207	9	205	8
GKF-8001	158	10	347	7	190	6	195	11	190	3	202	1	205	10
Blueboy	156	7	345	5	195	16	195	12	195	12	208	13	205	9
NE68719	161	13	352	12	189	4	193	6	194	10	203	2	201	1
Priboy	156	7	348	11	191	9	193	6	195	12	207	11	206	13
Atlas 66	158	9	354	14	192	12	199	15	197	16	213	15	205	11
Galiafen	162	14	354	13	193	14	198	14	196	15	218	16	207	15
Probstdorfer Karat	163	16	357	16	192	11	193	8	193	9	206	8	206	12
WA5829	162	15	355	15	194	15	199	15	196	14	207	11	206	14
Mean	157.5		347.7		190.8		193.8		192.9		206.5		204.6	
L.S.D. of cultivar means (.05)	3.8		4.5		N.S.		N.S.		4.3		6.0		N.S.	
Coefficient of variation (%)	1.3		0.5		0.5		--		0.1		0.6		0.4	
F test: Cultivars	8.3**		12.7**		1.6^{ns}		2.2^{ns}		3.2*		4.2**		2.1^{ns}	
Year x cultivar	3.0**		5.2**		30.8**		--		286.0**		18.5**		17.8**	

[a] These sites are not included in the overall means and analyses.

Table 99. Two-year means and rankings of date of ripening (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Martonvasar, Hungary		Hamadan, Iran		Karaj,[a/] Iran		Sulaimaniya, Iraq		Rieti, Italy		Morioka Iwate, Japan		Amman, Jordan	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	186	1	187	1	172	1	154	1	186	6	199	9	164	1
Flavio	187	2	197	15	172	2	157	2	185	1	198	5	164	3
Oasis	189	3	197	16	172	2	162	3	188	11	195	1	164	2
Martonvasari 3	193	11	197	13	172	2	162	5	188	13	199	8	166	11
Bordenave Puan Sag	192	9	197	14	177	10	165	10	186	4	198	6	165	4
Sage	190	5	193	2	175	7	165	10	188	10	197	4	166	9
Odesskaya 51	192	10	195	10	174	5	162	4	188	7	198	6	168	13
Bezostaya 1	191	7	194	7	178	13	162	6	186	3	196	2	165	5
GKF-8001	190	4	194	6	177	11	165	12	188	14	201	13	167	12
Blueboy	194	13	195	8	176	8	163	7	188	11	201	13	166	9
NE68719	191	6	196	12	177	11	169	14	188	7	197	3	168	13
Priboy	193	12	193	3	176	8	163	8	188	14	200	10	165	5
Atlas 66	192	8	195	8	174	5	166	13	189	16	200	11	166	7
Galiafen	194	13	196	11	181	14	164	9	185	2	201	12	166	8
Probstdorfer Karat	196	16	193	4	181	15	171	15	188	7	203	15	169	16
WA5829	195	15	194	5	183	16	172	16	186	4	205	16	169	15
Mean	191.5		194.5		175.8		163.8		187.2		199.1		166.1	
L.S.D. of cultivar means (.05)	3.1		N.S.		6.1		2.8		2.5		3.6		N.S.	
Coefficient of variation (%)	0.6		2.4		0.3		1.1		1.6		1.5		1.4	
F test:														
Cultivars	7.1**		1.2[ns]		3.0*		22.8**		2.4*		4.7**		1.7[ns]	
Year x cultivar	7.3**		1.8*		48.5**		2.1*		0.6[ns]		1.3[ns]		2.8**	

[a/] These sites are not included in the overall means and analyses.

Table 99. Two-year means and rankings of date of ripening (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Suwon, Korea[a]		Toluca, Mexico[a]		Kathmandu, Nepal		Wageningen, Netherlands		Warsaw, Poland[a]		Fundulea, Romania		Bethlehem, South Africa (irrigated)	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	--		187	4	130	1	205	1	--		178	1	318	1
Flavio	--		178	1	134	2	207	5	209	5	180	2	329	2
Oasis	173	3	181	2	150	7	209	7	208	4	182	3	337	3
Martonvasari 3	172	1	191	5	158	9	205	2	209	7	182	3	338	4
Bordenave Puan Sag	176	8	183	3	145	3	206	4	208	2	184	8	339	6
Sage	174	4	195	9	150	6	212	11	208	3	182	3	344	13
Odesskaya 51	172	2	191	5	159	12	206	3	209	6	182	3	339	7
Bezostaya 1	174	6	196	10	161	13	208	6	209	9	184	10	341	9
GKF-8001	176	8	201	14	158	11	210	8	210	10	184	8	344	14
Blueboy	177	10	192	8	152	8	212	12	212	15	186	13	339	5
NE68719	175	7	198	11	158	10	210	9	206	1	183	7	347	16
Priboy	174	4	198	11	164	14	211	10	210	11	185	12	341	10
Atlas 66	180	12	191	5	146	4	212	13	211	14	185	11	341	8
Galiafen	--		198	11	146	5	212	14	210	12	186	14	342	12
Probstdorfer Karat	180	11	220	16	168	16	215	16	211	13	187	16	342	11
WA5829	182	13	219	15	165	15	213	15	209	7	186	14	346	15
Mean	175.8		194.7		152.7		209.4		209.2		183.2		339.3	
L.S.D. of cultivar means (.05)	5.2		N.S.		8.2		N.S.		N.S.		2.2		13.0	
Coefficient of variation (%)	1.0		--		4.5		0.6		0.6		--		2.8	
F test: Cultivars	3.6*		1.3^{ns}		15.2**		1.7^{ns}		2.0^{ns}		11.8**		2.6*	
Year x cultivar	7.0**		--		1.3^{ns}		31.3**		5.2**		--		1.6^{ns}	

[a] These sites are not included in the overall means and analyses.

Table 99. Two-year means and rankings of date of ripening (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Continued.

Cultivars	Bethlehem, South Africa (dryland)		Svalof,[a] Sweden		Erzurum, Turkey		Eskisehir, Turkey		Davis,[a] California USA		Stillwater,[a] Oklahoma USA		Krasnodar,[a] USSR	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	314	1	--		214	4	186	1	198	1	--		--	
Flavio	325	2	--		216	11	189	2	199	2	--		--	
Oasis	331	5	217	4	213	2	191	7	205	7	146	2	176	1
Martonvasari 3	332	6	221	11	215	6	191	6	205	4	145	1	180	3
Bordenave Puan Sag	329	3	216	3	214	4	189	2	206	9	156	10	181	7
Sage	335	12	216	1	213	1	189	4	207	12	154	8	179	2
Odesskaya 51	332	7	219	9	215	6	192	9	205	4	149	3	180	6
Bezostaya 1	331	4	219	8	216	10	192	8	206	10	151	6	180	3
GKF-8001	335	11	218	7	220	15	192	9	208	14	151	5	181	8
Blueboy	334	8	218	6	217	12	193	12	205	4	154	7	181	8
NE68719	339	14	216	2	214	3	191	5	208	13	155	9	180	3
Priboy	335	9	219	10	216	8	194	13	205	7	150	4	181	8
Atlas 66	335	10	222	13	216	8	194	13	201	3	160	13	183	11
Galiafen	336	13	--		218	13	194	16	207	11	--		--	
Probstdorfer Karat	342	15	221	12	220	16	194	13	215	16	160	11	185	12
WA5829	342	15	217	4	219	14	192	11	213	15	160	12	188	13
Mean	332.8		218.3		216.0		191.4		205.6		153.1		181.0	
L.S.D. of cultivar means (.05)	5.8		N.S.		4.0		4.0		6.4		2.6		3.6	
Coefficient of variation (%)	0.7		0.4		0.4		1.0		--		0.9		0.1	
F test:														
Cultivars	12.7**		2.3^{ns}		2.6*		2.8*		4.1**		34.5**		6.0**	
Year x cultivar	6.0**		20.6**		22.4**		3.5**		--		2.9**		1160.3**	

[a] These sites are not included in the overall means and analyses.

Table 99. Two-year means and rankings of date of ripening (days from Jan. 1) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977. Concluded.

Cultivars	Odessa,[a/] USSR		Weihenstephan,[a/] West Germany		Novi Sad, Yugoslavia		Zagreb,[a/] Yugoslavia		Cultivar mean over 20 sites
	date	rank	date	rank	date	rank	date	rank	days from Jan. 1
Lerma Rojo 64	192	8	213	1	183	1	182	1	204.2
Flavio	195	14	213	1	183	1	185	2	206.5
Oasis	191	7	217	5	186	4	188	7	208.9
Martonvasari 3	187	1	220	8	186	4	187	5	209.6
Bordenave Puan Sag	191	6	217	6	186	6	186	3	209.6
Sage	190	2	220	8	188	11	187	6	210.3
Odesskaya 51	191	5	220	8	185	3	188	8	210.5
Bezostaya 1	192	9	220	8	186	6	188	8	210.5
GKF-8001	190	3	220	8	187	8	189	14	211.3
Blueboy	193	11	220	8	188	13	188	8	211.5
NE68719	190	3	215	4	188	11	188	8	211.8
Priboy	192	10	220	8	187	9	189	14	211.9
Atlas 66	193	13	220	8	189	15	189	12	212.0
Galiafen	--		214	3	187	9	186	4	212.9
Probstdorfer Karat	195	15	220	8	189	15	190	16	214.6
WA5829	193	11	217	6	188	13	189	12	214.6
Mean	191.6		217.6		186.3		187.2		210.7
L.S.D. of cultivar means (.05)	N.S.		4.1		2.7		2.5		2.2
Coefficient of variation (%)	1.6		--		--		--		1.5
F test:									
Cultivars	0.6^{ns}		3.5*		4.4**		6.1**		11.3**
Year x cultivar	5.1**		--		--		--		1.4^{ns}
Location x cultivar									3.5**

[a/] These sites are not included in the overall means and analyses.

Table 100. Two-year means and rankings of shattering (%) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Herat, Afghanistan		Boehns-hausen, East Germany		Kathmandu, Nepal		Wageningen, Netherlands		Warsaw, Poland		Bethlehem, South Africa (dryland)		Billings, Montana USA		Cultivar mean over 7 sites
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%
Bezostaya 1	10.6	1	0.1	9	0.1	1	10.6	3	5.1	2	0.0	1	0.0	1	3.8
Blueboy	15.6	5	0.3	13	0.9	7	11.3	5	4.9	1	0.0	1	1.3	9	4.9
Priboy	12.5	3	0.0	1	1.6	14	13.8	12	6.4	5	0.0	1	0.0	1	4.9
GKF-8001	11.1	2	0.0	1	0.9	7	10.0	2	15.0	11	0.0	1	0.0	1	5.3
Odesskaya 51	16.9	6	0.0	1	0.3	2	10.6	3	12.0	9	0.0	1	0.0	1	5.7
Probstdorfer Karat	20.6	8	0.1	9	2.6	15	13.1	11	5.5	3	0.0	1	0.0	1	6.0
NE68719	12.5	3	0.4	14	1.1	13	11.3	5	20.6	13	0.0	1	0.0	1	6.6
Bordenave Puan Sag	21.3	9	0.0	1	0.9	7	12.5	10	6.3	4	0.0	1	5.0	11	6.6
Martonvasari 3	29.4	13	0.0	1	0.4	4	13.8	12	11.0	8	0.0	1	7.5	13	8.9
Flavio	26.3	12	0.1	9	3.3	16	11.3	5	19.4	12	8.9	15	0.0	1	9.9
Lerma Rojo 64	25.1	11	0.0	1	0.3	2	14.4	14	28.8	15	0.0	1	3.8	10	10.3
Atlas 66	52.8	14	0.6	15	0.4	4	11.3	5	8.9	7	0.0	1	7.5	13	11.6
WA5829	17.5	7	0.0	1	1.0	12	11.9	9	48.1	16	0.0	1	5.0	11	11.9
Galiafen	58.1	15	0.0	1	0.6	6	18.1	16	6.9	6	0.0	1	0.0	1	12.0
Sage	25.0	10	0.1	9	0.9	7	15.6	15	21.3	14	11.8	16	18.8	15	13.3
Oasis	72.4	16	1.0	16	0.9	7	9.4	1	13.1	10	0.0	1	22.5	16	17.0
Mean	26.7		0.2		1.0		12.4		14.6		1.3		4.5		8.7
L.S.D. of cultivar means (.05)	N.S.		N.S.		1.3		3.8		21.8		N.S.		11.4		N.S.
Coefficient of variation (%)	46.3		159.7		124.4		19.6		47.3		94.9		235.0		78.0
F test:															
Cultivar	1.6^{ns}		1.8^{ns}		3.8**		3.3*		2.5*		0.9^{ns}		3.4*		1.9^{ns}
Year x cultivar	11.0**		4.5**		1.0^{ns}		2.1*		8.8**		77.0**		1.0^{ns}		0.5^{ns}
Location x cultivar															1.6*

Table 101. Two-year means and rankings of frost damage (0-9) for the 16 cultivars grown in the International Winter Wheat Performance Nursery, 1976 and 1977.

Cultivars	Male Ripnany, Czechoslovakia		Boehnshausen, East Germany		Fundulea, Romania		Eskisehir, Turkey		Cultivar means over 4 sites
	0-9	rank	0-9	rank	0-9	rank	0-9	rank	0-9
WA5829	0.0	1	2.0	1	0.5	1	3.1	1	1.4
Sage	0.0	1	2.1	4	0.5	1	3.6	6	1.6
NE68719	0.4	4	2.0	1	0.5	1	3.4	3	1.6
Probstdorfer Karat	0.5	6	2.1	4	0.5	1	3.5	5	1.7
Odesskaya 51	1.4	11	2.3	6	0.5	1	3.3	2	1.8
Priboy	1.5	12	2.4	8	0.5	1	3.9	9	2.1
Martonvasari 3	0.6	7	2.5	10	1.9	8	3.8	7	2.2
GKF-8001	0.6	7	2.3	6	2.6	9	3.4	3	2.2
Bezostaya 1	1.0	9	2.5	10	1.6	7	3.8	7	2.2
Blueboy	0.4	4	2.4	8	3.3	10	3.9	9	2.5
Oasis	1.0	9	2.0	1	3.3	10	3.9	9	2.5
Bordenave Puan Sag	0.0	1	2.5	10	4.5	12	4.6	12	2.9
Atlas 66	3.0	14	3.3	14	4.9	13	5.6	13	4.2
Flavio	2.0	13	2.5	10	6.1	14	7.1	14	4.4
Lerma Rojo 64	4.9	15	3.4	15	8.0	15	7.3	16	5.9
Galiafen	5.5	16	4.4	16	8.3	16	7.1	14	6.3
Mean	1.4		2.5		3.0		4.4		2.8
L.S.D. of cultivar means (.05)	3.1		0.5		1.7		2.2		1.4
Coefficient of variation (%)	39.4		20.6		12.1		9.4		16.6
F test:									
Variety	2.6*		17.5**		22.5**		4.0**		9.7**
Year x variety	27.6**		0.7^{ns}		20.0**		25.1**		0.8^{ns}
Location x variety									2.1**