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Results of the Tenth International Winter Wheat Performance Nursery Grown in 1978

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by
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North Central Region
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Office of Agriculture
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The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Roy G. Arnold, Director

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ACKNOWLEDGMENTS

Cooperation of nursery collaborators from the 61 sites in 36 countries in which the Tenth International Winter Wheat Performance Nursery (IWWPN) was grown in 1978 is gratefully acknowledged. The nursery would not be possible without the information and data provided by these individuals. Their responsibility for 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 personnel in the Plant Production and Protection Division,

Food and Agriculture Organization of the United Nations, especially to Dr. W. Tahir, for 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 Joyce Kovar and the University of Nebraska Wheat Quality Laboratory staff is acknowledged. Appreciation also is expressed to Janet Whitehead for her help in the preparation of this report.

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DATA MANAGEMENT

Results presented in this report are based on data provided by our cooperators throughout the world. We report the data as we receive them 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 detected questionable or incorrect data before it was published.

SUMMARY

Seed for the Tenth International Winter Wheat Performance Nursery (IWWPN) was sent to cooperators at 68 locations in 38 countries in the fall of 1977. 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

included for the first year of testing in the 1978 IWWPN and 17 were repeated from 1977.

Data are reported on grain yield, test weight, 1000-kernel weight, grain protein and lysine content, plant height, lodging, winter survival, frost damage, maturity, shattering, plant diseases, and all other traits recorded by cooperators. Supplemental nursery management information is reported for each nursery site adjacent to the table of data from the site. Statistical analyses over locations and corresponding summary data are presented by trait for each cultivar tested in 1978. Yield means and analyses based on regionalization of the data into six broad geographical areas of the world are reported. Two-year means and analyses for 17 cultivars tested in 1977 and 1978 also are reported.

The grand yield mean of all varieties averaged over 52 sites was 41.5 q/ha in 1978. This compares with 38.0 q/ha over 56 sites in 1977, and 40.5 q/ha over 50 sites in 1976. Individual nursery yield means ranged from 7.2 q/ha at Vollebekk, Norway to 74.7 q/ha at Tolbukhin, Bulgaria.

Nine sites produced nursery yield means that were less than 20 q/ha. Nineteen sites had nursery means ranging between 20 and 40 q/ha while 20 sites had mean yields between 40 to 60 q/ha. Nursery yield means at nine sites exceeded 60 q/ha.

Eleven cultivars had overall yield means surpassing the yield of Bezostaya 1. Twelve cultivars in the Tenth IWWPN were directly or indirectly related to Bezostaya 1. Nine of these exceeded the average yield of Bezostaya 1. Yubiley, the highest yielding cultivar, averaged 48.7 q/ha over 52 sites. This was 11.7% above the yield of Bezostaya 1. Yubiley ranked among the 10 highest yielding cultivars at 42 of the 52 sites and ranked first at 5 sites. Zg 887-73 was ranked first in yield at 5 sites also, but ranked only 24th overall.

In Northern Europe and Southern Europe, three varieties were significantly higher in yield than Bezostaya 1. In the other four regions where overall yields were lower and L.S.D. values were higher, none of the varieties were significantly higher in yield than Bezostaya 1.

Yield advantages over Bezostaya 1 expressed as percentages were recorded for Slavia—23% above Bezostaya 1 in Northern Europe; Yubiley and NR 72-837—20% advantage in Southern Europe; Partizanka—10% over Bezostaya 1 in the Middle East; Sadovo-1—26% advantage in the Far East; Yubiley—12% advantage in North America; and NR 72-837—18% over Bezostaya 1 at the Southern Hemisphere stations.

The grand mean of 17 cultivars grown in 1977 and 1978 was 41.5 q/ha, averaged over 49 sites. Yubiley had the highest two-year mean of 48.9 q/ha. The lowest yield for a test-cultivar was 38.8 q/ha for NE 73640.

Forty-one sites reported precipitation data with no added irrigation water. A broad range of precipitation occurred among the test sites in 1978. The sites were arranged into groups of: (1) <350 mm; (2) 350-700 mm; (3) 701-1000 mm; (4) >1000 mm precipitation. Relative yield rankings of the cultivars in each group are reported and discussed.

Nap Hal/Atlas 66 possessed the highest grain protein content (18.1%) in the Tenth IWWPN. Atlas 66, the long-term protein check, had a mean value of 16.2% compared with the nursery mean of 14.1%. The overall correlation coefficient between grain yield and grain protein was -.26**. Lysine values were determined from five sites. CI 13449/Centurk had the highest adjusted lysine value of 3.03%.

Averaged over 35 sites, Atlas 66 had the highest two-year protein value (16.4%) while Blueboy was lowest in protein content at 12.5%. F53-70 and F54-70 each had noteworthy two-year average values of 15.6%.

Partizanka had the highest average test weight value of 81.6 kg/hl, while Ticonderoga had the lowest mean value of 72.6 kg/hl. Averaged over 23 sites, Iulia produced the highest two-year test weight mean of 80.4 kg/hl compared with an overall mean of 78.0. Moslavka had the lowest two-year average test weight (75.0 kg/hl).

Sadovo-1 had the highest 1000-kernel weight mean of 46.7 grams averaged over 28 sites. Absolvent was second with 42.5 grams. Nap Hal/Atlas 66 had the lowest mean of only 28.2 grams. The two-year average for Sadovo-1 was 47.2 grams. This was 11% higher than the second ranked value (42.5 grams) shared by Bezostaya 1 and Iulia. The lowest two-year average for 1000-kernel weight was 31.1 grams for Lindon.

The grand means for plant height and lodging were 92.4 cm and 19.0% , respectively. Plant height and lodging were positively correlated (.36**). Mironovskaya 808 was the tallest variety (117.6 cm) in the Tenth IWWPN. It also had the highest average lodging value of 49.8% computed from 20 sites. The shortest cultivars in the nursery were the four cultivars from Zagreb, Yugoslavia. These varieties also had low lodging values.

Averaged over 36 sites, two-year plant height means ranged from 63.7 cm (Zg 4293-73) to 120.9 cm (Mironovskaya 808). The amount of lodging in the two-year period ranged from 4.8% for Zlatoklasa to 59.0% for Atlas 66.

Differential readings for winter survival were analyzed over 24 sites. The grand mean was 76.8% survival. Cultivar means ranged from 93.3% for Mironovskaya 808 to 24.5% for Lerma Rojo 64. The most severe winter-killing occurred at Jokioinen, Finland and Lincoln, Nebraska, U.S.A. The grand mean for the two-year analysis was 77.2% survival. Mironovskaya 808 had the highest mean survival of

91.8%. Zg 887-73 had the lowest survival among the test cultivars of 52.4% compared with 33% for the spring wheat check, Lerma Rojo 64.

The correlation coefficient measuring the relationship between flowering and ripening dates in the Tenth IWWPN was .98**. The four Zagreb cultivars and Lerma Rojo 64 were among the earliest to flower and ripen. Disponent was the latest maturing variety in the nursery.

Yield analyses were performed on data from locations grouped according to time intervals between flowering and ripening for Bezostaya 1. The grain-filling period for Bezostaya 1 varied from about 29 to 76 days over 35 sites. Seven groups of five-day intervals were established to accommodate the range. Yield values and rankings were examined in each group for possible effects of grain-filling time on yield.

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

Results of the Tenth International Winter Wheat Performance Nursery Grown in 1978

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

This is the tenth report of results from an International Winter Wheat Performance Nursery (IWWPN) organized in 1968 by the Nebraska Agricultural Experiment Station in cooperation with the Science and Education Administration (SEA), U.S. Department of Agriculture, under contract number AID/ta-C-1093 with the U.S. International Development Corporation, Agency for International Development. The Nursery was designed to (1) test the adaptation and stability of winter wheat cultivars in a range of latitudes, daylengths, fertility conditions, water management regimes, and disease complexes; (2) identify superior winter cultivars to serve as recipient

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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 1978 IWWPN, 17 were repeated from the 1977 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 performance of these cultivars has been included herein from all sites re-

Table 1. Cultivars grown in the Tenth International Winter Wheat Performance Nursery, 1978.

Name	Origin	Pedigree
F53-70	Romania	Mironovskaya 262//Bucuresti 1/Skorospelka 3b
Blueboy	USA, NC	Norin 10/Brevor//Anderson/Coker 55-9
Krasnodarskaya 39	USSR	Saratovskaya 3/Bezostaya 1
Atlas 66	USA, NC	Frondoso/2/Redhart 3/Noll 28
Mironovskaya 808	USSR	Autumnized selection from Artemovka spring wheat
F54-70	Romania	Mironovskaya 264/Bezostaya 1
Lindon	USA, CO	II 211 83/CO 652363//Lancer/KS 62136
Yubiley	Bulgaria	(Flightman x Bezostaya 1)F_1 x Bezostaya 1
Zg 887-73	Yugoslavia	Zg 6877-61/T. timopheevi Der. 1951//Abondanza
Iulia	Romania	Beloterkovskaya 198/Bezostaya 1
Moslavka (Zg 4240/73)	Yugoslavia	Zg 3814-65/Tp 114-1965A//Zg 3814-65/Sanja
NE 73640	USA, NE	Scout/3/Quivira/Tenmarq//Marquillo/Oro/4/Homestead
Bezostaya 1	USSR	Lutescens 17/Skorospelka 2
Sadovo 1	Bulgaria	Yubileina 3/Bezostaya 1
Zlatoklasa (Zg 4364/73)	Yugoslavia	Zg 5997-66/Tp 114-1965A//Zg 5997-66
Zg 4293-73	Yugoslavia	Zg 4938-65/Tp 114-1965A//Zg 8058-67/3/Zg 435-67
Lerma Rojo 64	Mexico	Lerma Rojo/4/Lerma 52/3/Norin 10/Brevor/2/Yaqui 50
Martonvasari 4	Hungary	Mironovskaya 808/Bez. 1//Bez. 1
Slavyanka	Bulgaria	NS 313/Bezostaya 1
NR 72-837	Austria	Neuhof Nr. 1 x Bez. 1 x Produttore
Slavia (ST-VUR 37)	Czechoslovakia	Mironovskaya 808/Bezostaya 1
Ticonderoga	USA, NY	Genesee/4/NY wheat-rye selection/3/Genesee/2/Purdue No. 8/Cornell 595 /5/Heine VII/6/Genesee *2/2/Brevor/Norin 10/4/Avon sib
Disponent	West Germany	Benno *2/Florian
Partizanka	Yugoslavia	Bezostaya 1/NS 116
Nap Hal/Atlas 66	USA, NE	Nap Hal/Atlas 66
NR 73/5028 (Samson)	Austria	Bezostaya 1/3/Theissweizen/Kanadischer Dickkopf/2/Weizen aus Australien
Budifen	Chile	Heines Koga/5/II-50-18/4/Nrn 10/Brevor 14/3/27-15/Rex/Rio/6/Heine 110
Newton (KS 73112)	USA, KS	Pitic 62/Chris sib//2* Sonora 64/3/Klein Rendicor/4/Scout
Absolvent	West Germany	Mass selected line out of a Russian population related to Bezostaya 1
CI 13449/Centurk	USA, NE	CI 13449/Centurk

porting such data, but they were not included in any of the statistical analyses.

NURSERY SITES

Cooperators at the 68 sites receiving seed of the Tenth IWWPN are listed in Table 2. The nursery was grown at 61 sites in 36 different countries—a 90% completion rate. Fifty-six sites were in the Northern Hemisphere while 5 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 Tabriz, Iran; Lima, Peru; and Logrono, Spain, either arrived too late for normal planting, or the nursery was abandoned for other reasons.

Fifty of the 61 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.

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 48 locations. Precipitation ranged from a low of 148 mm at Herat, Afghanistan to a high of approximately 1300 mm at Corvallis, Oregon, U.S.A. Twenty-three locations were in the 0 to 500 mm range and 19 had precipitation amounts between 501 and 1000 mm. Six locations had precipitation totals in excess of 1000 mm. Average rainfall over 48 locations was 588.4 mm with a standard deviation of 296.4 mm. Supplemental irrigation was applied at 10 locations.

Fertilizer was applied to most of the nurseries. Nitrogen, phosphorus, and potassium rates are tabulated from sites reporting fertilizer usage.

Element	Number of sites	Amount used (kg/ha)			C.V. %
		Range	Mean	S.D.	
Nitrogen	52	12 — 224.4	94.8	51.1	53.9
Phosphorus	45	6.1 — 170	68.0	37.7	55.4
Potassium	27	16.7 — 203.4	83.8	51.9	61.8

Country	Station	Cooperator(s)
Afghanistan	Kabul	Mr. M. A. Noory, A. Qayoum, and M. Osmanzai
"	Herat	Mr. M. A. Noory, S. A. R. Pakdil, F. Haq, and M. Nasim
Algeria	Algiers	Institute de Development des Grandes Cultures
Argentina	Balcarce	Ing. Agr. Ernesto F. Godoy and Ing. Roberto Bedogni
"	Bordenave	Ing. Agr. Ernesto F. Godoy, Ing. Santiago Garbini, and Juan R. Lopez
"	Marcos Juarez*	Ing. Agr. Ernesto F. Godoy
Austria	Vienna	Drs. R. Hron and H. Foessleitner
Bulgaria	Tolbukhin	Drs. T. Rachinsky and I. Govedarov
Canada	Alberta, Lethbridge	Dr. M. N. Grant
"	Prince Edward Island	Dr. H. G. Nass
Chile	Chillan	Dr. Ignacio Ramirez A., L. Aguayo, M. Mellado, and R. Madariaga
"	Temuco	Drs. Ignacio Ramirez A. and Juan Acevedo
Czechoslovakia	Male Ripnany	Ing. Dezider Michalik
"	Sedlec	Ing. J. Schmidt, Ing. Jaroslav Maly, and Augustina Vernerova
East Germany	Bohnshausen	Dr. A. Meinel
England	Cambridge	Dr. F. G. H. Lupton and Mr. R. H. Oliver
Finland	Jokioinen	Dr. Rolf Manner
France	Orgerus	Dr. J. P. Hardouin and Mr. Pierre Benoist
Hungary	Martonvasar	Drs. S. Rajki and L. Balla
"	Szeged	Drs. Z. Barabas and I. Szaniel
Iran	Hamadan	Dr. H. Kaveh and Mr. M. R. Eslampour
"	Karaj	Dr. H. Kaveh
"	Tabriz*	"
Iraq	Sulaimaniya	Dr. Y. V. Klaimi, Mr. A. Alaka, and M. M. Said
Italy	Milano	Dr. Basilio Borghi
"	Rieti	Drs. G. Zitelli and E. Biancolatte
Japan	Morioka Iwate	Drs. T. Gotoh and H. Fujiwara
Jordan	Amman*	Mr. Zulkifl Ghosheh
Korea	Suwon	Dr. Chang Hwan Cho
Lebanon	Beirut	Dr. A. Alameddine and Mr. A. Chauban
Mexico	Toluca	Bread Wheat Progam - CIMMYT
Nepal	Kathmandu	Dr. A. N. Bhattarai, A. Mudvari, R. H. Dongol, and B. Silwal
The Netherlands	Wageningen	Dr. A. C. Zeven
Norway	Vollebekk	Dr. K. Ringlund
Pakistan	Islamabad	Dr. M. Tahir and Mr. N. Mohammad
Peru	Lima*	Dr. Marino Romero
Poland	Przeclaw	Dr. E. Bilski
"	Warsaw	Dr. S. Starzycki
Romania	Fundulea	Dr. N. Ceapoiu, G. H. Ittu, and N. N. Saulescu
South Africa	Bethlehem	Drs. I. B. J. Smit and K. W. Pakendorf
"	Pretoria*	"
Spain	Alcala de Henares	Dr. J. Salazar and Mr. F. Sanz
"	Logrono*	Dr. P. de la Hera
Sweden	Svalof	Dr. Bo Kristiansson
Switzerland	Zurich	Drs. F. Weilenmann and G. Popow
Syria	Aleppo	Drs. J. Srivastava, A. Kamel, and R. Bertram
Turkey	Ankara*	Mr. Basri Devecioglu
"	Erzurum	Drs. F. Tosun and C. Koycu
"	Eskisehir	Dr. M. K. Haksel, F. Altay, and H. Kutluk
USA	Davis, CA	Dr. C. O. Qualset, H. E. Vogt, and C. C. Jan
"	Akron, CO	Drs. J. R. Welsh and G. Hinze
"	Fort Collins, CO	Dr. J. R. Welsh
"	Brookston, IN	Drs. D. Baker and K. E. Miskin
"	Hutchinson, KS	Drs. E. G. Heyne and G. M. Paulsen
"	Billings, MT	Mr. Joe Lenneman
"	Lincoln, NE	Drs. V. A. Johnson and K. D. Wilhelmi
"	Ithaca, NY	Dr. Neal F. Jensen
"	Rowan Co., NC	Dr. C. F. Murphy
"	Stillwater, OK	Dr. E. L. Smith
"	Corvallis, OR	Drs. W. E. Kronstad, W. L. McCuistion, and F. A. Cholick
"	Pullman, WA	Dr. C. J. Peterson, Jr.
USSR	Krasnodar	Dr. Y. M. Puchkov
"	Mironovski	Dr. V. N. Remeslo
"	Odessa	Drs. A. A. Sozinov and L. K. Sechnjak
West Germany	Monsheim	Dr. K. Brunckhorst
"	Weihenstephan	Dr. G. Fischbeck
Yugoslavia	Novi Sad	Dr. S. Borojevic
"	Zagreb	Dr. Josip Potocanac

* Sites which either did not receive the nursery or at which the nursery apparently failed.

Table 3. Latitude, longitude, and elevation of nursery sites in the Tenth International Winter Wheat Performance Nursery in 1978.

Country	Station	Latitude	Longitude	Elevation m
Afghanistan	Herat	N34° 11'	E 62° 13'	964
"	Kabul	N34° 33'	E 69° 21'	1803
Algeria	Algiers	N36° 09'	E 05° 21'	1000
Argentina	Balcarce	S37° 45'	W 58° 14'	135
"	Bordenave	S37° 51'	W 63° 01'	212
Austria	Vienna	N48° 12'	E 16° 45'	147
Bulgaria	Tolbukhin	N43° 40'	E 28° 10'	236
Canada	Lethbridge	N49° 43'	W112° 48'	909
"	Prince Edward Island	N46° 20'	W 63° 00'	16
Chile	Chillan	S36° 34'	W 71° 55'	217
"	Temuco	S38° 41'	W 72° 25'	200
Czechoslovakia	Male Ripnany	N48° 29'	E 17° 59'	172
"	Sedlec	N50° 14'	E 14° 30'	300
East Germany	Bohnshausen	N51° 42'	E 11° 00'	202
England	Cambridge	N52° 10'	E 00° 06'	20
Finland	Jokioinen	N60° 49'	E 23° 29'	92
France	Orgerus	N48° 40'	E 02° 20'	90
Hungary	Martonvasar	N47° 21'	E 18° 49'	150
"	Szeged	N46° 10'	E 20° 00'	80
Iran	Hamadan	N34° 47'	E 48° 30'	1877
"	Karaj	N35° 48'	E 51° 00'	1321
Iraq	Sulaimaniya	N36° 05'	E 46° 05'	700
Italy	Milano	N45° 13'	E 09° 05'	70
"	Rieti	N42° 24'	E 00° 24'	402
Japan	Morioka Iwate	N39° 45'	E141° 08'	167
Korea	Suwon	N36° 19'	E126° 59'	37
Lebanon	Beirut	N33° 55'	E 35° 28'	950
Mexico	Toluca	N19° 16'	W 99° 51'	2640
Nepal	Kathmandu	N27° 40'	E 85° 20'	1360
Netherlands	Wageningen	N51° 58'	E 05° 38'	7
Norway	Vollebekk	N59° 40'	E 10° 47'	95
Pakistan	Islamabad	N30° 11'	E 66° 57'	1802
Poland	Przeclaw	N50° 11'	E 21° 29'	185
"	Warsaw	N52° 12'	E 29° 39'	90
Romania	Fundulea	N44° 03'	E 24° 10'	66
South Africa	Bethlehem	S28° 10'	E 28° 18'	1631
Spain	Alcala de Henares	N40° 33'	W 03° 19'	673
Sweden	Svalof	N55° 35'	E 13° 06'	50
Switzerland	Zurich	N47° 29'	E 08° 32'	445
Syria	Aleppo	N36° 24'	E 36° 54'	300
Turkey	Erzurum	N39° 58'	E 41° 20'	1900
"	Eskisehir	N36° 45'	E 30° 55'	789
United States	California, Davis	N38° 32'	W121° 46'	18
"	Colorado, Akron	N40° 10'	W103° 20'	1420
"	Colorado, Fort Collins	N40° 35'	W105° 10'	1475
"	Indiana, Brookston	N40° 35'	W 87° 00'	183
"	Kansas, Hutchinson	N38° 00'	W 98° 00'	468
"	Montana, Billings	N45° 38'	W108° 30'	923
"	Nebraska, Lincoln	N41° 10'	W 96° 25'	360
"	New York, Ithaca	N42° 30'	W 76° 30'	335
"	North Carolina, Rowan Co.	N35° 42'	W 80° 37'	251
"	Oklahoma, Stillwater	N36° 07'	W 97° 04'	270
"	Oregon, Corvallis	N44° 30'	W123° 30'	68
"	Washington, Pullman	N46° 42'	W117° 08'	768
USSR	Krasnodar	N45° 00'	E 38° 55'	37
"	Mironovski	N50° 15'	E 31° 10'	151
"	Odessa	N46° 40'	E 31° 20'	42
West Germany	Monsheim	N49° 35'	E 08° 20'	160
"	Weihenstephan	N48° 24'	E 11° 44'	467
Yugoslavia	Novi Sad	N45° 03'	E 19° 08'	84
"	Zagreb	N45° 49'	E 15° 59'	177

FIGURE 1

10th INTERNATIONAL WINTER WHEAT PERFORMANCE NURSERY

68 SITES; 38 COUNTRIES

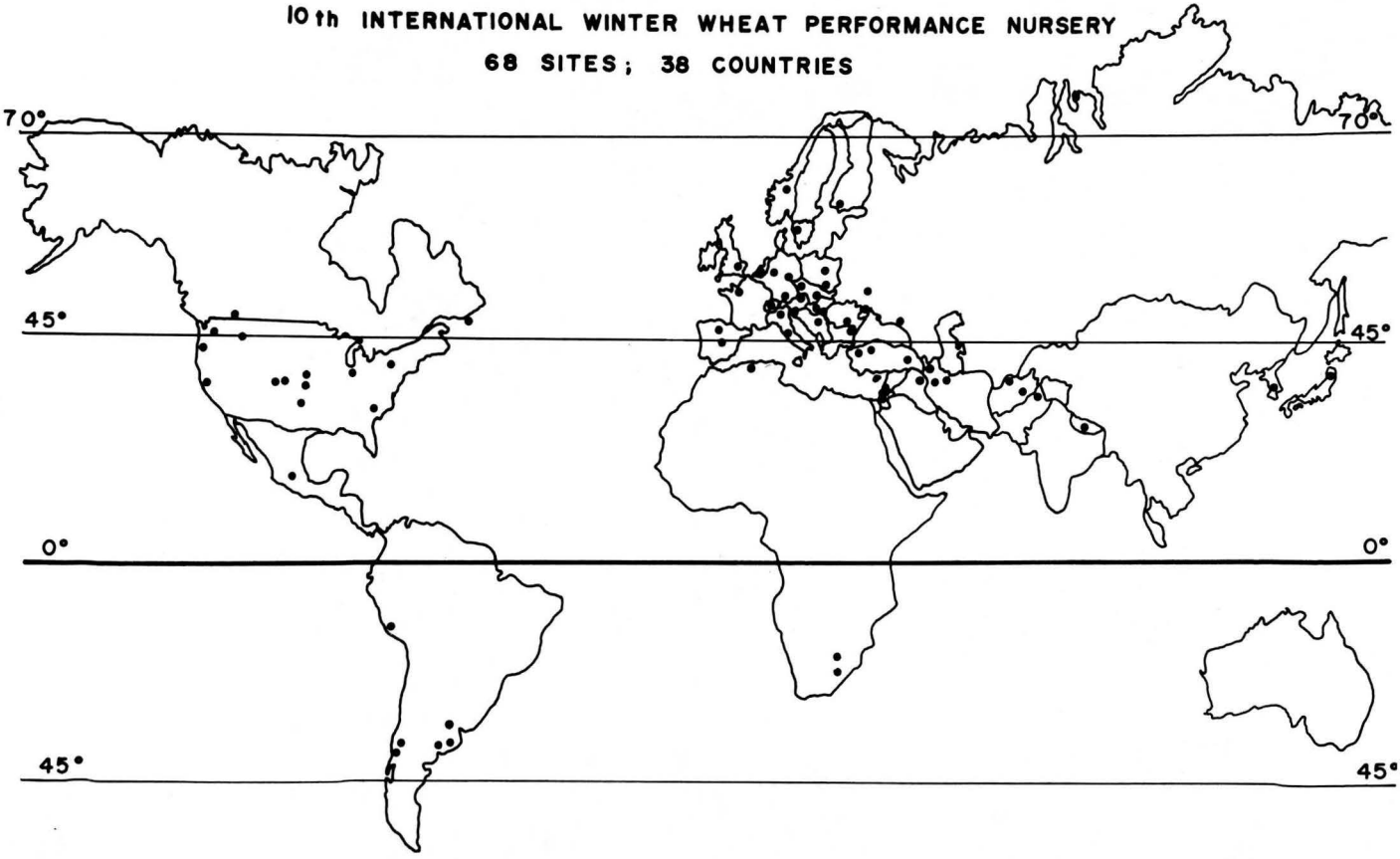
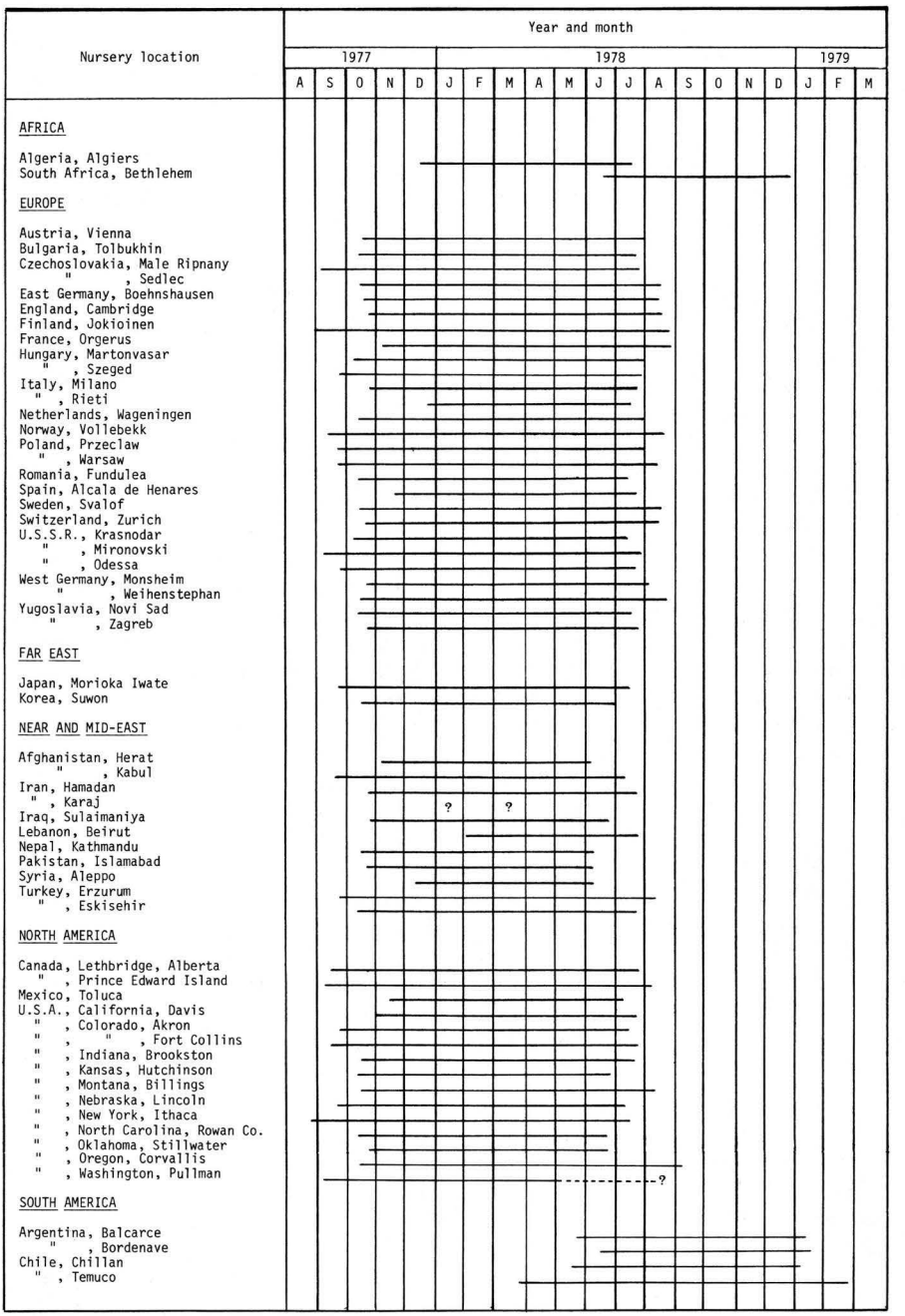


Figure 2. Length of growing season for nursery sites in the Tenth International Winter Wheat Performance Nursery in 1978.



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. The samples were composited by entry before analyses. Consequently, only one replication is reported for each site.

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 nursey information sheets adjacent to the individual location nursery data results.

A combined analysis for each trait over all locations in the Tenth 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 7 locations for shattering to a high of 52 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 58 nursery locations were computed.

We have regionalized the data for grain yield from the IWWPN testing network into six broad geographical areas 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 9 countries and 12 sites as follows: Algiers, Algeria; Tolbukhin, Bulgaria; Martonvasar and Szeged, Hungary; Milano and Rieti, Italy; Fundulea, Romania; Madrid, Spain; 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 Lethbridge, Alberta and Charlottetown, Prince Edward Island.

(4) **Near and Middle East**—includes 10 sites in 7 countries as follows: Herat and Kabul, Afghanistan; Hamadan and Karaj, Iran; Sulaimaniya, Iraq; Beirut, Lebanon; Kathmandu, Nepal; Islamabad, Pakistan; 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; and Bethlehem, Republic of South Africa.

Regional analyses were made on yield data from all 30 cultivars grown in the Tenth IWWPN in 1978. Variety means and rankings over all locations within a region have been computed as well as the grand mean. 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.

Two-year variety yield means and rankings by region with accompanying statistics for 17 cultivars comparing the six geographic regions are presented. Variety yield means over 49 locations from the six regions are listed.

Two-year means for each trait have been computed and ranked for each of 17 varieties at each of those locations reporting complete data in both years, 1977-1978. 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.

RESULTS AND DISCUSSION

Yield and other agronomic, grain quality, and disease data are reported for individual Tenth International Winter Wheat Performance Nursery sites in Tables 4-70. Supplemental nursery management information is given on the page immediately preceding the table of data for each site.

Grain Yield

Fifty-seven nursery sites reported replicated yield data in 1978. Three sites reported agronomic data without yield data. Five sites reported data from single-replication observation nurseries.

Summary tables of average yields and yield rankings from all nursery sites are reported in Tables 71 and 72. Cultivar grand means relative to that of Bezostaya 1 also are shown in Table 71. Statistics for grain yield including mean, standard deviation, low and high values, and coefficient of variation for each cultivar are given in Table 73.

Summaries of other agronomic traits and grain quality measurements for each cultivar combined over nursery sites reporting at least three replications of data are presented in Table 75.

In 1978, nursery yield means ranged from a low of 7.2 q/ha at Vollebekk, Norway to a high of 74.7 q/ha at Tolbukhin, Bulgaria (Table 71). Nine sites had nursery yield means of less than 20 q/ha. Nineteen sites had mean yields ranging between 20 and 40 q/ha and 20 sites had mean yields between 40 to 60 q/ha. There were nine sites

at which nursery mean yields were in excess of 60 q/ha. The grand mean over 52 sites was 41.5 q/ha. This compares with the 1977 grand mean of 38.0 q/ha over 56 sites.

In the Ninth IWWPN, Bezostaya 1 averaged 42.7 q/ha compared with 43.6 q/ha in the Tenth IWWPN. Yubiley, the highest yielding cultivar in 1977 (45.0 q/ha), also was the most productive cultivar in 1978 with 48.7 q/ha. Eleven cultivars had yield means above that of Bezostaya 1 in 1978 compared with only three in 1977.

Twelve of the cultivars including Absolvent in the Tenth IWWPN were from crosses involving Bezostaya 1. Nine of these cultivars were more productive, on the average, than Bezostaya 1 (Table 71). Ticonderoga and Zlatoklasa were the only two varieties not descended from Bezostaya 1 which had average yields exceeding that of Bezostaya 1.

The high protein entry (Nap Hal/Atlas 66) was the lowest yielding test cultivar (28.2 q/ha) while Lerma Rojo 64, the spring check, was lowest in the nursery with a yield of 24.5 q/ha.

The summary of yield rankings (Table 72) provides an indication of the range of adaptation for each cultivar. The number of times a cultivar ranked first in yield or was among the highest 10 entries is given below.

Cultivar	Number of sites		Cultivar	Number of sites	
	Ranked first	Ranked among highest ten		Ranked first	Ranked among highest ten
Yubiley	5	42	NR 73-5028	4	19
NR 72-837	6	35	Newton	3	17
Slavia	5	33	Moslavka	2	17
MV-4	1	35	F53-70	0	12
Sadovo-1	3	27	Mironovskaya 808	3	13
Partizanka	2	31	CI 13449/Centurk	0	20
Slavyanka	0	24	Zg 4293-73	0	17
Absolvent	0	21	F54-70	0	8
Iulia	0	19	Zg 887-73	5	24
Ticonderoga	1	28	Krasnodarskaya 39	1	7
Zlatoklasa	3	20	NE 73640	1	7
Bezostaya 1	0	17	Budifen	2	15
Lindon	1	19	Atlas 66	0	4
Disponent	6	19	Nap Hal/Atlas 66	0	1
Blueboy	2	17	Lerma Rojo 64	1	8

Twenty cultivars ranked first in yield at one or more nursery sites. The frequency of a cultivar rank among the highest 10 generally reflects its adaptability and overall yield potential. The first six varieties demonstrate this. In contrast Zg 887-73, as it did in 1977, displayed a high degree of specific adaptation. Although it ranked first at five sites and among the highest 10 at 24 sites, its overall yield ranking was only 24th. Disponent, ranking first at six sites, also displayed specific adaptation.

The genetic yield potential of varieties is limited greatly by en-

vironmental stresses. One such environmental factor measured by IWWPN cooperators is precipitation. Sites that did not apply irrigation were arranged into four groups on the basis of total precipitation. Variety yield means were ranked within each of these groups and are reported below.

Cultivar	Overall yield ranking	Precipitation			
		<350 mm	351-700 mm	701-1000 mm	>1000 mm
Number of sites	52	7	23	5	6
Yubiley	1	1	3	5	2
NR 72-837	2	10	1	4	13
Slavia	3	17	2	2	21
MV-4	4	2	4	6	1
Sadovo-1	5	5	4	7	16
Partizanka	6	3	7	3	18
Slavyanka	7	16	6	7	15
Absolvent	8	13	9	19	3
Iulia	9	11	10	9	10
Ticonderoga	10	18	7	10	12
Zlatoklasa	11	14	11	12	22
Bezostaya 1	12	14	13	18	5
Lindon	13	8	18	13	16
Disponent	14	24	14	1	7
Blueboy	15	12	19	17	8
NR 73-5028	16	9	16	15	26
Newton	17	5	22	23	9
Moslavka	18	4	15	19	27
F53-70	19	21	21	13	3
Mironovskaya 808	20	25	16	11	5
CI 13449/Centurk	21	5	23	25	19
Zg 4293-73	22	20	19	21	27
F54-70	23	23	24	16	11
Zg 887-73	24	26	12	28	29
Krasnodarskaya 39	25	22	25	24	13
NE 73640	26	19	26	22	20
Budifen	27	28	27	29	23
Atlas 66	28	27	28	26	24
Nap Hal/Atlas 66	29	29	29	27	25
Lerma Rojo 64	30	30	30	30	30

Effects of many confounding factors such as distribution of rainfall, latitude, elevation, and temperature cannot be adequately accounted for. It appears that Yubiley and MV-4 were productive in all four precipitation regimes, while NR 72-837 and Slavia did best in the intermediate precipitation classes. Disponent tended to show an improvement as precipitation increased, while Moslavka and CI 13449/Centurk had best relative performances in one specific class.

On a regional basis (Table 74), the following varieties made the best yields.

Region	Cultivar	Yield q/ha
Northern Europe	Slavia	68.9
	Disponent	67.8
Southern Europe	Yubiley	56.0
	NR 72-837	56.0
Middle East	Partizanka	42.3
	Budifen	42.3
Far East	Sadovo-1	40.6
	NR 72-837	39.2
North America	Yubiley	43.3
	Newton	40.9
Southern Hemisphere	NR 72-837	37.5
	Blueboy	36.0

Correlation coefficients for yield, grain protein, and other agronomic traits combined over 58 nursery sites are presented in Table 76. With a large number of observations, it will be noted that even relatively small "r" values are statistically significant. Grain 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 shattering.

Table 88 contains two-year means, rankings, and statistics for 17 cultivars grown in the 1977 and 1978 nurseries. Two-year yield means ranged from a high of 48.9 q/ha for Yubiley to a low of 26.5 q/ha for Lerma Rojo 64 over 49 sites. Two-year nursery-site means ranged from 9.1 q/ha at Balcarce, Argentina to 81.9 q/ha at Male Ripnany, Czechoslovakia. There were no statistically significant differences among variety yield means at seven locations. The year x cultivar interactions were found to be statistically significant at all but eight sites. Non-significant interactions probably indicate similar environmental conditions in 1977 and 1978.

Yubiley had the best two-year yield performance at sites in Southern and Northern Europe, as well as in North America (Table 87). Sadovo-1 ranked first at sites in the Middle East and Far East. Statistically significant differences were not found among the two-year means in the Southern Hemisphere.

Grain Protein

Protein data for individual locations from which 10-gram seed samples were returned to Nebraska are reported in Tables 4-70. Results of the protein analyses over locations are presented in Table 75.

Protein values ranged from 12.2% in Ticonderoga to 18.1% in Nap Hal/Atlas 66. The grand mean over 40 sites was 14.1% .

This corresponds to 14.4% over 40 sites in 1977 (9th IWWPN), and 14.2% over 33 sites in 1976 (8th IWWPN). Atlas 66, the long-term protein check, had a mean value of 16.2%. None of the cultivars in the Tenth IWWPN had the yield and protein combination shown by F26-70 in the Ninth IWWPN, although F54-70 and F53-70 deserve attention.

Table 91 presents two-year (1977-1978) cultivar means and rankings of grain protein content for 17 cultivars on an individual location basis. Location means ranged from 11.2% at Rieti, Italy to 17.3% at Morioka, Japan. At four sites there were no significant statistical differences among the two-year cultivar means. Averaged over 35 sites, Atlas 66 had the highest two-year protein value (16.4%) while Blueboy was lowest in protein content at 12.5%. F53-70 and F54-70 each had two-year protein averages of 15.6%.

Lysine analyses were performed on seed samples from five sites of the Tenth IWWPN. Results of these analyses are summarized in Table 75. Lysine values expressed as percentages of total protein were adjusted, via regression techniques, to a constant protein level of 13.0%. This technique reduces the negative effect between high protein and levels of the lysine component. For example, the correlation of lysine (% of protein) with total protein was -.52** over the five locations. However, the correlation of the adjusted values with protein was .09.

Adjusted lysine differences among the cultivars were small. The range was from 2.67% in Sadovo-1 to 3.03% in CI 13449/Centurk. The overall mean was 2.86%.

Supplementary data concerning grain protein, milling and baking, and other quality characteristics are presented in Tables 83-86, and Figures 3 and 4.

Quality Evaluation of the Tenth IWWPN Harvested in 1978

Relative processing quality for 27 replicated samples grown at the Fort Collins, Colorado, USA, site in 1978 were composited and evaluated for milling and baking properties in the Nebraska Wheat Quality Laboratory.

Usual routine evaluation procedures were employed. Milling temper (%) was modified according to hardness of the kernels. Certain samples were too small for accurate milling yield data using the Buhler Laboratory Mill Model MLU-202. However, an adequate amount of flour was still recovered for analysis and test baking.

Milling, baking and analytical data are listed in Table 86. Agtron color readings were made with an Agtron Model M400A in the green mode and are inversely related to ash content.

Loaves were prepared with a straight dough baking procedure using 200 g flour (14% M.B.). Doughs were mixed to optimum by an

experienced operator and divided into two equal weights for further processing.

Mixing properties were determined from the optimum baking mixing time and from mixing curves from the Mixograph (Table 86). Mixogram mixing times are given in minutes and the tolerance is a relative value which ranges from a low of 1 to a high value of 5. A tolerance of 3 would be considered average. Mixogram mixing times of 3-4½ minutes would be considered normal quality types for U.S. bread production. Usually, shorter mixing times are associated with less mixing tolerance. Longer mixing times can cause problems by incorporating too much oxygen during the mixing period, and higher energy requirements for the baker.

Mixograms in Figure 3 are identified by nursery entry number only, but can be cross referenced to Table 86 for variety identification. External and internal bread pictures of the 100 g (flour weight) doughs are shown in Figure 4.

This group of samples exhibits a range in milling and baking properties. The flour protein values are generally high which can give improved baking results. Nevertheless, these data show a number of interesting quality combinations, and point out the need for adequate testing to identify wheats for specific processing potential.

Test Weight

Individual location test weight data appear in Tables 4-70. Cultivar means averaged over 26 sites are listed in Table 75. The grand mean averaged over varieties and locations was 78.2 kg/hl. Partizanka had the highest average test weight value of 81.6 kg/hl, while Ticonderoga had the lowest mean value (72.6 kg/hl). Test weight values were positively correlated with grain yield, 1000-kernel weight, plant height, and winter survival (Table 76).

Table 89 presents the two-year test weight means for 17 cultivars by location. The location means ranged from 73.8 kg/hl at Warsaw, Poland to 81.4 kg/hl at Eskisehir, Turkey. Iulia had the highest two-year average value (80.4 kg/hl) while Moslavka had the lowest (75.0 kg/hl). The grand mean over 23 sites was 78.0 kg/hl.

Only 2 of the 23 sites had non-significant L.S.D. values for test weight. Rieti, Italy was the only site which did not show a significant year x cultivar interaction.

1000-kernel Weight

Twenty-eight sites are included in the statistical analysis of 1000-kernel weight in Table 75. As in the Ninth IWWPN, Sadovo-1 had the highest seed weight (46.7 grams). This was 4.2 grams higher than the second ranked seed weight of 42.5 grams for Absolvent. The lightest seeds were produced by Nap Hal/Atlas 66, which had a 1000-kernel weight of only 28.2 grams.

Positive correlation coefficients (Table 76) for 1000-kernel weight

with grain yield and test weight were determined. Winter survival also was found to be positively correlated with 1000-kernel weight but the r-value was very small.

The two-year means for the 17 varieties tested in 1977 and 1978 are listed by location in Table 90. The location means ranged from 29.1 grams at Balcarce, Argentina to 46.9 grams at Svalof, Sweden. Averaged over 23 sites, Sadovo-1 had the largest two-year seed weight value of 47.2 grams. This was 11% higher than the value of 42.5 grams for second ranked Bezostaya 1 and Iulia. Lindon had the lowest two-year mean of 31.1 grams.

Plant Height

Averaged over 41 sites the mean plant height of the 30 cultivars in the Tenth IWWPN was 92.4 cm. The shortest cultivar was Zg 4293-73 (64.3 cm) and the tallest cultivar was Mironovskaya 808 (117.6 cm). The four cultivars from Zagreb, Yugoslavia ranked 1-4 in plant height. The fifth ranked cultivar was 11 cm taller than the fourth ranked cultivar.

Plant height was positively correlated with yield, test weight, lodging, shattering, and winter survival (Table 76).

Two-year plant height means and analyses are contained in Table 92. The location with the shortest average plant height (72.9 cm) was Svalof, Sweden. Pullman, Washington, USA, had the highest two-year average nursery mean of 109.4 cm. The cultivars ranged in height from 63.7 cm (Zg 4293-73) to 120.9 cm (Mironovskaya 808) when averaged over 36 sites. Statistically significant differences among the cultivar means were found at all 36 sites. Thirty of those sites also had significant year x cultivar interactions.

Lodging

Average lodging values over 20 sites are listed for each cultivar in Table 75. The means range from 1.8% for Moslavka to 49.8% for Mironovskaya 808. Several sites reporting all plots lodged 100% were not included in the overall means or analyses.

Lodging values were positively correlated with grain protein, plant height, winter survival, and frost damage (Table 76).

Fourteen sites reported replicated lodging data in both 1977 and 1978. Krasnodar, USSR reported the greatest amount of lodging (56.7%). Zlatoklasa had the least amount of lodging (4.8%) when averaged over 14 sites, while Atlas 66 had the highest amount of lodging of 59.0% compared with the grand mean of 24.3%. At four sites, there were no statistically significant differences among the cultivar two-year mean lodging values. Significant year x cultivar interactions were computed at all 14 sites.

Winter Survival

Differential readings for winter survival were reported from 24

sites. The average survival of the 30 cultivars in the Tenth IWWPN, including Lerma Rojo 64, was 76.8% (Table 75). Individual site means were lowest at Jokioinen, Finland; Lincoln, Nebraska USA; Brookston, Indiana, USA; Prince Edward Island, Canada; and Vollebekk, Norway, with 6.6, 12.2, 54.5, 56.6, and 57.0% survival, respectively. Averaged over 24 sites cultivar means ranged from a high of 93.3% for Mironovskaya 808 to a low of 24.5% for Lerma Rojo 64. Winter survival was positively correlated with yield, test weight, plant height, and lodging as shown in Table 76.

Winter survival means of 17 cultivars analyzed over 22 sites for the two-year period 1977-1978 are compared in Table 94. Lincoln, Nebraska, USA, had the lowest average survival mean of 32.3%, while Zagreb, Yugoslavia had the highest average survival of 99.4%. Mironovskaya 808 had the highest mean survival of 91.8% over 22 sites. Zg 887-73 had the lowest survival among the test cultivars with 52.4% compared with 33.0% for the spring wheat check, Lerma Rojo 64. At 7 of the 22 sites there were no statistically significant differences among the two-year cultivar means.

Frost Damage

Ten sites reported frost damage to the cultivars in the Tenth IWWPN (Table 75). Lerma Rojo 64, being a spring wheat, suffered the greatest amount of damage from frost. On the 0-9 scale the average damage to Lerma Rojo 64 was 5.7. Krasnodarskaya 39 was least affected by frost. The grand mean for all cultivars was 1.7. Frost damage was negatively correlated with winter survival, date of flowering and ripening, shattering, plant height, and test weight (Table 76).

Two-year means and analyses for frost damage from four sites are reported in Table 98. NE 73640, Krasnodarskaya 39, and Mironovskaya 808 shared the lowest two-year average of 0.6. Zg 887-73 had the highest incidence of damage (3.3) among the test cultivars compared with a value of 6.3 for Lerma Rojo 64. The grand mean of the 17 cultivars tested in 1977 and 1978 was 1.7.

Maturity

Individual location data both for days to flowering and days to ripening are given in Tables 4-70. Flowering and ripening data summarized over 40 and 25 sites, respectively, are listed in Table 75.

The correlation coefficient between flowering and ripening was .98** (Table 76). Flowering and ripening generally were negatively correlated with other agronomic characters.

The four Zagreb cultivars were among the earliest to flower (Table 75). Moslavka averaged only 155.3 days from January 1 to the flowering stage compared with 155.8 days for Lerma Rojo 64. The cultivar, Disponent, required the longest period of time to reach the flowering stage (169.5 days). The grand mean of all 30 cultivars was

160.7 days from January 1.

Lerma Rojo 64, on the average, needed only 203.9 days from January 1 to ripen. The Zagreb cultivars and NR 73-5028 also ripened relatively early. Disponent required 214.3 days from January 1 to reach maturity when averaged over 25 sites. The grand mean of all cultivars was 207.8 days to ripening from January 1.

In terms of grain-filling time, Moslavka averaged 50.0 days to ripen after flowering. Nap Hal/Atlas 66 had the shortest interval for grain-filling of 43.5 days. The mean of the 30 cultivars was 47.1 days between flowering and ripening.

Thirty-five locations provided yield data in conjunction with flowering and ripening data. In comparing the grain-filling period for Bezostaya 1 among these sites, a range of 29 to 76 days was observed. The sites were separated into seven groups of five-day intervals. Yield analyses were performed for each group to determine if the length of grain-filling time had an active influence on cultivar yields. Results are shown in tabular form on the following page.

Many confounding factors make inconclusive the results from these data. It can be seen that Budifen was the most productive cultivar at the three sites with short grain-filling periods. However, the yield of this cultivar did not increase substantially as the grain-filling period became longer. Similar observations are noted for Atlas 66, Nap Hal/Atlas 66, and Lerma Rojo 64. The top 10 yielding cultivars underwent substantial advances in yield as the grain-filling interval increased from about 35 days to 45 days. Disponent started with a low relative yield, but improved as the grain-filling period reached 50 to 55 days. The high yields found in the group with more than 57 days are due mainly to the very high yields reported at Male Ripnany, Czechoslovakia.

Two-year means and rankings of flowering data are listed in Table 95. In the Northern Hemisphere, Kathmandu, Nepal had the earliest average flowering date, only 89.3 days from January 1. The latest average flowering date was reported by Erzurum, Turkey. The two-year mean at that site was 183.6 days from January 1. Averaged over 37 sites, the grand two-year mean for 16 cultivars (excluding Lerma Rojo 64) was 160.6 days from January 1. Lerma Rojo 64 was the earliest to flower (154.8 days) followed by the four Zagreb cultivars. Mironovskaya 808 was the last cultivar to flower on the average, requiring 166.4 days from January 1. At four sites there were no statistically significant differences among the average two-year flowering dates of the cultivars.

Table 96 includes two-year average ripening dates for the 17 cultivars tested in 1977 and 1978. The 126.7-day average for Kathmandu, Nepal made it the first location to reach harvest. Although Weihenstephan, West Germany was not included in the over-

Cultivars	Number of days in grain-filling period														Average yield
	28-32		33-37		38-42		43-47		48-52		53-57		>57		
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha
Number of sites	3		4		8		6		8		3		3		35
Yubiley	26.4	11	35.1	5	54.9	1	52.5	1	45.5	11	41.7	5	60.6	14	47.1
NR 72-837	22.9	20	32.8	11	50.8	4	48.4	2	55.5	1	35.5	13	64.1	7	46.8
Slavia	23.1	19	32.8	11	49.0	8	43.5	14	55.4	2	44.4	4	67.6	1	46.6
Martonvasari 4	29.6	6	35.6	4	50.7	5	47.3	4	48.6	5	41.0	6	65.2	4	46.6
Partizanka	30.3	5	37.2	1	50.4	7	46.1	8	44.7	14	36.6	11	64.3	6	45.2
Sadovo-1	29.2	7	36.7	2	51.3	2	47.2	5	45.6	10	34.2	16	59.9	15	45.1
Slavyanka	26.1	13	36.2	3	48.1	12	46.7	6	46.3	9	32.5	19	62.2	12	44.1
Absolvent	27.8	9	33.5	8	46.9	14	44.9	12	45.5	11	45.1	2	56.4	18	43.8
Ticonderoga	21.1	25	34.5	7	42.0	19	46.0	9	54.0	3	34.4	15	62.7	11	43.8
Iuľa	24.3	18	32.8	11	47.0	13	41.7	17	48.3	6	40.5	7	60.8	13	43.4
Moslavka	22.4	22	31.8	16	50.9	3	45.9	10	42.4	20	27.3	23	62.8	10	42.6
Zlatoklasa	20.8	26	31.9	15	50.5	6	47.5	3	44.2	15	20.4	28	63.7	8	42.5
Bezostaya 1	26.1	13	31.0	18	48.4	10	43.4	15	43.4	17	39.7	8	51.9	23	42.1
Zg 887-73	26.4	11	29.5	21	49.0	8	46.7	6	39.7	25	25.4	25	67.6	1	42.0
Lindon	25.0	17	34.7	6	41.4	20	39.7	22	47.9	7	33.8	17	63.2	9	41.6
NR 73-5028	30.8	4	33.1	10	45.4	15	40.7	19	42.1	22	30.3	20	65.3	3	41.6
Disponent	16.1	30	29.5	21	37.2	24	38.0	26	51.5	4	46.4	1	64.4	5	41.0
Blueboy	28.7	8	33.3	9	44.4	17	39.7	22	42.7	19	33.8	17	53.0	22	40.4
CI 13449/Centurk	31.9	2	32.8	11	39.4	23	41.7	17	45.2	13	28.2	22	56.1	19	40.2
Mironovskaya 808	22.5	21	26.3	27	35.1	26	42.9	16	47.1	8	44.8	3	59.8	16	40.1

Cultivars	Number of days in grain-filling period														Average yield
	28-32		33-37		38-42		43-47		48-52		53-57		>57		
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha
Number of sites	3		4		8		6		8		3		3		35
Zg 4293-73	20.8	26	30.5	19	48.2	11	45.1	11	38.9	26	20.6	27	59.6	17	39.9
F53-70	21.7	23	28.1	24	39.7	22	44.7	13	43.8	16	38.3	9	55.0	20	39.8
Newton	31.7	3	31.6	17	44.7	16	39.3	25	43.0	18	26.6	24	45.8	28	39.3
Krasnodarskaya 39	21.2	24	28.6	23	43.3	18	39.5	24	40.5	24	34.5	14	51.3	24	38.4
F54-70	19.6	28	27.6	25	40.3	21	40.7	19	41.4	23	37.6	10	53.2	21	38.3
NE 73640	26.6	10	30.3	20	37.0	25	40.4	21	42.2	21	30.1	21	50.8	25	37.7
Budifen	32.8	1	26.4	26	32.3	27	34.8	27	35.6	27	35.8	12	50.2	26	34.7
Atlas 66	26.1	13	25.5	28	31.2	28	33.5	28	30.2	28	23.8	26	47.8	27	31.1
Nap Hal/Atlas 66	17.5	29	19.4	30	27.8	20	32.5	30	24.1	29	18.7	29	44.6	29	26.7
Lerma Rojo 64	25.6	16	20.5	29	18.7	30	32.9	29	22.5	30	4.9	30	41.3	30	23.6
Mean	25.2		31.0		43.2		42.5		43.3		32.9		57.7		40.5
L.S.D. of cultivar means (.05)	7.3		8.8		9.5		9.2		9.8		15.0		10.7		4.2
Coefficient of variation (%)	21.4		18.6		16.4		13.6		13.7		22.4		7.5		15.4

all means and analyses, it did have the latest two-year ripening date in the Northern hemisphere (224.0 days from January 1). The range in dates among the cultivars when averaged over 24 sites was from 202.3 days (Lerma Rojo 64) to 208.3 days for Mironovskaya 808. The grand mean, excluding Lerma Rojo 64, was 205.9 days from January 1.

Shattering

Seven sites reported replicated shattering data in 1978. The average amount of shattering for the 30 cultivars in the Tenth IWWPN was 5.5% (Table 75). The severity of shattering ranged from 0.8% in Budifen to 15.8% in Nap Hal/Atlas 66.

Table 97 lists the two-year cultivar means for 1977 and 1978 at six sites. Location averages ranged from 1.2% at Przeclaw, Poland to 15.0% at Herat, Afghanistan. Averaged over the six sites, Lindon had the least amount of shattering (4.8%) while Mironovskaya 808 showed the greatest amount of shattering of 19.3%. There were, however, no statistically significant differences among the cultivar means, averaged over the six sites. Warsaw, Poland was the only site at which statistically significant differences occurred among the two-year shattering means.

Diseases

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

Averaged over 20 sites, NR 72-837 had the lowest stripe rust severity mean (5.1%) while CI 13449/Centurk and Ticonderoga showed the highest severity means of 37.9% and 37.7%, respectively (Table 77). NR 72-837 also had the lowest "high score" among the 30 cultivars of 25%. Six cultivars had high scores of 99% infection at one or more sites. Stripe rust percentages were highest at Balcarce, Argentina; Madrid, Spain; and Corvallis, Oregon, USA.

Leaf rust severity means ranged from 4.8% for Partizanka to 55.0% for Ticonderoga when averaged over 21 sites (Table 78). Zlatoklasa had the lowest "high score" of 23%. Nine cultivars had high scores of 99%. Average severity percentages were highest at Hutchinson, Kansas, USA, and Odessa, USSR with location means of 51.2 and 51.9%, respectively.

Table 79 lists stem rust data from 10 sites. Averaged over locations, Zg 4293-73, Zg 887-73, Zlatoklasa (Zg 4364-73), and Moslavka (Zg 4240-73) had the lowest stem rust infections of 1.5, 1.8, 2.9, and 3.0%, respectively. They also had the lowest "high score" values. The highest average infection severity mean (36.6%) was recorded for Ticonderoga. The largest recorded value was 90% for Sadovo-1 at

Balcarce, Argentina. Of the 10 sites, Zagreb, Yugoslavia had the highest average infection of 36.8%.

Data for powdery mildew (*Erysiphe graminis*) are listed by location in Table 80. Data were recorded on a scale of 0-9. Averaged over 21 sites, the grand mean was 3.9. Zg 887-73 had the lowest average value of 0.7 as well as the lowest "high score" of 3. Blueboy, Newton, and Lerma Rojo 64 had the highest severity means of 6.5, 6.4, and 6.2, respectively. Seven cultivars had high scores of 9. Three sites had average infection readings higher than six.

Severity means for *Septoria* sp. are reported in Table 81. Averaged over 11 sites, the grand mean was 4.3, based on a scale of 0-9. The lowest average infection of 2.7 occurred on Mironovskaya 808. Lerma Rojo 64 had the highest average reading of 5.9. The lowest "high score" was 7, recorded for 2 cultivars. Fifteen cultivars had high scores of 8, and 13 cultivars had 9 as high scores at one or more locations. The highest incidence of *Septoria* occurred at Corvallis, Oregon, USA, which had a location mean of 8.2.

Reactions of the 30 cultivars in the Tenth IWWPN to artificial inoculation with dwarf bunt (*Tilletia contraversa*) are reported in Table 82. The disease readings ranged from 2% for Lerma Rojo 64 to 95% for Krasnodarskaya 39 and Lindon. The overall mean was 52.4%.

Insects

Dr. R. L. Gallun, Purdue University-USDA entomologist, reported that in two repeated experiments, all of the entries in the Tenth IWWPN were susceptible to Hessian fly (*Phytophaga destructor*) Biotypes B, C, and D.

AFGHANISTAN

Herat

COOPERATOR(S): S. A. R. Pakdil, F. Haq, and M. Nasim.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 8, 1977.

PRECIPITATION DURING CYCLE OF TEST: 148 mm.

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

FERTILIZER USED: N = 120 kg/ha; P = 26 kg/ha. Urea and Diammonium Phosphate were used.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: On June 7 and 8, there were strong winds which caused severe shattering and consequent yield reductions.

DISEASE DEVELOPMENT: Rust development was promoted by favorable conditions. Stripe, Leaf, and Stem rusts were all observed.

INSECT, WEED OR PEST PROBLEMS: Plant lice infested the wheat just prior to heading. B.H.C. (5 kg/ha) was applied to control the insects.

DATE OF HARVEST: June 9, 1978.

AREA HARVESTED FOR YIELD: 3.2 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Plant height - June 8, 1978
Shattering - June 8, 1978

Correlation Coefficients

No. of observations = 120	Yield	1000-kernel weight	Plant height	Flowering	Ripening	Shattering	Winter survival
1000-kernel weight	.35**						
Plant height	-.51**	.02					
Flowering	-.33**	-.17	.26**				
Ripening	-.27**	-.19*	.31**	.73**			
Shattering	-.66**	-.17	.48**	.27**	.27**		
Winter survival	.01	.28**	.32**	.04	.01	.12	
Frost	.16	-.03	-.05	-.38**	-.38**	-.09	-.23*

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

Table 4. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Herat, Afghanistan in 1978.

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)	Shattering %	Winter survival %	Frost damage 0-9	Stripe rust Sev. %
NR 73-5028 (Samson)	55.3	38.8	94	111	155	0	84	0	0
Newton (KS 73112)	52.0	34.0	78	114	157	0	88	0	1
Budifen	50.4	34.8	96	116	159	0	76	0	0
Zg 887-73	48.7	19.0	74	108	153	0	68	1	4
Partizanka	48.3	36.3	91	114	156	0	83	0	1
NR 72-837	48.3	36.3	90	122	159	0	75	0	1
Absolvent	48.3	44.3	106	117	156	0	88	0	0
Bezostaya 1	45.6	46.5	105	112	154	3	85	0	2
Lerma Rojo 64	45.2	34.5	98	105	150	1	70	3	2
Martonvasari 4	44.6	34.5	103	112	152	1	83	0	0
Zg 4293-73	42.3	29.5	61	110	152	0	69	0	0
Slavyanka	40.0	37.3	104	111	152	0	84	0	0
Zlatoklasa (Zg 4364)	39.7	28.5	84	111	152	2	78	0	1
Iulia	39.5	32.0	96	113	158	1	74	0	1
Krasnodarskaya 39	38.9	31.5	105	122	156	1	79	0	1
Sadovo-1	38.9	51.0	94	111	153	11	80	0	1
Moslavka (Zg 4240-73)	38.0	32.0	75	110	152	1	80	0	0
Lindon	37.5	27.5	98	113	158	4	76	0	0
Disponent	36.2	30.0	88	129	160	3	74	0	0
Yubiley	36.1	34.3	93	113	152	2	86	0	0
Slavia (ST-VUR 37)	35.4	36.0	94	121	158	15	76	0	3
Ticonderoga	29.8	29.0	95	122	159	7	81	0	8
NE 73640	29.7	31.8	108	114	156	5	78	0	2
Blueboy	26.3	29.5	111	115	157	19	79	0	0
CI 13449/Centurk	25.3	34.5	111	115	158	5	84	0	4
F54-70	21.5	27.3	111	117	158	25	78	0	1
F53-70	19.1	33.0	110	115	157	42	83	0	1
Atlas 66	16.5	30.5	124	115	155	22	89	0	1
Mironovskaya 808	13.6	29.8	134	122	158	68	81	0	1
Nap Hal/Atlas 66	10.4	20.3	108	122	159	36	73	0	4
Mean	36.7	33.1	97.8	115.0	155.6	9.1	79.2	0.1	1.2
L.S.D. of cultivar means (.05)	8.8	4.7	14.6	2.6	1.7	16.8	9.8	0.1	-
Coefficient of variation (%)	17.1	10.0	10.6	1.6	0.8	132.0	8.8	90.4	-

AFGHANISTAN

Kabul

COOPERATOR(S): A. Qayoum and M. Osmanzai.

DATE OF PLANTING (EFFECTIVE GERMINATION): Not reported.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Amount 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: The rusts were the most commonly observed diseases in the nursery.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 6, 1978.

AREA HARVESTED FOR YIELD: 3.20 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Plant height	Flowering
1000-kernel weight	.29			
N	29			
Plant height	-.18*	-.08		
N	120	29		
Flowering	-.31**	.20	.13	
N	120	29	120	
Ripening	-.10	-.26	-.02	.62**
N	120	29	120	120

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

Table 5. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Kabul, Afghanistan in 1978.

Cultivars	Yield q/ha	1000-kernel weight[a] g	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Stripe rust sev. %	Stripe rust resp.
Moslavka (Zg 4240-73)	37.6	30.0	75	130	171	0	-
Zg 4293-73	34.0	28.0	63	130	170	0	-
Zg 887-73	33.6	32.0	69	132	172	13	S
Slavyanka	32.6	36.0	96	132	169	0	-
Absolvent	32.4	33.2	91	135	172	0	-
Partizanka	31.9	32.0	88	138	173	0	-
Lindon	31.7	24.0	83	132	172	0	-
Sadovo-1	31.3	40.0	85	130	169	0	-
Ticonderoga	30.7	30.0	90	143	175	38	MS-S
Yubiley	29.8	36.0	83	132	168	0	-
Lerma Rojo 64	29.7	38.8	101	127	162	0	-
Zlatoklasa (Zg 4364)	29.5	28.0	66	133	170	3	MS
Martonvasari 4	28.7	32.0	93	131	169	0	-
Blueboy	27.9	28.0	98	130	173	0	-
Bezostaya 1	27.2	34.0	91	135	170	1	S
Newton (KS 73112)	26.8	24.0	90	131	171	0	-
NR 73-5028 (Samson)	26.6	30.8	84	131	168	0	-
NR 72-837	26.5	32.0	76	143	176	1	MR
CI 13449/Centurk	25.9	32.0	99	137	173	0	-
Iulia	25.6	36.0	84	133	171	1	R
Slavia (ST-VUR 37)	25.6	38.0	79	139	174	0	-
NE 73640	25.5	27.6	90	131	169	1	MR
Budifen	24.9	27.2	88	141	179	0	-
F53-70	24.0	34.0	89	144	173	0	-
F54-70	23.3	-	94	136	172	0	-
Atlas 66	21.2	30.0	108	136	170	3	S
Mironovskaya 808	20.6	24.0	109	139	172	4	S
Disponent	20.3	30.4	88	145	181	0	-
Krasnodarskaya 39	19.3	32.0	90	138	172	1	R
Nap Hal/Atlas 66	17.5	24.0	90	141	172	3	MS
Mean	27.4	31.2	87.5	135.1	171.4	3.5	
L.S.D. of cultivar means (.05)	6.9	-	8.4	5.2	3.4	-	
Coefficient of variation (%)	17.8	-	6.8	2.8	1.4	-	

[a] One replication only.

ALGERIA

Algiers

COOPERATOR: Institute de Development des Grandes Cultures.

DATE OF PLANTING (EFFECTIVE GERMINATION): December 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 261.7 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 33.5 kg/ha; P = 46.0 kg/ha. Ammonium nitrate and Superphosphate were used.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The nursery was dry at planting time, and little precipitation was received during the winter.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 17, 1978.

AREA HARVESTED FOR YIELD: 2.5 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Flowering - May, 1978
Maturity - June, 1978
Plant height - June, 1978

Correlation Coefficients

N = No. of observations	Yield	Protein	Plant height	Flowering
Protein	-.33			
N	30			
Plant height	.39**	-.04		
N	120	30		
Flowering	-.11	.42*	.05	
N	30	30	30	
Ripening	.13	.24	.14	.61**
N	30	30	30	30

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

Table 6. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Algiers, Algeria in 1978.

Cultivars	Yield q/ha	Protein %	Seed grade 1-9	Plant height cm	Date of Flowering[a] days from Jan. 1	Date of Ripening[a] days from Jan. 1
NR 73-5028 (Samson)	18.8	15.6	3	54	141	172
Blueboy	17.1	17.7	4	55	141	174
NE 73640	16.7	16.4	3	52	142	172
Martonvasari 4	16.5	16.2	3	51	140	170
Budifen	16.3	15.2	4	51	150	173
CI 13449/Centurk	16.3	15.4	4	48	140	174
Sadovo-1	15.9	16.1	3	48	141	170
NR 72-837	15.4	18.2	4	54	152	176
Bezostaya 1	15.3	16.5	3	48	144	175
Yubiley	14.9	15.8	4	49	140	170
Partizanka	14.9	15.4	3	51	139	170
Iulia	14.9	16.8	3	48	145	172
Atlas 66	14.6	18.8	4	64	141	175
Newton (KS 73112)	14.5	16.2	3	51	140	173
F53-70	14.3	18.0	3	51	141	176
Lindon	14.3	15.8	3	44	141	175
Lerma Rojo 64	13.8	17.2	3	62	137	170
Absolvent	13.4	15.8	3	50	141	173
Slavyanka	13.3	16.1	3	56	141	173
Slavia (ST-VUR 37)	13.2	16.9	4	43	152	176
Mironovskaya 808	13.2	17.3	4	52	151	176
F54-70	13.1	17.3	4	49	151	176
Zg 887-73	12.4	14.9	3	45	137	173
Zg 4293-73	12.1	16.5	4	40	138	170
Moslavka (Zg 4240-73)	12.1	18.0	4	44	140	170
Ticonderoga	12.1	16.6	4	58	151	173
Krasnodarskaya 39	11.4	15.8	4	45	153	176
Nap Hal/Atlas 66	10.7	21.4	5	49	153	174
Zlatoklasa (Zg 4364)	9.7	16.9	4	40	140	170
Disponent	8.9	20.3	6	42	151	173
Mean	14.0	16.8	3.6	49.7	143.8	173.0
L.S.D. of cultivar means (.05)	3.9			6.7	-	-
Coefficient of variation (%)	20.0			9.5	-	-

[a] One replication only.

ARGENTINA

Balcarce

COOPERATOR(S): R. Bedogni and E. Godoy.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 23, 1978.

PRECIPITATION DURING CYCLE OF TEST: 658.7 mm (May - December, 1978).

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZED USED: N = 18 kg/ha; P = 47 kg/ha as Diamonic phosphate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: There were heavy incidences of rusts and Septoria sp.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: January 10, 1979.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Stripe rust	- September 10 to November 20, 1978
Leaf rust	- October 6 to December 10, 1978
Stem rust	- November 26 to December 26, 1978
Septoria tritici	- September 5, October 6, and November 26, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering
Test weight	-.07						
N	69						
1000-kernel weight	.43**	.49**					
N	120	69					
Protein	-.50**	.52*	-.52**				
N	30	15	30				
Plant height	.19*	-.06	.45**	-.55**			
N	120	69	120	30			
Lodging	-.37**	.09	-.13	-.03	.34**		
N	120	69	120	30	120		
Flowering	.65**	-.39**	.36**	-.65**	.48**	-.06	
N	120	69	120	30	120	120	
Ripening	.57**	.06	.57**	-.53**	.63**	-.02	.73**
N	120	69	120	30	120	120	120

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

Table 7. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Balcarce, Argentina in 1978.

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	Stripe rust Sev. %	Stripe rust Resp.	Leaf rust Sev. %	Leaf rust Resp.	Stem rust Sev. %	Stem rust Resp.	Septoria Sev. (0-9)
NR 72-837	28.2	72.2	33.9	12.4	90	0	310	349	1	MS	50	MR	23	MR	5
Disponent	19.3	72.3	29.0	16.1	96	0	321	355	0	-	13	MS	10	MR	6
Budifen	18.6	72.6	27.3	11.1	83	0	308	345	43	MR	0	-	13	R-MR	6
Ticonderoga	17.8	68.5	27.3	10.8	95	0	318	355	6	MS	63	S	48	S	4
Newton (KS 73112)	17.7	75.1	25.0	13.3	75	0	306	345	0	-	65	S	18	MS	7
NE 73640	17.4	78.3	28.3	14.9	90	30	308	345	99	S	0	-	0	-	5
Iulia	14.8	77.8	35.4	14.5	95	25	299	351	60	MS	0	-	58	MS-S	6
Slavia (ST-VUR 37)	13.7	72.0	34.1	12.6	90	0	312	350	0	-	83	S	6	MR	5
F53-70	12.1	77.2	35.3	13.7	99	30	297	352	50	MS	0	-	60	S	4
F54-70	11.5	78.7	33.3	13.8	95	0	300	356	60	MR-S	0	-	45	MS-S	4
Mironovskaya 808	10.0	73.6	30.5	12.2	109	55	315	352	30	MR	0	-	83	S	3
Absolvent	8.0	78.4	32.5	15.2	80	0	303	341	75	MS	0	-	20	MS-S	5
CI 13449/Centurk	6.4	70.8	25.3	14.8	85	0	303	341	80	MS-S	33	MS-S	1	S	4
Bezostaya 1	6.1	75.8	32.6	15.3	94	0	300	350	50	MS	0	-	43	S	5
Blueboy	5.2	70.0	29.5	11.9	105	43	298	343	40	MS	13	MS	80	S	4
Lindon	5.1	71.1	22.0	15.6	93	20	296	343	99	S	0	-	0	-	3
Nap Hal/Atlas 66	5.1	75.9	27.3	13.5	103	35	311	348	48	MS	80	S	13	MS-S	4
Atlas 66	5.0	76.0	29.0	16.0	109	48	311	351	92	S	0	-	10	S	4
Krasnodarskaya 39	4.8	72.1	28.3	11.6	104	80	311	350	80	S	0	-	73	S	4
Slavyanka	3.9	75.2	29.2	14.8	85	23	294	341	40	MS-S	0	-	83	S	4
NR 73-5028 (Samson)	3.7	71.0	21.9	17.1	74	0	294	340	80	MS-S	0	-	20	MS	6
Martonvasari 4	3.1	.	29.0	14.9	80	18	292	342	13	MS	0	-	73	S	4
Partizanka	2.7	.	31.1	16.1	75	0	296	342	55	MS	0	-	11	MS	5
Zlatoklasa (Zg 4364)	2.6	.	26.2	15.7	80	73	290	342	99	S	0	-	0	-	6
Sadovo-1	2.0	.	28.0	15.5	86	40	294	343	3	MS	0	-	90	S	5
Yubiley	1.8	.	26.1	17.9	85	60	295	342	48	MS	0	-	43	S	8
Moslavka (Zg 4240-73)	1.5	.	21.1	21.3	66	0	287	341	90	S	0	-	0	-	7
Zg 887-73	1.4	.	22.1	17.8	81	60	289	342	80	S	0	-	0	-	5
Zg 4293-73	0.9	.	23.1	18.6	76	30	287	341	90	S	0	-	0	-	8
Lerma Rojo 64	0.9	.	26.5	17.1	95	0	275	338	63	MS	38	MS-S	3	MS	9
Mean	8.4	74.1	28.3	14.9	89.0	22.3	300.7	345.9	52.4		14.5		30.7		5.2
L.S.D. of cultivar means (.05)	3.7	0.2	0.2		3.0	6.4	-	0.1	-		-		-		-
Coefficient of variation (%)	31.5	0.2	0.4		2.4	20.3	0.0	0.1	-		-		-		-

ARGENTINA

Bordenave

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

DATE OF PLANTING (EFFECTIVE GERMINATION): May 26, 1978 (June 17, 1978).

PRECIPITATION DURING CYCLE OF TEST: 339.1 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: None.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was an intense frost in late August which caused some damage. Conditions were favorable from the middle of October. There was an abundance of precipitation at maturity.

DISEASE DEVELOPMENT: There were observed attacks of Leaf rust, Stripe rust, and Stem rust of moderate intensity.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: December 6 - 23, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Frost damage - August 29, 1978
Flowering - October 12 to November 12, 1978
Leaf rust - November 20, 1978
Stripe rust - November 20, 1978
Maturity - December 2-20, 1978
Stem rust - December 15, 1978
Plant height - December 5-24, 1978
Lodging - "
Shattering - "

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	.29**								
N	120								
1000-kernel weight	.50**	.43**							
N	120	120							
Protein	-.47**	.19	-.23						
N	30	30	30						
Plant height	-.12	.59**	.42**	.31					
N	120	120	30	30					
Lodging	.22*	.38**	.05	-.04	.20*				
N	120	120	120	30	120				
Flowering	-.64**	-.29**	-.18	.30	.17	-.33**			
N	120	120	120	30	120	120			
Ripening	-.62**	-.30**	-.15	.41*	.16	-.41**	.91**		
N	120	120	120	30	120	120	120		
Shattering	-.41**	.15	-.20*	.32	.26**	-.12	.24**	.36**	
N	120	120	120	30	120	120	120	120	
Frost	.10	.11	-.17	-.04	-.13	.36**	-.48**	-.49**	-.18*
N	120	120	120	30	120	120	120	120	120

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

Table 8. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Bordenave, Argentina in 1978.

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 %	Frost damage 0-9	Stripe rust Sev. %	Leaf rust Sev. %	Leaf rust Resp.	Stem rust Sev. %	Stem rust Resp.
Yubiley	44.5	75.0	43.8	12.6	93	0	297	345	0	0	1	2	R	0	-
Partizanka	44.4	78.4	41.1	13.4	95	0	297	345	0	0	3	1	O-R	1	O-MS
Martonvasari 4	41.2	77.0	42.8	12.1	108	10	297	345	0	0	1	60	S	0	-
Zg 887-73	39.2	72.2	32.0	10.5	71	0	290	343	0	4	0	23	MS	3	O-MS
Sadovo-1	38.6	74.1	49.0	11.1	98	0	298	345	0	0	0	50	S	0	-
Zg 4293-73	38.3	71.4	31.5	12.6	69	0	291	343	0	0	18	23	MS-S	0	-
Zlatoklasa (Zg 4364)	38.2	71.9	34.0	12.3	75	0	296	345	0	0	30	3	O-R	0	-
Slavyanka	37.8	75.7	44.6	11.9	101	0	296	345	0	0	0	50	S	0	-
Moslavka (Zg 4240-73)	37.5	69.6	32.7	12.0	76	0	290	344	0	3	0	1	O-R	0	-
Lerma Rojo 64	37.5	83.0	39.1	12.5	103	20	286	337	0	5	0	33	S	0	-
NR 73-5028 (Samson)	37.0	76.3	36.6	12.6	95	10	296	345	0	0	0	60	S	0	-
Absolvent	36.5	77.4	44.5	13.7	96	0	302	347	0	0	1	16	MS-S	4	O-MS
Iulia	36.4	77.6	41.4	13.2	95	0	300	348	0	0	4	55	S	10	O-S
Bezostaya 1	36.2	76.9	44.4	12.4	104	0	302	347	0	0	0	33	S	3	O-MS
Newton (KS 73112)	36.0	77.7	34.1	12.9	88	0	303	347	0	0	0	58	S	0	-
NR 72-837	32.9	71.0	36.7	12.5	80	0	312	350	0	0	0	43	MS-S	0	-
Blueboy	32.6	73.5	37.0	12.1	103	0	298	345	0	0	5	28	MS-S	10	O-S
CI 13449/Centurk	32.5	74.9	36.7	12.7	104	0	303	347	8	0	20	5	R-MS	5	O-MS
Lindon	32.1	78.1	32.5	12.1	96	0	300	347	5	0	6	48	MS-S	0	-
NE 73640	31.8	77.4	36.3	13.0	101	5	304	348	0	0	15	25	MS-S	0	-
Slavia (ST-VUR 37)	30.8	71.0	41.0	12.2	89	0	310	350	0	0	0	55	S	1	O-MS
Budifen	29.0	71.5	29.9	11.9	76	0	304	348	0	2	0	38	S	0	-
Krasnodarskaya 39	28.5	75.9	38.7	11.8	100	0	309	349	0	0	6	60	S	8	O-S
Disponent	27.5	73.0	32.6	13.4	88	0	315	354	0	0	0	3	R-MR	0	-
F54-70	26.1	76.8	39.1	13.8	100	0	305	353	9	0	0	14	MR-MS	28	S
F53-70	26.1	76.1	39.3	15.7	103	0	306	352	6	0	2	18	MS-S	20	O-S
Mironovskaya 808	25.1	72.5	35.3	12.3	106	0	311	353	3	0	0	55	S	13	O-S
Atlas 66	24.6	75.1	37.1	16.8	113	0	306	350	0	3	18	25	S	0	O-MR
Ticonderoga	19.8	66.6	29.4	11.1	78	0	312	351	0	0	8	92	S	3	O-MS
Nap Hal/Atlas 66	15.9	74.8	24.7	17.9	99	0	309	350	8	0	0	30	MS-S	0	-
Mean	33.2	74.7	37.3	12.8	93.3	1.5	301.5	347.1	1.3	0.5	4.5	33.4		3.6	
L.S.D. of cultivar means (.05)	5.2	1.0	2.1		5.7	6.0	1.3	1.4	1.6	0.3					
Coefficient of variation (%)	11.1	1.0	4.0		4.3	286.2	0.3	0.3	89.3	45.1					

AUSTRIA

Vienna

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

DATE OF PLANTING (EFFECTIVE GERMINATION): October 18, 1977.

PRECIPITATION DURING CYCLE OF TEST: 358 mm (October 1, 1977 to July 31, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 36 kg/ha; P = 39 kg/ha; K = 120 kg/ha.
Topdress (April 18, 1978): N = 56 kg/ha, Nitro chalk.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A dry fall produced slow growth, but there was no winter injury. March was warm, but the whole vegetative period was abnormally cool. A frost on April 7 caused leaf injuries on some plots. Precipitation was sufficient during the growing season to ensure high yields.

DISEASE DEVELOPMENT: There was a high incidence of Powdery mildew; medium to strong incidence of Leaf rust; and a late, moderate incidence of Glume-blotch.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 31, 1978.

AREA HARVESTED FOR YIELD: 3.3 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Stand rating - April 10, 1978
Frost damage - April 20, 1978
Powdery mildew - May 17, June 2, June 22, 1978
Lodging - July 19, 1978
Shattering - August 9, 1978

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flower-ing	Ripen-ing	Shat-tering	Frost	Stand rating
1000-kernel weight	.11									
N	120									
Protein	-.48**	-.09								
N	30	30								
Plant height	-.16	.20*	.48**							
N	120	120	30							
Lodging	.01	-.10	.04	.61**						
N	120	120	30	120						
Flowering	-.10	-.18	.02	.41**	.23*					
N	120	120	30	120	120					
Ripening	-.05	.09	-.07	.48**	.24**	.61**				
N	120	120	30	120	120	120				
Shattering	.11	-.25**	.06	.31**	.22*	.40**	.38**			
N	120	120	30	120	120	120	120			
Frost	-.23*	-.12	.30	-.24**	-.10	-.37**	-.21*	-.15		
N	120	120	30	120	120	120	120	120		
Stand rating	-.18*	-.09	-.06	-.22*	-.04	-.12	-.10	-.12	.54**	
N	120	120	30	120	120	120	120	120	120	
Mildew severity	-.38**	.15	.01	.35**	.03	.12	.37**	-.03	-.26**	-.12
N	120	120	30	120	120	120	120	120	120	120

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

Table 9. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Vienna, Austria in 1978.

Cultivars	Yield q/ha	1000-Kernel weight kg/hl	Protein %	Plant height cm	Lodging (0-9)	Date of Heading days from Jan 1	Date of Ripening days from Jan 1	Shattering %	Frost damage (0-9)	Stand rating (1-9)	Mildew (0-9) June 22	Mildew (0-9) June 2
NR 72-837	77.7	47.7	14.4	88	1	153	201	1	1	3	1	1
Zg 887-73	77.4	37.1	12.7	73	1	148	197	2	3	3	0	0
Ticonderoga	75.2	41.0	12.3	96	1	155	204	3	0	3	3	3
Zg 4293-73	72.5	38.1	13.2	68	1	146	197	1	4	3	0	0
Lindon	71.8	34.9	13.7	99	5	147	201	3	0	2	4	3
Slavia (ST-VUR 37)	70.8	51.2	12.5	89	1	154	204	2	1	2	4	3
NR 73-5028 (Samson)	70.7	41.0	13.4	88	1	148	199	1	2	2	4	3
Martonvasari 4	69.9	48.8	14.1	95	1	147	199	1	1	1	3	3
Slavyanka	69.8	48.6	14.6	94	1	148	200	1	2	3	4	4
Disponent	69.4	40.9	14.0	91	1	157	207	3	1	2	6	5
Mironovskaya 808	68.8	49.8	14.4	126	6	154	201	2	0	2	2	2
Zlatoklasa (Zg 4364)	68.3	40.4	14.2	76	1	146	198	2	4	3	0	0
CI 13449/Centurk	68.1	41.5	13.7	101	2	151	202	2	1	2	5	3
Moslavka (Zg 4240-73)	66.8	37.6	14.3	75	1	146	198	2	4	4	0	0
F54-70	65.5	45.4	15.9	103	1	150	204	3	1	2	3	2
Yubiley	64.8	46.5	12.5	80	1	148	197	1	1	2	4	4
Partizanka	64.7	43.1	13.3	89	1	148	200	2	0	2	4	3
Iulia	64.6	48.8	14.6	86	1	146	199	1	1	2	4	3
Newton (KS 73112)	64.4	42.4	14.8	96	1	148	200	1	2	3	7	5
NE 73640	62.0	42.8	16.7	98	2	146	198	1	1	2	5	3
Bezostaya 1	61.9	48.8	13.8	95	1	150	205	1	1	2	4	4
Blueboy	61.7	38.9	13.5	105	2	152	206	2	1	3	6	5
F53-70	59.8	46.2	16.2	99	1	149	200	2	1	2	3	2
Sadovo-1	59.4	54.8	13.0	84	1	148	202	1	1	3	6	6
Absolvent	58.7	48.9	13.6	93	1	150	206	2	2	2	5	4
Krasnodarskaya 39	57.1	47.3	14.8	101	1	152	201	2	0	3	5	5
Lerma Rojo 64	52.3	48.4	15.0	93	1	141	198	1	6	4	6	6
Atlas 66	48.9	44.3	17.5	115	3	154	205	2	6	4	3	2
Budifen	46.1	33.0	12.4	83	1	156	202	1	1	3	5	5
Nap Hal/Atlas 66	44.2	31.4	19.3	99	3	155	201	2	2	2	5	4
Mean	64.4	43.6	14.3	92.5	1.6	149.6	200.9	1.6	1.7	2.3	3.6	3.0
L.S.D. of cultivar means (.05)	5.5	2.2		5.8	1.3	1.3	3.2	0.3	0.4	0.9	0.8	-
Coefficient of Variation (%)	6.1	3.6		4.5	58.3	0.6	1.1	12.5	17.2	26.4	15.9	-
Local cultivar: Probstdorfer Extrem	61.9	47.9		121	3	153	203	1	2	2	2	2

BULGARIA

Tolbukhin

COOPERATOR(S): I. Govedarov and T. Rachinsky.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 10, 1977.

PRECIPITATION DURING CYCLE OF TEST: 412.3 mm (October 10, 1977-July 16, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

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

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Climatic conditions were very favorable.

DISEASE DEVELOPMENT: Leaf rust and Powdery mildew were quite severe.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 21, 1977.

AREA HARVESTED FOR YIELD: 5 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 30	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering
Test weight	-.14					
1000-kernel weight	.09	.40*				
Protein	-.10	.51**	-.05			
Plant height	-.39*	-.07	.13	.12		
Flowering	.06	-.25	-.18	-.14	.52**	
Ripening	-.01	-.30	-.27	-.27	.45*	.76**

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

Table 10. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery at Tolbukhin, Bulgaria in 1978.

Cultivars	Yield q/ha	Test[a] weight kg/hl	1000-Kernel[a] weight g	Protein %	Plant[a] height cm	Date of Flowering days from Jan 1	Date of Ripening days from Jan 1	Leaf rust Sev. (%)	Leaf rust Resp.	Mildew Sev. (%)	Mildew Resp.
Yubiley	97.3	81.8	44.4	12.8	91	141	187	1	R	40	VS
NR 72-837	96.5	80.0	48.0	13.3	93	144	187	5	M	0	-
Moslavka (Zg 4240-73)	91.9	79.7	36.3	13.4	84	135	186	5	M	0	-
Zg 887-73	90.7	79.0	40.2	12.8	80	135	186	5	R	0	-
Zlatoklasa (Zg 4364)	88.9	80.5	36.0	13.6	86	137	186	10	M	0	-
Zg 4293-73	88.6	79.7	33.6	13.2	70	135	186	10	M	0	-
Nap Hal/Atlas 66	85.8	81.0	28 1	18.5	100	142	186	-	R	30	VS
Ticonderoga	85.3	75.9	35.0	10.7	104	144	189	99	VS	1	MR
Slavyanka	82.7	79.7	43.5	14.5	110	141	186	40	MS	35	VS
F53-70	80.7	82.1	40.2	15.4	114	142	188	1	R	25	M
Sadovo-1	79.7	82.1	48.2	12.6	98	139	187	99	VS	90	VS
Slavia (ST-VUR 37)	78.3	78.4	39.6	12.4	100	144	189	50	MS	1	MR
Partizanka	77.2	83.8	36.3	13.2	90	141	189	5	M	25	MS
Iulia	74.8	82.7	44.3	14.5	105	138	185	65	VS	20	MS
F54-70	74.7	82.4	40.1	15.7	115	142	188	1	R	15	MS
Absolvent	73.7	82.5	41.2	13.4	105	142	189	50	VS	25	VS
Blueboy	71.6	78.5	40.0	12.4	121	142	190	25	S	90	VS
Disponent	71.0	77.8	30.8	13.1	102	148	193	50	MS	10	M
Mironovskaya 808	71.0	79.4	38.0	12.6	130	145	189	70	VS	20	S
Martonvasari 4	70.5	82.9	40.7	13.9	103	141	186	99	VS	65	VS
Bezostaya 1	70.2	82.5	40.4	13.4	98	144	190	40	S	40	VS
Lindon	68.7	82.6	34.1	13.6	100	139	188	1	R	10	MS
Newton (KS 73112)	66.3	82.2	40.0	12.9	90	138	186	65	VS	40	MS
CI 13449/Centurk	66.2	79.0	40.1	11.8	115	141	188	99	VS	25	S
Krasnodarskaya 39	62.9	80.7	38.3	13.0	101	144	187	99	VS	50	VS
NR 73-5028 (Samson)	61.6	81.4	37.8	12.3	90	138	185	99	VS	65	VS
NE 73640	59.3	82.5	38.4	15.6	95	140	186	80	VS	30	VS
Budifen	56.6	74.8	28.5	11.3	100	144	189	50	VS	25	VS
Atlas 66	52.8	81.1	40.2	15.4	120	141	190	0	-	15	S
Lerma Rojo 64	46.0	80.4	42.8	14.7	98	131	184	25	M	65	VS
Mean	74.7	80.6	38.8	13.5	100.3	140.6	187.5	43.0		28.6	
L.S.D. of cultivar means (.05)	6.0	-	-		-	-	-	-		-	
Coefficient of variation (%)	5.7	-	-		-	-	-	-		-	

[a] One replication only.

CANADA

Alberta

Lethbridge

COOPERATOR: M. N. Grant.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 546 mm.

AMOUNT OF IRRIGATION APPLIED: None.

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

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was above average rainfall overall, and the winter was very mild.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 27, 1978.

AREA HARVESTED FOR YIELD: 2.3 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Winter survival - May 2, 1978; Shattering - August 29, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Flowering	Ripening	Shattering
Test weight	.21						
N	27						
1000-kernel weight	.29	.34					
N	27	28					
Protein	-.72**	.12	-.18				
N	27	28	28				
Flowering	-.13	-.34	.05	-.20			
N	116	28	28	28			
Ripening	-.09	-.28	-.11	-.07	.60**		
N	111	27	27	27	111		
Shattering	.01	.05	.10	.32	.15	-.02	
N	119	28	28	28	117	111	
Winter survival	.91**	.27	.27	-.23	-.18	-.37**	.13
N	119	28	28	28	117	111	120

** Significant at the 1% level.

Table 11. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Lethbridge, Alberta, Canada in 1978.

Cultivars	Yield q/ha	Test[a] weight kg/hl	1000[a] kernel weight g	Protein %	Plant[a] height cm	Lodging[a] %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Shattering %	Winter survival %
Yubiley	69.8	83.0	39.0	12.8	78	1	164	206	1	100
Ticonderoga	65.4	79.2	37.6	11.3	85	1	166	207	1	100
Partizanka	61.8	83.8	35.2	13.3	82	1	165	207	0	100
Martonvasari 4	60.9	83.1	39.2	13.1	90	1	164	205	0	100
Absolvent	60.9	84.7	42.0	12.4	89	1	165	207	1	100
Sadovo-1	60.3	81.9	46.8	13.1	83	1	162	206	1	100
Slavia (ST-VUR 37)	59.5	77.9	41.2	11.4	74	1	166	207	1	100
Krasnodarskaya 39	58.7	82.5	40.8	13.6	90	2	167	207	0	100
Zg 4293-73	58.2	79.8	31.6	13.5	55	1	161	206	0	96
Bezostaya 1	57.7	84.1	42.8	12.8	90	1	165	207	1	100
Slavyanka	57.2	82.9	38.2	12.8	85	1	162	205	0	100
Blueboy	57.0	78.3	36.0	12.9	90	4	166	208	3	100
Zlatoklasa (Zg 4364)	56.6	80.0	33.2	13.5	66	1	163	206	0	100
F54-70	56.5	83.1	40.0	16.9	88	1	165	206	15	100
Iulia	56.3	84.4	44.8	15.9	80	1	161	205	1	98
NE 73640	55.1	83.7	36.0	14.6	86	3	160	205	2	100
CI 13449/Centurk	54.8	82.0	30.8	11.5	90	2	165	207	3	100
NR 72-837	54.5	78.6	39.6	12.9	75	2	164	206	0	98
F53-70	53.9	83.0	40.4	15.4	90	1	164	206	8	100
Mironovskaya 808	52.5	77.8	36.0	15.5	108	1	165	206	18	100
Disponent	52.5	78.0	31.6	12.0	72	1	171	208	3	100
NR 73-5028 (Samson)	50.1	82.4	34.8	14.0	70	1	162	205	0	100
Lindon	49.4	83.6	26.0	14.0	88	4	163	205	0	100
Newton (KS 73112)	47.9	83.0	39.2	14.6	82	3	159	205	0	100
Moslavka (Zg 4240-73)	45.4	78.1	30.8	14.2	63	2	161	206	2	95
Atlas 66	38.1	80.3	34.4	18.6	96	2	164	208	5	85
Zg 887-73	37.5	78.8	32.4	13.4	68	2	163	209	0	45
Nap Hal/Atlas 66	36.8	80.8	27.6	19.3	77	1	165	207	11	89
Budifen	0.0	.	.	.	70	3	168	.	0	6
Lerma Rojo 64	0.0	.	.	.	.	.	161	.	0	0
Mean	51.0	81.4	36.7	13.9	81.4	1.6	163.9	206.2	2.6	90.3
L.S.D. of cultivar means (.05)	6.1	-	-		-	-	1.5	1.1	5.4	8.0
Coefficient of variation (%)	8.6	-	-		-	-	0.6	0.4	149.6	6.3

[a] One replication only.

Table 12. Agronomic data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Canning, Nova Scotia, Canada in 1978. [a/]

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Plant height cm
Yubiley	72.8	80.6	48	78
Iulia	70.9	83.2	52	80
Mironovskaya 808	68.6	80.6	54	100
Ticonderoga	67.7	78.1	46	90
Lindon	67.4	83.2	40	87
Partizanka	66.3	81.9	42	80
CI 13449/Centurk	66.3	83.2	40	81
Blueboy	65.8	83.2	46	96
Absolvent	65.7	83.2	48	90
Sadovo-1	63.2	81.9	54	80
Disponent	63.1	79.4	40	84
Slavia	62.3	79.4	50	75
NE 73640	61.3	81.9	42	82
Zlatoklasa (Zg 4364)	60.0	83.2	46	90
F53-70	60.0	80.6	42	70
NR 72-837	59.0	79.4	46	80
Newton	55.0	81.9	42	76
Krasnodarskaya 39	53.1	83.2	42	90
Atlas 66	52.9	80.6	42	98
Bezostaya 1	52.9	83.2	48	85
Zg 4293-73	51.8	81.9	38	54
Martonvasari 4	49.7	83.2	48	90
Slavyanka	49.5	83.2	48	85
F54-70	48.8	80.6	46	86
Moslavka	48.6	76.9	42	60
NR 73-5028 (Samson)	44.0	80.6	40	70
Nap Hal/Atlas 66	36.2	80.6	34	80
Zg 887-73	26.2	78.1	40	60
Budifen	22.6	76.9	40	75
Lerma Rojo 64	0 [b/]	-	-	-
Mean	56.3	81.2	44.3	81.1
CV (%)	22.1	2.5	10.9	13.5

[a/] Data provided by Dr. Hans Nass.

[b/] Not included in the overall mean.

Table 13. Agronomic data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Kentville, Nova Scotia, Canada in 1978.[a/].

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Plant height cm
Blueboy	71.2	83.2	44	100
Slavia	70.2	80.6	46	82
Martonvasari 4	68.6	84.4	46	91
Mironovskaya 808	67.8	80.6	52	100
Yubiley	67.4	84.4	44	88
Ticonderoga	65.2	80.6	44	84
Iulia	63.2	84.4	48	85
Absolvent	62.7	83.2	48	88
Sadovo-1	61.9	84.4	52	80
F54-70	60.5	83.2	44	100
CI 13449/Centurk	58.4	83.2	40	88
Partizanka	58.2	83.2	42	79
Slavyanka	57.6	84.4	48	85
Disponent	57.3	80.6	38	80
NR 72-837	57.1	80.6	44	76
F 53-70	56.5	81.9	46	94
Atlas 66	56.2	83.2	42	110
Moslavka	54.5	79.4	38	65
Bezostaya 1	52.8	85.7	48	85
Lindon	51.7	83.2	36	82
NE 73640	49.9	83.2	38	76
Zg 4293-73	49.1	80.6	34	60
Zlatoklasa	48.0	80.6	38	66
Krasnodarskaya 39	46.2	84.4	42	89
NR 73-5028 (Samson)	45.0	80.6	38	80
Nap Hal/Atlas 66	39.6	83.2	32	82
Newton	33.2	81.9	38	66
Budifen	29.9	80.6	40	80
Zg 887-73	28.4	80.6	36	61
Lerma Rojo 64	0 [b/]	-	-	-
Mean	54.8	82.4	42.3	82.8
CV (%)	21.0	2.1	12.2	14.4

[a/] Data provided by Dr. Hans Nass.

[b/] Not included in the overall mean.

Table 14. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Elora, Ontario, Canada in 1978.[a/]

Cultivars	Yield q/ha	Plant height cm	Days to heading from Jan. 1	Winter survival %	Leaf rust Sev. (1-9)	Mildew Sev. (0-9)
Bezostaya 1	71.9	94	168	99	3	7
Slavia (ST-VUR 37)	71.0	88	170	98	4	3
Partizanka	65.4	80	166	97	3	3
Absolvent	63.7	96	165	97	2	6
Blueboy	60.8	108	164	99	4	8
Martonvasari 4	52.7	96	162	97	4	5
Mironovskaya 808	50.2	112	167	100	3	3
Newton	48.9	92	162	96	3	6
Yubiley	48.6	92	167	97	2	3
Iulia	47.0	90	164	97	3	4
F 54-70	46.5	96	166	80	2	4
F 53-70	45.7	98	168	80	2	5
Slavyanka	45.4	84	165	99	2	5
Disponent	45.1	90	166	90	3	1
Lindon	43.8	94	163	98	1	5
Zlatoklasa (Zg 4364)	41.3	74	163	75	3	2
NE 73640	41.1	102	160	98	2	4
CI 13449/Centurk	41.1	102	163	79	5	6
NR 72-837	39.4	80	170	61	2	3
Krasnodarskaya 39	37.0	100	165	98	2	6
Sadovo-1	32.1	78	162	80	3	6
Moslavka (Zg 4240-73)	22.4	70	162	93	2	2
Ticonderoga	21.3	104	165	98	4	4
Zg 4293-73	15.7	60	163	78	2	1
Atlas 66	10.3	-	-	3	-	0
Zg 887-73	0	-	-	1	-	0
Samson	0	-	-	2	-	0
Nap Hal/Atlas 66	0	-	-	2	-	0
Budifen	0	-	-	1	-	0
Lerma Rojo 64	0	-	-	1	-	0
Fredrick (local check)	56.3	110	167	95	2	3
Mean	39.7	91.6	164.9	76.1	2.7	3.3
L.S.D. of cultivar means (.05)	20.3	-		27.8	-	1.3
Coefficient of variation (%)	25.1	-		18.0	-	29.6

[a/] Data were provided by Drs. Tony Hunt and Pankaj Mehta.

CANADA

Prince Edward Island

Charlottetown

COOPERATOR: H. G. Nass.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 7, 1977.

PRECIPITATION DURING CYCLE OF TEST: 1231 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 20 kg/ha; P = 34.9 kg/ha; K = 66.4 kg/ha as (5:20:20) compound. Topdress: N = 80 kg/ha as Ammonium nitrate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There were many sunny days in summer, with below normal summer rainfall.

DISEASE DEVELOPMENT: There was more Fusarium sp. than normal, but Mildew and Septoria infections were about average.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 7, 1978.

AREA HARVESTED FOR YIELD: 2.784 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Diseases - July 18, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.49*							
N	22							
1000-kernel weight	.73**	.50*						
N	24	22						
Protein	-.53**	-.26	-.44*					
N	24	22	24					
Plant height	.82**	.25	.71**	-.56**				
N	96	22	24	24				
Lodging	.29**	-.10	.09	-.46*	.43**			
N	96	22	24	24	96			
Flowering	-.32**	-.85**	-.26	.16	-.12	-.05		
N	96	22	24	24	96	96		
Ripening	-.10	-.46*	-.04	-.07	.09	.07	.69**	
N	96	22	24	24	96	96	96	
Winter survival	.87**	.52*	.59**	-.44*	.72**	.25*	-.43**	-.16
N	120	22	24	24	96	96	96	96

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

Table 15. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Prince Edward Island, Canada in 1978.

Cultivars	Yield q/ha	Test[a] weight kg/hl	1000-kernel[a] weight g	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan.1)	Date of Ripening (days from Jan.1)	Winter Survival %	Mildew Sev. (0-9)	Septoria Sev. (0-9)
Mironovskaya 808	34.5	70.0	36.7	14.1	104	18	172	219	86	0	2
Martonvasari 4	25.8	77.1	35.9	15.7	85	11	170	218	85	0	3
Ticonderoga	25.4	67.1	29.9	14.8	87	11	175	219	85	0	2
Krasnodarskaya 39	24.5	74.3	33.8	13.4	90	10	173	219	86	1	3
Bezostaya 1	22.1	74.1	35.3	15.9	89	11	172	219	89	0	2
Absolvent	21.8	73.1	34.4	15.4	90	10	173	218	81	0	2
F53-70	20.7	75.2	36.5	17.4	84	10	172	219	85	0	2
Yubiley	19.5	70.9	31.1	15.9	73	10	172	218	84	0	3
F54-70	19.4	74.9	33.1	17.0	87	10	172	219	86	0	3
NE 73640	18.6	75.7	31.1	17.5	78	14	170	218	84	0	4
Sadovo-1	18.3	75.8	38.6	14.5	78	10	171	218	85	1	7
Partizanka	17.5	73.6	27.3	17.2	76	11	172	218	88	0	3
Slavyanka	16.5	73.1	30.4	16.2	88	14	172	219	81	1	3
Iulia	13.8	72.1	29.1	17.9	74	10	171	218	71	0	3
Lindon	13.8	74.8	21.9	15.3	78	13	172	218	80	0	9
Blueboy	12.3	63.8	29.6	14.5	87	15	175	220	74	1	1
Disponent	12.3	64.1	26.5	18.3	76	10	178	222	55	0	1
Newton (KS 73112)	12.3	75.4	29.3	16.9	72	10	169	218	64	0	6
CI 13449/Centurk	10.9	68.9	26.1	16.1	79	10	173	220	59	2	3
Slavia (ST-VUR 37)	7.2	60.3	27.7	17.3	63	10	176	220	51	0	1
Zlatoklasa (Zg 4364)	6.1	68.4	24.5	16.9	59	10	173	218	44	0	1
NR 72-837	4.1	60.4	24.8	18.8	68	10	176	218	26	0	4
Moslavka (Zg 4240-73)	3.1	.	23.2	17.4	50	10	173	219	34	0	2
Zg 4293-73	2.7	.	22.7	16.2	50	10	173	219	36	0	2
Atlas 66	0.0	.	.	.	.	.	.	.	0	-	-
Zg 887-73	0.0	.	.	.	.	.	.	.	0	-	-
Lerma Rojo 64	0.0	.	.	.	.	.	.	.	0	-	-
Nap Hal/Atlas 66	0.0	.	.	.	.	.	.	.	0	-	-
NR 73-5028 (Samson)	0.0	.	.	.	.	.	.	.	0	-	-
Budifen	0.0	.	.	.	.	.	.	.	0	0	3
Mean	12.8	71.1	30.0	16.3	77.6	11.1	172.6	218.7	56.6	0.2	2.8
L.S.D. of cultivar means (.05)	4.2	-	-		7.5	2.5	0.8	0.6	11.7	-	-
Coefficient of variation (%)	23.2	-	-		6.8	15.6	0.3	0.2	14.7	-	-

[a] One replication only.

CHILE

Chillan

COOPERATOR(S): I. Ramirez, M. Mellado, L. Aguayo, and R. Madariaga.

DATE OF PLANTING (EFFECTIVE GERMINATION): May 19, 1978.

PRECIPITATION DURING CYCLE OF TEST: 1008 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha; P = 65.4 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Total rainfall was normal, but the distribution varied from a normal year. Spring rainfall was higher than normal, while fall rainfall was lower.

DISEASE DEVELOPMENT: Infections of Leaf rust and Septoria tritici were severe. Stripe rust was moderately severe, while Barley Yellow Dwarf infection was slight.

INSECT, WEED OR PEST PROBLEMS: There were some aphids present.

DATE OF HARVEST: January 4, 1979.

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	Protein	Plant height
Test weight	.17			
N	120			
Protein	-.09	.32		
N	30	30		
Plant height	.41**	.42**	.51**	
N	120	120	30	
Flowering	.41*	.05	-.12	.43*
N	30	30	30	30

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

Table 16. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Chillan, Chile in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Date of flowering[a] days from Jan.1	Stripe rust[a] Sev. (%)	Stripe rust[a] Resp.	Leaf rust[a] Sev. (%)	Leaf rust[a] Resp.	Septoria[a] Sev. (0-9)
Blueboy	55.9	81.0	11.8	121	193	0	-	60	S	3
CI 13449/Centurk	47.4	81.5	11.8	121	195	40	S	60	S	5
NR 72-837	46.9	77.8	11.1	98	209	0	-	10	MS	5
Mironovskaya 808	46.1	81.1	12.7	150	206	0	-	0	-	2
Newton (KS 73112)	46.1	84.4	11.4	104	196	0	-	60	S	7
Iulia	45.0	85.3	11.4	105	195	0	-	30	S	3
Yubiley	44.8	82.8	11.5	99	193	0	-	0	-	7
Ticonderoga	44.7	77.7	9.4	105	207	10	MS	90	S	2
Zlatoklasa (Zg 4364)	43.7	80.5	11.0	79	192	40	S	0	-	3
Atlas 66	42.7	83.6	15.3	149	199	80	S	5	MS	7
Disponent	42.7	78.2	10.9	108	213	0	-	10	MS	5
Sadovo-1	42.3	84.4	10.6	101	189	0	-	0	-	6
Bezostaya 1	42.2	83.5	11.9	119	196	0	-	10	MS	6
Absolvent	41.6	84.5	13.0	116	195	0	-	40	MS	7
F53-70	41.4	84.2	14.8	124	201	50	MS	0	-	4
Slavyanka	41.3	84.8	10.7	106	189	40	S	1	MS	7
Lindon	40.6	84.2	10.8	111	196	80	S	0	-	4
Budifen	39.8	77.2	9.5	98	197	0	-	0	-	8
Martonvasari 4	39.5	83.4	10.2	111	192	0	-	10	MS	6
F54-70	38.6	84.0	13.6	123	198	5	MS	0	-	4
Partizanka	36.1	84.5	10.5	99	220	0	-	0	-	6
Slavia (ST-VUR 37)	34.8	77.8	9.9	98	209	0	-	60	S	6
Krasnodarskaya 39	34.2	83.7	13.7	124	204	40	MS	10	MS	5
NE 73640	33.7	84.7	11.8	116	198	40	MS	0	-	6
Nap Hal/Atlas 66	32.9	84.7	14.1	121	199	40	S	20	MS	6
NR 73-5028 (Samson)	32.9	84.2	14.5	96	188	0	-	0	-	6
Moslavka (Zg 4240-73)	28.5	79.0	12.1	78	178	0	-	0	-	6
Zg 4293-73	28.2	79.5	11.1	71	180	0	-	40	S	3
Zg 887-73	25.5	77.0	11.7	71	177	0	-	0	-	7
Lerma Rojo 64	14.6	80.3	12.5	96	164	0	-	0	-	9
Mean	39.2	82.0	11.8	107.2	195.6	15.5		17.2		5.4
L.S.D. of cultivar means (.05)	9.8	1.5		5.4	-	-		-		-
Coefficient of variation (%)	17.7	1.3		3.6	-	-		-		-

[a] One replication only.

CHILE

Temuco

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

DATE OF PLANTING (EFFECTIVE GERMINATION): May 25, 1978.

PRECIPITATION DURING CYCLE OF TEST: 1298.4 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha; P = 87.2 kg/ha; K = 50 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally wet during the winter, but the summer was dry.

DISEASE DEVELOPMENT: There was not a large amount of disease build-up.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: February 22, 1979.

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	Protein	Plant height
Test weight	.12			
N	106			
Protein	-.31	.38		
N	30	27		
Plant height	.63**	.12	--	
N	90	79	--	
Flowering	.59**	-.23*	-.73**	.46**
N	120	106	30	90

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

Table 17. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Temuco, Chile in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	1000 kernel weight g	Plant height cm	Date of flowering days from Jan.1	Stripe rust[a/] Sev. (%)	Stripe rust[a/] Resp.	Septoria[a/] Sev. (0-9)
Disponent	65.5	77.0	11.1	107	342	0	-	2
Martonvasari 4	64.2	80.1	13.1	115	326	0	-	7
NR 72-837	63.0	77.6	9.7	103	338	0	-	7
Blueboy	60.8	74.1	10.6	117	327	5	MR	3
F53-70	59.7	79.7	12.5	125	327	0	-	4
Ticonderoga	53.5	70.6	7.9	110	348	60	MS	3
Bezostaya 1	53.2	79.9	11.4	107	336	1	MR	5
Iulia	52.4	79.1	10.9	103	327	5	MR	3
Budifen	51.0	70.3	8.2	103	329	1	MR	7
Absolvent	50.9	79.9	8.6	105	329	1	MR	6
Lindon	48.7	79.4	9.4	103	327	1	R	5
NE 73640	48.6	78.8	11.2	113	329	30	MR	2
F54-70	48.0	80.1	10.3	118	327	1	R	1
Slavia (ST-VUR 37)	46.9	72.2	8.9	102	333	0	-	4
Yubiley	45.3	76.6	11.0	97	326	0	-	7
Slavyanka	45.2	78.7	12.5	103	327	70	S	7
Krasnodarskaya 39	45.0	78.6	9.5	118	333	5	MR	1
CI 13449/Centurk	44.8	74.2	8.1	118	327	90	S	0
Sadovo-1	44.7	79.4	11.6	100	325	0	-	9
Mironovskaya 808	44.7	73.7	11.2	138	334	1	R	1
Newton (KS 73112)	44.0	79.5	8.8	100	328	1	MR	5
Atlas 66	43.7	78.1	11.9	145	329	30	MR	2
Nap Hal/Atlas 66	41.0	80.2	12.8	122	331	1	MR	3
Zlatoklasa (Zg 4364)	40.3	77.1	13.4	83	318	1	MS	3
Partizanka	39.1	79.3	12.6	97	326	0	-	7
NR 73-5028 (Samson)	33.3	76.3	12.5	93	318	0	-	9
Zg 4293-73	26.6	73.8	14.2	68	318	0	-	9
Moslavka (Zg 4240-73)	19.8	.	14.2	75	318	0	-	7
Zg 887-73	19.6	.	14.6	78	314	0	-	9
Lerma Rojo 64	14.3	.	17.3	90	310	0	-	9
Mean	45.3	77.3	11.3	105.3	327.5	10.1		4.9
L.S.D. of cultivar means (.05)	12.1	1.5		7.3	5.8	-		-
Coefficient of variation (%)	19.0	1.4		4.2	1.3	-		-

a/ One replication only.

CZECHOSLOVAKIA

Male Ripnany

COOPERATOR: D. Michalik.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 4, 1977.

PRECIPITATION DURING CYCLE OF TEST: 310.5 mm (608 mm is normal).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 50 kg/ha, Ammonium sulfate; P = 54 kg/ha, Calcium phosphate; K = 75 kg/ha, Potassium chloride.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The weather was extremely unstable with intense changes in temperature. The nursery experienced drought conditions.

DISEASE DEVELOPMENT: Moderate infections of Stem rust and Powdery mildew were observed.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 27, 1978.

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	Lodging	Flower-ing	Ripen-ing	Winter survival
Test weight	-.04								
N	120								
1000-kernel weight	.12	.20*							
N	120	120							
Protein	-.50**	.34	-.11						
N	30	30	30						
Plant height	-.41**	.03	.14	.34					
N	120	120	120	30					
Lodging	-.35**	.37**	-.11	.60**	.43**				
N	120	120	120	30	120				
Flowering	-.13	-.41**	.23**	-.15	.39**	-.14			
N	120	120	120	30	120	120			
Ripening	.03	-.29**	.54**	-.18	.33**	-.11	.81**		
N	120	120	120	30	120	120	120		
Winter survival	.52**	.07	-.15	-.15	.16	.01	.00	-.03	
N	120	120	120	30	120	120	120	120	
Frost	-.46**	-.21*	.03	-.02	-.26**	-.05	-.03	-.02	-.89**
N	120	120	120	30	120	120	120	120	120

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

Table 18. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Male Ripnany, Czechoslovakia in 1978.

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 %	Frost damage 0-9	Stripe rust Sev. (%)	Stripe rust Resp.	Stem rust Sev. (%)	Stem rust Resp.	Mildew Sev. (0-9)
Moslavka (Zg 4240-73)	83.6	80.4	34.5	13.5	85	0	154	201	100	0	0	-	10	R	1
NR 72-837	75.8	79.9	47.6	14.6	106	5	157	206	100	0	0	-	23	R	2
Ticonderoga	75.2	77.5	42.3	12.0	105	0	158	207	100	0	0	-	20	R	3
Iulia	73.6	84.8	45.5	14.0	94	25	155	203	100	0	0	-	38	R	3
Slavia (ST-VUR 37)	72.6	80.2	45.1	13.2	105	6	157	206	100	0	0	-	33	R	3
Yubiley	71.7	82.5	43.8	12.6	93	0	157	205	100	0	0	-	5	VR-R	4
Zg 887-73	71.5	80.7	37.2	12.1	81	8	154	201	91	4	10	VR	0	-	1
Zlatoklasa (Zg 4364)	71.5	82.1	38.9	13.5	84	0	154	201	100	0	0	-	10	R	1
Zg 4293-73	71.1	81.1	35.3	13.4	73	0	154	200	100	0	6	VR	0	-	1
NR 73-5028 (Samson)	70.0	83.4	36.0	13.6	110	18	154	202	100	0	0	-	10	R	5
Sadovo-1	68.8	82.9	50.9	13.1	101	1	155	204	100	0	0	-	40	R-MR	6
Martonvasari 4	67.5	83.4	42.1	14.5	107	25	156	205	100	0	0	-	5	R	3
Disponent	66.1	80.2	38.0	13.4	106	5	158	207	100	0	0	-	14	VR	6
CI 13449/Centurk	66.0	81.6	35.7	13.6	109	5	156	202	100	0	10	VR	0	-	4
Slavyanka	64.9	83.2	46.5	14.9	108	4	156	205	100	0	0	-	20	R	2
F54-70	64.1	83.3	41.5	14.9	107	10	157	204	100	0	0	-	10	VR-R	2
Partizanka	63.0	84.4	38.2	12.6	104	18	155	202	100	0	0	-	10	R	5
F53-70	61.7	83.8	42.6	15.4	112	13	156	203	100	0	0	-	0	-	3
Absolvent	60.9	83.5	42.3	13.5	107	8	156	201	100	0	0	-	10	R	5
Blueboy	60.9	80.4	39.5	12.8	118	5	156	201	100	0	0	-	0	-	7
Bezostaya 1	60.2	84.0	44.8	13.1	110	5	157	207	100	0	0	-	0	-	4
Lindon	59.4	83.0	30.4	14.2	111	10	155	201	100	0	0	-	0	-	6
NE 73640	57.6	83.1	38.9	16.0	115	20	154	201	100	0	0	-	10	R	6
Krasnodarskaya 39	56.9	82.1	41.7	13.7	112	6	157	205	100	0	0	-	0	-	6
Mironovskaya 808	56.0	80.5	48.0	14.1	135	20	156	206	100	0	0	-	10	VR	1
Newton (KS 73112)	55.7	82.6	38.8	15.1	105	6	154	201	100	0	0	-	20	R	7
Budifen	53.4	76.5	31.8	11.3	107	0	158	205	99	2	0	-	10	R	7
Atlas 66	41.6	82.0	40.4	16.9	124	28	156	203	100	0	0	-	10	VR	3
Nap Hal/Atlas 66	40.6	81.8	28.7	19.1	113	35	156	202	100	0	0	-	0	-	5
Lerma Rojo 64	26.8	81.3	45.3	15.5	97	10	156	204	33	8	0	-	10	R	3
Mean	63.0	81.9	40.4	14.0	104.8	9.8	155.8	203.4	97.4	0.5	0.9		10.9		3.8
L.S.D. of cultivar means (.05)	6.9	0.4	0.5		0.7	6.0	0.1	-	6.4	0.3					
Coefficient of variation (%)	7.8	0.4	0.9		0.4	43.2	0.1	0.0	4.6	47.6					

CZECHOSLOVAKIA

Sedlec

COOPERATOR(S): J. Schmidt, J. Maly, and A. Vernerova.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 487.7 mm (October 1, 1977 - August 31, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 30 kg/ha, Ammonium sulfate.
Topdress: N = 30 kg/ha, Urea spray.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: September and October were quite dry. The winter was mild, but the spring and summer were cooler than usual. May and August were especially wet.

DISEASE DEVELOPMENT: There was moderate development of Powdery mildew and Eyespot, and slight development of Stripe rust.

INSECT, WEED OR PEST PROBLEMS: None. The herbicide, Aniten, was applied at 3.5 kg/ha to control weeds.

DATE OF HARVEST: August 10 - 23, 1978.

AREA HARVESTED FOR YIELD: 7.88 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Plant height	- July 5, 1978	Evaluation of tillering	- April 27, 1978
Lodging	- June 9 and August 10, 1978	Stripe rust	- July 20, 1978
Number of plants per m^2	- March 30, 1978	Mildew on ears	- July 6, 1978
Promptness of spring growth	- April 17, 1978		

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flower-ing	Ripen-ing	Winter survival	Plants/m^2
Test weight	.18									
N	120									
1000-kernel weight	.34**	.27**								
N	120	120								
Protein	-.36*	.39*	-.18							
N	30	30	30							
Plant height	-.01	.22*	.20*	.19						
N	120	120	120	30						
Lodging	-.28**	-.01	-.43**	.27	.30**					
N	120	120	120	30	120					
Flowering	-.02	-.12	-.05	-.10	.65**	.23**				
N	120	120	120	30	120	120				
Ripening	.08	-.05	.22*	-.04	.56**	.07	.71**			
N	120	120	120	30	120	120	120			
Winter survival	.38**	.20*	.11	-.12	.09	-.20*	.12	.05		
N	120	120	120	30	120	120	120	120		
Plants/m^2	.45*	-.14	-.09	-.22	-.14	-.16	.08	.07	.54**	
N	30	30	30	30	30	30	30	30	30	
Heads/m^2	.13	.11	-.29**	.13	-.05	.13	.06	.07	.18	.27
N	120	120	120	30	120	120	120	120	120	30
Grain wt./head	.73**	.05	.46**	-.41*	.03	-.28**	-.04	.04	.20*	.16
N	120	120	120	30	120	120	120	120	120	30
Kernels/head	.51**	-.12	-.35**	-.31	-.13	.07	-.01	-.15	.14	.27
N	120	120	120	30	120	120	120	120	120	30
Date of first mildew (plants)	-.19	.14	-.17	.44*	.29	.43*	.25	.04	-.28	-.24
N	26	26	26	26	26	26	26	26	26	26
Mildew sev. June 6 (plants)	-.28**	.34**	.05	.01	.37**	.22*	.14	.14	-.06	-.36*
N	120	120	120	30	120	120	120	120	120	30
Mildew sev. July 6	-.21*	.38**	.09	-.06	.43**	.21*	.18*	.15	-.04	-.35
N	120	120	120	30	120	120	120	120	120	30
Date of first mildew (heads)	.20	.06	.43*	.17	.09	-.23	.10	.10	.16	.28
N	27	27	27	27	27	27	27	27	27	27
Mildew sev. June 6 (heads)	-.30**	.04	-.34**	-.11	.34**	.25**	.37**	.19*	.07	-.19
N	120	120	120	30	120	120	120	120	120	30
Eyespot	.08	-.14	-.25**	-.31	.42**	.21*	.29**	.04	.22*	.38*
N	120	120	120	30	120	120	120	120	120	30
Promptness of spring growth	.10	-.22*	-.18*	-.19	.26**	.17	.59**	.32**	.18	.48**
N	120	120	120	30	120	120	120	120	120	30
Evaluation of tillering	-.18*	.01	.16	.10	-.46**	-.28**	-.52**	-.33**	-.48**	-.71**
N	120	120	120	30	120	120	120	120	120	30
Plant conditions after winter	-.34**	-.14	.09	.22	-.24**	-.02	-.39**	-.22*	-.53**	-.73**
N	120	120	120	30	120	120	120	120	120	30

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

N = No. of observations	Heads/m^2	Grain wt./head	Kernels/ head	Date of first mildew (plants)	Mildew sev. June 6 (plants)	Mildew sev. July 6	Date of first mildew (heads)	Mildew sev. June 6 (heads)	Eyespot	Promptness of spring growth	Evaluation of tillering
Grain wt./head	-.57**										
N	120										
Kernels/head	-.33**	.66**									
N	120	120									
Date of first mildew (plants)	.13	-.22	-.13								
N	26	26	26								
Mildew sev. June 6 (plants)	.06	-.27**	-.32**	-.44*							
N	120	120	120	26							
Mildew sev. July 6	.03	-.18*	-.27**	-.33	.95**						
N	120	120	120	26	120						
Date of first mildew (heads)	-.19	.36	.04	.30	-.60**	-.58**					
N	27	27	27	26	27	27					
Mildew sev. June 6 (heads)	.18*	-.37**	-.10	-.24	.63**	.59**	-.78**				
N	120	120	120	26	120	120	27				
Eyespot	.09	.00	.23*	.04	.17	.20*	-.01	.47**			
N	120	120	120	26	120	120	27	120			
Promptness of spring growth	.27**	-.08	.07	.19	-.11	-.14	.10	.14	.22*		
N	120	120	120	26	120	120	27	120	120		
Evaluation of tillering	-.28**	.02	-.11	.05	-.04	-.02	-.28	-.28**	-.47**	-.62**	
N	120	120	120	26	120	120	27	120	120	120	
Plant conditions after winter	-.38**	-.03	-.13	.13	-.01	.01	-.21	-.18*	-.25**	-.54**	.67**
N	120	120	120	26	120	120	27	120	120	120	120

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

Table 19. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Sedlec, Czechoslovakia in 1978.

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 %	Plants/m^2 [a]	Ears/m^2
Slavia (ST-VUR 37)	82.4	76.5	48.6	11.3	83	9	168	227	95	333	589
NR 73-5028 (Samson)	79.9	81.6	37.6	12.8	80	36	163	222	92	284	723
NR 72-837	79.9	78.9	46.6	12.2	84	23	167	226	92	344	691
Lindon	79.6	82.4	29.7	12.7	92	70	165	224	94	329	853
Martonvasari 4	79.1	82.7	46.1	11.8	88	13	160	219	93	297	607
Zg 887-73	78.6	78.1	38.4	12.9	73	43	165	224	85	294	608
CI 13449/Centurk	77.2	78.1	37.1	11.6	98	16	166	225	95	355	710
Mironovskaya 808	75.2	80.9	50.2	13.2	122	38	168	228	99	284	659
Ticonderoga	74.1	75.8	41.4	10.3	101	36	169	222	92	338	559
Disponent	73.9	80.4	40.7	11.1	92	11	173	231	94	339	625
F53-70	71.6	82.3	43.5	14.0	93	10	164	223	95	273	665
Iulia	71.2	81.8	43.6	13.0	81	19	160	221	95	327	659
Moslavka (Zg 4240-73)	69.8	77.5	37.3	13.1	66	5	159	221	87	308	666
Yubiley	69.7	78.1	41.2	13.1	76	5	160	220	91	287	678
Partizanka	69.6	82.1	40.7	12.2	79	8	161	222	87	245	653
Absolvent	68.8	82.1	48.3	12.1	86	15	164	225	92	319	683
F54-70	68.4	82.3	43.6	14.5	93	14	164	224	94	270	650
Slavyanka	68.0	81.4	44.1	12.6	83	6	161	220	87	248	571
Zlatoklasa (Zg 4364)	67.3	76.5	34.6	12.4	71	8	160	217	92	352	667
Blueboy	65.0	76.7	41.4	12.3	106	18	168	230	85	274	631
Sadovo-1	64.8	80.0	50.5	12.2	78	6	160	222	91	272	638
NE 73640	64.3	81.1	39.1	15.1	91	86	163	220	95	333	685
Newton (KS 73112)	63.1	78.8	34.5	12.4	89	59	164	219	94	261	636
Bezostaya 1	62.7	81.3	46.5	12.9	86	16	164	225	95	310	651
Krasnodarskaya 39	62.1	80.3	44.3	13.8	96	20	168	221	74	267	644
Zg 4293-73	60.9	76.7	34.7	13.3	59	6	159	218	87	326	668
Atlas 66	59.7	81.1	41.7	16.2	113	49	169	231	84	281	604
Lerma Rojo 64	50.4	78.1	40.0	13.1	79	63	156	221	57	241	524
Budifen	49.0	74.9	32.9	11.4	91	69	171	229	80	241	750
Nap Hal/Atlas 66	46.9	81.3	29.3	14.7	96	60	170	221	86	303	631
Mean	68.4	79.6	40.9	12.8	87.4	27.7	164.1	223.1	89.2	297.8	652.5
L.S.D. of the cultivar means (.05)	5.3	0.9	2.1		2.3	21.3	1.2	1.4	12.1	-	78.9
Coefficient of variation (%)	5.5	0.8	3.6		1.9	54.7	0.5	0.4	9.7	-	8.6

[a] One replication only.

Table 19. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Sedlec, Czechoslovakia in 1978. Concluded.

Cultivars	Kernels/ ear	Mildew (Plants) First[a] occurence (May)	Mildew (Plants) Sev. (0-9) June 6	Mildew (Plants) Sev. (0-9) July 6	Mildew (ears) First[a] Occurence (June)	Mildew (ears) Sev.(%) July 6	Eyespot[b]	Promptness[c] of spring growth (0-9)	Evaluation[c] of tillering (0-9)	Field evaluation[c] before winter (0-9)	Field evaluation[c] after winter (0-9)
Slavia (ST-VUR 37)	29	13	3	7	25	7	5	2	3	2	2
NR 73-5028 (Samson)	30	16	6	8	19	35	46	2	2	2	2
NR 72-837	25	13	1	2	25	10	55	4	0	0	1
Lindon	32	17	6	8	19	40	93	3	1	1	1
Martonvasari 4	28	4	6	7	23	10	22	1	3	2	2
Zg 887-73	34	.	0	0	.	2	9	2	3	2	2
CI 13449/Centurk	29	10	6	8	16	58	252	3	1	1	1
Mironovskaya 808	23	18	4	4	28	8	74	3	0	2	1
Ticonderoga	32	14	3	5	25	10	175	3	1	2	2
Disponent	30	8	7	8	23	25	12	4	1	1	1
F53-70	25	17	5	7	20	21	41	2	2	2	2
Iulia	25	7	7	8	20	16	14	2	2	2	1
Moslavka (Zg 4240-73)	28	.	0	0	25	3	7	1	4	1	2
Yubiley	25	11	6	8	24	11	19	2	3	2	2
Partizanka	27	16	6	8	20	18	13	1	3	2	2
Absolvent	21	10	6	7	18	31	17	1	3	1	2
F54-70	24	14	5	7	22	25	46	2	2	2	2
Slavyanka	27	16	4	7	26	7	13	1	4	2	3
Zlatoklasa (Zg 4364)	29	.	0	0	.	3	25	3	1	1	1
Blueboy	25	6	7	8	15	58	63	2	2	2	2
Sadovo-1	20	10	7	8	22	29	26	1	4	3	3
NE 73640	25	15	7	8	23	19	59	3	0	2	1
Newton (KS 73112)	29	10	7	9	13	60	135	2	2	3	2
Bezostaya 1	22	12	6	8	23	30	26	2	2	2	2
Krasnodarskaya 39	22	17	6	8	22	34	26	2	4	3	3
Zg 4293-73	27	.	0	0	.	0	7	2	4	2	3
Atlas 66	24	17	4	6	25	9	28	2	2	2	3
Lerma Rojo 64	24	12	7	9	15	13	11	1	6	1	5
Budifen	20	15	7	8	15	49	37	4	1	0	2
Nap Hal/Atlas 66	26	16	6	8	22	60	83	2	2	0	1
Mean	26.1	13	4.7	6.2	21	23.2	47.9	2.0	2.1	1.5	2.0
L.S.D. of cultivar means (.05)	3.7		0.7	0.6		11.0	34.6	0.6	1.1	1.2	0.9
Coefficient of variation (%)	9.9		11.1	6.6		33.8	51.4	21.6	36.1	55.8	30.7

[a] One replication only.

[b] Number of white ears per plot. July 17.

[c] 0 = Very quick spring growth, good tillering, very good state before winter and after winter.
9 = Very slow spring growth, poor tillering, bad general state before winter and after winter.

EAST GERMANY

Bohnshausen

COOPERATOR: A. Meinel.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 17, 1977.

PRECIPITATION DURING CYCLE OF TEST: 363.5 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 26 kg/ha; P = 120 kg/ha; K = 200 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was mild with late frosts occurring up to the middle of April. In general, the temperatures were unusually low up to the 20th of July.

DISEASE DEVELOPMENT: Powdery mildew infection was severe. There were moderate infections of Leaf rust and Glume blotch (Septoria nodorum). Present in slight amounts were Stripe rust, eyespot (Cercosperella herpotrichoides) and Fusarium culmorum.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 13, 1978.

AREA HARVESTED FOR YIELD: 7.43 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival
1000-kernel weight	.40**							
N	60							
Protein	-.52**	.01						
N	30	30						
Plant height	-.24	.28*	.36					
N	60	60	30					
Lodging	-.54**	.06	.62**	.56**				
N	60	60	30	60				
Flowering	-.16	.02	-.15	.49**	.20			
N	60	60	30	60	60			
Ripening	-.01	-.08	-.18	.11	-.03	.39**		
N	60	60	30	60	60	60		
Winter survival	.11	.23	.07	.21	.14	-.23	.00	
N	60	60	30	60	60	60	60	
Frost	-.31*	-.26*	-.05	-.13	.07	.05	.11	-.13
N	60	60	30	60	60	60	60	60

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

Table 20. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Bohnshausen, East Germany in 1978.[a/]

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	Stripe rust Sev. (%)	Stripe rust Resp.	Leaf rust Sev. (%)	Leaf rust Resp.	Mildew Sev. (0-9)	Septoria Sev. (0-9)
NR 72-837	74.0	44.0	10.7	89	0	163	212	68	3	0	-	0	-	4	2
Martonvasari 4	73.5	43.7	11.6	96	0	159	213	75	2	0	-	0	-	7	0
Slavia (ST-VUR 37)	69.3	47.3	10.9	93	0	162	216	88	3	0	-	2	R-MR	8	1
Zg 887-73	68.4	33.9	10.7	68	0	159	214	70	5	0	-	0	-	3	2
Ticonderoga	67.6	41.4	10.3	104	0	166	215	58	4	4	MR	4	MR-M	7	2
Slavyanka	63.1	46.5	12.8	85	10	158	215	70	4	0	-	0	-	7	2
Sadovo-1	62.6	48.2	10.8	90	5	159	214	78	3	0	-	0	-	8	1
Lindon	61.8	33.2	11.1	93	8	159	214	68	3	1	MR	0	-	7	2
Zlatoklasa (Zg 4364)	61.8	33.2	11.5	72	0	158	210	55	3	0	-	0	-	4	2
Yubiley	61.5	42.5	11.5	77	0	159	214	73	3	0	-	0	-	7	1
F54-70	59.9	44.0	13.9	107	3	160	215	75	3	0	-	0	-	7	1
Partizanka	59.9	36.7	12.2	85	8	159	215	65	2	0	-	0	-	7	1
NR 73-5028 (Samson)	59.5	34.5	12.5	90	10	160	213	68	3	0	-	1	MR	8	2
Disponent	58.0	38.4	11.6	101	30	171	218	70	3	0	-	0	-	8	4
Mironovskaya 808	56.6	50.0	12.0	125	60	166	211	80	3	0	-	0	-	3	1
Bezostaya 1	56.1	44.0	12.6	98	20	163	215	73	3	0	-	0	-	8	2
Moslavka (Zg 4240-73)	56.0	36.0	11.7	68	0	158	213	80	3	2	MR	2	MR	3	2
F53-70	55.4	43.8	13.6	106	33	160	210	80	3	0	-	0	-	7	1
Iulia	55.1	41.4	12.8	93	25	159	213	88	3	0	-	0	-	8	1
Newton (KS 73112)	52.3	34.0	12.4	92	5	159	209	63	3	0	-	0	-	9	0
CI 13449/Centurk	51.7	32.2	12.0	108	25	157	214	93	3	3	MR	1	R	7	2
NE 73640	49.2	38.9	15.2	101	50	159	212	78	2	0	-	0	-	8	2
Absolvent	48.2	43.8	12.4	93	30	157	213	78	3	0	-	0	-	8	2
Zg 4293-73	46.6	34.0	12.1	63	0	158	213	58	3	0	-	0	-	3	2
Blueboy	46.6	37.7	12.0	106	3	165	215	53	3	1	MR	0	-	9	2
Lerma Rojo 64	45.0	42.5	13.7	90	25	157	213	70	5	0	-	0	-	7	6
Krasnodarskaya 39	44.9	42.9	12.4	103	10	163	214	73	3	2	MR	1	MR	7	2
Budifen	38.3	26.4	10.2	95	10	167	216	60	5	0	-	0	-	8	4
Atlas 66	37.3	40.7	15.4	115	70	165	215	65	3	2	MR	0	-	6	3
Nap Hal/Atlas 66	33.5	28.4	14.9	104	50	163	214	80	4	2	R-MR	0	-	8	6
Mean	55.8	39.4	12.3	93.4	16.3	160.7	213.4	71.5	2.9	0.5		0.3		6.4	1.8
L.S.D. of cultivar means (.05)	7.3	2.6		6.0	21.6	2.3	1.4	N.S.	1.1	-		-		-	-
Coefficient of variation (%)	7.9	3.9		3.8	79.6	0.9	0.4	17.4	21.6	-		-		-	-

[a/] Two replications only.

ENGLAND

Cambridge

COOPERATOR(S): F. G. H. Lupton and R. H. Oliver.

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

PRECIPITATION DURING CYCLE OF TEST: 470.1 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 40.2 kg/ha; P = 8.8 kg/ha; K = 16.7 kg/ha; applied as a (16:8:8) compound.
Topdress: N = 60.2 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The growing season was generally cool and cloudy.

DISEASE DEVELOPMENT: Disease development was very good, since conditions were ideal.

INSECT, WEED OR PEST PROBLEMS: There was bird damage on the early varieties.

DATE OF HARVEST: Nursery was not harvested.

AREA HARVESTED FOR YIELD: ----

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Mildew - June 26, 1978
Mildew - July 9, 1978
Stripe rust - July 9, 1978
Lodging - July 9, 1978

Correlation Coefficients

No. of observations = 30	1000-kernel weight	Protein	Plant height	Lodging
Protein	-.07			
Plant height	.21	.17		
Lodging	.03	.17	.69**	
Flowering	.07	-.15	.28	.13

** Significant at the 1% level.

Table 21. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Cambridge, England in 1978.[a/]

Cultivars	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of Flowering days from Jan.1	Stripe rust Sev.(0-9)	Mildew Sev.(0-9)
F53-70	46.5	15.1	123	30	156	4	2
Blueboy	37.0	10.8	127	20	155	7	8
Krasnodarskaya 39	35.0	12.7	116	30	153	6	5
Atlas 66	41.0	12.3	147	70	156	5	2
Mironovskaya 808	56.0	12.7	135	70	153	2	2
F54-70	37.0	15.2	122	40	156	6	5
Lindon	30.0	12.2	108	50	154	7	2
Yubiley	52.0	12.6	90	20	154	4	3
Zg 887-73	32.5	13.1	86	10	151	8	3
Iulia	51.0	12.3	111	30	153	3	3
Moslavka (Zg 4240-73)	32.0	13.7	96	10	151	4	8
NE 73640	27.5	14.9	112	60	153	7	4
Bezostaya 1	52.5	14.2	117	40	156	3	8
Sadovo-1	53.5	12.8	106	20	153	1	6
Zlatoklasa (Zg 4364)	29.5	12.0	87	10	153	6	4
Zg 4293-73	31.0	12.6	81	10	151	4	2
Lerma Rojo 64	43.0	15.1	108	20	149	2	6
Martonvasari 4	47.0	12.7	121	30	153	2	2
Slavyanka	48.0	13.1	109	20	152	3	3
NR 72-837	51.0	11.9	94	10	157	2	2
Slavia (ST-VUR 37)	54.5	11.2	106	10	157	2	4
Ticonderoga	34.0	10.7	104	20	155	5	4
Disponent	41.5	12.6	107	10	160	2	4
Partizanka	37.5	12.4	115	10	155	4	3
Nap Hal/Atlas 66	35.0	17.6	118	20	156	4	4
NR 73-5028 (Samson)	31.5	13.0	108	30	154	3	4
Budifen	36.0	10.9	103	30	159	2	4
Newton (KS 73112)	44.0	14.4	108	30	153	3	9
Absolvent	43.5	13.9	114	50	158	4	9
CI 13449/Centurk	26.5	13.2	116	40	158	8	5
Mean	40.6	13.1	109.8	28.3	154.5	4.1	4.3
L.S.D. of cultivar means (.05)	-		-	-	-	-	-
Coefficient of variation (%)	-		-	-	-	-	-

[a/] One replication only.

FINLAND

Jokioinen

COOPERATOR(S): R. Manner.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 1, 1977.

PRECIPITATION DURING CYCLE OF TEST: 247 mm (May 1 to September 30, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 150 kg/ha; P = 47 kg/ha; K = 62 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The fall season was very rainy. Early May was very cold. There was a dry spell from mid-May to early June, but in late June and in August there was quite a lot of precipitation.

DISEASE DEVELOPMENT: There was a heavy incidence of winter diseases. Fusarium nivale was the worst.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 25, 1978.

AREA HARVESTED FOR YIELD: 2.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival	- May 3, 1978
Flowering	- June 16 to 26, 1978
Ripening	- August 15 to 24, 1978
Lodging	- August 24, 1978

Correlation Coefficients

N = No. of observations	Plant height	Flowering	Ripening
Flowering	-.36**		
N	53		
Ripening	-.44**	.82**	
N	53	53	
Winter survival	.63**	-.50**	-.45**
N	53	55	53

** Significant at the 1% level.

Table 22. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Jokioinen, Finland in 1978.

Cultivars	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Winter Survival %
F53-70	42	175	232	14
Blueboy	44	175	231	2
Krasnodarskaya 39	47	176	232	30
Atlas 66	.	.	.	0
Mironovskaya 808	61	170	229	69
F54-70	45	169	229	30
Lindon	43	173	231	5
Yubiley	.	.	.	0
Zg 887-73	.	.	.	0
Iulia	34	176	233	2
Moslavka (Zg 4240-73)	.	.	.	0
NE 73640	40	173	229	13
Bezostaya 1	42	177	233	8
Sadovo-1	.	177	.	0
Zlatoklasa (Zg 4364)	.	.	.	0
Zg 4293-73	.	.	.	0
Lerma Rojo 64	.	.	.	0
Martonvasari 4	40	174	232	9
Slavyanka	45	177	233	0
NR 72-837	.	.	.	0
Slavia (ST-VUR 37)	46	177	236	2
Ticonderoga	46	174	232	2
Disponent	43	177	234	1
Partizanka	37	177	235	2
Nap Hal/Atlas 66	.	.	.	0
NR 73-5028 (Samson)	.	.	.	0
Budifen	.	.	.	0
Newton (KS 73112)	33	172	230	4
Absolvent	43	177	233	8
CI 13449/Centurk	35	176	231	1
Mean	42.9	174.3	231.5	6.6
L.S.D. of cultivar means	11.2	4.2	N.S.	9.2
Coefficient of variation (%)	18.1	1.7	1.0	98.8

FRANCE

Orgerus

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

DATE OF PLANTING (EFFECTIVE GERMINATION): November 8, 1977.

PRECIPITATION DURING CYCLE OF TEST: 628.6 mm.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 136 kg/ha; P = 33 kg/ha; K = 33 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were those of a normal year.

DISEASE DEVELOPMENT: Not reported.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: August 28, 1978.

AREA HARVESTED FOR YIELD: 11.25 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 30	Yield	Protein
Protein	-.33	
Flowering	-.02	.00

Table 23. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Orgerus, France in 1978.

Cultivar	Yield q/ha	Protein %	Date of flowering[a] days from Jan. 1
Sadovo-1	86.8	13.3	149
Blueboy	85.2	10.8	155
Yubiley	85.1	12.9	152
NR 72-837	82.5	13.8	159
Slavia (ST-VUR 37)	81.3	11.9	157
Partizanka	79.3	14.4	153
Martonvasari 4	79.1	13.5	152
Disponent	76.5	14.5	163
Absolvent	75.9	14.2	154
Slavyanka	72.9	14.2	151
Moslavka (Zg 4240-73)	72.8	12.8	145
Zlatoklasa (Zg 4364)	72.4	12.4	150
Iulia	71.6	13.8	151
F53-70	69.8	15.9	155
Bezostaya 1	69.1	14.2	153
Newton (KS 73112)	68.0	13.9	152
NR 73-5028 (Samson)	67.6	14.2	152
Mironovskaya 808	65.9	13.5	159
Zg 4293-73	65.6	13.0	148
F54-70	63.7	16.1	153
Lerma Rojo 64	62.8	14.1	142
Zg 887-73	62.0	13.2	152
Atlas 66	61.6	15.5	154
Ticonderoga	59.8	11.4	160
Budifen	58.0	12.2	161
Lindon	56.9	12.6	152
CI 13449/Centurk	56.8	13.3	154
Krasnodarskaya 39	47.7	13.6	157
Nap Hal/Atlas 66	47.0	17.7	157
NE 73640	43.6	14.4	153
Mean	68.2	13.7	153.5
L.S.D. of cultivar means (.05)	10.4		-
Coefficient of variation (%)	10.9		-

[a] One replication only.

Table 24. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Thessaloniki, Greece in 1978.[a/]

Cultivars	Yield g	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Mildew Sev. (0-9)
F53-70	52.5	94	126	165	5
Blueboy	57.5	101	128	166	7
Krasnodarskaya 39	30.0	89	131	162	5
Atlas 66	57.5	101	133	168	5
Mironovskaya 808	30.0	101	136	166	5
F54-70	57.5	95	128	166	6
Lindon	62.5	93	126	162	6
Yubiley	72.5	92	124	161	6
Zg 887-73	110.0	83	121	160	2
Iulia	45.0	93	121	161	6
Moslavka	92.5	76	116	161	2
NE 73640	45.0	91	129	165	6
Bezostaya 1	70.0	102	128	165	7
Sadovo-1	100.0	90	123	160	7
Zlatoklasa	90.0	78	120	163	2
Zg 4293-73	47.5	70	118	161	2
Lerma Rojo 64	100.0	93	115	161	6
Martonvasari 4	37.5	100	124	161	5
Slavyanka	36.3	97	121	161	5
NR 72-837	32.5	74	138	168	5
Slavia	22.5	83	136	167	6
Ticonderoga	52.5	88	137	168	7
Disponent	32.5	85	141	171	6
Partizanka	50.0	90	125	162	6
Nap Hal/Atlas 66	37.5	95	135	168	5
NR 73-5028 (Samson)	101.3	88	125	160	4
Budifen	52.5	83	136	169	8
Newton	40.0	88	130	164	8
Absolvent	55.0	87	127	164	6
CI 13449/Centurk	52.5	96	128	162	6
Mean	57.6	89.7	127.4	163.9	5.4
L.S.D. of cultivar means (.05)	28.8	10.4	2.2	-	-
Coefficient of variation (%)	35.6	8.3	1.2	-	-

[a/] Data were provided by Prof. Elpis Skorda.

HUNGARY

Martonvasar

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

DATE OF PLANTING (EFFECTIVE GERMINATION): October 8, 1977.

PRECIPITATION DURING CYCLE OF TEST: 420 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 170 kg/ha; P = 170 kg/ha; K = 170 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was mild while the spring season was rather cold. There was above average rainfall during June which caused lodging.

DISEASE DEVELOPMENT: Powdery mildew, Leaf rust, and Stem rust were all present at moderate levels.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 31, 1978.

AREA HARVESTED FOR YIELD: 5.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Powdery mildew - June 9, 1978
Lodging - June 22, 1978
Leaf rust - June 22, 1978
Stem rust - July 6, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering
Test weight	.31**						
N	120						
1000-kernel weight	.45**	.73**					
N	120	120					
Protein	-.18	.33	-.05				
N	30	30	30				
Plant height	-.24	.21	.18	.08			
N	60	60	60	30			
Lodging	-.51**	.09	-.14	.31	.59**		
N	30	30	30	30	30		
Flowering	-.33**	-.14	.05	.11	.14	.29	
N	120	120	120	30	60	30	
Ripening	-.23	-.29	-.31	.12	.34	.11	-.03
N	30	30	30	30	30	30	30

** Significant at the 1% level.

Table 25. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Martonvasar, Hungary in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of[a] Flowering (days from Jan. 1)	Date of[a] Ripening (days from Jan. 1)	Stripe rust[a] Sev. (%)	Stripe rust[a] Resp.	Leaf rust[a] Sev. (%)	Leaf rust[a] Resp	Mildew Sev. (0-9)
NR 72-837	74.0	76.6	42.6	14.3	90	30	158	204	10	MR	0	-	4
Ticonderoga	65.6	67.7	31.8	12.9	102	10	158	205	80	S	30	MS	5
Zlatoklasa (Zg 4364)	64.9	75.8	33.6	14.0	84	0	153	198	1	VR	1	MR	1
NR 73-5028 (Samson)	64.8	77.5	36.6	14.3	92	60	155	201	35	MS	1	MR	5
Zg 887-73	64.1	73.6	31.0	14.4	79	10	154	202	1	R	0	-	1
Zg 4293-73	63.9	75.3	32.6	14.1	73	0	153	198	-	VR	0	-	1
Martonvasari 4	63.2	80.6	40.3	14.3	102	20	155	201	40	MS	10	MS	7
Moslavka (Zg 4240-73)	60.6	73.2	33.6	13.9	77	0	153	198	1	R	0	-	1
Slavyanka	59.4	81.6	43.4	15.1	102	0	154	199	10	MR	5	MS	6
Slavia (ST-VUR 37)	58.7	74.3	41.4	13.3	95	10	158	205	40	MS	0	R	5
NE 73640	56.9	80.9	39.8	15.5	105	80	155	203	50	S	1	MR	8
Yubiley	56.4	78.3	41.4	14.5	90	10	154	198	30	MS	0	-	7
F53-70	56.0	79.6	37.9	15.7	107	10	154	202	30	MS	5	MR	6
F54-70	55.2	80.8	39.3	16.4	102	90	154	201	40	MS	1	R	5
Iulia	54.6	79.3	40.5	14.6	95	0	154	200	20	MS	0	-	7
Mironovskaya 808	52.9	76.4	40.5	14.9	124	99	162	208	50	MS	10	MS	4
Absolvent	52.0	79.4	41.8	14.3	96	50	155	201	10	MR	0	M	7
Partizanka	51.8	79.9	37.5	13.8	93	0	155	202	5	R	0	-	7
CI 13449/Centurk	51.7	73.1	32.3	14.6	104	90	155	200	10	MR	10	MS	7
Sadovo-1	50.4	78.0	47.0	13.3	98	0	153	199	50	S	15	MS	8
Atlas 66	49.6	78.9	39.0	13.6	109	90	158	205	90	S	1	R	5
Bezostaya 1	45.8	79.0	42.4	14.3	98	30	156	202	50	MS	1	MR	7
Blueboy	45.0	70.8	30.6	13.2	107	90	156	202	60	MS	5	MR	8
Krasnodarskaya 39	44.0	77.6	37.0	13.3	111	90	156	202	70	S	5	R	8
Newton (KS 73112)	42.3	73.3	29.1	14.7	96	70	152	197	5	MR	0	R	9
Disponent	39.0	71.7	28.4	15.1	94	10	160	206	5	MR	20	S	7
Lerma Rojo 64	38.3	78.0	43.0	14.9	93	80	178	192	5	R	5	MS	9
Lindon	35.8	75.8	27.9	13.9	105	90	154	201	40	S	1	R	8
Nap Hal/Atlas 66	35.7	77.1	25.6	19.3	95	90	159	208	20	MS	0	-	7
Budifen	25.6	62.4	20.6	13.1	89	0	160	208	5	R	1	MR	8
Mean	52.6	76.2	36.3	14.5	96.6	40.3	156.3	201.6	29.8		4.3		5.8
L.S.D. of cultivar means (.05)	9.0	1.5	2.3		7.2	-	0.7	-	-		-		-
Coefficient of variation (%)	12.2	1.4	4.4		3.7	-	0.3	-	-		-		-

[a] One replication only.

HUNGARY

Szeged

COOPERATOR(S): Z. Barabas and I. Szaniel.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 23, 1977.

PRECIPITATION DURING CYCLE OF TEST: 619.5 mm (September 1, 1977 - July 31, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: None.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were mild and dry throughout most of the winter and spring. The summer was slightly wetter than usual.

DISEASE DEVELOPMENT: There was average rust infection, but the Powdery mildew infection was quite severe.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 30, 1978.

AREA HARVESTED FOR YIELD: 2 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Powdery mildew - June 5, 1978
Plant height - June 20, 1978
Lodging - June 29, 1978
Rusts - June 29, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height
Test weight	.32**				
N	120				
1000-kernel weight	.42**	.63**			
N	120	120			
Protein	-.20	.21	.15		
N	30	30	30		
Plant height	.10	.29**	.29**	.31	
N	120	120	120	30	
Flowering	-.26**	-.43**	-.16	.15	.11
N	120	120	120	30	120

** Significant at the 1% level.

Table 26. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Szeged, Hungary[a/].

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering: days from Jan. 1	Leaf rust: Sev. (%)	Leaf rust: Resp.	Mildew Sev.(0-9)	Septoria Sev.(0-9)
Mironovskaya 808	59.1	77.8	42.0	16.3	134	152	4	MR	5	2
Atlas 66	57.2	78.3	38.2	19.5	134	152	4	MR-MS	5	2
Iulia	57.1	81.4	40.3	15.4	103	148	3	MR	7	2
Slavyanka	57.0	79.9	42.2	15.7	110	149	28	MR-MS	7	0
NR 72-837	56.1	76.3	43.4	15.9	100	155	2	MR-MS	8	0
Zlatoklasa (Zg 4364)	55.7	74.2	31.2	15.2	90	148	0	O-R	4	7
Lerma Rojo 64	53.3	78.0	39.8	15.6	109	141	10	MR	7	0
Slavia (ST-VUR 37)	52.9	76.8	43.6	15.1	110	152	23	O-MR	7	0
Yubiley	52.7	78.3	39.0	15.1	98	149	1	O-MR	7	4
Absolvent	52.1	80.1	43.4	16.5	106	151	10	MR-MS	7	4
Sadovo-1	51.8	78.2	42.6	14.2	104	148	23	MR-MS	9	4
Bezostaya 1	51.4	80.4	40.8	15.0	108	151	4	MR-MS	8	0
NR 73-5028 (Samson)	51.0	74.2	30.5	14.6	103	149	23	MS	9	0
Ticonderoga	49.2	70.3	33.6	14.3	115	155	60	MS-S	5	0
Zg 887-73	48.8	72.2	28.0	15.4	89	149	0	-	0	9
CI 13449/Centurk	47.6	73.5	29.5	15.8	119	151	24	MR-MS	8	0
NE 73640	46.9	79.4	35.2	16.8	113	147	0	-	8	4
Martonvasari 4	46.8	80.6	42.4	15.1	110	149	28	MR	8	0
F53-70	46.0	79.8	42.2	17.1	120	148	1	O-MR	6	3
F54-70	45.6	78.4	35.9	17.6	118	147	1	O-MR	7	0
Zg 4293-73	45.6	74.4	30.9	15.4	79	147	0	O-R	4	9
Moslavka (Zg 4240-73)	44.4	71.8	29.9	14.2	86	147	1	O-MR	3	7
Blueboy	44.3	76.0	36.0	14.2	124	150	0	-	9	4
Lindon	41.9	76.6	28.9	14.8	109	148	4	O-MR	8	6
Newton (KS 73112)	41.3	80.2	33.8	16.1	111	148	1	O-MR	9	0
Nap Hal/Atlas 66	41.3	79.8	29.4	15.4	120	154	8	MR-MS	6	0
Partizanka	40.3	80.7	34.6	17.2	100	151	1	O-MR	8	0
Disponent	34.4	67.9	31.6	17.2	105	161	1	O-MR	7	0
Krasnodarskaya 39	32.2	79.3	39.1	15.5	114	150	8	MR-MS	8	3
Budifen	26.7	68.1	26.0	15.6	99	157	1	O-MR	7	5
Mean	47.7	76.8	36.1	15.7	107.8	150.0	8.9		6.6	2.5
L.S.D. of cultivar means (.05)	12.8	2.5	2.9		6.1	2.1	-		-	-
Coefficient of variation (%)	19.0	2.3	5.7		4.0	1.0	-		-	-

[a/] All plots were lodged badly.

IRAN

Hamadan

COOPERATOR(S): M. R. Eslampour and H. Kaveh.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 24, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter and spring were mild, with no frost damage.

DISEASE DEVELOPMENT: There were few, if any, diseases of consequence.

INSECT, WEED OR PEST PROBLEMS: Birds were a problem in the nursery area.

DATE OF HARVEST: July 22, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 120	Yield	Plant height	Flowering	Ripening
Plant height	.32**			
Flowering	-.01	-.03		
Ripening	-.11	-.08	.68**	
Shattering	-.49**	-.18	.01	.09

** Significant at the 1% level.

Table 27. Agronomic data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Hamadan, Iran in 1978.

Cultivar	Yield	Plant height	Date of Flowering	Date of Ripening	Shattering
	q/ha	cm	days from Jan. 1		%
Blueboy	59.9	88	140	191	0
Budifen	53.7	71	143	192	0
NR 73-5028 (Samson)	53.4	72	138	190	0
Newton (KS 73112)	53.3	81	137	188	0
CI 13449/Centurk	52.7	79	141	193	0
Iulia	51.2	82	136	188	0
NR 72-837	51.2	67	143	193	0
Ticonderoga	50.8	70	141	192	0
Slavia (ST-VUR 37)	50.0	76	141	193	0
Mironovskaya 808	49.9	90	141	191	0
Martonvasari 4	49.1	85	137	189	0
F53-70	48.3	92	143	193	1
Slavyanka	48.0	86	136	188	0
Partizanka	47.5	75	138	192	0
Absolvent	47.4	86	141	190	0
Lindon	47.0	78	142	194	0
Lerma Rojo 64	46.5	88	135	186	0
NE 73640	46.4	78	138	188	0
Zg 887-73	45.0	64	138	191	0
Krasnodarskaya 39	44.1	76	143	193	0
Disponent	41.2	68	146	195	0
Bezostaya 1	40.6	75	140	191	0
F54-70	40.4	81	142	194	1
Atlas 66	37.2	96	140	191	0
Zlatoklasa (Zg 4364)	37.0	66	137	189	1
Yubiley	34.1	77	139	190	5
Sadovo-1	32.9	68	140	192	3
Zg 4293-73	32.5	56	137	188	1
Moslavka (Zg 4240-73)	25.4	67	137	189	10
Nap Hal/Atlas 66	23.3	71	145	195	9
Mean	44.7	76.9	139.7	190.8	1.0
L.S.D. of cultivar means (.05)	9.9	7.8	2.1	3.4	4.4
Coefficient of variation (%)	15.7	7.2	1.1	1.2	302.1

IRAN

Karaj

COOPERATOR: H. Kaveh.

DATE OF PLANTING (EFFECTIVE GERMINATION): Not reported.

PRECIPITATION DURING CYCLE OF TEST: 253 mm.

AMOUNT OF IRRIGATION APPLIED: Six applications (amount not reported).

FERTILIZER USED: N = 120 kg/ha; P = 60 kg/ha. Urea and Ammonium phosphate were used.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Fall rains postponed the planting date. The winter and spring were warm and dry. The summer was cool, however.

DISEASE DEVELOPMENT: There was a new (unidentified) disease occurrence in the nursery. Symptoms included dwarfing, leaf striping, and later, leaf yellowing.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: Not reported.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

No. of observations = 120	Yield	Plant height	Flowering
Plant height	.04		
Flowering	-.14	.31**	
Ripening	-.05	.27**	.29**

** Significant at the 1% level.

Table 28. Agronomic data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Karaj, Iran in 1978.

Cultivar	Yield q/ha	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1
Sadovo-1	56.9	88	129	174
Yubiley	55.4	76	129	175
Budifen	50.9	86	130	188
Lerma Rojo 64	50.8	94	126	174
Zg 887-73	50.4	74	128	175
Absolvent	50.0	88	130	175
CI 13449/Centurk	49.3	95	130	185
Lindon	49.0	89	128	179
Slavyanka	48.2	85	129	175
Slavia (ST-VUR 37)	47.1	85	130	181
NR 73-5028 (Samson)	47.0	80	128	174
Bezostaya 1	46.6	94	132	178
Blueboy	46.0	98	133	179
Martonvasari 4	45.5	90	129	177
Atlas 66	45.5	113	131	179
F53-70	45.3	95	130	179
Newton (KS 73112)	45.1	94	130	177
NR 72-837	44.8	81	130	184
Disponent	44.7	90	130	185
NE 73640	44.7	90	130	180
Partizanka	44.5	85	129	175
Krasnodarskaya 39	44.4	91	130	178
Moslavka (Zg 4240-73)	44.1	69	128	174
Zlatoklasa (Zg 4364)	43.8	73	129	174
Mironovskaya 808	42.5	109	131	176
Zg 4293-73	41.3	60	128	174
Ticonderoga	38.8	89	131	179
F54-70	36.8	94	132	179
Nap Hal/Atlas 66	36.4	96	132	179
Iulia	34.8	83	128	178
Mean	45.7	87.7	129.5	178.0
L.S.D. of cultivar means (.05)	N.S.	9.9	2.7	0.8
Coefficient of variation (%)	21.0	8.0	1.5	0.3

IRAQ

Sulaimaniya

COOPERATOR(S): A. I. Alaka, M. M. Said, and T. A. J. Tabrah.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 25, 1977.

PRECIPITATION DURING CYCLE OF TEST: 596 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 80 kg/ha; P = 80 kg/ha. Ammonium sulfate and Superphosphate were used.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Temperature means were above average during the test cycle in general. The winter was mild, and there were adequate well distributed rains. From mid-March to the end of April, there was a drought period which hastened the maturation of the crop.

DISEASE DEVELOPMENT: The drought period precluded any significant disease build-up.

INSECT, WEED OR PEST PROBLEMS: The trial was weeded by hand on two occasions.

DATE OF HARVEST: June 26, 1978.

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	Plant height	Lodging	Flowering
Test weight	.04					
N	30					
1000-kernel weight	.39*	.33				
N	30	30				
Plant height	-.00	.35	.03			
N	120	30	30			
Lodging	.00	.14	.12	.21*		
N	120	30	30	120		
Flowering	-.53**	-.37*	-.18	-.01	.03	
N	120	30	30	120	120	
Ripening	-.40**	-.28	-.14	.02	.05	.70**
N	120	30	30	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 29. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery at Sulaimaniya, Iraq in 1978.

Cultivar	Yield q/ha	Test weight[a] kg/hl	1000 kernel weight[a] g	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1
Zg 887-73	44.1	75.0	27.9	73	0	112	147
Lerma Rojo 64	42.8	79.0	26.3	111	0	99	136
Partizanka	42.2	71.0	30.0	95	0	119	150
NR 73-5028 (Samson)	41.0	79.0	31.4	99	0	114	147
Moslavka (Zg 4240-73)	39.5	76.0	29.8	79	0	112	146
Martonvasari 4	39.4	79.0	32.0	108	2	117	145
Yubiley	39.0	78.0	33.7	86	13	119	152
CI 13449/Centurk	38.6	72.0	24.9	106	1	120	152
Blueboy	37.5	75.0	29.6	106	0	119	152
Lindon	36.0	80.0	24.7	94	0	119	152
Sadovo-1	35.5	79.0	41.8	93	0	116	150
Slavyanka	35.5	80.0	33.4	100	0	115	150
Absolvent	35.0	80.0	24.5	108	4	120	145
Zlatoklasa (Zg 4364)	34.4	76.0	29.3	68	0	118	150
Iulia	33.5	79.0	33.5	89	1	121	146
Krasnodarskaya 39	33.4	79.0	30.4	103	8	122	154
Ticonderoga	33.4	74.0	28.5	88	0	124	155
Bezostaya 1	32.8	80.5	34.2	104	0	119	152
Zg 4293-73	32.7	76.0	27.2	65	0	115	147
Newton (KS 73112)	31.0	80.0	29.7	88	0	119	151
Budifen	30.6	73.0	26.2	86	0	122	155
Slavia (ST-VUR 37)	29.6	74.0	34.7	86	0	123	155
NE 73640	29.2	79.0	27.8	100	0	119	152
NR 72-837	28.1	72.0	26.3	79	0	126	157
Atlas 66	27.1	76.0	25.5	118	11	120	153
F53-70	26.6	79.0	31.3	101	0	124	155
Disponent	26.1	72.0	22.2	85	0	130	161
F54-70	25.5	78.0	30.4	100	0	124	156
Mironovskaya 808	23.3	75.0	31.0	120	3	124	156
Nap Hal/Atlas 66	17.7	77.0	20.0	101	0	123	154
Mean	33.4	76.8	29.3	94.5	1.4	119.0	151.0
L.S.D. of cultivar means (.05)	7.8	-	-	9.2	7.2	2.2	6.3
Coefficient of variation (%)	16.7	-	-	6.9	358.6	1.3	3.0

Table 30. Agronomic and disease data for the cultivars in the Tenth International Winter Wheat Performance Nursery grown at Bet-Dagan, Israel in 1978. 1/

Cultivar	Growth habit	Plant height (cm)	Days to heading (from Jan.1)	Septoria: % leaf area with pycnidia (F,F-1,F-2,F-3)	Septoria: Progress coefficient 2/	Rusts: Stripe Sev(%)	Rusts: Stripe Resp.	Rusts: Leaf Sev(%)	Rusts: Leaf Resp.	Rusts: Stem Sev(%)	Rusts: Stem Resp.
F 53-70	W	105	129	1.5	0.305	0		5	MS	20	S
Blueboy	W	110	116	27.5	0.682	10	S	80	VS	10	S
Krasnodarskaya 39	W	105	116	2.8	0.343	60	S	30	S	20	S
Atlas 66	W	115	124	15.0	0.496	80	VS	0		20	S
Mironovskaya 808	W	125	140	1.5	0.272	10	S	10	MS	40	S
8828-233 (check)	S	80	94	90.0	0.938	0		20	S	0	
F54-70	W	105	130	1.5	0.305	20	S	5	S	30	VS
Lindon	W	100	106	8.8	0.500	20	S	40	S	5	S
Yubiley	W	75	100	82.5	0.867	0		0		0	
Zg 887-73	W	72	99	87.5	0.778	50	S	0		0	
Giorgio 331 (Durum check)	S	90	129	77.5	0.889	0		0		0	
Iulia	W	90	100	1.5	0.333	0		20	S	50	S
Moslavka (Zg 4240-73)	W	65	96	82.5	0.769	0		0		0	
NE 73640	W	110	105	4.0	0.400	50	S	t	S	10	S
Bezostaya 1	W	85	114	4.0	0.612	0		20	S	50	S
8828-233 (check)	S	65	95	87.5	0.923	0		20	S	0	
Sadovo-1	W	85	97	16.3	0.706	0		50	S	10	S
Zlatoklasa (Zg 4364)	W	70	99	80.0	0.786	5	MR	0		0	
Zg 4293-73	W	55	109	90.0	0.909	0		0		0	
Lerma Rojo 64	S	85	111	87.5	0.918	0		0		0	
Titan (check)	S	140	128	1.5	0.229	10	S	0		10	S
Martonvasari 4	W	90	99	9.0	0.722	0		10	MS	40	S
Slavyanka	W	85	100	4.0	0.494	0		20	S	20	S
NR 72-837	W	85	145	11.3	0.706	0		30	S	50	S
Slavia	W	90	116	21.3	0.556	0		80	VS	20	MS
8828-233 (check)	S	70	94	90.0	0.857	0		40	S	0	
Ticonderoga	W	100	140	1.5	0.320	30	S	60	VS	40	S
Disponent	W	110	140	0.3	0.273	0		0		20	MS
Partizanka	W	75	101	16.3	0.800	0		0		10	S
Nap Hal/Atlas 66	W	110	135	1.5	0.291	70	S	0		40	S
Lee x Kvz/CC-Ron-cha (check)	S	90	106	20.0	0.867	0		0		0	
Samson	W	80	106	35.0	0.850	30	S	10	S	10	MS
Budifen	W	100	133	3.8	0.380	0		50	S	5	MS
Newton	W	120	137	7.8	0.375	10	S	70	S	10	S
Absolvent	W	90	106	9.0	0.722	0		10	MS	50	S
8828-233 (check)	S	75	94	90.0	0.933	0		60	S	0	
CI 13449/Centurk	W	110	123	16.3	0.636	80	S	60	S	10	S

1/ Data provided by Dr. Zahir Eyal, Tel-Aviv University.

2/ Septoria Progress Coefficient; Disease height/Plant height.

ITALY

Milano

COOPERATOR: B. Borghi.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 25, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 92 kg/ha; P = 100 kg/ha; K = 92 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There were heavy rains in October and again during the spring. The spring rains caused extensive lodging.

DISEASE DEVELOPMENT: Not reported.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 20, 1978.

AREA HARVESTED FOR YIELD: 10.20 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
Test weight	.22*				
N	120				
1000-kernel weight	.51**	.64**			
N	120	120			
Protein	-.57**	.11	-.22		
N	30	30	30		
Plant height	-.19*	.25**	.18*	-.12	
N	120	120	120	30	
Flowering	-.21*	-.11	.01	-.01	.33**
N	120	120	120	30	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 31. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Milano, Italy in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Date of flowering days from Jan. 1
Yubiley	66.4	77.6	41.1	13.6	94	137
NR 72-837	65.5	76.6	43.1	14.0	85	144
Absolvent	63.2	80.7	43.5	14.8	104	139
Moslavka (Zg 4240-73)	61.7	70.9	32.6	13.5	85	132
Sadovo-1	61.2	76.2	46.1	12.1	104	135
Ticonderoga	59.4	68.4	32.6	11.9	104	146
Slavyanka	59.0	77.8	41.1	14.7	104	136
Slavia (ST-VUR 37)	58.4	72.9	39.6	12.8	108	145
NR 73-5028 (Samson)	57.3	77.6	34.7	12.2	99	135
Zlatoklasa (Zg 4364)	57.2	72.3	29.3	13.5	83	133
Martonvasari 4	56.6	78.6	40.3	13.7	109	136
Blueboy	55.3	72.8	33.8	10.5	110	139
F53-70	54.9	75.3	36.7	13.9	111	138
Iulia	54.4	79.2	41.1	14.5	99	133
Zg 887-73	54.3	70.9	30.0	14.3	85	132
Partizanka	53.7	80.2	40.2	13.9	93	138
Zg 4293-73	52.0	71.0	28.7	14.7	71	133
Bezostaya 1	51.0	79.0	43.2	13.6	104	139
Lindon	49.7	76.5	27.8	12.8	106	137
CI 13449/Centurk	48.4	72.4	31.6	14.0	113	139
F54-70	48.1	78.4	36.0	14.3	111	139
Krasnodarskaya 39	44.6	76.5	37.4	12.9	110	143
Newton (KS 73112)	43.2	77.2	34.6	13.7	99	136
Lerma Rojo 64	42.9	74.1	36.2	15.5	96	120
Mironovskaya 808	42.5	74.3	36.2	13.9	133	146
Atlas 66	41.5	77.3	35.6	15.2	125	136
NE 73640	37.2	77.6	36.0	16.1	105	138
Disponent	36.0	73.5	40.1	15.6	99	148
Nap Hal/Atlas 66	31.1	77.7	28.6	18.5	104	143
Budifen	20.6	66.0	20.2	14.9	93	144
Mean	50.9	75.3	35.9	14.0	101.4	137.9
L.S.D. of cultivar means (.05)	7.4	1.9	3.4		5.8	1.9
Coefficient of variation (%)	10.3	1.8	6.8		4.0	1.0

ITALY

Rieti

COOPERATOR(S): G. Zitelli and E. Biancolatte.

DATE OF PLANTING (EFFECTIVE GERMINATION): December 22, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: N = 112 kg/ha; P = 92 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 16, 1978.

AREA HARVESTED FOR YIELD: 10.0 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	.04					
N	120					
1000-kernel weight	.43**	.41**				
N	120	120				
Protein	-.12	.42*	-.04			
N	30	30	30			
Plant height	.23*	.46**	.34**	.22		
N	120	120	120	30		
Flowering	-.17	.07	-.06	.16	.32**	
N	120	120	120	30	120	
Ripening	-.09	.01	.00	.20	.34	.80**
N	120	120	120	30	120	120

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

Table 32. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Rieti, Italy in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering: days from Jan. 1	Date of Ripening: days from Jan. 1	Stripe rust Sev.(%)	Leaf rust Sev.(%)	Stem rust Sev.(%)
Yubiley	35.1	79.1	38.5	10.0	71	143	196	0	10	18
Slavia (ST-VUR 37)	34.2	75.1	41.1	9.4	76	151	199	0	58	15
Budifen	32.8	77.6	36.8	9.5	77	155	201	0	35	28
Sadovo-1	32.3	80.7	48.9	10.8	74	141	196	0	30	20
Partizanka	30.3	82.2	37.5	10.2	76	144	196	8	8	20
Lindon	30.0	81.1	31.9	10.2	75	145	196	0	13	30
Moslavka (Zg 4240-73)	28.5	73.3	33.3	10.8	57	137	196	0	13	3
Zg 887-73	27.7	74.3	33.0	10.1	54	143	196	0	3	0
Martonvasari 4	27.4	81.8	41.0	10.5	87	144	197	0	33	63
NR 73-5028 (Samson)	27.3	81.6	41.4	10.6	71	146	196	0	30	35
Disponent	26.8	79.2	36.5	10.7	79	157	203	0	38	0
Bezostaya 1	26.0	82.0	39.5	11.2	83	148	199	5	28	38
Iulia	24.5	81.4	43.9	12.7	72	144	196	5	23	3
Atlas 66	24.5	81.3	36.6	13.1	104	150	199	0	23	38
Lerma Rojo 64	24.3	80.9	42.6	11.7	83	134	196	0	0	5
NR 72-837	24.2	78.6	45.3	12.8	68	155	201	0	15	43
Ticonderoga	23.8	73.6	33.0	9.4	79	153	200	25	45	73
F54-70	23.6	81.6	38.6	12.4	80	149	199	0	18	55
Mironovskaya 808	22.9	80.7	42.9	10.3	101	153	200	0	20	38
Absolvent	22.7	81.8	41.6	9.7	78	148	198	0	8	43
Newton (KS 73112)	22.5	82.2	39.5	11.4	72	147	196	0	13	20
F53-70	21.6	80.9	39.1	12.2	73	148	199	0	8	38
Zlatoklasa (Zg 4364)	21.3	75.6	33.4	10.6	52	142	196	5	5	3
Slavyanka	21.1	81.4	38.3	10.5	79	143	197	30	5	23
Zg 4293-73	18.6	74.8	31.8	10.8	49	139	196	0	15	0
NE 73640	18.2	81.3	35.0	13.0	77	149	198	0	0	0
Blueboy	16.7	77.0	36.2	10.0	77	150	199	5	45	55
Nap Hal/Atlas 66	15.9	81.9	29.8	16.1	77	153	200	0	0	13
CI 13449/Centurk	14.7	74.6	29.7	9.6	78	147	197	13	0	13
Krasnodarskaya 39	12.0	80.0	33.7	10.4	73	151	199	10	23	55
Mean	24.4	79.2	37.7	11.0	74.9	146.8	197.7	3.5	18.6	26.0
L.S.D. of cultivar means (.05)	10.2	1.4	3.7		9.6	2.0	1.4	-	-	-
Coefficient of variation (%)	29.8	1.3	7.0		9.1	1.0	0.5	-	-	-

JAPAN

Morioka

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

DATE OF PLANTING (EFFECTIVE GERMINATION): September 22, 1977.

PRECIPITATION DURING CYCLE OF TEST: 735.5 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 80 kg/ha; P = 128 kg/ha; K = 96 kg/ha as (10:16:12) compound.
Topdress: N = 20 kg/ha as Ammonium sulfate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The duration of the snow cover was a little shorter than the normal year.

DISEASE DEVELOPMENT: Infection of Leaf rust was later and lighter than usual.

INSECT, WEED OR PEST PROBLEMS: There was slight damage by rats during the winter.

DATE OF HARVEST: July 13 and 18, 1978.

AREA HARVESTED FOR YIELD: 1.98 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival	- April 11, 1978
Mildew	- June 2 and 23, 1978
Lodging	- June 14, 1978
Leaf rust	- June 29, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.47**							
N	116							
1000-kernel weight	.40**	.57**						
N	116	116						
Protein	-.54**	-.13	-.18					
N	29	29	29					
Plant height	.52**	.38**	.31**	.25				
N	120	116	116	29				
Lodging	.21*	.15	-.13	.16	.73**			
N	120	116	116	29	120			
Flowering	.35**	-.10	-.01	-.07	.44**	.17		
N	120	116	116	29	120	120		
Ripening	.31**	-.08	.14	-.08	.43**	.21*	.56**	
N	120	116	116	29	120	120	120	
Winter survival	.45**	.45**	.36**	.21	.48**	.25	.08	.13
N	60	58	58	29	60	60	60	60

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

Table 33. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Morioka Iwate, Japan in 1978.

Cultivar	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Date of Flowering	Date of Ripening	Winter survival[a/]	Leaf rust		Mildew
	q/ha	kg/hl	g	%	cm	%	days from Jan. 1		%	Sev.(%)	Resp.	Sev.(0-9)
Disponent	42.9	79.2	33.1	19.5	115	8	167	200	100	0	-	0
NR 72-837	39.7	80.0	40.5	17.3	102	1	163	197	96	0	R	0
Slavia (ST-VUR 37)	38.8	79.6	38.2	15.9	110	30	162	196	100	2	R-MR	2
Partizanka	38.6	83.8	34.5	17.2	104	22	162	194	100	0	-	4
Martonvasari 4	38.4	81.8	37.6	18.3	117	29	158	192	100	3	M	3
Slavyanka	38.2	81.4	38.2	18.6	113	14	160	193	100	0	-	3
Yubiley	37.8	81.0	36.8	18.8	100	3	160	192	100	0	-	3
Sadovo-1	37.2	83.1	44.2	16.5	105	8	158	192	100	5	M-MS	4
Ticonderoga	36.8	75.7	30.7	18.2	122	64	163	194	100	61	S-VS	1
Lindon	36.7	82.2	27.3	17.4	115	80	161	195	100	0	R	1
Iulia	36.2	83.0	38.8	18.2	107	20	159	193	100	39	S-VS	4
Zlatoklasa (Zg 4364)	34.9	79.3	30.0	17.0	87	0	159	193	99	1	M	0
Newton (KS 73112)	34.4	81.3	30.2	18.1	112	75	160	192	52	5	MR-MS	5
Blueboy	34.1	79.9	32.2	17.0	124	78	161	196	100	10	M-S	5
NE 73640	34.1	82.0	33.9	18.9	113	79	159	191	100	0	-	3
CI 13449/Centurk	34.0	79.1	31.4	19.1	123	73	161	195	100	81	S-VS	1
Mironovskaya 808	33.8	80.5	37.2	19.0	141	90	162	195	100	11	MS-S	2
F54-70	32.4	81.9	36.3	19.8	123	34	161	196	100	1	MS	2
F53-70	31.5	82.5	36.4	19.7	122	43	162	195	100	0	-	2
Bezostaya 1	30.7	81.4	35.5	19.9	117	48	161	195	100	5	MR-M	4
Absolvent	29.8	82.4	40.1	18.7	113	30	161	195	100	10	S	4
Krasnodarskaya 39	29.7	81.2	35.4	18.4	119	32	162	193	100	11	M-S	5
Atlas 66	27.8	77.2	32.0	21.6	133	81	162	195	100	0	-	3
Moslavka (Zg 4240-73)	27.3	75.9	28.9	18.4	83	0	161	193	100	2	M	3
Budifen	26.4	71.2	27.8	15.2	92	0	162	194	20	43	S-VS	4
NR 73-5028 (Samson)	25.3	79.7	33.6	18.6	82	0	156	192	99	28	S-VS	0
Zg 4293-73	23.4	78.7	29.7	17.5	72	0	158	189	100	4	M	2
Nap Hal/Atlas 66	21.5	79.2	25.9	23.4	106	13	161	191	99	0	-	4
Zg 887-73	8.0	73.3	28.0	18.8	67	0	157	194	20	31	S-VS	0
Lerma Rojo 64	0.0	.	.	.	74	0	157	192	2	0	-	2
Mean	31.3	79.9	33.9	18.4	107.0	31.7	160.4	193.8	89.5	11.7		2.5
L.S.D. of cultivar means (.05)	8.8	1.8	2.2		3.6	18.0	2.9	0.8	25.7	-		-
Coefficient of variation (%)	19.9	1.6	4.7		2.4	40.4	1.3	0.3	14.0	-		-
Local cultivars:												
Aoba-Komugi	25.6	80.3	32.0	-	104	51	156	190	100	9	S	4
Nanbu-Komugi	33.5	81.5	40.0	-	111	14	157	188	100	25	S	3

[a/] Two replications only.

KOREA

Suwon

COOPERATOR: Chang Hwan Cho.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 15, 1977.

PRECIPITATION DURING CYCLE OF TEST: 494.2 mm.

AMOUNT OF IRRIGATION APPLIED: 74 mm from three applications at planting time.

FERTILIZER USED: N = 120 kg/ha (Urea); P = 90 kg/ha (Fused phosphate); K = 70 kg/ha (Potassium chloride).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Fall was very dry, necessitating the irrigation. There was also a seven week period in spring when conditions were very dry. Some frost damage occurred in early April.

DISEASE DEVELOPMENT: The dry conditions prevalent in the nursery hampered most disease development.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: June 30, 1978.

AREA HARVESTED FOR YIELD: 4.8 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	Winter survival	Frost
Test weight	.52**								
N	90								
1000-kernel weight	.26*	.10							
N	90	90							
Protein	-.58**	-.45*	-.28						
N	30	30	30						
Plant height	.18	.33**	.17	.07					
N	90	90	90	30					
Flowering	.06	.13	-.06	.09	.35**				
N	90	90	90	30	90				
Ripening	-.13	.03	-.18	.16	.13	.72**			
N	90	90	90	30	90	90			
Winter survival	.18	-.04	.17	-.06	-.06	.13	.00		
N	90	90	90	30	90	90	90		
Frost	-.26*	.00	-.25*	.07	.03	-.14	-.02	-.90**	
N	90	90	90	30	90	90	90	90	
Heads/m^2	.40**	.34**	-.05	-.27	.18	.13	.09	-.06	.00
N	90	90	90	30	90	90	90	90	90

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

Table 34. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Suwon, Korea in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Seed grade 1-9	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %	Frost damage 0-9	Heads/m^2
Sadovo-1	45.2	72.3	50.7	15.8	4	88	127	166	80	2	606
NR 73-5028 (Samson)	41.8	71.0	43.3	14.2	3	79	125	165	83	2	597
Slavyanka	39.3	70.0	48.0	14.7	3	90	129	167	77	2	530
Slavia (ST-VUR 37)	39.0	62.3	42.0	15.2	4	77	131	168	80	2	644
NR 72-837	38.4	64.3	46.0	15.4	4	71	133	168	87	1	439
Absolvent	38.0	72.7	50.7	15.7	4	91	130	168	47	3	625
Ticonderoga	37.9	52.0	43.7	14.4	5	79	133	168	87	1	643
Iulia	36.8	71.7	50.3	16.0	3	80	125	166	83	2	514
Martonvasari 4	36.1	72.3	48.3	14.5	3	82	129	166	87	1	514
Partizanka	35.6	76.0	47.3	14.4	3	80	129	167	77	2	561
Newton (KS 73112)	35.0	65.3	41.3	15.5	4	83	126	167	53	5	595
Bezostaya 1	34.1	70.3	49.3	15.6	4	84	131	168	80	2	542
Lindon	34.1	69.7	36.3	15.0	4	85	129	167	77	2	657
Blueboy	33.6	65.7	41.3	15.0	4	90	128	166	77	2	583
Yubiley	33.5	68.7	45.0	14.5	3	74	130	167	73	3	572
Krasnodarskaya 39	33.1	66.3	43.7	14.0	4	88	132	168	80	2	544
Zg 887-73	33.0	61.3	38.0	13.9	4	56	125	165	30	7	511
NE 73640	32.9	72.0	42.0	15.6	4	85	131	167	77	2	650
CI 13449/Centurk	32.8	65.3	41.0	15.0	4	94	130	167	80	2	625
Zg 4293-73	32.4	57.3	38.0	15.7	4	53	125	166	77	2	601
F53-70	31.2	73.0	45.7	15.7	3	93	129	167	77	2	549
F54-70	29.6	74.0	46.0	15.8	3	87	129	167	83	2	553
Disponent	28.8	62.7	39.0	17.5	4	73	135	174	80	2	578
Zlatoklasa (Zg 4364)	28.1	68.0	40.3	14.9	4	58	125	166	80	2	571
Mironovskaya 808	27.7	62.7	40.0	15.3	3	94	131	168	80	2	559
Atlas 66	26.0	66.7	48.0	18.6	4	109	129	167	50	5	558
Budifen	23.0	59.7	36.7	15.6	4	78	132	169	80	2	480
Nap Hal/Atlas 66	21.5	64.0	34.3	22.5	4	88	130	168	37	6	610
Moslavka (Zg 4240-73)	19.9	(38.7)	43.3	17.7	7	69	125	166	87	1	494
Lerma Rojo 64	6.1	(23.7)	48.0	18.7	4	64	126	166	67	3	275
Mean	32.2	64.7	43.4	15.7	3.8	80.8	128.9	167.2	73.7	2.5	559.4
L.S.D. of cultivar means (.05)	9.8	9.0	5.4			10.0	2.4	1.3	25.2	2.4	N.S.
Coefficient of variation (%)	18.7	8.5	7.6			7.6	1.2	0.5	20.9	56.9	18.5

LEBANON

Tel-Amara

COOPERATOR(S): A. Alameddine and A. Chaaban.

DATE OF PLANTING (EFFECTIVE GERMINATION): February 2, 1978.

PRECIPITATION DURING CYCLE OF TEST: 850 mm.

AMOUNT OF IRRIGATION APPLIED: Four applications by flooding.

FERTILIZER USED: N = 120 kg/ha, Ammonium sulfate and Ammonium nitrate; P = 100 kg/ha, Triple Superphosphate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was very wet, with 250 mm of excess rainfall.

DISEASE DEVELOPMENT: The spring was dry, and thus disease development was extremely limited.

INSECT, WEED OR PEST PROBLEMS: There was some bird damage in the nursery.

DATE OF HARVEST: July 25, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Rusts - June, 1978.

Table 35. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Beirut, Lebanon in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight[a] g	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Stripe rust[a] Sev.(%)	Stripe rust[a] Resp.	Leaf rust[a] Sev.(%)	Leaf rust[a] Resp.	Stem rust[a] Sev.(%)	Stem rust[a] Resp.
Lerma Rojo 64	44.9	78.5	33.0	85	124	166	5	MS	1	MS	0	
Newton (KS 73112)	35.6	78.1	32.0	80	145	186	10	MS	20	S	5	S
NR 73-5028 (Samson)	34.7	76.5	32.0	75	139	175	0		10	MS	5	S
Budifen	33.2	73.2	32.0	75	141	181	0		30	S	0	
Zg 887-73	31.1	73.2	28.0	55	139	175	30	S	0		0	
Partizanka	21.7	78.2	32.0	85	147	179	0		5	MR	5	S
Yubiley	21.6	75.0	34.0	70	141	179	0		0		0	
Blueboy	20.6	70.7	29.0	70	145	179	0		0		5	S
CI 13449/Centurk	20.6	75.7	30.0	85	150	181	50	S	20	S	0	
Atlas 66	19.1	72.0	28.0	80	141	176	0		0		0	
Nap Hal/Atlas 66	19.0	73.7	22.0	95	146	178	10	MS	0		0	
Martonvasari 4	17.9	76.3	33.0	85	151	189	0		5	MS	0	
Moslavka (Zg 4240-73)	17.1	70.4	29.0	50	146	174	0		0		0	
Sadovo-1	16.9	76.0	39.0	75	150	181	5	MS	5	MS	0	
NE 73640	16.8	76.9	30.0	75	155	188	10	MS	0		0	
Slavyanka	16.1	75.5	33.0	90	150	187	0		5	MS	0	
F53-70	14.1	-	29.0	70	166	196	0		0		0	
Lindon	12.0	76.7	26.0	65	159	194	0		5	S	0	
Bezostaya 1	10.8	75.2	32.0	80	156	189	5	MS	0		5	S
Absolvent	9.8	73.7	32.0	85	155	189	0		0		5	S
NR 72-837	9.6	72.2	32.0	70	165	191	5	MS	10	MS	0	
Zg 4293-73	7.9	72.7	27.0	45	148	186	0		5	MR	0	
Zlatoklasa (Zg 4364)	6.8	73.5	28.0	50	157	191	10	MS	5	MS	0	
F54-70	6.3	-	28.0	60	166	196	0		0		5	S
Krasnodarskaya 39	0.0[b]	-	-	-	-	-	0		0		0	
Mironovskaya 808	0.0	-	-	-	-	-	0		0		0	
Iulia	0.0	-	-	-	-	-	0		0		0	
Slavia (ST-VUR 37)	0.0	-	-	-	-	-	0		0		0	
Ticonderoga	0.0	-	-	-	-	-	0		0		0	
Disponent	0.0	-	-	-	-	-	0		0		0	
Mean	15.3	74.7	30.4	73.1	149.3	183.6	4.7		4.2		1.2	
L.S.D. of cultivar means (.05)	6.4	-	-	-	-	-	-		-		-	
Coefficient of variation (%)	29.6	-	-	-	-	-	-		-		-	

[a] One replication only.

[b] Six varieties were very late, and did not produce heads.

MEXICO

Toluca

COOPERATOR(S): CIMMYT Bread Wheat Staff.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 15, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Ten applications (amounts unspecified).

FERTILIZER USED: N = 200 kg/ha Ammonium sulfate; P = 100 kg/ha Triple Superphosphate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were generally sunny and dry until May, and then it became cloudy and rainy until harvest.

DISEASE DEVELOPMENT: There was good development of Stripe rust and Stem rust.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 5, 1978.

AREA HARVESTED FOR YIELD: 2.4 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Protein	Plant height
Protein	-.44*		
N	29		
Plant height	.10	-.37*	
N	60	29	
Flowering	-.18	-.42*	.60**
N	119	28	59

** Significant at the 1% level.

* Significant at the 5% level.

Table 36. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Toluca, Mexico in 1978.

Cultivars	Yield q/ha	Protein %	Plant height cm	Date of Flowering days from Jan.1	Stripe rust[a] Sev.(%)	Stripe rust[a] Resp.	Stem rust[a] Sev.(%)	Stem rust[a] Resp.
NR 72-837	67.2	13.6	103	128	1	R	0	-
Newton (KS 73112)	63.7	14.1	110	121	10	R	0	-
Budifen	61.8	12.2	105	127	0	-	30	MR-S
Yubiley	58.3	13.8	103	124	1	R	10	R-MS
Blueboy	55.1	14.3	113	124	15	MR	18	MR-S
Slavyanka	53.5	15.8	110	121	1	R	30	S
Martonvasari 4	53.3	14.0	113	124	50	MR-S	40	MS-S
Slavia (ST-VUR 37)	50.7	13.1	115	133	0	-	0	MR
Sadovo-1	48.2	13.7	103	121	20	MS	15	S
Iulia	47.3	12.9	108	126	18	MR-MS	18	MS-S
Lindon	45.5	13.4	110	129	35	MR	0	-
Zlatoklasa (Zg 4364)	45.5	14.0	83	122	3	MS	0	R
Partizanka	44.5	14.7	98	122	5	R-MR	38	S
Absolvent	43.8	14.9	108	126	10	R-MS	25	MS
F53-70	43.8	16.2	103	127	0	R	5	MS-S
F54-70	42.0	14.7	123	127	5	MR	30	MS
NE 73640	41.3	13.4	123	127	40	MS	0	-
Moslavka (Zg 4240-73)	40.6	14.3	80	117	1	R	0	MS
Bezostaya 1	38.4	14.2	113	126	10	R-MS	18	MS-S
CI 13449/Centurk	38.4	12.5	118	123	60	MS-S	5	MS
Zg 887-73	35.0	15.0	70	119	1	R	0	R
Mironovskaya 808	32.8	13.9	135	132	13	MR-MS	5	MR-MS
Ticonderoga	31.7	12.3	120	133	70	S	8	MS
Nap Hal/Atlas 66	31.7	20.9	105	124	13	MS	0	MS
Zg 4293-73	31.0	15.8	68	117	1	R	0	-
NR 73-5028 (Samson)	29.2	17.0	88	119	28	S	20	MS
Atlas 66	27.0	16.4	120	123	10	R-MS	0	-
Krasnodarskaya 39	24.1	13.5	105	134	35	S	30	MS
Lerma Rojo 64	19.7	15.8	88	120	10	R	0	-
Disponent	-[b]	-	110	134	0	-	40	S
Mean	42.9	14.5	104.8	124.8	21.3		13.0	
L.S.D. of cultivar means (.05)	7.4	-	11.1	2.9				
Coefficient of variation (%)	12.4	-	5.2	1.6				

[a] Two replications only.

[b] Disponent was very late and was not harvested.

NEPAL

Khumaltar

COOPERATOR(S): A. N. Bhattarai, A. Mudvari, R. H. Dongol, and B. Silwal.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not available.

AMOUNT OF IRRIGATION APPLIED: Two applications - amounts unspecified.

FERTILIZER USED: N = 100 kg/ha; P = 60 kg/ha; K = 40 kg/ha. Applied (20:20:0), Ammonium sulfate, and Muriate of Potash.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were favorable throughout the season.

DISEASE DEVELOPMENT: There was a moderate development of Leaf rust and Stem rust after the flowering stage.

INSECT, WEED OR PEST PROBLEMS: There was a weed problem with Chenopodium album.

DATE OF HARVEST: June 10, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Diseases - April, 1978.

Correlation Coefficients

No. of observations = 120	Yield	1000-kernel weight	Plant height	Flowering	Ripening
1000-kernel weight	.30**				
Plant height	.27**	.14			
Flowering	-.13	-.20*	.09		
Ripening	-.20*	-.43**	.10	.69**	
Helminthosporium	-.13	.01	.06	.27**	.37**

** Significant at the 1% level.

* Significant at the 5% level.

Table 37. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Kathmandu, Nepal in 1978.

Cultivars	Yield q/ha	1000-kernel weight g	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Helminthosporium leaf spot (0-9)
Budifen	59.4	36.0	99	78	133	1
Newton (KS 73112)	55.9	34.0	107	103	135	1
CI 13449/Centurk	54.5	36.5	105	107	134	3
Partizanka	48.9	33.5	110	103	136	2
Martonvasari 4	48.7	37.3	106	103	134	4
NR 73-5028 (Samson)	48.7	40.5	103	101	123	1
Sadovo-1	48.0	42.5	105	104	134	4
Absolvent	45.3	38.0	106	107	138	2
Atlas 66	44.9	38.8	116	96	131	2
Blueboy	43.8	34.3	112	103	135	2
Slavyanka	42.5	34.5	98	104	136	3
Bezostaya 1	42.0	39.0	105	106	138	4
Mironovskaya 808	41.6	36.8	102	109	141	3
NE 73640	41.1	33.3	104	105	136	3
Slavia (ST-VUR 37)	39.9	36.3	107	110	142	3
Lindon	39.1	33.8	113	107	142	4
Yubiley	38.7	30.5	94	105	136	3
Iulia	38.4	34.5	86	108	141	3
Zg 887-73	38.0	37.8	92	54	120	2
NR 72-837	36.9	31.8	96	111	144	3
Krasnodarskaya 39	36.7	34.8	108	105	141	3
Ticonderoga	36.4	30.0	95	107	144	3
Lerma Rojo 64	34.8	41.8	92	87	121	1
F53-70	32.7	30.3	109	108	142	3
Zg 4293-73	32.5	31.8	88	97	131	2
Moslavka (Zg 4240-73)	32.4	30.0	93	96	133	2
Nap Hal/Atlas 66	29.7	30.0	104	96	131	1
F54-70	29.2	35.0	106	112	145	3
Disponent	29.0	25.3	101	116	150	4
Zlatoklasa (Zg 4364)	27.2	31.3	80	105	136	3
Mean	40.6	34.6	101.2	101.7	136	2.5
L.S.D. of cultivar means (.05)	11.7	4.4	116.8	8.1	2.8	1.6
Coefficient of variation (%)	20.5	9.1	11.8	5.7	1.5	43.7

THE NETHERLANDS

Wageningen

COOPERATOR: A. C. Zeven.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 423.2 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Not reported.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was a mild winter which was followed by wet and cool conditions throughout spring and summer.

DISEASE DEVELOPMENT: There was some development of Mildew and Stripe rust on some varieties.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 26 - August 5, 1978.

AREA HARVESTED FOR YIELD: 3.75 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival	- March 27, 1978	Stripe rust	- July 4, 1978
Flowering	- May 29-June 10, 1978	Lodging	- July 20, 1978
Plant height	- July 4, 1978	Ripening	- July 26-August 5, 1978
Mildew	- July 4, 1978		

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	-.23**								
N	120								
1000-kernel weight	.24**	-.16							
N	120	120							
Protein	-.82**	.14	-.26						
N	30	30	30						
Plant height	-.23*	.34**	-.03	.37*					
N	120	120	120	30					
Lodging	-.16	.20*	-.10	.30	.73**				
N	120	120	120	30	120				
Flowering	.16	-.26**	.02	-.12	.04	.06			
N	120	120	120	30	120	120			
Ripening	.05	.00	-.10	.10	.24**	.02	.47**		
N	120	120	120	30	120	120	120		
Shattering	-.01	-.16	.01	.10	.04	.10	-.20*	-.08	
N	120	120	120	30	120	120	120	120	
Winter survival	.21*	.03	-.09	-.20	-.13	-.13	.17	.21*	-.05
N	120	120	120	30	120	120	120	120	120

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

Table 38. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Wageningen, Netherlands in 1978.

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 %	Stripe rust Sev.(%)	Mildew Sev.(0-9)
Partizanka	50.4	84.0	37.4	8.6	88	0	152	212	6	88	9	0
Budifen	50.1	77.5	37.8	8.3	91	0	162	213	5	89	0	0
Zlatoklasa (Zg 4364)	48.5	79.0	38.7	8.3	78	0	151	212	20	89	0	0
Slavia (ST-VUR 37)	47.5	78.0	45.6	8.1	91	1	153	212	16	90	0	1
Zg 887-73	46.3	78.0	42.0	8.6	79	0	151	207	10	90	0	0
Ticonderoga	46.0	77.5	43.6	8.5	90	0	161	213	18	88	45	0
Moslavka (Zg 4240-73)	45.5	78.0	35.6	8.3	78	0	151	212	15	90	0	0
CI 13449/Centurk	45.3	81.0	34.9	9.3	95	9	153	211	24	89	21	0
Lindon	45.2	83.5	35.1	8.3	94	4	153	214	1	89	8	1
Disponent	45.1	79.0	38.1	8.6	84	0	163	217	11	90	0	1
NR 73-5028 (Samson)	44.7	81.5	38.1	8.4	90	4	153	207	0	90	0	0
Sadovo-1	43.8	81.0	50.0	10.0	94	0	151	213	15	88	5	1
Yubiley	43.1	79.5	41.1	8.3	81	0	153	212	5	90	1	0
Zg 4293-73	43.0	78.5	36.2	9.0	71	0	151	207	24	90	0	0
Absolvent	42.6	81.0	45.2	10.8	96	8	153	213	16	89	4	1
Mironovskaya 808	42.5	81.0	45.1	9.2	116	48	157	213	8	89	0	0
Slavyanka	42.3	82.5	43.1	9.0	96	3	151	207	16	90	8	0
Blueboy	40.2	79.0	41.2	9.9	100	1	153	215	5	88	13	3
NR 72-837	39.4	79.5	46.5	10.6	78	0	161	212	5	89	6	0
Martonvasari 4	38.9	82.5	44.4	9.7	95	4	152	212	21	89	11	0
Iulia	38.5	82.0	45.6	9.4	84	0	152	207	8	90	0	0
Bezostaya 1	36.7	81.5	42.5	9.5	91	5	153	212	21	91	19	1
Krasnodarskaya 39	34.4	80.0	38.5	9.5	96	5	160	212	11	88	6	3
Atlas 66	33.6	82.0	35.7	11.5	128	69	153	213	23	89	0	0
F53-70	31.4	83.5	36.7	11.3	95	0	153	212	6	88	18	0
F54-70	31.1	83.5	37.4	11.6	95	0	153	214	5	90	14	0
Lerma Rojo 64	30.4	79.5	44.2	11.0	94	14	149	207	15	61	20	3
NE 73640	29.4	83.0	36.3	10.9	98	30	153	211	0	88	14	1
Nap Hal/Atlas 66	23.2	82.0	29.5	15.0	98	8	153	212	20	86	8	2
Newton (KS 73112)	22.4	79.0	39.8	14.5	91	0	153	212	11	90	8	2
Mean	40.0	80.6	40.2	9.8	91.8	7.0	153.9	211.5	12.0	88.0	7.8	0.6
L.S.D. of cultivar means (.05)	3.9	2.1	1.5		5.6	12.1	1.4	1.1	2.7	4.1	-	-
Coefficient of variation (%)	6.9	1.9	2.6		4.3	122.6	0.6	0.4	16.1	3.3	-	-

NORWAY

Vollebekk

COOPERATOR: K. Ringlund.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 10, 1977.

PRECIPITATION DURING CYCLE OF TEST: 678.3 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Fall of 1977: N = 32 kg/ha; P = 6.1 kg/ha; K = 19.9 kg/ha. Applied as (16:7:12) compound. Spring of 1978: N = 109 kg/ha was applied.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There were five months of snow cover during the winter. May and June were dry.

DISEASE DEVELOPMENT: There was some Mildew and Septoria development in July and August.

INSECT, WEED OR PEST PROBLEMS: There were some weeds in the nursery.

DATE OF HARVEST: August 23, 1978.

AREA HARVESTED FOR YIELD: 3.375 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Winter survival - May 2, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.25							
N	51							
1000-kernel weight	.28*	-.29*						
N	77	51						
Protein	-.74**	.29	-.08					
N	21	13	19					
Plant height	.86**	.28*	.40**	-.60**				
N	94	51	77	21				
Lodging	.44**	.15	.35**	-.39	.43**			
N	80	50	76	18	80			
Flowering	-.02	-.45**	.26*	-.02	-.08	-.08		
N	95	51	77	21	94	80		
Ripening	-.11	-.20	.28*	-.05	-.04	-.08	.67**	
N	95	51	77	21	94	80	95	
Winter survival	.70**	.09	-.15	-.66**	.57**	.29**	-.11	-.26*
N	120	51	77	21	94	80	95	95

** Significant at the 1% level.

* Significant at the 5% level.

Table 39. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Vollebekk, Norway in 1978.

Cultivar	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 %
Mironovskaya 808	24.8	80.7	47.1	13.8	62	6	165	216	93
Martonvasari 4	18.7	81.4	42.7	14.5	55	1	165	218	78
Absolvent	18.5	80.8	44.6	16.1	55	0	167	220	78
Krasnodarskaya 39	17.7	78.9	40.5	15.0	48	0	167	217	84
F54-70	14.8	80.5	37.8	15.5	50	0	165	217	86
Ticonderoga	13.3	77.7	46.3	15.1	48	0	166	219	75
F53-70	13.0	80.4	37.7	16.5	50	0	164	214	86
Bezostaya 1	11.2	80.0	41.2	16.0	45	0	166	219	79
Partizanka	10.8	81.6	37.4	16.5	43	0	167	220	73
Slavyanka	10.7	81.4	41.6	17.4	48	0	166	219	74
Slavia (ST-VUR 37)	10.6	75.2	45.1	14.2	37	0	168	220	74
Lindon	9.5	81.6	33.7	17.2	37	0	165	218	74
Blueboy	8.2	79.2	42.5	16.1	46	0	166	220	70
Yubiley	7.3	78.8	38.0	15.6	34	0	167	219	70
NE 73640	6.8	81.0	36.5	18.0	36	0	163	212	71
Iulia	6.3	80.8	43.3	16.8	38	0	165	217	68
CI 13449/Centurk	5.6	78.7	38.0	18.3	42	0	166	220	73
Disponent	3.2	.	41.5	19.2	35	0	169	224	64
Sadovo-1	2.7	77.0	46.2	15.7	36	0	165	218	69
NR 72-837	2.1	.	47.0	19.6	37	0	166	219	48
Newton (KS 73112)	0.6	.	37.6	19.5	27	0	164	212	65
Zlatoklasa (Zg 4364)	0.0	.	.	.	22	0	166	219	63
Zg 4293-73	0.0	-	-	-	23	-	165	218	36
Moslavka (Zg 4240-73)	0.0	-	-	-	30	0	165	221	30
NR 73-5028 (Samson)	0.0	-	-	-	25	-	166	220	25
Atlas 66	0.0	-	-	-	-	-	-	-	5
Nap Hal/Atlas 66	0.0	-	-	-	-	-	-	-	5
Zg 887-73	0.0	-	-	-	-	-	-	-	0
Lerma Rojo 64	0.0	-	-	-	-	-	-	-	0
Budifen	0.0	-	-	-	-	-	-	-	0
Mean	7.2	79.9	41.2	16.5	41.2	0.4	165.7	218.1	57.0
L.S.D. of cultivar means (.05)	5.7	1.2	3.0	-	9.5	1.2	0.9	2.4	13.2
Coefficient of variation (%)	56.0	1.1	5.1	-	16.2	218.2	0.4	0.8	16.4

PAKISTAN

Islamabad

COOPERATOR(S): N. Mohammad and M. Tahir.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 22, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Two applications (250 mm).

FERTILIZER USED: N = 170 kg/ha; P = 115 kg/ha. Applied Urea, Diammonium phosphate, and Triple Superphosphate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The conditions were unfavorable during most of the winter, due to drought.

DISEASE DEVELOPMENT: There was slight development of Stripe rust during May.

INSECT, WEED OR PEST PROBLEMS: There were serious bird problems and also army worms.

DATE OF HARVEST: June 6, 1978.

AREA HARVESTED FOR YIELD: 1.69 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Flowering - April 2, 1978
Maturity - May 10, 1978
Plant height - May 18, 1978

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Plant height	Flowering	Ripening
1000-kernel weight	.34**				
N	120				
Plant height	-.09	-.06			
N	120	120			
Flowering	-.18	-.37*	.19		
N	30	30	30		
Ripening	-.09	-.36*	.24	.96**	
N	30	30	30	30	
% germination	.13	-.08	-.41**	-.02	-.09
N	120	120	120	30	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 40. Agronomic data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Islamabad, Pakistan in 1978.

Cultivar	Yield q/ha	1000-kernel weight g	Plant height cm	Date of Flowering[a] days from Jan. 1	Date of Ripening[a] days from Jan. 1	Germination %
Zg 887-73	46.0	24.4	70	110	148	98
Yubiley	43.7	32.4	79	110	148	94
Partizanka	43.7	34.3	78	110	140	96
Moslavka (Zg 4240-73)	43.0	25.8	71	115	150	92
Blueboy	40.8	31.1	101	122	160	84
Absolvent	40.8	39.4	74	122	163	97
Iulia	40.8	35.8	80	122	162	88
Krasnodarskaya 39	39.3	31.2	81	122	160	78
Bezostaya 1	39.3	36.8	83	122	162	84
Martonvasari 4	39.3	32.8	88	110	139	93
CI 13449/Centurk	36.3	27.5	76	128	170	99
Newton (KS 73112)	34.8	26.8	61	123	165	93
Budifen	34.1	28.8	69	122	162	100
F54-70	34.1	27.9	101	130	175	88
NR 73-5028 (Samson)	33.4	31.4	83	110	138	98
Lindon	32.6	22.8	88	130	178	89
Zlatoklasa (Zg 4364)	32.6	27.3	62	112	149	91
Lerma Rojo 64	32.6	29.4	68	110	148	93
NE 73640	31.9	26.1	85	110	148	77
Slavyanka	31.1	35.9	87	110	139	98
Sadovo-1	30.4	39.1	75	110	148	85
Zg 4293-73	30.4	28.8	60	115	141	91
Ticonderoga	30.4	21.9	84	120	159	89
F53-70	27.4	30.2	84	130	175	84
Slavia (ST-VUR 37)	27.4	33.2	80	120	160	85
Disponent	25.2	17.0	76	130	175	98
Atlas 66	24.5	28.8	100	110	148	76
Mironovskaya 808	24.5	23.3	105	122	162	81
NR 72-837	23.7	26.5	72	129	170	94
Nap Hal/Atlas 66	20.8	16.1	89	130	175	95
Mean	33.8	29.1	80.3	118.9	157.0	90.1
L.S.D. of cultivar means (.05)	N.S.	1.9	5.8	-	-	5.6
Coefficient of variation (%)	33.2	4.5	5.1	-	-	4.4

[a] One replication only.

POLAND

Przeclaw

COOPERATOR: E. Bilski.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 24, 1977.

PRECIPITATION DURING CYCLE OF TEST: 419.9 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 40 kg/ha, Ammonium nitrate; P = 80 kg/ha, Superphosphate; K = 100 kg/ha, Potassium salt.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Vegetative growth and maturity were approximately two weeks later than usual.

DISEASE DEVELOPMENT: Disease development was about like always. No epidemics or new diseases.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 31, 1978 - August 3, 1978.

AREA HARVESTED FOR YIELD: 7.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - April 10, 1978
Diseases - July, 1978
Plant height - July 12, 1978
Lodging - July 29, 1978
Shattering - August 15, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flower-ing	Ripen-ing	Shat-tering	Winter survival	Mildew (leaves
Test weight	-.15										
N	120										
1000-kernel weight	.30**	-.06									
N	120	120									
Protein	-.62**	.55**	-.20								
N	30	30	30								
Plant height	.26**	-.07	.06	-.09							
N	120	120	120	30							
Lodging	-.10	-.21*	-.20*	.12	.66**						
N	120	120	120	30	120						
Flowering	.51**	-.75**	.05	-.63**	.31**	.19*					
N	120	120	120	30	120	120					
Ripening	.26**	-.76**	.25**	-.41*	.32**	.30**	.69**				
N	120	120	120	30	120	120	120				
Shattering	.15	-.19*	.12	-.28	.42**	.38**	.26**	.32**			
N	120	120	120	30	120	120	120	120			
Winter survival	.70**	.08	-.00	-.39*	.46**	.13	.27**	.05	.12		
N	120	120	120	30	120	120	120	120	120		
Mildew (leaves)	-.21*	.02	.17	-.06	.01	-.05	-.08	-.03	-.02	-.33**	
N	120	120	120	30	120	120	120	120	120	120	
Ophiobolus graminus	-.20*	.12	-.40**	.05	.10	.20*	-.20*	-.20*	-.16	.16	-.06
N	120	120	120	30	120	120	120	120	120	120	120

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

Table 41. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Przeclaw, Poland in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Adjusted lysine/protein %	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1
Slavia (ST-VUR 37)	51.4	76.3	50.8	10.3	2.71	91	9	163	211
Disponent	50.1	73.0	42.4	9.3	2.78	91	18	164	212
NR 72-837	45.8	78.6	45.4	11.5	2.97	83	6	161	209
Ticonderoga	45.4	74.1	36.9	8.9	2.73	94	63	163	211
Zg 4293-73	43.9	80.5	34.2	12.7	2.69	65	0	160	208
Martonvasari 4	43.0	82.4	44.9	12.2	2.67	98	24	159	209
Sadovo-1	42.4	80.9	50.2	11.0	2.46	92	9	160	209
Partizanka	42.3	81.0	38.6	11.4	2.59	87	9	160	209
Yubiley	41.6	80.8	46.2	11.5	2.96	84	3	160	209
Bezostaya 1	40.8	78.7	45.1	12.6	2.62	97	42	160	211
Slavyanka	40.6	82.6	43.2	12.9	2.80	93	21	159	210
Iulia	40.0	81.5	41.7	13.7	2.76	96	33	160	210
Lindon	39.5	81.0	30.3	12.3	2.83	97	48	161	209
Mironovskaya 808	39.0	78.2	38.9	13.0	2.79	119	72	162	211
Krasnodarskaya 39	37.9	76.0	35.1	11.2	2.94	100	39	161	210
F53-70	37.6	79.1	39.8	14.1	2.62	94	15	160	209
Absolvent	37.1	78.8	44.2	11.9	2.68	91	39	160	210
NR 73-5028 (Samson)	33.4	81.8	37.5	12.2	3.14	91	33	158	209
CI 13449/Centurk	33.1	76.2	38.0	11.8	3.04	94	72	161	210
Moslavka (Zg 4240-73)	32.4	79.1	38.5	12.4	2.66	71	0	158	210
Zlatoklasa (Zg 4364)	31.7	80.3	35.3	12.4	2.64	73	0	160	208
Budifen	31.3	75.3	34.1	11.0	3.16	92	9	163	212
Blueboy	31.2	75.8	44.4	10.1	2.87	96	45	162	210
NE 73640	31.0	81.0	38.1	14.3	2.74	97	36	158	208
Atlas 66	29.5	78.1	42.1	15.1	3.06	100	69	160	212
F54-70	29.5	81.5	40.1	14.4	2.69	98	36	160	209
Zg 887-73	26.8	77.8	42.1	12.9	2.94	70	0	160	211
Newton (KS 73112)	26.8	81.7	37.2	12.2	2.86	90	18	158	208
Nap Hal/Atlas 66	25.8	81.9	32.5	15.8	2.72	91	42	160	208
Lerma Rojo 64	3.2	78.7	40.8	16.1	2.69	70	24	158	209
Mean	36.1	79.1	40.3	12.4	2.79	90.1	27.8	160.2	209.6
L.S.D. of cultivar means (.05)	2.5	0.5	1.0	1.7[a/]	0.17[a/]	3.6	11.3	0.5	0.6
Coefficient of variation (%)	5.0	0.5	1.8	13.9	6.1	2.8	29.0	0.2	0.2

[a/] Standard deviation

Table 41. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Przeclaw, Poland in 1978. Concluded.

Cultivar	Shattering	Winter survival %	Leaf rust		Septoria heads (%)	Mildew		Ophiobolus graminis (%)
			Sev.(%)	Resp.		heads %	leaves (0-9)	
Slavia (ST-VUR 37)	2	99	3	R	38	0	3	0
Disponent	1	96	3	R-MR	48	0	3	0
NR 72-837	1	96	2	R	24	0	4	1
Ticonderoga	2	95	8	MR-M	28	0	3	2
Zg 4293-73	0	95	2	R	43	0	2	2
Martonvasari 4	1	95	3	R-MR	38	0	3	2
Sadovo-1	1	95	3	R-MR	45	0	5	3
Partizanka	2	96	1	R	30	0	3	2
Yubiley	0	96	1	R	45	0	5	2
Bezostaya 1	1	97	2	R-MR	35	30	4	1
Slavyanka	1	96	2	R-MR	50	0	4	2
Iulia	1	93	2	R	28	45	5	2
Lindon	1	96	2	R	15	0	5	5
Mironovskaya 808	3	97	3	R-MR	18	0	3	2
Krasnodarskaya 39	1	93	2	R	38	25	5	2
F53-70	1	97	2	R	25	0	3	2
Absolvent	2	95	1	R	48	0	5	2
NR 73-5028 (Samson)	1	96	2	R	43	0	3	5
CI 13449/Centurk	1	98	4	R-MR	43	0	3	7
Moslavka (Zg 4240-73)	1	88	1	R	45	0	2	3
Zlatoklasa (Zg 4364)	0	96	2	R-MR	35	0	2	3
Budifen	1	88	2	R-MR	48	0	4	5
Blueboy	1	96	2	R-MR	33	0	5	2
NE 73640	1	95	0	-	58	0	3	7
Atlas 66	2	94	2	R	23	0	2	2
F54-70	1	98	1	R	23	0	3	3
Zg 887-73	1	61	2	R	40	0	5	3
Newton (KS 73112)	1	95	2	R	53	43	6	3
Nap Hal/Atlas 66	1	95	3	R-MR	65	0	3	2
Lerma Rojo 64	1	9	5	R-MR	75	0	5	1
Mean	1.0	91.1	2.2		39.1	4.8	3.6	2.5
L.S.D. of cultivar means (.05)	1.1	3.3	-		-	-	0.8	1.6
Coefficient of variation (%)	78.8	2.6	-		-	-	15.0	44.8

POLAND

Radzikow

(Warsaw)

COOPERATOR: S. Starzycki.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 22, 1977.

PRECIPITATION DURING CYCLE OF TEST: 511.2 mm (September, 1977 - August, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 90 kg/ha, Ammonium nitrate; P = 70 kg/ha, Calcium phosphate; K = 80 kg/ha, Potassium chloride.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Although there was not very much snow during the winter, there was no winter damage. The spring was cold and wet, with rains continuing on into summer.

DISEASE DEVELOPMENT: Most of the cultivars in the nursery were attacked by Mildew, Septoria, Leaf rust, and Stripe rust.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 11, 1978.

AREA HARVESTED FOR YIELD: 4.7 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival	- March 31, 1978	Shattering	- August 26, 1978
Flowering	- June 5-17, 1978	Mildew	- June 19, 1978
Ripening	- July 30-August 8, 1978	Septoria	- June 26, 1978
Plant height	- July 3, 1978	Rusts	- July 15, 1978
Lodging	- August 7, 1978		

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering
Test weight	.52**								
N	116								
1000-kernel weight	.71**	.48**							
N	116	116							
Protein	-.01	.21	-.08						
N	29	29	29						
Plant height	.28**	.25**	.18	-.02					
N	116	116	116	29					
Lodging	.25**	.17	.19*	-.02	.50**				
N	116	116	116	29	116				
Flowering	.12	-.06	.14	-.41*	.22*	.04			
N	116	116	116	29	116	116			
Ripening	.08	.12	.25**	-.30	.49**	.18	.60**		
N	116	116	116	29	116	116	116		
Shattering	-.08	.02	.09	.43*	.15	.01	-.03	.07	
N	116	116	116	29	116	116	116	116	
Winter survival	.65**	.23*	.17	.26	.32**	-.15	-.18	-.18	-.11
N	120	116	116	29	116	116	116	116	116

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

Table 42. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Warsaw, Poland in 1978.

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 %	Stripe rust Sev(%)	Stripe rust Resp.	Leaf rust Sev(%)	Leaf rust Resp.	Mildew (0-9)	Septoria (0-9)
Disponent	73.8	76.3	42.2	10.8	98	0	167	216	0	99	0	-	28	MR-MS	0	3
Slavia (ST-VUR 37)	70.7	72.6	49.9	11.4	84	0	163	215	11	81	0	-	38	MS-S	3	5
Iulia	70.2	75.0	46.6	15.4	93	3	159	214	18	84	0	-	28	MS-S	2	4
Mironovskaya 808	68.3	76.7	44.2	13.2	131	58	160	216	11	91	0	-	13	MR-MS	2	2
Martonvasari 4	64.0	76.8	41.2	13.8	103	3	159	215	0	85	16	MR-MS	25	MR-MS	2	7
Bezostaya 1	62.2	77.5	45.6	12.9	102	5	160	215	0	80	0	-	33	MS	3	6
Yubiley	62.1	75.5	43.9	13.3	81	3	159	214	11	80	0	-	24	MR-MS	5	8
Sadovo-1	59.5	75.0	46.0	14.2	83	0	158	214	0	68	0	-	30	MS	2	7
F54-70	59.1	75.7	40.2	15.9	96	0	160	215	43	86	0	-	19	MR-MS	2	6
F53-70	58.2	77.0	46.5	17.7	98	0	159	214	30	85	0	-	19	MR-MS	4	6
Absolvent	58.0	74.5	42.7	11.7	99	3	160	216	21	84	16	MS	23	MS	4	6
NR 72-837	53.9	71.3	44.4	12.8	79	0	160	213	10	85	0	-	24	MR-MS	2	6
Partizanka	52.6	74.3	36.0	12.0	86	0	159	215	0	86	20	MR-MS	30	MS-S	2	7
Newton (KS 73112)	51.5	74.2	35.8	12.9	90	0	157	213	0	83	25	MS	23	MS-S	8	7
Blueboy	49.4	73.2	42.3	12.8	108	8	160	217	30	66	0	-	10	MR	7	5
Moslavka (Zg 4240-73)	48.9	73.9	32.6	14.5	69	0	158	214	20	58	0	-	26	MR-MS	0	8
Budifen	48.2	70.8	36.2	11.6	88	0	166	216	0	33	0	-	35	MS	7	5
Krasnodarskaya 39	47.4	74.7	37.6	13.0	106	3	165	219	15	69	24	MR-MS	20	MR-MS	4	6
Lindon	46.9	72.9	24.7	13.0	86	3	159	214	0	88	23	MS	15	MR-MS	2	7
Slavyanka	46.9	74.8	36.4	13.0	98	0	159	215	10	74	20	MS	28	MS	1	9
NE 73640	42.5	70.0	28.1	15.8	106	0	157	212	11	88	30	MS-S	13	MR-MS	4	8
NR 73-5028 (Samson)	40.8	70.4	30.3	12.7	86	0	158	213	10	68	16	MR-MS	30	MS	2	8
Zg 4293-73	38.7	72.4	29.7	14.6	59	0	158	213	0	60	18	MS	30	MS	0	9
Nap Hal/Atlas 66	37.4	76.7	31.5	15.6	93	5	160	213	30	68	28	MS-S	28	MS	2	6
Zlatoklasa (Zg 4364)	36.8	69.1	29.3	13.9	66	0	159	212	0	88	14	MR-MS	23	MS-S	4	9
Ticonderoga	35.6	63.5	28.0	14.0	100	3	165	217	18	68	28	MS-S	18	MS	2	7
Atlas 66	35.5	75.7	39.4	11.6	104	3	162	219	13	35	13	MR-MS	16	MR-MS	4	4
CI 13449/Centurk	31.8	68.1	25.6	11.6	103	0	159	215	15	81	31	MR-MS	15	MR-MS	1	7
Zg 887-73	26.9	65.7	30.8	12.0	66	0	160	214	21	6	0	-	30	MS-S	0	9
Lerma Rojo 64	0.0	.	.	.	.	.	.	.	.	0	-	-	-	-	-	-
Mean	49.3	73.3	37.5	13.4	91.6	3.3	160.1	214.5	12.0	70.8	11.0		23.7		2.6	6.4
L.S.D. of cultivar means (.05)	10.1	4.2	5.8	-	8.8	8.0	1.0	1.2	6.7	10.3			-		-	-
Coefficient of variation (%)	14.5	4.1	11.0	-	6.8	172.6	0.4	0.4	40.0	10.3		-	-		-	-
Local cultivars: Grana	48.7	73.2	40.2	-	105	3	166	217	0	81	18	MR-MS	38	MS	3	4

ROMANIA

Fundulea

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

DATE OF PLANTING (EFFECTIVE GERMINATION): October 11, 1977.

PRECIPITATION DURING CYCLE OF TEST: 599.9 mm from July 1, 1977 to July 1, 1978.

AMOUNT OF IRRIGATION APPLIED: Two autumn applications; one spring application (amount in mm not reported).

FERTILIZER USED: N = 130 kg/ha; P = 80 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The autumn was drier than normal and the winter was quite mild. Spring conditions were favorable for good plant development. Early in the summer, it became very hot.

DISEASE DEVELOPMENT: Conditions were conducive to the development of Leaf rust and Powdery mildew.

INSECT, WEED OR PEST PROBLEMS: Weeds were controlled with ICDIN.

DATE OF HARVEST: July 10, 1978.

AREA HARVESTED FOR YIELD: 5.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Frost damage	- March 10, 1978	Plant height	- June 25, 1978
Winter survival	- March 15, 1978	Leaf rust	- June 26, 1978
Mildew	- June 17, 1978	Stem rust	- June 26, 1978
Stripe rust	- June 20, 1978	Lodging	- June 28, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival
Test weight	.15							
N	120							
Protein	-.04	.38*						
N	30	30						
Plant height	-.24**	.12	-.16					
N	120	120	30					
Lodging	-.26**	.15	.02	.59**				
N	120	120	30	120				
Flowering	.00	-.42**	-.11	.37**	.11			
N	120	120	30	120	120			
Ripening	.16	-.10	-.25	.60**	.28**	.77**		
N	120	120	30	120	120	120		
Winter survival	.69**	.07	-.27	.18*	.15	.37**	.59**	
N	120	120	30	120	120	120	120	
Frost	-.49**	-.32**	.33	-.33**	-.20*	-.24**	-.53**	-.69**
N	120	120	30	120	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 43. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Fundulea, Romania in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Lodging %	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	Winter survival %
Zlatoklasa (Zg 4364)	63.8	77.0	14.7	88	3	143	179	100
Slavia (ST-VUR 37)	62.4	75.2	13.4	98	9	146	184	100
Moslavka (Zg 4240-73)	58.2	75.2	14.7	78	3	142	179	100
Zg 4293-73	57.8	76.2	14.7	71	0	144	178	100
NR 72-837	57.4	77.5	13.7	97	8	147	185	100
Sadovo-1	56.9	78.6	14.7	95	9	145	181	100
Yubiley	55.9	79.2	15.0	91	5	146	181	100
NR 73-5028 (Samson)	54.6	78.5	14.2	96	58	143	180	100
Martonvasari 4	54.1	80.1	15.2	106	58	144	180	100
Iulia	54.0	80.4	16.5	98	10	143	181	100
Zg 887-73	53.9	76.4	13.9	78	4	142	180	100
Slavyanka	53.6	80.8	15.1	106	5	145	182	100
Partizanka	51.5	80.9	15.3	98	48	145	183	100
Absolvent	50.8	79.9	14.9	105	54	147	185	100
Ticonderoga	49.6	72.2	11.3	111	10	148	184	100
Bezostaya 1	49.2	80.4	15.0	103	40	145	183	100
Lindon	49.1	79.7	13.2	108	61	145	183	100
Krasnodarskaya 39	48.1	78.0	11.6	106	25	146	184	100
F54-70	47.8	80.0	15.8	111	24	145	183	100
Newton (KS 73112)	47.8	79.6	14.6	104	90	144	183	100
F53-70	47.7	79.9	16.0	111	11	144	183	100
Mironovskaya 808	47.7	76.4	12.6	127	95	148	184	100
Blueboy	47.2	75.6	11.4	117	43	145	183	100
CI 13449/Centurk	43.8	76.8	12.3	112	71	145	182	100
NE 73640	43.5	80.0	15.0	111	72	144	181	100
Disponent	42.9	72.3	16.3	100	15	156	186	100
Nap Hal/Atlas 66	42.6	79.2	19.4	110	50	146	182	93
Atlas 66	41.5	78.4	15.8	123	94	146	184	100
Budifen	26.6	73.1	12.9	106	44	148	183	91
Lerma Rojo 64	13.3	77.4	16.4	87	0	139	174	45
Mean	49.1	77.8	14.5	101.6	33.8	145.2	182.0	97.6
L.S.D. of cultivar means (.05)	7.2	1.0		4.8	28.5	-	0.1	1.8
Coefficient of variation (%)	10.5	0.9		3.4	60.1	0.0	0.1	1.3

Table 43. **Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Fundulea, Romania in 1978. Concluded.**

Cultivar	Frost damage 0-9	Stripe rust		Leaf rust		Stem rust		Mildew
		Sev.(%)	Resp.	Sev.(%)	Resp.	Sev.(%)	Resp.	Sev.(0-9)
Zlatoklasa (Zg 4364)	4	33	MS	10	R	5	R	2
Slavia (ST-VUR 37)	2	1	R	9	MR	5	R	4
Moslavka (Zg 4240-73)	4	25	MS	5	R	5	R	1
Zg 4293-73	4	24	MS	1	R	8	R	1
NR 72-837	2	25	MS	5	R	6	R-MR	1
Sadovo-1	2	5	R	85	VS	10	MR	6
Yubiley	2	1	R	6	R	9	R	5
NR 73-5028 (Samson)	1	28	R-MR	99	S	10	MS-S	6
Martonvasari 4	1	1	R	99	VS	58	VS	5
Iulia	2	2	R	28	MS	5	R-MR	4
Zg 887-73	3	5	R	9	MR	5	R	1
Slavyanka	1	33	MS	9	R	5	R-MR	6
Partizanka	0	13	MR	5	R	9	MS	6
Absolvent	1	1	R	50	S	50	VS	6
Ticonderoga	2	40	MS	65	S	48	VS	3
Bezostaya 1	1	8	R	43	S	9	MS	5
Lindon	2	78	S	1	R	7	S	5
Krasnodarskaya 39	1	35	MS	45	S	45	VS	5
F54-70	1	8	R	9	R	11	MR-MS	4
Newton (KS 73112)	1	21	MS	23	MR	9	MS	8
F54-70	1	1	R	10	R	9	MS	4
Mironovskaya 808	0	1	R	83	S	40	S	2
Blueboy	1	28	MR-MS	1	R	40	VS	7
CI 13449/Centurk	3	61	S	10	MR	30	MS-S	4
NE 73640	0	38	MS-S	8	MR-MS	9	MR	5
Disponent	2	1	R	99	VS	1	R	6
Nap Hal/Atlas 66	6	34	R-MS	5	R	6	MR	4
Atlas 66	4	48	S	9	R	6	MR	2
Budifen	6	4	R	85	S	5	R	7
Lerma Rojo 64	8	1	R	8	MR	6	R	7
Mean	2.2	20.0		30.7		15.6		4.4
L.S.D. of cultivar means (.05)	0.5			-		-		-
Coefficient of variation (%)	15.2			-		-		-

REPUBLIC OF SOUTH AFRICA

Bethlehem

(Dryland)

COOPERATOR(S): I. B. J. Smit and K. W. Packendorf.

DATE OF PLANTING (EFFECTIVE GERMINATION): June 16, 1978.

PRECIPITATION DURING CYCLE OF TEST: 213 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 12 kg/ha; P = 18 kg/ha. Applied Limestone Ammonium nitrate and Superphosphate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: It was a poor season, being very dry and hot.

DISEASE DEVELOPMENT: The nursery was so dry that diseases were slow to develop and spread.

INSECT, WEED OR PEST PROBLEMS: Aphids were sprayed three times with Metasystox.

DATE OF HARVEST: December 7, 1978 to January 8, 1979.

AREA HARVESTED FOR YIELD: 5.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Diseases - November 28, 1978
Plant height - December 5, 1978
Lodging - December 7, 1978
Shattering - December 7, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering	Ripening
Test weight	.60**						
N	119						
1000-kernel weight	.02	.18					
N	119	119					
Protein	-.61**	-.41*	-.39*				
N	30	30	30				
Plant height	.24**	.44**	.19*	.07			
N	119	119	119	30			
Flowering	-.76**	-.50**	.02	.46**	-.11		
N	119	119	119	30	119		
Ripening	-.74**	-.56**	.13	.47**	-.18*	.91**	
N	119	119	119	30	119	119	
% stand	.21*	.09	-.23*	.33	.26**	-.03	-.03
N	119	119	119	30	119	119	119

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

Table 44. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Bethlehem, South Africa in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)	% Stand	Leaf rust Sev.(%)	Leaf rust Resp.	Stem rust Sev.(%)	Stem rust Resp.
Zg 887-73	28.8	76.0	28.8	13.9	63	296	329	71	1	S	0	-
Lerma Rojo 64	28.3	78.3	36.3	14.2	91	285	320	80	0	-	4	S
Partizanka	27.1	78.9	31.2	13.1	78	302	332	80	2	-	9	S
Zlatoklasa (Zg 4364)	25.6	73.5	28.5	15.0	57	301	331	76	0	-	1	S
Yubiley	25.4	76.3	31.8	14.0	68	299	328	85	0	S	4	S
Blueboy	25.3	72.4	28.0	15.3	83	304	334	83	5	S	14	S
NR 73-5028 (Samson)	25.1	78.3	30.6	14.2	79	299	328	76	2	S	14	S
CI 13449/Centurk	25.0	75.9	27.0	13.1	83	306	335	84	3	S	24	S
Newton (KS 73112)	24.8	78.1	27.7	15.9	77	307	336	94	2	S	2	S
Absolvent	24.6	79.7	35.4	13.8	79	306	334	69	1	S	4	S
Sadovo-1	23.5	77.6	38.6	15.3	72	301	332	69	1	S	8	S
Martonvasari 4	23.5	76.7	33.0	14.6	88	302	334	60	2	S	10	S
Budifen	22.7	70.4	26.9	13.4	72	305	336	89	1	S	20	S
Moslavka (Zg 4240-73)	22.6	73.0	26.1	16.4	58	297	328	58	1	S	0	-
Slavyanka	22.5	76.2	32.2	14.4	80	304	332	66	0	S	2	S
NE 73640	21.9	75.6	26.4	17.0	80	309	336	83	1	S	4	S
Lindon	21.6	79.0	24.6	16.7	80	305	335	87	3	S	1	S
Bezostaya 1	21.0	77.8	34.0	15.2	80	306	335	68	2	S	8	S
Iulia	19.7	76.7	32.9	16.0	68	304	340	80	7	S	23	S
Atlas 66	18.6	74.8	28.1	22.0	100	307	333	94	3	S	8	S
F53-70	18.0	75.6	32.1	17.4	71	313	341	68	0	-	30	S
Zg 4293-73	17.8	73.3	25.6	15.8	47	299	331	58	3	MR-S	0	-
NR 72-837	16.5	70.1	29.1	15.2	61	316	344	80	0	-	48	S
F54-70	16.4	74.1	30.3	19.5	71	315	342	73	0	S	40	S
Slavia (ST-VUR 37)	16.3	66.9	32.1	14.3	65	317	344	54	5	MS-S	25	S
Krasnodarskaya 39	15.4	76.1	31.4	17.9	75	315	340	68	2	S	20	S
Ticonderoga	14.9	71.4	31.3	15.5	66	317	343	72	16	S	58	S
Mironovskaya 808	12.8	69.6	33.2	20.2	79	316	346	76	0	-	23	S
Nap Hal/Atlas 66	12.0	75.0	21.0	20.1	76	312	335	85	1	S	16	S
Disponent	10.6	68.3	34.1	19.6	63	326	362	85	0	S	7	S
Mean	20.9	74.8	30.3	16.0	73.5	306.3	336	75.5	2.0		14.1	
L.S.D. of cultivar means (.05)	4.1	1.8	2.0	-	5.0	2.8	2.3	13.2	-		-	
Coefficient of variation (%)	13.8	1.7	4.6	-	4.8	0.7	0.5	12.4	-		-	

SPAIN

Madrid

COOPERATOR(S): J. Salazar and F. Sanz.

DATE OF PLANTING (EFFECTIVE GERMINATION): November 22, 1977.

PRECIPITATION DURING CYCLE OF TEST: 415 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 100 kg/ha; P = 130.8 kg/ha; K = 83 kg/ha applied as an (8:24:8) compound.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: December had very mild temperatures, but January and February were cold with frequent freezing. In March and April there were isolated instances of frost. In June and July, temperatures were generally hot.

DISEASE DEVELOPMENT: Stripe rust was severe; Leaf rust was of some importance also. Stem rust and Mildew were slow to develop.

DATE OF HARVEST: July 25, 1978.

AREA HARVESTED FOR YIELD: 1.875 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Mildew - May 15, 1978
Septoria - May 30, 1978
Stripe rust - June 2, 1978
Leaf rust - June 20, 1978
Stem rust - July 3, 1978
Plant height - July 4, 1978
Lodging - July 5, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering
Test weight	.25**						
N	120						
1000-kernel weight	.30**	.40**					
N	120	120					
Protein	-.07	.16	-.15				
N	30	30	30				
Plant height	.19*	.37**	.21*	.16			
N	120	120	120	30			
Lodging	.03	-.02	.00	.06	.19*		
N	120	120	120	30	120		
Flowering	-.05	.01	.13	-.11	.46**	-.07	
N	120	120	120	30	120	120	
Ripening	.08	.01	.10	.25	.38**	.17	.20*
N	120	120	120	30	120	120	120

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

Table 45. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Madrid, Spain in 1978.

Cultivar	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Date of Flowering	Date of Ripening	Stripe rust		Leaf rust		Stem rust		Mildew
	q/ha	kg/hl	g	%	cm	%	days from Jan. 1		Sev(%)	Resp.	Sev(%)	Resp.	Sev(%)	Resp	Sev(0-9)
Slavia (ST-VUR 37)	56.3	78.4	44.0	13.3	103	0	146	183	5	MR	53	S	1	MS-S	0
Blueboy	54.6	77.9	34.9	10.0	113	5	144	184	15	MR-S	12	MR-S	13	MS-S	5
Yubiley	54.3	80.6	37.4	14.1	91	0	137	180	30	MR-MS	0	-	5	S	2
Sadovo-1	53.9	82.2	43.4	13.5	95	0	137	182	23	MR-S	18	S	13	MS-S	3
Martonvasari 4	49.5	82.3	36.5	14.5	108	0	137	181	43	MS-S	1	MS	1	MS	1
Budifen	48.9	76.1	30.1	11.9	95	0	146	182	0	-	0	S	0	-	6
Partizanka	45.5	82.8	34.6	13.9	96	0	138	181	63	MS-S	0	-	0	-	1
Newton (KS 73112)	44.3	81.4	37.1	15.7	104	19	147	182	19	MS-S	0	-	1	R-MS	2
F54-70	44.3	82.2	37.5	15.5	115	0	140	184	53	S	0	-	5	S	1
NR 72-837	44.0	80.2	41.5	14.2	96	0	148	182	18	MR-S	0	-	0	-	0
Bezostaya 1	42.2	83.1	39.6	14.5	104	0	140	182	63	MS-S	3	S	6	S	2
F53-70	40.9	82.1	39.1	11.2	113	0	140	183	35	MR-S	0	MR	21	S	2
Moslavka (Zg 4240-73)	39.3	76.2	28.6	14.9	80	0	134	180	68	S	1	S	0	-	1
Mironovskaya 808	38.8	79.1	39.8	11.8	139	25	149	184	28	MR-S	1	MR	1	MR	0
Absolvent	38.8	83.1	40.8	12.9	101	0	140	181	30	MR-MS	0	MR	0	MR	1
Disponent	37.8	78.4	36.6	15.8	104	0	135	186	7	MR	0	-	1	MR	0
Lerma Rojo 64	37.7	79.2	35.0	14.9	100	72	131	182	20	MR-MS	0	-	0	-	6
Slavyanka	36.7	82.1	35.6	13.9	95	0	137	182	58	MS-S	0	-	0	-	1
Zg 887-73	36.4	75.1	28.3	13.1	80	0	136	182	80	S	0	-	0	-	0
Zlatoklasa (Zg 4364)	36.1	74.7	28.6	12.8	71	0	137	181	58	MS-S	0	-	0	-	0
Iulia	34.7	82.3	39.1	15.0	96	0	138	183	45	MR-S	0	S	0	-	1
Atlas 66	34.5	81.3	34.9	15.2	131	15	144	184	53	MS-S	0	-	0	-	3
Lindon	32.5	79.5	25.6	13.8	103	0	138	182	83	MS-S	0	-	0	-	0
NR 73-5028 (Samson)	32.2	76.4	27.6	14.9	89	0	139	180	80	S	0	-	0	-	0
Krasnodarskaya 39	29.4	81.2	39.0	12.1	94	0	144	182	58	S	0	-	1	MR	0
NE 73640	29.2	79.3	30.8	12.6	115	8	143	180	88	S	0	-	0	-	0
CI 13449/Centurk	28.1	77.0	25.4	13.4	103	0	143	181	85	S	0	-	0	-	0
Zg 4293-73	27.1	74.7	27.5	14.8	66	0	135	181	59	R-S	0	-	0	-	0
Ticonderoga	25.6	72.5	44.1	12.9	100	0	146	183	70	S	0	-	1	S	2
Nap Hal/Atlas 66	24.9	81.1	26.8	19.1	125	0	150	185	75	S	0	-	0	-	1
Mean	39.3	79.4	35.0	13.9	100.8	4.8	140.5	182.0	46.9		2.9		2.3		1.3
L.S.D. of cultivar means (.05)	12.7	2.2	7.2		10.2	17.9	4.6	2.6							
Coefficient of variation (%)	22.9	2.0	14.5		7.2	266.3	2.3	1.0							

SWEDEN

Svalof

COOPERATOR: B. Kristiansson.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 12, 1977.

PRECIPITATION DURING CYCLE OF TEST: 638.8 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 90 kg/ha; P = 28 kg/ha; K = 52 kg/ha. Initial application of 200 kg (15:0:0) followed by application of 400 kg/ha of (15:7:13).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Disease development was less than in average years.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 15, 1978.

AREA HARVESTED FOR YIELD: 6.5 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Mildew - July 13, 1978
Lodging - July 13, 1978
Height - July 20, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival
Test weight	.52**								
N	119								
1000-kernel weight	.40**	.22*							
N	119	119							
Protein	-.54**	-.08	-.68**						
N	30	30	30						
Plant height	.48**	.38**	.33**	-.20					
N	119	119	119	30					
Lodging	-.41**	-.30**	-.16	.23	.18*				
N	119	119	119	30	119				
Flowering	.39**	.07	.26**	-.36	.42**	-.29**			
N	119	119	119	30	119	119			
Ripening	.23*	.00	.01	-.20	.20*	-.20*	.55**		
N	119	119	119	30	119	119	119		
Winter survival	.65**	.59**	.31**	-.44*	.25**	-.30**	.08	-.06	
N	119	119	119	30	119	119	119	119	
Frost	.32	.20	-.04	-.00	.13	-.25	.46*	.31	.20
N	30	30	30	30	30	30	30	30	30

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

Table 46. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Svalof, Sweden in 1978.

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 %	Frost damage 0-9	Mildew Sev.(0-9)
Disponent	62.1	82.6	48.8	15.1	74	1	167	222	83	4	1
Budifen	59.1	81.0	44.5	13.7	80	1	169	222	77	4	1
Absolvent	58.9	82.5	44.8	16.2	76	5	164	219	88	0	1
Yubiley	55.6	81.4	48.9	15.0	65	1	163	219	86	4	1
Ticonderoga	54.2	80.4	53.4	14.5	76	11	166	216	83	4	0
Slavia (ST-VUR 37)	52.1	79.0	53.0	13.5	63	0	166	220	77	0	0
NR 72-837	50.5	79.5	53.7	16.2	70	8	164	218	87	0	0
NR 73-5028 (Samson)	50.0	81.8	43.8	17.3	66	4	162	219	82	0	0
Zg 887-73	49.2	81.0	43.3	14.2	60	4	163	218	81	4	0
CI 13449/Centurk	47.3	82.2	52.7	15.3	75	4	165	221	80	0	1
Partizanka	46.5	82.1	45.2	14.9	69	3	166	220	86	9	0
Bezostaya 1	45.7	81.9	52.0	15.8	74	14	165	220	79	0	1
Lindon	44.9	83.9	42.3	16.2	69	16	162	218	86	0	0
Iulia	44.9	82.6	50.6	16.5	64	4	163	218	86	4	1
F53-70	43.8	82.1	48.7	17.5	71	1	164	219	89	0	0
Blueboy	43.7	80.2	45.8	15.8	75	40	165	219	78	0	4
Mironovskaya 808	41.3	81.2	53.2	14.7	84	85	163	218	84	0	0
NE 73640	41.0	82.4	40.1	18.4	69	44	159	218	84	0	0
Sadovo-1	40.6	81.6	57.8	14.6	63	4	163	218	82	0	1
Martonvasari 4	40.3	83.1	49.0	16.1	73	7	162	217	76	0	0
Slavyanka	39.9	81.4	50.3	16.6	71	6	162	218	77	0	0
F54-70	38.8	81.4	48.3	18.6	69	4	164	219	83	0	0
Krasnodarskaya 39	38.3	80.8	45.3	14.5	73	23	167	219	68	0	1
Atlas 66	36.0	79.7	40.1	18.2	81	26	165	219	66	0	0
Moslavka (Zg 4240-73)	33.0	79.5	37.8	21.7	56	10	161	219	64	0	0
Newton (KS 73112)	27.6	80.3	42.3	18.2	65	28	159	216	71	0	3
Zlatoklasa (Zg 4364)	24.4	79.5	42.0	15.9	51	6	164	218	70	0	0
Zg 4293-73	22.9	79.6	37.8	16.3	45	4	161	219	76	0	0
Nap Hal/Atlas 66	18.8	79.6	37.0	21.7	63	20	167	219	53	9	0
Lerma Rojo 64	14.6	77.0	42.8	16.7	59	56	159	219	51	0	2
Mean	42.4	81.0	46.6	16.3	68.3	14.5	163.6	218.6	77.9	1.4	0.6
L.S.D. of cultivar means (.05)	13.0	1.3	3.4		5.5	15.2	-	0.9	16.0	-	
Coefficient of variation (%)	21.7	1.1	5.1		5.7	74.4	0.0	0.3	14.6	-	-

SWITZERLAND

Zurich

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

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

PRECIPITATION DURING CYCLE OF TEST: 985 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 120 kg/ha; P = 90 kg/ha; K = 180 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was a long period of snow cover from winter until spring. Spring was cool but summer came early. In general, however, maturities were delayed.

DISEASE DEVELOPMENT: There was moderate development of Mildew and Stripe rust but only a small incidence of Leaf rust.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 12, 1978.

AREA HARVESTED FOR YIELD: 4.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Lodging - July 13, 1978
Plant height - July 13, 1978
Stripe rust - July 19, 1978
Mildew - July 19, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Kernel rating
Test weight	.32**							
N	120							
1000-kernel weight	.39**	.39**						
N	120	120						
Protein	-.34	.52**	-.11					
N	30	30	30					
Plant height	-.29**	.27**	.14	.17				
N	120	120	120	30				
Lodging	-.51**	.03	-.05	.32	.51**			
N	120	120	120	30	120			
Flowering	.02	-.15	-.18*	-.37*	.47**	.06		
N	120	120	120	30	120	120		
Kernel rating	-.59**	-.60**	-.59**	.05	-.17	.17	.00	
N	120	120	120	30	120	120	120	
Zeleny	.08	.63**	.25**	.33	.20*	.19*	-.19*	-.34**
N	120	120	120	30	120	120	120	120

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

Table 47. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Zurich, Switzerland in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of flowering days from Jan.1	Kernel[a] rating (1-9)	Zeleny[b] value	Stripe rust Sev(%)	Stripe rust Resp.	Septoria[c] sev. (TKW %)	Mildew Sev(0-9)
Disponent	68.8	81.3	37.7	12.0	104	0	161	4	37	0	-	62.9	2
Slavia (ST-VUR 37)	66.0	76.2	41.6	10.9	98	0	158	3	27	0	-	60.1	4
Yubiley	65.3	79.8	43.6	12.6	88	0	156	3	38	3	M	76.3	5
Partizanka	64.7	81.9	36.1	12.8	95	4	156	4	67	13	M-MS	72.4	3
Sadovo-1	62.5	79.8	44.4	12.0	98	10	155	3	45	5	M	67.8	5
NR 72-837	61.7	77.3	42.7	12.6	90	0	158	4	48	0	-	57.1	3
Iulia	60.5	82.2	47.4	12.6	96	4	153	3	52	5	M	71.2	4
Martonvasari 4	59.0	81.7	43.4	13.1	108	11	155	3	67	10	M	77.3	4
Slavyanka	58.7	81.6	41.8	12.8	106	4	154	3	65	15	M-MS	76.7	4
Moslavka (Zg 4240-73)	57.4	75.6	36.7	12.7	75	0	152	5	41	5	M	61.3	1
Zg 887-73	57.2	77.7	33.6	12.1	75	0	156	5	30	13	MS	60.9	1
Zg 4293-73	57.0	76.6	31.4	12.0	65	0	152	5	38	8	M	66.6	1
Zlatoklasa (Zg 4364)	56.5	77.0	36.0	11.9	75	0	154	4	40	8	M	76.0	1
Blueboy	55.8	77.2	36.0	11.7	113	19	157	5	27	13	M-MS	80.3	8
F54-70	54.9	82.3	43.3	14.4	108	8	156	3	69	5	M	72.1	4
Mironovskaya 808	54.5	80.5	40.9	11.7	134	55	159	3	59	5	MS	71.5	3
NR 73-5028 (Samson)	54.4	79.2	35.2	13.3	93	11	156	5	58	23	M-S	57.5	3
F53-70	53.3	81.6	40.9	14.5	105	11	156	3	66	5	M	75.9	3
Bezostaya 1	52.7	80.2	40.3	12.8	104	51	157	4	66	13	M-MS	70.1	6
Absolvent	51.9	80.4	41.8	13.0	104	34	158	4	64	13	M-MS	65.1	6
Newton (KS 73112)	50.1	80.4	37.4	13.0	94	15	154	4	64	5	M	64.2	6
Ticonderoga	46.1	72.7	36.4	10.9	105	0	160	5	21	60	VS	68.0	5
Atlas 66	45.7	79.8	38.9	13.9	121	62	156	4	40	5	M	76.3	4
Budifen	45.5	75.0	30.8	11.8	100	0	160	6	34	0	-	40.0	3
Krasnodarskaya 39	44.4	78.6	38.5	11.6	108	26	158	4	59	40	S	85.3	7
NE 73640	43.5	81.1	34.0	14.1	105	47	154	5	69	55	S-VS	88.5	4
Lerma Rojo 64	42.6	78.7	44.0	14.2	93	23	149	5	39	8	MS	89.1	9
Lindon	42.4	79.2	32.6	12.4	99	19	156	6	64	60	VS	73.2	6
Nap Hal/Atlas 66	40.0	81.2	32.0	15.5	109	30	157	5	21	30	MS-S	85.4	5
CI 13449/Centurk	26.9	73.3	30.8	13.2	110	59	157	7	36	60	VS	61.0	5
Mean	53.3	79.0	38.3	12.7	99.1	16.7	155.9	4.2	48.3	16.0		70.3	3.9
L.S.D. of the cultivar means (.05)	5.8	0.9	5.5	-	4.1	21.9	0.7	0.9	5.4	-		-	-
Coefficient of variation (%)	7.8	0.8	10.3	-	3.0	93.4	0.3	15.3	8.0	-		-	-

[a] 1 = good, 9 = poor.

[b] Higher values indicate higher protein with strong gluten.

[c] Plots innoculated with Septoria nodorum; evaluated via method described in the Proc. of the 2nd IWW Conference, p. 442, 1975.

SYRIA

Aleppo

COOPERATOR(S): J. Srivastava, A. Kamel, and R. Bertram.

DATE OF PLANTING (EFFECTIVE GERMINATION): December 12, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: One application (amount not recorded).

FERTILIZER USED: N = 120 kg/ha; P = 25.8 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were normal except that the rains ended early (in March) so that the spring was dry.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: June 5, 1978.

AREA HARVESTED FOR YIELD: 2.7 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Table 48. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Aleppo, Syria in 1978.[a/]

Cultivars	Yield q/ha	Protein %	Plant height cm	Date of Flowering (days from Jan. 1)	Date of Ripening (days from Jan. 1)
Slavyanka	67.5	15.7	80	132	162
Absolvent	67.3	17.2	80	135	162
Zlatoklasa (Zg 4364)	65.5	16.6	57	131	162
Sadovo-1	64.2	14.5	71	136	158
Partizanka	63.0	14.2	70	133	162
Iulia	62.7	-	71	139	>167
Lerma Rojo 64	61.8	12.9	85	116	149
Lindon	61.5	15.2	72	136	163
Zg 4293-73	61.2	16.1	51	130	158
Samson	59.8	14.8	70	132	160
Yubiley	59.5	14.3	70	134	161
F53-70	59.1	17.4	70	141	>167
CI 13449/Centurk	59.1	15.1	65	138	163
Moslavka (Zg 4240-73)	59.1	15.2	68	130	156
Newton (KS 73112)	57.7	14.9	70	138	162
Ticonderoga	56.5	-	62	144	>167
NE 73640	56.4	15.9	75	140	167
Zg 887-73	56.4	14.1	61	131	156
Slavia (ST-VUR 37)	55.8	-	65	144	>167
Nap Hal/Atlas 66	53.8	20.6	65	>145	>167
Blueboy	53.4	16.1	80	133	162
Mironovskaya 808	52.8	-	74	147	>167
Budifen	51.7	13.8	60	138	163
Martonvasari 4	49.3	15.2	78	131	162
Disponent	45.9	-	50	>145	>167
Krasnodarskaya 39	45.2	-	70	143	>167
Bezostaya 1	44.0	16.2	78	135	167
Atlas 66	41.6	18.1	90	140	166
NR 72-837	39.7	16.8	50	148	>167
F54-70	30.7	16.1	70	141	>167
Mean	55.4	15.7	69.3	136.9	163.4

[a/] One replication only.

TURKEY

Erzurum

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

DATE OF PLANTING (EFFECTIVE GERMINATION): September 23, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: 35 mm.

FERTILIZER USED: N = 60 kg/ha, Ammonium sulfate; P = 50 kg/ha, Superphosphate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was cold with adequate snow cover. Spring was cool, but temperatures became very hot at maturity.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 5-12, 1978.

AREA HARVESTED FOR YIELD: 2.4 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - May 10, 1978
Flowering - July 1-12, 1978
Plant height - July 20, 1978
Lodging - August 5, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Flowering
Test weight	.26**					
N	120					
1000-kernel weight	.36**	.50**				
N	120	120				
Protein	.23	-.43*	-.36*			
N	30	30	30			
Plant height	.08	.17	.09	-.17		
N	120	120	120	30		
Flowering	-.45**	-.24**	-.32**	.02	.10	
N	120	120	120	30	120	
Winter survival	.30**	.09	-.02	.23	.22*	-.21*
N	120	120	120	30	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 49. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Erzurum, Turkey in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Date of Flowering days from Jan. 1	Winter survival %
Partizanka	34.0	80.4	30.9	12.8	82	186	93
CI 13449/Centurk	33.6	76.7	25.6	12.8	100	189	94
Sadovo-1	33.3	78.6	40.2	10.0	80	187	76
Bezostaya 1	33.3	80.1	34.1	10.1	92	186	95
Ticonderoga	31.7	74.5	31.5	15.3	88	188	91
Absolvent	31.5	78.9	34.6	14.2	96	186	95
Slavyanka	30.9	78.6	31.0	14.2	91	185	95
Yubiley	30.6	77.5	33.5	9.9	82	186	93
Martonvasari 4	30.6	79.4	32.0	15.2	102	185	93
NR 72-837	30.4	76.6	34.2	13.6	79	189	79
Zlatoklasa (Zg 4364)	30.3	74.9	30.5	14.3	75	185	86
Iulia	30.1	80.1	34.3	11.1	88	191	89
Lindon	28.3	80.8	29.7	9.9	83	191	93
NR 73-5028 (Samson)	28.1	79.6	29.8	13.3	80	189	95
Zg 887-73	27.7	76.3	30.7	11.5	70	187	80
Newton (KS 73112)	27.3	80.5	35.2	13.8	82	191	95
Lerma Rojo 64	26.7	75.2	32.4	14.0	100	191	93
NE 73640	26.7	80.4	30.3	12.1	106	193	89
Slavia (ST-VUR 37)	26.6	73.3	31.2	16.9	77	190	93
Mironovskaya 808	25.9	76.0	32.2	10.4	121	192	91
Disponent	25.0	70.8	24.0	13.2	81	192	86
F53-70	24.8	80.6	33.3	10.9	82	189	86
Blueboy	24.0	75.4	29.7	10.1	93	191	83
F54-70	23.7	80.0	33.9	10.8	96	188	95
Budifen	21.8	71.8	24.0	13.5	81	192	95
Krasnodarskaya 39	21.7	78.5	29.2	9.6	91	190	78
Zg 4293-73	21.4	74.8	28.5	17.2	53	188	88
Moslavka (Zg 4240-73)	20.7	75.5	29.7	10.3	52	189	71
Atlas 66	17.1	75.3	28.1	13.1	122	190	93
Nap Hal/Atlas 66	16.8	75.8	21.0	16.6	77	191	81
Mean	27.2	77.2	30.8	12.7	86.6	188.8	88.7
L.S.D. of cultivar means (.05)	5.5	1.2	3.0		8.4	2.5	14.4
Coefficient of variation (%)	14.4	1.1	6.8		6.9	1.0	11.5

TURKEY

Eskisehir

COOPERATOR(S): F. Altay, H. Kutluk, and M. K. Haksel.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 10, 1977.

PRECIPITATION DURING CYCLE OF TEST: 495.4 mm from September, 1977 to August 31, 1978.

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: There was ample rainfall at planting time, so that seed germination was good. The winter produced a lot of snow, and there followed a cold and rainy spring season.

DISEASE DEVELOPMENT: There was only a moderate incidence of rust development.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 25, 1978.

AREA HARVESTED FOR YIELD: 8.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Flowering - May 20-June 5, 1978
Lodging - June 25, 1978
Stripe rust - June 25, 1978
Stem rust - July 5, 1978
Ripening - July 3-15, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	-.00							
N	120							
1000-kernel weight	.27*	.17						
N	90	90						
Protein	-.39*	.28	-.07					
N	30	30	30					
Plant height	-.14	.08	.19	.13				
N	120	120	90	30				
Lodging	-.36**	.05	-.03	.17	.25**			
N	120	120	90	30	120			
Flowering	.07	-.52**	-.05	-.24	.32**	-.21*		
N	120	120	90	30	120	120		
Ripening	.18	-.25**	.17	-.01	.42**	-.27**	.58**	
N	120	120	90	30	120	120	120	
Frost	-.25**	-.03	-.16	.18	-.18*	.53**	-.40**	-.45**
N	120	120	90	30	120	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 50. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Eskisehir, Turkey in 1978.

Cultivar	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)	Frost damage 0-9	Stripe rust Sev.(%)	Stripe rust Resp.	Stem rust Sev.(%)	Stem rust Resp.
Budifen	46.9	80.3	36.5	11.8	94	0	154	194	3	0	-	5	S
Zlatoklasa (Zg 4364)	42.9	81.2	35.3	13.1	61	0	145	190	3	16	S	5	S
Yubiley	41.8	84.2	43.7	13.3	83	0	146	191	2	0	-	18	S
Partizanka	41.4	85.9	38.4	13.1	88	0	146	193	2	8	S	3	MS
Ticonderoga	41.2	77.2	37.6	10.8	93	0	152	194	2	78	S	25	S
Bezostaya 1	39.6	84.9	39.9	14.5	103	0	147	192	2	3	MS	30	MS-S
CI 13449/Centurk	39.5	83.4	37.4	11.0	99	0	147	192	2	18	S	40	MS-S
Sadovo-1	39.3	84.0	47.4	13.9	89	0	144	193	2	0	-	9	MS
F53-70	39.2	83.8	39.8	14.8	100	0	147	193	2	0	-	25	S
Lindon	38.7	85.9	37.3	12.7	86	0	150	191	2	0	-	15	S
Slavia (ST-VUR 37)	38.7	79.0	42.3	13.0	78	0	150	193	2	1	MR	15	MS-S
Moslavka (Zg 4240-73)	38.4	81.3	35.1	13.7	68	0	142	190	3	3	MR	3	MS
NR 72-837	38.2	81.1	43.2	13.6	81	0	153	194	2	9	S	28	S
Martonvasari 4	37.5	84.5	41.0	14.4	101	0	146	191	2	0	-	26	MS-S
Zg 4293-73	36.1	82.6	32.2	13.6	54	0	144	189	3	0	-	3	S
Zg 887-73	36.0	82.6	38.0	11.6	61	0	144	189	4	45	S	0	-
Slavyanka	35.7	84.5	40.9	14.4	90	0	144	191	3	0	-	10	S
Iulia	35.6	84.6	41.8	15.5	90	0	145	192	2	0	-	18	MS-S
Absolvent	35.2	84.8	44.5	14.2	98	0	148	192	2	3	S	23	S
Disponent	33.7	79.2	34.5	12.9	84	0	157	193	2	3	MS	8	S
Newton (KS 73112)	33.7	85.0	38.1	11.9	84	5	146	189	2	10	S	30	MS-S
NR 73-5028 (Samson)	33.5	84.6	36.2	13.8	86	0	145	191	2	0	-	15	S
Krasnodarskaya 39	32.9	83.5	37.7	11.5	98	0	151	194	2	34	MR-S	35	S
F54-70	31.8	83.6	40.2	15.0	100	0	147	193	2	9	S	18	S
Mironovskaya 808	31.6	80.9	44.0	12.1	123	5	152	194	2	28	MS-S	25	MS-S
NE 73640	31.0	84.1	34.5	14.5	96	10	146	191	2	70	S	5	MS
Blueboy	30.9	80.1	37.7	11.3	98	0	148	192	2	1	MR	38	S
Atlas 66	28.3	81.7	34.5	14.6	125	15	149	193	3	50	S	5	S
Lerma Rojo 64	24.9	83.8	39.9	15.7	85	20	140	187	7	18	S	0	-
Nap Hal/Atlas 66	21.3	82.0	28.3	18.8	94	0	151	193	3	45	S	0	-
Mean	35.8	82.8	38.6	13.5	89.5	1.8	147.4	191.7	2.4	14.9		15.8	
L.S.D. of cultivar means (.05)	5.2	0.7	2.1		7.6	5.3	1.9	2.4	0.4	-		-	
Coefficient of variation (%)	10.3	0.6	3.4		6.0	205.6	0.9	0.9	12.6	-		-	

UNITED STATES

California

Davis

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

DATE OF PLANTING (EFFECTIVE GERMINATION): October 31, 1977.

PRECIPITATION DURING CYCLE OF TEST: 678.4 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 89.8 kg/ha (injected anhydrous ammonia as preplant).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: January and March were abnormally wet; 276 mm precipitation was measured above average levels. Temperatures were above average during the grain filling stages.

DISEASE DEVELOPMENT: There were moderate infections of the rusts as well as Septoria.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 21, 1978.

AREA HARVESTED FOR YIELD: 1.46 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Stripe rust	- May 3, 1978
Leaf rust	- May 3, 1978
Barley yellow dwarf virus	- May 3, 1978
Septoria	- May 3, 1978
Lodging	- June 1, 1978
Shattering	- July 19, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Lodging	Flowering
Test weight	.24					
N	30					
Protein	-.60**	.07				
N	30	30				
Plant height	-.09	.08	-.19			
N	120	30	30			
Lodging	-.19*	.48**	.34	.28**		
N	120	30	30	120		
Flowering	-.35**	.06	.19	.35**	.00	
N	120	30	30	120	120	
Shattering	-.02	.02	-.16	.11	.21*	-.07
N	120	30	30	120	120	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 51. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Davis, California in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	Protein[a] %	Adjusted[a] lysine/ protein (%)	Plant height cm	Lodging %	Date of Flowering days from Jan. 1	Shattering %	Stripe rust[a] Sev.(%)	B.Y.D.V.[a] (0-9)
Newton (KS 73112)	94.9	73.3	14.6	2.89	124	30	110	1	1	7
NR 73-5028 (Samson)	89.5	76.1	13.6	2.76	101	19	96	1	10	4
Sadovo-1	85.5	75.2	15.4	2.79	105	23	98	1	0	7
Lerma Rojo 64	79.2	76.0	17.7	2.68	90	88	74	1	1	2
Partizanka	74.3	76.6	15.6	2.90	101	26	103	1	10	5
Lindon	73.4	75.6	14.2	3.21	109	68	105	7	30	4
Absolvent	73.0	74.6	16.7	2.76	105	63	111	0	20	7
Bezostaya 1	72.1	75.6	16.8	2.87	101	60	109	0	40	5
Zg 4293-73	71.9	71.8	17.0	2.92	78	1	90	2	5	7
Zg 887-73	71.8	71.3	14.2	2.86	93	5	87	8	0	0
Yubiley	69.9	72.8	14.8	3.03	98	53	102	1	0	5
Zlatoklasa (Zg 4364)	68.8	68.8	18.7	2.76	80	9	105	1	0	8
Slavia (ST-VUR 37)	68.8	69.2	14.5	3.04	107	30	118	0	1	2
NR 72-837	68.1	68.7	15.3	2.97	85	5	111	0	5	3
Slavyanka	67.5	75.6	16.4	2.74	110	38	98	0	20	7
Moslavka (Zg 4240-73)	67.4	69.5	14.6	2.92	86	6	87	3	0	3
Martonvasari 4	66.9	73.9	16.4	2.78	111	49	104	0	10	7
Ticonderoga	64.1	69.3	12.8	2.91	95	9	113	0	60	2
Budifen	60.7	61.8	14.9	3.14	103	6	111	0	0	4
Disponent	58.5	68.6	16.3	2.87	103	0	133	1	1	2
Iulia	56.8	74.3	15.6	2.88	98	39	107	1	10	4
Nap Hal/Atlas 66	56.2	74.8	17.6	2.93	111	78	117	8	30	2
CI 13449/Centurk	55.6	72.3	15.3	2.98	100	75	111	1	80	8
NE 73640	55.4	74.2	15.1	2.90	112	73	118	0	90	6
Blueboy	55.1	65.2	14.2	3.14	118	57	97	21	70	4
F53-70	49.8	69.4	17.0	2.95	107	33	95	2	0	6
F54-70	49.0	70.2	17.1	3.26	112	33	109	2	5	6
Mironovskaya 808	48.7	68.1	16.7	3.34	116	30	124	4	0	4
Krasnodarskaya 39	46.5	73.6	15.1	3.12	106	63	120	0	20	4
Atlas 66	30.0	70.6	19.6	2.78	123	70	113	4	10	6
Mean	65.0	71.9	15.8	2.94	102.9	37.8	105.7	2.2	17.6	4.7
L.S.D. of cultivar means (.05)	16.6	-	1.5[b]	0.16[b]	9.6	25.6	9.0	8.8	25.5[b]	2.1[b]
Coefficient of variation (%)	18.2	-	9.7	5.6	6.7	48.1	6.0	283.1	144.6	44.8
Local cultivars:										
Anza	121.8	78.7			89	5	88	0	0	2
WW33G	97.1	75.0			91	6	88	1	0	2

a/ One replication only.
b/ Standard deviation.

UNITED STATES

Colorado

Akron

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

DATE OF PLANTING (EFFECTIVE GERMINATION): September 25, 1977.

PRECIPITATION DURING CYCLE OF TEST: 235 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 56.1 kg/ha, Ammonium nitrate.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were normal with timely rains.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 13, 1978.

AREA HARVESTED FOR YIELD: 7.5 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Winter survival - April 7, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein
Test weight	.57**		
N	27		
Protein	-.54**	-.27	
N	27	26	
Winter survival	.86**	.39*	-.50**
N	120	27	27

** Significant at the 1% level.

* Significant at the 5% level.

Table 52. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Akron, Colorado in 1978.

Cultivars	Yield q/ha	Test[a] weight kg/hl	Protein %	Winter Survival %
Krasnodarskaya 39	26.0	74.9	10.8	100
Bezostaya 1	24.9	78.9	11.8	100
Absolvent	24.9	79.8	11.6	100
Blueboy	24.8	73.8	10.9	100
Yubiley	24.4	80.9	12.0	100
Slavyanka	23.4	78.0	12.8	100
Martonvasari 4	23.4	77.4	11.4	100
CI 13449/Centurk	23.3	73.3	9.7	100
Newton (KS 73112)	23.2	80.5	10.5	100
Lindon	23.1	81.4	10.8	100
Sadovo-1	22.6	77.1	.	100
Partizanka	22.2	80.9	12.4	100
Iulia	21.8	79.3	12.8	100
NR 72-837	21.7	73.1	13.5	100
NE 73640	21.6	78.3	11.8	100
F53-70	21.6	78.9	13.1	100
Disponent	21.2	69.2	12.8	100
Slavia (ST-VUR 37)	20.9	79.3	12.0	100
Zlatoklasa (Zg 4364)	20.7	72.0	13.9	100
F54-70	20.1	77.1	13.6	100
Ticonderoga	20.1	71.8	11.0	95
Mironovskaya 808	19.8	74.9	12.0	100
Moslavka (Zg 4240-73)	18.3	69.2	10.9	93
Zg 4293-73	17.0	69.6	11.4	95
Atlas 66	13.1	74.9	15.4	75
NR 73-5028 (Samson)	12.2	70.9	15.8	58
Nap Hal/Atlas 66	7.3	71.1	19.5	26
Zg 887-73	0.0	.	.	0
Lerma Rojo 64	0.0	.	.	0
Budifen	0.0	.	.	0
Mean	18.8	75.8	12.5	84.7
L.S.D. of cultivar means (.05)	4.0	-		10.6
Coefficient of variation (%)	15.0	-		8.9

[a] One replication only.

UNITED STATES

Colorado

Fort Collins

COOPERATOR: J. R. Welsh.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 259 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: None.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were normal with well distributed and timely rains.

DISEASE DEVELOPMENT: There was only a low level of Stem rust development from an artificial inoculation.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 25, 1978.

AREA HARVESTED FOR YIELD: 3.72 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Winter survival - April 1, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Flowering
Test weight	.58**				
N	28				
Protein	-.56**	-.37			
N	28	28			
Plant height	.22	.24	.14		
N	27	27	27		
Flowering	-.15	-.51**	.44*	.43*	
N	108	27	27	27	
Winter survival	.86**	.42*	-.18	.21	-.10
N	120	28	28	27	108

** Significant at the 1% level.

* Significant at the 5% level.

Table 53. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Fort Collins, Colorado in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	Protein %	Plant[a] height cm	Date of flowering days from Jan. 1	Winter survival %
Newton (KS 73112)	69.1	80.5	15.1	91	156	96
Lindon	63.6	79.8	15.2	97	159	99
Mironovskaya 808	55.4	72.7	15.2	114	163	98
Ticonderoga	54.4	71.1	16.1	91	163	98
Bezostaya 1	53.7	78.9	15.2	94	162	99
NE 73640	53.1	78.4	17.2	97	155	96
Martonvasari 4	51.6	78.0	15.2	89	159	99
Yubiley	50.1	77.7	14.6	79	160	98
F54-70	49.2	77.1	17.4	94	158	100
Blueboy	49.1	67.6	15.2	99	162	100
Disponent	49.1	68.6	16.9	89	176	94
Absolvent	48.9	78.9	15.1	99	161	94
CI 13449/Centurk	47.7	74.0	15.0	94	161	98
Partizanka	47.3	79.6	14.6	89	157	98
Zlatoklasa (Zg 4364)	46.7	69.3	16.2	66	158	94
NR 72-837	46.5	67.7	17.1	86	167	99
Krasnodarskaya 39	44.4	79.0	14.3	107	167	80
Moslavka (Zg 4240-73)	44.4	70.7	16.1	61	157	95
F53-70	43.2	75.5	16.7	99	161	99
NR 73-5028 (Samson)	42.9	74.9	16.2	69	156	93
Sadovo-1	42.9	75.3	15.3	76	157	94
Slavia (ST-VUR 37)	42.7	71.1	16.0	86	164	98
Slavyanka	42.6	77.4	16.6	89	157	95
Iulia	42.2	75.4	17.2	81	154	94
Zg 4293-73	37.6	70.9	15.2	61	154	93
Atlas 66	29.9	71.5	21.6	114	166	89
Nap Hal/Atlas 66	26.3	69.9	23.5	89	171	84
Zg 887-73	8.3	.	.	.	162	19
Budifen	4.3	.	16.8	.	.	6
Lerma Rojo 64	0.0	.	.	.	.	0
Mean	42.9	74.2	16.3	88.9	160.6	86.4
L.S.D. of cultivar means (.05)	7.3	-		-	-	11.0
Coefficient of variation (%)	12.1	-		-	-	9.1

[a] One replication only.

UNITED STATES

Indiana

Brookston

COOPERATOR(S): D. Baker and K. E. Miskin.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 1051.1 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 56.1 kg/ha (Ammonium nitrate applied as spring topdress).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was cold and wet, with quite a lot of snow cover. Conditions were cold and wet in the spring also. Summer was normal.

DISEASE DEVELOPMENT: There was a heavy build-up of Rhizoctonia sp. which may have killed some of the plots instead of the cold winter.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 22, 1978.

AREA HARVESTED FOR YIELD: 11.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Plant height	Lodging	Flowering
Test weight	.68**				
N	76				
Plant height	.70**	.36**			
N	79	76			
Lodging	.48**	.28	.62**		
N	38	38	38		
Flowering	-.54**	-.67**	-.17	-.24	
N	75	73	75	36	
Winter survival	.95**	.64**	.66**	.41*	-.49**
N	120	76	79	38	75

** Significant at the 1% level.

* Significant at the 5% level.

Table 54. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Brookston, Indiana in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Lodging[a] (1-9)	Date of flowering days from Jan. 1	Winter survival %
Martonvasari 4	31.5	78.1	14.1	89	3	152	100
NE 73640	31.3	78.6	14.5	94	5	155	99
Absolvent	31.3	78.2	14.1	87	3	155	99
Bezostaya 1	30.9	78.2	14.7	91	2	155	100
F54-70	30.7	78.2	15.2	91	2	158	100
Newton (KS 73112)	30.3	78.0	12.7	86	4	152	100
Partizanka	30.3	77.3	15.1	78	3	155	99
F53-70	29.5	77.5	15.9	94	2	157	100
Krasnodarskaya 39	29.3	77.5	13.4	94	3	157	100
Mironovskaya 808	28.9	74.9	13.8	110	5	159	100
Lindon	27.9	79.7	14.1	81	2	155	97
Sadovo-1	25.6	75.6	15.4	75	1	152	80
CI 13449/Centurk	25.4	74.8	13.5	90	4	156	97
Yubiley	25.4	74.9	14.8	71	1	155	90
Slavyanka	21.4	75.4	15.7	85	1	154	83
Blueboy	20.3	70.5	14.5	90	2	159	64
Ticonderoga	16.3	68.1	15.0	76	2	165	34
Iulia	14.8	75.8	17.3	71	2	161	38
Disponent	14.1	63.8	16.9	71	2	166	53
NR 73-5028 (Samson)	4.9	73.5	18.8	60	1	159	5
Slavia (ST-VUR 37)	0.0	.	.	58	.	.	1
Atlas 66	0.0	.	.	.	.	.	0
Zg 887-73	0.0	.	.	.	.	.	0
Moslavka (Zg 4240-73)	0.0	.	.	.	.	.	0
Zlatoklasa (Zg 4364)	0.0	.	.	.	.	.	0
Zg 4293-73	0.0	.	.	.	.	.	0
Lerma Rojo 64	0.0	.	.	.	.	.	0
NR 72-837	0.0	.	.	.	.	.	0
Nap Hal/Atlas 66	0.0	.	.	.	.	.	0
Budifen	0.0	.	.	.	.	.	0
Mean	16.7	75.5	15.0	84.0	2.3	156.5	54.5
L.S.D. of cultivar means (.05)	5.1	1.9		6.8	N.S	2.2	16.7
Coefficient of variation (%)	21.8	1.8		5.7	48.8	1.0	21.7

[a] 1 = erect; 9 = down flat.

UNITED STATES

Kansas

Hutchinson

COOPERATOR(S): E. G. Heyne and G. M. Paulsen.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 12, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Not reported.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were about average for the area, but there were unusually high winds and hot temperatures for several days while the wheat was in the dough stage.

DISEASE DEVELOPMENT: Leaf rust developed heavily, but not until late in the spring.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: June 28, 1978.

AREA HARVESTED FOR YIELD: 1.784 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - March 31, 1978
Leaf rust - June 1-2, 1978
Plant height - June 16, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Flowering
Test weight	.38*				
N	29				
Protein	-.29	-.15			
N	29	29			
Plant height	.06	.44*	.08		
N	115	28	28		
Flowering	-.57**	-.61**	.45*	.22*	
N	115	28	28	115	
Winter survival	.64**	.29	-.14	.29**	-.21*
N	118	28	28	115	115

** Significant at the 1% level.

* Significant at the 5% level.

Table 55. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Hutchinson, Kansas in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	Protein %	Seed grade 1-9	Plant height cm	Date of flowering days from Jan. 1	Winter survival %	Leaf rust Sev.(%)	Leaf rust Resp.
Newton (KS 73112)	29.6	77.9	14.2	3	103	138	100	48	MR-MS
Lindon	29.4	78.0	14.4	4	107	136	100	92	S
Yubiley	28.9	75.3	14.9	4	94	139	95	7	R-MR
NE 73640	26.1	78.3	14.9	3	111	139	100	78	S
Partizanka	25.1	76.8	15.2	3	94	139	100	3	R-MR
Moslavka (Zg 4240-73)	25.0	69.8	16.2	4	75	137	99	8	MR
Zlatoklasa (Zg 4364)	24.7	69.4	14.7	4	80	136	100	19	MR-MS
Zg 4293-73	24.7	69.7	15.1	4	65	134	100	48	MS
Sadovo-1	24.0	75.7	13.7	4	98	136	100	99	S
Iulia	22.6	74.6	15.0	3	100	135	100	65	MR-S
Blueboy	22.6	68.4	13.5	4	105	139	100	75	MS-S
Absolvent	22.0	77.0	14.3	3	106	139	100	53	MS-S
Martonvasari 4	21.6	77.4	14.7	3	107	138	100	78	S
F54-70	21.1	74.8	18.2	4	106	141	100	5	R-MR
F53-70	20.6	73.1	17.1	4	105	141	100	6	MR
Slavia (ST-VUR 37)	20.4	64.9	14.0	4	93	142	100	95	S
NR 72-837	19.4	60.2	16.3	4	82	144	100	10	MR
Slavyanka	18.6	74.7	14.2	3	104	137	100	99	S
NR 73-5028 (Samson)	18.4	71.2	13.9	3	98	135	100	90	S
Zg 887-73	18.2	72.6	15.3	4	76	136	88	48	MR-S
Mironovskaya 808	17.4	62.8	17.9	5	119	145	100	9	MR
Krasnodarskaya 39	17.3	76.1	14.2	3	109	141	100	92	S
Bezostaya 1	15.3	77.3	15.7	4	106	139	100	50	MS
Atlas 66	14.7	71.6	18.9	4	116	143	89	9	MR
Ticonderoga	14.0	58.7	14.2	5	92	144	100	97	S-VS
Disponent	13.7	56.6	17.9	5	91	146	100	30	MR-MS
CI 13449/Centurk	13.2	66.8	13.8	4	107	140	100	95	S
Nap Hal/Atlas 66	13.0	70.7	21.9	4	99	144	98	14	MR-MS
Budifen	6.6	55.0	14.6	5	77	144	43	70	S
Lerma Rojo 64	0.0	.	.	.	.	.	0	-	-
Mean	19.6	70.9	15.5	3.8	97.2	139.4	94.4	51.2	
L.S.D. of cultivar means (.05)	3.8	-			5.3	1.6	9.4		
Coefficient of variation	13.6	-			3.9	0.8	7.0		

[a] One replication only.

UNITED STATES

Montana

Billings

COOPERATOR: J. Lenneman.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 14, 1977.

PRECIPITATION DURING CYCLE OF TEST: 457.2 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 134.6 kg/ha, applied as (34:0:0) compound.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The season was quite cool, with a cooler than normal summer.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: August 10, 1978.

AREA HARVESTED FOR YIELD: 2.57 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - April 4, 1978
Heading - June 7-20, 1978
Plant height - August 8, 1978
Lodging - August 8, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height
Test weight	.19*			
N	120			
Protein	-.43*	.36*		
N	30	30		
Plant height	-.02	.33**	.42*	
N	120	120	30	
Flowering	-.24**	-.32**	.13	.39**
N	120	120	30	120

** Significant at the 1% level.

* Significant at the 5% level.

Table 56. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Billings, Montana in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Date of flowering days from Jan. 1
NR 73-5028 (Samson)	81.7	81.0	15.6	87	167
Yubiley	80.2	79.7	15.6	86	165
Martonvasari 4	78.4	80.9	16.5	96	167
Blueboy	78.1	75.3	14.5	98	169
Slavia (ST-VUR 37)	77.4	76.9	13.8	89	171
Zg 887-73	77.4	76.3	14.5	72	167
Lindon	77.2	82.5	15.6	93	167
Partizanka	77.1	81.9	14.7	89	169
Slavyanka	76.6	80.7	16.2	91	165
CI 13449/Centurk	75.0	80.4	15.3	95	169
Mironovskaya 808	72.7	77.3	16.7	114	171
Krasnodarskaya 39	72.7	79.7	15.8	98	169
Absolvent	71.7	81.2	16.0	93	169
Lerma Rojo 64	71.3	80.1	16.1	91	162
Bezostaya 1	70.7	81.1	15.7	93	169
Iulia	70.5	81.5	17.1	91	165
Ticonderoga	70.1	72.1	14.4	88	171
Sadovo-1	69.8	79.0	14.9	86	166
Zlatoklasa (Zg 4364)	68.7	76.4	15.9	63	164
Zg 4293-73	67.9	75.7	15.8	55	163
NR 72-837	67.6	76.6	15.2	78	170
Moslavka (Zg 4240-73)	66.9	74.6	15.1	69	162
NE 73640	66.6	80.6	17.3	97	165
F54-70	65.2	80.4	17.0	99	170
Disponent	65.1	74.9	17.2	89	175
Newton (KS 73112)	64.5	81.2	16.4	89	164
F53-70	63.6	79.7	17.0	98	167
Budifen	61.2	70.7	13.8	89	174
Atlas 66	57.3	78.5	19.2	108	171
Nap Hal/Atlas 66	50.8	79.4	20.4	92	172
Mean	70.5	78.5	16.0	89.1	167.7
L.S.D. of cultivar means (.05)	7.8	0.9		4.8	1.6
Coefficient of variation (%)	7.9	0.8		3.8	0.7

UNITED STATES

Nebraska

Lincoln

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

DATE OF PLANTING (EFFECTIVE GERMINATION): September 21, 1977.

PRECIPITATION DURING CYCLE OF TEST: 855.2 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 12 kg/ha; P = 11 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITION DURING TEST: Winter was very cold with occasional thawing. Few of the varieties in the trial survived.

DISEASE DEVELOPMENT: None.

INSECT, WEED OR PEST PROBLEMS: There was a severe infestation of chinch bug (Blissus leucopterus) which devastated the plots that did survive the winter. Plants were very stunted and the grain was shrivelled.

DATE OF HARVEST: Plots were not harvested.

AREA HARVESTED FOR YIELD: ----

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - April 7, 1978
Insect damage - June 12, 1978

Table 57. Agronomic data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Lincoln, Nebraska in 1978.

Cultivar	Winter survival %	Chinch bug damage (0-9)
F53-70	15	3
Blueboy	4	3
Krasnodarskaya 39	65	2
Atlas 66	0	-
Mironovskaya 808	81	1
F54-70	15	2
Lindon	15	3
Yubiley	1	1
Zg 887-73	0	-
Iulia	4	3
Moslavka (Zg 4240-73)	0	-
NE 73640	84	2
Bezostaya 1	6	3
Sadovo-1	1	1
Zlatoklasa (Zg 4364)	1	1
Zg 4293-73	0	-
Lerma Rojo 64	0	-
Martonvasari 4	18	2
Slavyanka	0	-
NR 72-837	4	4
Slavia (ST-VUR 37)	0	-
Ticonderoga	0	-
Disponent	11	1
Partizanka	13	3
Nap Hal/Atlas 66	0	-
NR 73-5028 (Samson)	0	-
Budifen	0	-
Newton (KS 73112)	15	3
Absolvent	8	3
CI 13449/Centurk	6	3
Mean	12.2	2.3
L.S.D. of cultivar means (.05)	6.6	-
Coefficient of variation (%)	38.3	-

UNITED STATES

New York

Ithaca

COOPERATOR(S): N. F. Jensen and M. E. Sorrells.

DATE OF PLANTING (EFFECTIVE GERMINATION): August 29, 1977.

PRECIPITATION DURING CYCLE OF TEST: 1142.2 mm (August 1, 1977 - July 31, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 13.6 kg/ha; P = 27.2 kg/ha; K = 27.2 kg/ha.
Topdress on April 3, 1978: N = 5.4 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The season was drier than normal.

DISEASE DEVELOPMENT: Nothing of significance.

INSECT, WEED OR PEST PROBLEMS: There were some problems with birds.

DATE OF HARVEST: July 17, 1978.

AREA HARVESTED FOR YIELD: 2.97 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - May 8, 1978
Plant height - July 14, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height
Test weight	.13			
N	26			
Protein	-.67**	-.02		
N	27	26		
Plant height	.54**	.11	-.36	
N	84	26	27	
Winter survival	.76**	.21	-.62**	.67**
N	30	26	27	28

** Significant at the 1% level.

* Significant at the 5% level.

Table 58. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Ithaca, New York in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	Protein %	Plant height cm	Winter[a] survival %
NR 72-837	36.4	75.3	11.1	82	87
Absolvent	35.5	76.1	11.4	90	88
Lindon	35.2	79.3	11.5	90	92
Yubiley	34.0	78.2	11.9	72	88
Slavyanka	32.8	78.6	12.5	92	93
Martonvasari 4	32.8	77.0	12.2	92	91
CI 13449/Centurk	32.0	73.5	11.2	93	89
Slavia (ST-VUR 37)	29.6	71.2	12.0	80	89
Zg 4293-73	29.2	76.2	13.2	57	84
F53-70	28.5	75.3	12.9	87	92
Newton (KS 73112)	27.3	80.6	11.8	88	90
Mironovskaya 808	27.3	79.5	14.1	107	89
Bezostaya 1	27.1	76.8	12.3	85	89
Ticonderoga	27.0	71.1	11.9	87	88
Sadovo-1	26.7	77.3	12.0	75	87
F54-70	26.6	74.4	13.3	90	87
Disponent	26.5	72.5	13.0	83	90
Krasnodarskaya 39	26.1	76.2	11.9	90	87
Partizanka	25.1	78.3	12.8	72	83
NE 73640	23.9	78.7	13.5	88	91
Zlatoklasa (Zg 4364)	23.6	74.3	13.1	63	84
Iulia	23.5	75.6	12.7	80	84
Moslavka (Zg 4240-73)	21.1	73.3	12.4	62	80
Atlas 66	19.3	75.2	15.5	95	79
Nap Hal/Atlas 66	18.4	74.8	16.5	75	50
Blueboy	17.8	75.9	12.1	93	84
NR 73-5028 (Samson)	2.7	.	15.0	53	10
Zg 887-73	0.6	.	.	57	3
Lerma Rojo 64	0.0	.	.	.	0
Budifen	0.0	.	.	.	0
Mean	23.9	76.0	12.7	81.3	74.9
L.S.D. of cultivar means (.05)	9.9	-		9.2	-
Coefficient of variation (%)	25.4	-		6.9	-

[a] One replication only.

UNITED STATES

North Carolina

Rowan County

COOPERATOR: C. F. Murphy.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 11, 1977.

PRECIPITATION DURING CYCLE OF TEST: 978.7 mm.

AMOUNT OF IRRIGATION APPLIED: None.

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

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: A severe winter with many days showing below normal temperatures was experienced. Growing conditions were good nevertheless.

DISEASE DEVELOPMENT: Nothing of significance.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: June 21, 1978.

AREA HARVESTED FOR YIELD: 1.484 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - March 28, 1978
Plant height - May 25, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height	Flowering
Test weight	-.18				
N	27				
Protein	-.45*	.28			
N	29	27			
Plant height	.51**	.04	-.16		
N	117	27	29		
Flowering	-.03	-.56**	-.29	.35**	
N	117	27	29	117	
Winter survival	.82**	-.19	-.20	.32**	-.18
N	119	27	29	117	117

** Significant at the 1% level.

* Significant at the 5% level.

Table 59. Agronomic and grain quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Rowan County, North Carolina in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	Protein %	Plant height cm	Date of flowering days from Jan. 1.	Winter survival %
Ticonderoga	52.7	71.6	10.6	102	101	100
Mironovskaya 808	50.1	75.9	12.1	129	103	100
Slavia (ST-VUR 37)	46.2	74.2	10.8	92	98	100
CI 13449/Centurk	45.6	75.5	11.2	98	97	100
Iulia	42.2	80.9	14.8	88	95	100
Disponent	42.1	71.6	11.9	96	106	100
Partizanka	40.9	81.3	12.8	91	97	98
Yubiley	40.7	78.3	12.7	85	98	98
Blueboy	40.2	76.4	12.6	114	97	100
Krasnodarskaya 39	39.7	78.8	13.7	104	102	98
Lindon	39.6	81.1	11.4	104	96	93
Sadovo-1	39.6	78.8	13.9	88	95	98
Absolvent	39.0	79.9	12.6	97	98	100
F53-70	38.9	79.2	14.8	108	98	93
Bezostaya 1	38.3	79.7	14.1	97	98	100
Martonvasari 4	37.9	80.6	13.4	96	96	100
NR 72-837	37.8	72.2	12.7	88	105	100
Slavyanka	37.3	79.7	12.7	96	94	98
F54-70	37.1	78.2	14.3	112	98	100
Newton (KS 73112)	35.6	80.5	10.7	95	97	100
NE 73640	35.0	78.6	12.2	101	97	100
Zlatoklasa (Zg 4364)	34.7	78.0	14.0	76	93	98
NR 73-5028 (Samson)	34.4	79.3	11.8	84	93	90
Atlas 66	28.6	76.6	16.8	112	96	90
Zg 4293-73	27.8	78.4	14.1	63	92	98
Moslavka (Zg 4240-73)	26.9	73.7	13.3	68	92	93
Nap Hal/Atlas 66	22.7	78.7	16.7	98	101	88
Budifen	4.2	.	12.8	84	106	9
Zg 887-73	3.2	.	15.2	66	94	13
Lerma Rojo 64	0.0	.	.	97	104	2
Mean	34.6	77.7	13.1	94.1	97.6	89.1
L.S.D. of cultivar means (.05)	6.9	-		6.6	1.9	5.5
Coefficient of variation (%)	14.1	-		5.0	1.4	4.4

[a] One replication only.

UNITED STATES

Oklahoma

Stillwater

COOPERATOR: E. L. Smith.

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

PRECIPITATION DURING CYCLE OF TEST: 831.6 mm (July, 1977 - June, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: The trial was top-dressed with (45:0:0) on March 17, 1978. Amounts were not specified.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was obvious drought stress in the fall and also in the spring.

DISEASE DEVELOPMENT: Nothing of significance.

INSECT, WEED OR PEST PROBLEMS: There was some Aphid damage.

DATE OF HARVEST: June 22, 1978.

AREA HARVESTED FOR YIELD: 1.49 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Not reported.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height
Test weight	.56**			
N	29			
Protein	-.07	-.23		
N	29	29		
Plant height	.53**	.66**	-.15	
N	116	29	29	
Flowering	-.03	-.08	-.05	.35**
N	116	29	29	116

** Significant at the 1% level.

* Significant at the 5% level.

Table 60. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Stillwater, Oklahoma in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	Protein %	Plant height cm	Date of flowering days from Jan. 1	Leaf rust Sev.(%)	Leaf rust Resp.
NE 73640	19.6	71.5	17.5	74	131	18	S
NR 72-837	18.8	66.3	18.2	68	138	15	S
Lindon	18.7	70.8	16.2	73	126	25	S
CI 13449/Centurk	18.6	68.7	16.0	76	132	35	S
Newton (KS 73112)	17.7	70.1	17.0	70	132	15	S
Moronovskaya 808	17.2	70.1	16.8	86	139	21	S
Yubiley	17.0	66.6	18.8	64	126	2	S
Bezostaya 1	16.7	72.5	17.7	73	128	11	S
F53-70	16.6	71.9	18.8	72	128	2	S
F54-70	16.1	71.6	18.9	70	128	3	S
Ticonderoga	15.7	63.1	17.4	72	139	58	S
NR 73-5028 (Samson)	15.6	68.4	17.4	67	122	18	S
Krasnodarskaya 39	15.2	69.3	16.1	76	130	23	S
Sadovo-1	15.1	69.3	17.3	65	122	28	S
Blueboy	15.1	65.7	16.6	82	131	14	S
Absolvent	15.0	69.4	18.1	73	128	14	S
Slavyanka	14.9	68.3	18.2	74	123	29	S
Atlas 66	14.7	67.7	21.3	83	136	3	S
Partizanka	14.6	71.1	18.6	68	124	4	S
Martonvasari 4	13.6	69.3	18.3	75	124	16	S
Slavia (ST-VUR 37)	13.5	60.4	17.6	62	131	28	S
Iulia	13.3	70.2	19.0	65	122	16	S
Zlatoklasa (Zg 4364)	13.0	62.6	20.3	54	123	4	S
Nap Hal/Atlas 66	12.2	65.7	24.4	70	139	5	S
Disponent	11.4	60.8	20.4	62	142	11	S
Zg 887-73	10.6	63.4	17.5	58	123	33	S
Moslavka (Zg 4240-73)	8.8	56.4	21.0	54	120	2	S
Zg 4293-73	8.3	62.1	19.9	48	122	14	S
Budifen	2.9	59.2	15.0	63	139	18	S
Lerma Rojo 64	0.0	.	.	.	.	-	-
Mean	14.0	67.0	18.3	68.5	129.1	16.6	
L.S.D. of cultivar means (.05)	2.6	-		5.1	1.7	-	
Coefficient of variation (%)	13.1	-		5.3	0.9	-	

[a] One replication only.

UNITED STATES

Oregon

Corvallis

COOPERATOR(S): W. E. Kronstad, W. L. McCuistion, and F. A. Cholick.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 12, 1977.

PRECIPITATION DURING CYCLE OF TEST: 1300 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 224.4 kg/ha, granular Ammonium sulfate/urea. There was a split application (fall and spring).

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were excellent. However, rains during normal harvest time caused considerable lodging and sprouting.

DISEASE DEVELOPMENT: There was good development of Stripe rust and Barley Yellow Dwarf. There was a mild infection of Leaf rust and a rather high incidence of Septoria.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: September 7, 1978.

AREA HARVESTED FOR YIELD: 7.43 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Heading - From May 1, 1978
Diseases - June 15 and July 15, 1978
Lodging - September 1, 1978
Plant height - September 1, 1978

Correlation Coefficients

N = 30 observations	Yield	Lodging
Lodging	-.26	
Flowering	.28	.17

Table 61. Agronomic and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Corvallis, Oregon in 1978.

Cultivar	Yield q/ha	Lodging[a] %	Date of flowering[a] days from Jan. 1	Stripe rust[a] Sev.(%)	Stripe rust[a] Resp.	Septoria[a] Sev.(0-9)
Slavia (ST-VUR 37)	45.8	0	135	20	MR	8
Budifen	40.2	0	131	60	MS	8
Iulia	38.4	0	123	20	M	8
Yubiley	38.2	10	124	30	M	8
Disponent	34.7	0	150	40	MS	8
NR 72-837	32.8	0	143	20	M	7
Zlatoklasa (Zg 4364)	31.3	0	116	40	MS	8
Newton (KS 73112)	30.4	20	137	40	MS	8
Martonvasari 4	28.5	0	123	99	S	8
Partizanka	26.0	0	124	40	S	9
Slavyanka	23.7	20	119	99	S	8
Blueboy	23.1	20	126	40	MS	8
Moslavka (Zg 4240-73)	22.6	0	114	60	S	8
F54-70	21.9	0	125	20	M	8
Krasnodarskaya 39	21.8	10	140	20	M	7
Bezostaya 1	21.0	20	131	40	S	8
Absolvent	20.6	20	132	80	S	8
F53-70	20.2	0	126	60	S	8
Sadovo-1	19.4	10	120	60	S	9
NR 73-5028 (Samson)	18.9	0	117	0	-	8
Ticonderoga	17.4	0	142	60	S	9
Mironovskaya 808	14.9	80	142	20	MR	8
Lindon	12.7	60	126	20	MS	8
Zg 887-73	11.4	0	106	0	-	9
CI 13449/Centurk	11.4	0	133	80	S	9
NE 73640	10.5	10	140	60	S	9
Zg 4293-73	10.4	0	110	99	S	9
Atlas 66	9.3	99	133	20	MR	8
Nap Hal/Atlas 66	8.0	0	138	40	MS	9
Lerma Rojo 64	5.8	20	106	80	S	9
Mean	22.4	13.3	127.7	45.6		8.2
L.S.D. of cultivar means (.05)	5.8	-	-	-		-
Coefficient of variation (%)	18.5	-	-	-		-

[a] One replication only.

UNITED STATES

Washington

Pullman

COOPERATOR(S): C. J. Peterson, Jr. and R. E. Allan.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 6, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: Not reported.

FERTILIZER USED: Not reported.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: There was below normal precipitation in the fall and early winter, and above normal precipitation in spring.

DISEASE DEVELOPMENT: The entire nursery was sprayed with Benlate to control Cercosperella (foot rot).

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: Not reported.

AREA HARVESTED FOR YIELD: 2.97 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Rusts - July 12, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	Protein	Plant height
Test weight	-.02			
N	116			
Protein	-.67**	.54**		
N	29	29		
Plant height	-.31**	-.05	.11	
N	116	116	29	
Lodging	-.20*	.04	.30	.20*
N	117	116	29	116

** Significant at the 1% level.

* Significant at the 5% level.

Table 62. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Pullman, Washington in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Lodging %	Stripe rust[a] Sev.(%)	Stripe rust[a] Resp.	Leaf rust[a] Sev.(%)
Disponent	70.2	79.7	10.6	128	0	3	VR	1
NR 72-837	69.1	81.1	11.1	109	0	8	R	1
Yubiley	62.8	81.5	11.0	116	0	1	VR	1
Slavia (ST-VUR 37)	62.5	79.5	10.7	131	0	5	MR	8
Lindon	60.4	81.6	10.1	129	30	18	MS	1
Sadovo-1	59.1	81.0	12.4	124	0	13	MS-MR	1
Zlatoklasa (Zg 4364)	58.9	80.6	12.5	103	0	3	R-VR	1
Iulia	57.8	82.6	12.4	126	1	50	S-VS	5
Ticonderoga	57.7	73.9	8.9	132	0	80	VS	8
Partizanka	56.3	82.6	12.0	116	0	10	MR	1
Blueboy	55.3	78.0	10.3	136	0	25	MS-MR	13
NR 73-5028 (Samson)	55.0	80.8	12.0	104	0	25	S-MS	1
Zg 887-73	54.6	80.0	10.7	90	0	10	R-MR	1
Budifen	54.2	74.8	9.5	113	0	1	VR	3
Absolvent	51.5	82.4	12.0	133	1	13	VR-MR	1
Bezostaya 1	49.5	82.1	12.3	133	13	10	MS-MR	3
Moslavka (Zg 4240-73)	47.9	79.8	12.4	100	0	3	VR-R	1
Zg 4293-73	47.0	81.0	13.8	88	0	50	VS-S	3
Newton (KS 73112)	46.1	80.7	13.3	123	1	15	MS-R	3
Krasnodarskaya 39	45.6	80.0	12.6	139	1	13	MS-MR	3
CI 13449/Centurk	44.6	78.9	9.5	132	8	35	MR-R	5
F54-70	44.4	82.1	14.1	136	0	6	VR-MS	1
Slavyanka	42.8	81.8	13.2	125	4	15	MS	3
F53-70	41.5	81.5	15.0	136	0	13	MS-R	1
Martonvasari 4	40.2	81.8	13.3	131	8	10	MS-MR	3
Mironovskaya 808	34.6	79.4	11.4	151	8	3	VR-R	1
NE 73640	33.9	80.2	14.9	134	5	70	S-VS	1
Nap Hal/Atlas 66	32.0	81.5	17.6	130	1	23	MS-S	1
Atlas 66	25.6	78.9	13.4	148	20	8	R-MR	1
Lerma Rojo 64	0.0	.	.	.	-	-		-
Mean	48.7	80.3	12.2	123.8	3.4	18.4		2.6
L.S.D. of cultivar means (.05)	10.7	2.2		4.6	N.S.	-		-
Coefficient of variation (%)	15.6	1.9		2.7	327.5	-		-
Local cultivars:								
Luke	71.5	79.2	9.2	116	0	3	VR	8
Nugaines	67.3	80.3	9.3	110	3	10	VR-MS	8

[a] Two replications only.

Table 63. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Pullman, Washington in 1978.[a/]

Cultivars	Yield q/ha	Test weight kg/hl	Protein %	Plant height cm	Lodging %	Stripe rust[b/] Sev.(%)	Stripe rust[b/] Resp.	Leaf rust[b/] Sev.(%)
NR 72-837	78.0	81.4	12.2	110	0	1	VR	1
Disponent	70.2	79.8	12.4	125	0	1	VR	1
Yubiley	68.3	81.8	12.6	112	0	8	VR	1
Zlatoklasa (Zg 4364)	65.1	80.0	14.5	103	0	3	R-VR	1
Blueboy	63.5	77.7	11.7	135	0	70	R-S	3
Partizanka	61.4	82.6	13.1	112	0	15	R-MR	1
Sadovo-1	60.7	80.8	14.0	122	0	8	VR-MR	1
Ticonderoga	60.0	71.6	8.0	133	0	80	VS	5
Slavia (ST-VUR 37)	59.9	79.2	12.0	128	0	11	VR-MR	8
Moslavka (Zg 4240-73)	59.8	80.3	14.1	98	0	11	VR-MS	3
Iulia	59.7	82.4	14.0	123	10	55	S-VS	5
Zg 887-73	59.2	78.8	12.7	88	0	35	VR	3
Budifen	59.2	73.8	10.9	109	0	3	VR	10
Absolvent	54.8	81.8	13.8	128	5	16	VR-R	3
Bezostaya 1	53.2	82.1	13.7	130	3	5	R	4
NR 73-5028 (Samson)	53.2	78.4	13.0	105	0	35	R-VS	8
Zg 4293-73	52.6	80.8	14.5	88	0	30	MR-S	4
Newton (KS 73112)	52.6	80.5	14.5	121	3	58	S-VS	5
CI 13449/Centurk	50.6	78.2	12.4	127	30	40	VR	5
Krasnodarskaya 39	50.1	81.4	14.8	138	5	25	MR-MS	3
Slavyanka	49.5	82.4	14.7	120	4	13	MR-S	1
Lindon	48.6	81.0	11.8	129	40	35	R	1
Martonvasari 4	45.2	80.6	14.3	131	18	8	R	3
F53-70	44.9	81.1	15.9	133	0	10	R-MR	1
F54-70	40.9	81.6	11.8	134	0	8	MR-MS	1
Mironovskaya 808	39.2	79.2	15.9	152	23	1	R-MR	1
NE 73640	36.5	79.8	15.3	129	18	75	VS	1
Atlas 66	32.8	79.2	15.5	146	20	16	VR-MS	1
Nap Hal/Atlas 66	25.4	80.3	-	129	13	20	S	1
Lerma Rojo 64	0.0	.	-	.	-	-	-	-
Mean	51.8	80.0	13.4	121.9	6.3	23.8		2.9
L.S.D. of cultivar means (.05)	10.7	1.8		4.4	20.3	30.9		3.1
Coefficient of variation (%)	14.7	1.6		2.6	227.1	63.4		52.5
Local cultivars:								
Luke	69.5	78.0	11.1	113	10	1	VR	15
Nugaines	63.7	79.5	11.0	108	20	3	VR-R	10

[a/] 27.2 kg Additional nitrogen applied in spring.

[b/] Two replications only.

USSR

Krasnodar

COOPERATOR: Y. M. Puchkov.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 8, 1977.

PRECIPITATION DURING CYCLE OF TEST: 483 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 160 kg/ha; P = 90 kg/ha; K = 45 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The lowest winter temperature was -22.7° C. Snow cover was variable, ranging from 10 - 20 cm. Spring was generally cool, as was the summer also.

DISEASE DEVELOPMENT: Rusts developed well, late in the season.

INSECT, WEED OR PEST PROBLEMS: Lema melanopus L., Eurygaster integriceps L. and Cephus pygmalus Mordv. were observed.

DATE OF HARVEST: July 13, 1978.

AREA HARVESTED FOR YIELD: 6.6 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival - March 20, 1978
Lodging - June 27, 1978
Mildew - April 26, May 11, May 22, and June 5, 1978
Leaf rust - June 6 and July 3, 1978
Stripe rust - May 10, May 23, and June 6, 1978
Stem rust - July 3, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Winter survival
Test weight	.41**								
N	116								
1000-kernel weight	.50**	.63**							
N	116	116							
Protein	-.40*	.30	.13						
N	29	29	29						
Plant height	-.53**	.24*	.16	.46*					
N	116	116	116	29					
Lodging	-.56**	.09	-.14	.33	.68**				
N	116	116	116	29	116				
Flowering	-.64**	-.49**	-.37**	.11	.38**	.26**			
N	116	116	116	29	116	116			
Ripening	-.37**	-.22*	.15	.23	.39**	.01	.59**		
N	116	116	116	29	116	116	116		
Winter survival	.55**	--	--	--	--	--	--	--	
N	120								
Frost	.13	-.01	-.12	.05	-.29**	-.08	-.28**	-.22*	--
N	116	116	116	29	116	116	116	116	

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

Table 64. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Krasnodar, USSR in 1978.

Cultivar	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 %	Frost damage 0-9	Stripe rust Sev(%)	Leaf rust Sev(%)	Leaf rust Resp.	Mildew Sev. (0-9)
Zg 887-73	78.6	79.6	37.8	12.5	82	3	137	181	100	6	0	5	R-M	0
Moslavka (Zg 4240-73)	77.4	77.9	35.4	13.9	86	0	136	179	100	5	0	7	R	1
Sadovo-1	71.7	82.6	50.8	13.3	108	3	138	183	100	3	0	75	MS	8
Zg 4293-73	71.1	77.3	34.9	13.7	71	0	134	178	100	4	17	1	MR	0
Zlatoklasa (Zg 4364)	70.4	79.3	34.9	13.1	85	0	136	179	100	3	2	2	R	0
Slavyanka	70.3	83.0	46.2	14.9	116	13	135	183	100	3	8	8	VR-MR	5
Bezostaya 1	67.7	82.7	45.5	15.0	118	33	143	184	100	1	1	69	M-MS	7
Yubiley	66.9	82.3	47.4	13.9	101	0	139	181	100	2	0	1	VR-R	7
Partizanka	63.7	83.8	41.8	14.8	109	25	138	183	100	2	3	1	R-MR	7
NR 72-837	63.7	77.5	45.8	15.0	95	3	140	185	100	2	1	2	VR-MR	5
Martonvasari 4	63.3	83.9	43.5	15.0	120	35	138	183	100	3	1	75	M-MS	6
Slavia (ST-VUR 37)	62.6	78.8	47.1	14.0	109	38	143	184	100	2	0	21	R-S	6
Krasnodarskaya 39	61.1	81.7	42.7	15.2	129	50	143	182	100	2	9	68	M-MS	6
Iulia	58.8	83.1	44.4	15.3	112	25	137	182	100	2	0	81	M-MS	7
Newton (KS 73112)	56.4	82.5	35.3	13.9	115	58	139	180	100	2	0	45	M-MS	8
Absolvent	56.1	82.6	48.0	14.9	118	35	141	183	100	2	1	59	M-S	7
Lindon	49.3	80.5	28.6	13.6	118	83	140	180	1003	3	3	0	MR	5
Blueboy	47.1	76.4	36.7	12.6	122	45	141	183	100	2	0	54	M-MS	8
Ticonderoga	46.9	73.3	32.2	12.1	105	10	146	184	100	2	24	82	MR-MS	4
F54-70	43.0	80.5	41.9	17.2	127	45	140	184	100	2	0	20	R-M	4
F53-70	42.5	80.3	42.6	17.6	128	60	140	187	100	3	0	4	VR-M	5
NE 73640	42.5	80.9	37.4	15.8	112	88	141	180	100	2	18	19	MS	7
NR 73-5028 (Samson)	41.4	79.4	31.8	13.9	111	45	139	181	100	2	21	50	MS	4
Budifen	40.2	74.8	28.9	11.4	99	5	145	185	100	3	0	80	MS-S	9
CI 13449/Centurk	40.1	76.3	32.6	13.4	122	83	142	182	100	2	38	25	MS	7
Mironovskaya 808	37.9	77.8	38.0	13.7	139	78	144	183	100	2	0	82	M-S	3
Disponent	33.4	72.5	24.9	14.9	102	0	150	187	100	1	0	97	MS-S	6
Nap Hal/Atlas 66	30.8	80.5	30.1	20.2	119	68	145	181	100	3	1	2	R-MS	7
Atlas 66	29.1	79.1	38.9	18.8	127	85	142	185	100	5	0	0	VR-R	3
Lerma Rojo 64	0.0	.	.	.	.	.	.	.	0	.	-	-	-	-
Mean	52.8	79.7	38.8	14.6	110.4	34.8	140.3	182.4	96.7	2.4	5.0	35.5		5.1
L.S.D. of cultivar means (.05)	7.5	1.8	1.8		4.8	21.4	0.8	0.7	-	1.9				
Coefficient of variation(%)	10.1	1.6	3.3		3.1	43.6	0.4	0.3	0	55.8				

USSR

Mironovski

COOPERATOR: V. N. Remeslo.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 8, 1977.

PRECIPITATION DURING CYCLE OF TEST: 555 mm (average normal is 472 mm).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 45 kg/ha as Ammonium nitrate; P = 90 kg/ha as Superphosphate; K = 90 kg/ha as Potassium chloride.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Conditions were good for plant development.

DISEASE DEVELOPMENT: There was abundant Leaf rust and Powdery mildew in the nursery.

INSECT, WEED OR PEST PROBLEMS: A herbicide was used to control the weeds.

DATE OF HARVEST: August, 1978.

AREA HARVESTED FOR YIELD: 2.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Mildew - May 15, 1978; Leaf rust - June 25, 1978.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
1000-kernel weight	.17						
N	101						
Protein	-.74**	.29					
N	26	25					
Plant height	.42**	.42**	-.10				
N	101	101	25				
Lodging	.21*	.22*	.03	.74**			
N	101	101	25	101			
Flowering	.09	-.07	-.40*	.23*	.07		
N	101	101	25	101	101		
Ripening	.04	-.20*	-.51**	.02	-.01	.71**	
N	101	101	25	101	101	101	
Winter survival	.94**	.35**	-.46**	.46**	.25*	.05	-.11
N	120	101	26	101	101	101	101

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

Table 65. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Mironovski, USSR in 1978.

Cultivar	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 %	Leaf rust Sev. (0-9)	Mildew Sev. (0-9)
Lindon	74.6	32.8	13.6	99	53	151	203	94	1	4
Absolvent	71.4	42.7	12.9	86	8	156	206	91	4	4
Mironovskaya 808	70.9	43.0	13.0	127	70	155	203	98	4	3
Slavia (ST-VUR 37)	65.8	38.1	12.2	83	0	157	206	91	3	3
CI 13449/Centurk	65.3	34.7	12.2	82	10	154	204	89	4	4
Ticonderoga	65.3	30.7	12.5	96	10	156	205	87	4	4
Slavyanka	64.4	40.5	14.0	97	10	152	202	88	2	4
NR 72-837	63.1	39.6	13.1	85	10	156	206	89	1	4
Newton (KS 73112)	62.5	34.3	12.4	92	10	152	203	90	4	4
Disponent	62.0	29.7	12.9	90	10	161	205	89	4	2
Sadovo-1	61.7	46.8	13.3	89	8	151	202	87	4	4
Martonvasari 4	61.2	45.1	13.7	98	10	153	202	87	4	4
Krasnodarskaya 39	60.0	42.6	13.5	107	70	156	203	94	4	4
Partizanka	59.5	34.1	13.3	87	0	152	202	89	1	4
NE 73640	58.1	37.8	15.8	103	50	151	203	95	2	4
Zlatoklasa (Zg 4364)	57.6	31.8	13.8	65	0	152	203	68	1	1
Iulia	56.4	44.5	15.3	90	18	152	202	92	4	4
Bezostaya 1	56.1	43.3	14.3	96	10	155	204	94	3	4
F53-70	54.9	44.8	16.7	98	14	154	202	90	1	4
F54-70	48.8	44.8	16.2	97	20	154	203	96	2	4
Yubiley	48.7	39.7	13.8	77	0	153	202	72	1	4
Blueboy	48.1	38.0	12.6	101	23	154	204	58	3	4
Moslavka (Zg 4240-73)	42.5	35.3	14.3	65	0	150	203	67	1	1
Zg 4293-73	25.4	31.8	14.5	54	0	150	202	30	0	0
NR 73-5028 (Samson)	24.6	30.7	14.1	69	0	154	203	33	4	1
Atlas 66	11.7	39.8	18.1	109	50	158	207	21	1	3
Zg 887-73	0.0	.	.	.	.	.	.	0	-	-
Lerma Rojo 64	0.0	.	.	.	.	.	.	0	-	-
Nap Hal/Atlas 66	0.0	.	.	.	.	.	.	0	-	-
Budifen	0.0	.	.	.	.	.	.	0	-	-
Mean	48.0	38.4	13.9	89.9	17.3	153.6	203.3	69.2	2.6	3.3
L.S.D. of cultivar means (.05)	10.0	2.1		7.2	5.2	1.4	1.3	19.3	-	-
Coefficient of variation (%)	14.8	3.9		5.7	21.4	0.7	0.5	19.8	-	-

USSR

Odessa

COOPERATOR(S): A. A. Sozinov and L. K. Sechnjak.

DATE OF PLANTING (EFFECTIVE GERMINATION): September 28, 1977 (October 12, 1977).

PRECIPITATION DURING CYCLE OF TEST: 257 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 60 kg/ha; Ammonium nitrate applied in spring.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Autumn was quite dry, while the winter was mild and moist. There was a cold spring which delayed plant development. Summer was favorable for vegetative growth and head development.

DISEASE DEVELOPMENT: Leaf rust developed heavily.

INSECT, WEED OR PEST PROBLEMS: There was some sparrow damage.

DATE OF HARVEST: July 22-23, 1978.

AREA HARVESTED FOR YIELD: 3.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Winter survival - April 3-4, 1978.

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.41**							
N	116							
1000-kernel weight	.48**	.46**						
N	116	116						
Protein	-.31	.15	-.10					
N	30	29	29					
Plant height	-.12	.31**	.08	.21				
N	116	116	116	29				
Lodging	-.27**	.04	-.05	-.02	.50**			
N	116	116	116	29	116			
Flowering	-.31**	-.62**	-.30**	-.14	.20*	.12		
N	116	116	116	29	116	116		
Ripening	.01	-.29**	-.03	-.22	.27**	.09	.76**	
N	116	116	116	29	116	116	116	
Winter survival	.77**	.63**	.16	.05	.34**	.10	-.30**	-.15
N	120	116	116	30	116	116	116	116

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

Table 66. Agronomic, grain quality and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Odessa, USSR in 1978.

Cultivar	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)
NR 73-5028 (Samson)	66.4	82.3	36.0	12.7	98	0	150	191	100	99	VS	2
Yubiley	64.6	82.3	41.6	14.4	95	0	151	191	100	19	MR-VS	4
CI 13449/Centurk	63.4	80.5	33.3	12.5	121	19	155	193	100	99	VS	1
NR 72-837	63.0	80.7	44.1	13.6	89	0	157	195	100	9	MR-VS	0
Slavia (ST-VUR 37)	61.2	80.7	42.9	14.8	106	6	157	193	100	35	VS	0
Sadovo-1	61.1	83.3	47.8	13.6	106	0	150	190	100	99	VS	3
Partizanka	60.3	84.3	38.1	14.2	100	1	152	192	100	13	M-VS	4
Martonvasari 4	59.9	83.4	40.7	14.1	111	3	151	192	100	99	VS	4
Iulia	59.5	82.7	42.6	15.4	107	0	150	187	100	91	VS	4
Ticonderoga	59.0	76.8	36.7	10.9	108	0	158	194	100	99	VS	0
Lindon	58.9	83.7	30.5	13.3	109	1	153	191	100	1	MR	0
Slavyanka	58.6	83.8	41.5	14.6	109	0	151	193	100	18	M-VS	2
Moslavka (Zg 4240-73)	57.2	79.5	34.9	13.4	76	0	150	188	100	6	MR-M	0
Absolvent	56.1	84.0	43.5	14.7	110	4	154	193	100	74	VS	5
Blueboy	56.0	78.5	36.9	15.1	116	6	155	192	100	69	VS	4
Bezostaya 1	53.6	84.1	42.8	13.0	119	1	154	193	100	91	VS	4
Krasnodarskaya 39	52.8	82.2	36.5	13.4	123	49	155	193	100	91	VS	4
Zlatoklasa (Zg 4364)	52.0	80.1	33.4	14.1	79	0	150	187	100	11	MR-VS	0
F53-70	51.4	83.0	38.3	15.9	118	0	151	189	100	3	MR-M	4
Zg 4293-73	50.9	79.4	33.0	13.1	73	0	150	186	100	10	S-VS	0
Newton (KS 73112)	50.4	82.4	38.3	14.0	105	0	152	188	100	69	VS	5
Zg 887-73	46.0	79.9	39.7	13.6	73	0	150	187	63	14	MR-VS	0
NE 73640	45.2	81.9	34.8	14.3	121	36	151	186	100	45	M-VS	1
Disponent	45.2	77.4	27.7	13.9	100	0	161	196	100	99	VS	3
F54-70	45.0	82.2	37.2	16.8	124	1	153	190	100	24	MR-VS	4
Mironovskaya 808	43.0	81.2	39.9	12.5	140	81	156	193	100	99	VS	1
Atlas 66	41.5	81.6	33.6	16.3	133	41	153	193	100	6	MR-M	1
Budifen	35.1	70.4	32.0	12.9	90	0	162	197	43	99	VS	3
Nap Hal/Atlas 66	32.7	80.1	28.1	19.4	108	0	156	191	95	19	MR-M	0
Lerma Rojo 64	0.0	.	.	14.6	.	.	.	.	0	-	-	-
Mean	51.7	81.1	37.4	14.2	105.6	8.6	153.4	191.1	93.3	51.9		2.2
L.S.D. of cultivar means (.05)	4.9	1.1	1.1		6.5	21.0	1.0	2.0	4.7	-		-
Coefficient of variation(%)	6.8	1.0	2.2		4.4	174.0	0.4	0.7	3.6	-		-

WEST GERMANY

Monsheim

COOPERATOR: K. Brunckhorst.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 24, 1977.

PRECIPITATION DURING CYCLE OF TEST: 549.2 mm (October, 1977 - July, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: Preplant: N = 60 kg/ha; P = 60 kg/ha; K = 60 kg/ha. Topdress: N = 60 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: August 1, 1978.

AREA HARVESTED FOR YIELD: 4.75 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN: Mildew - May 21, 1978.

Correlation Coefficients

N = No. of observations	Yield	1000-kernel weight	Protein	Plant height	Flowering
1000-kernel weight	.18				
N	120				
Protein	-.52**	-.08			
N	30	30			
Plant height	-.14	.27**	.33		
N	120	120	30		
Flowering	.25**	.08	.09	.50**	
N	120	120	30	120	
Ripening	.16	-.01	-.23	.20*	.30**
N	120	120	30	120	120

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

Table 67. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Monsheim, West Germany in 1978.

Cultivar	Yield q/ha	1000-kernel weight g	Protein %	Adjusted lysine/protein %	Plant height cm	Date of Flowering days from Jan. 1	Date of Ripening days from Jan. 1	Mildew Sev.(0-9)
Slavia (ST-VUR 37)	93.5	53.1	10.7	3.06	79	153	205	5
Ticonderoga	93.1	48.8	11.8	3.05	82	155	206	5
Disponent	91.6	42.8	13.5	2.90	83	158	209	6
Zg 887-73	91.2	37.0	11.1	2.73	65	149	202	1
NR 72-837	91.1	50.7	13.1	2.84	75	153	205	1
Zlatoklasa (Zg 4364)	79.0	39.2	12.3	2.85	70	149	203	1
Yubiley	77.5	49.4	12.4	2.88	71	151	190	3
Martonvasari 4	76.4	48.1	13.2	2.69	81	150	204	3
Mironovskaya 808	76.3	52.9	12.4	2.78	102	155	205	3
Zg 4293-73	76.1	35.7	12.3	2.86	56	145	203	1
Moslavka (Zg 4240-73)	76.1	39.4	13.0	2.73	62	146	203	1
CI 13449/Centurk	75.0	42.4	13.1	3.18	84	152	205	7
Blueboy	74.9	41.8	13.2	2.90	87	153	203	7
Iulia	73.9	49.0	14.4	2.74	74	151	205	3
NR 73-5028 (Samson)	73.3	40.4	14.0	2.77	71	151	203	5
Slavyanka	72.7	51.7	13.8	2.78	77	150	204	6
Lindon	72.6	35.7	12.1	2.91	78	150	204	7
Sadovo-1	70.5	56.3	12.4	2.62	76	150	203	5
Absolvent	69.7	50.8	13.4	2.62	79	153	207	4
Bezostaya 1	67.4	50.1	13.3	2.61	79	154	205	5
Krasnodarskaya 39	65.5	44.8	13.2	2.86	84	152	205	7
F53-70	64.6	47.3	18.6	2.97	87	153	205	3
NE 73640	63.1	41.3	16.2	2.73	82	150	202	7
F54-70	62.8	45.2	15.6	2.75	85	154	205	4
Partizanka	60.0	44.3	13.4	2.93	72	150	205	2
Atlas 66	58.2	42.9	16.6	2.73	95	154	206	3
Budifen	58.1	32.7	11.4	2.91	76	155	206	8
Newton (KS 73112)	57.7	43.5	17.2	2.92	77	150	203	7
Nap Hal/Atlas 66	53.3	34.7	18.8	2.82	87	153	203	4
Lerma Rojo 64	44.6	50.6	15.9	2.72	76	139	197	8
Mean	72.0	44.7	13.7	2.83	78.4	151.1	203.6	4.3
L.S.D. of cultivar means (.05)	10.6	2.3	2.1[a/]	0.13[a/]	4.6	2.2	6.9	
Coefficient of variation (%)	10.5	3.7	15.1	4.7	4.2	1.0	2.4	

[a/] Standard deviation.

WEST GERMANY

Weihenstephan

COOPERATOR: G. Fischbeck.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 6, 1977 (October 18).

PRECIPITATION DURING CYCLE OF TEST: 761.2 mm (October, 1977 - August, 1978).

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 60 kg/ha; P = 51.7 kg/ha; K = 203.4 kg/ha.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The winter was very mild. The fall and spring growing seasons were quite cool and cloudy with normal rainfall.

DISEASE DEVELOPMENT: Moderate development of Mildew and Septoria was observed.

INSECT, WEED OR PEST PROBLEMS: None. Nursery was sprayed with 4 l/ha Certrol DP and .75 l/ha CCC on April 20, 1978.

DATE OF HARVEST: August 16-26, 1978.

AREA HARVESTED FOR YIELD: 1.86 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Mildew - May 22, 1978
Plant height - July 31, 1978
Lodging - August 2, 1978
Septoria - August 2, 1978

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Frost
Test weight	.40**								
N	120								
1000-kernel weight	.34**	.50**							
N	120	120							
Protein	-.39*	.41*	.01						
N	30	30	30						
Plant height	-.47**	-.01	.06	.11					
N	120	120	120	30					
Lodging	-.65**	-.16	-.05	.24	.69**				
N	120	120	120	30	120				
Flowering	.02	-.30**	-.10	-.47**	.37**	.01			
N	120	120	120	30	120	120			
Ripening	-.14	-.60**	-.03	-.44*	.26	.04	.85**		
N	30	30	30	30	30	30	30		
Frost	-.19*	-.22*	-.09	.19	-.15	.03	-.34**	-.11	
N	120	120	120	30	120	120	120	30	
Head/m^2	-.24**	-.07	-.42**	.20	.01	.25**	-.17	-.13	-.08
N	120	120	120	30	120	120	120	30	120

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

Table 68. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Weihenstephan, West Germany in 1978.

Cultivar	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Plant height cm	Lodging %	Date of[a] Flowering (days from Jan. 1)	Date of[a] Ripening (days from Jan. 1)	Frost damage 0-9	Heads/m^2	Mildew Sev. (0-9)	Septoria Sev. (0-9)
Zg 887-73	78.1	75.2	29.5	12.1	79	0	153	228	4	668	1	5
Martonvasari 4	77.6	80.5	42.2	12.5	100	55	155	228	4	667	3	4
Slavyanka	76.3	80.0	42.9	12.5	96	25	155	228	4	669	3	5
Zlatoklasa (Zg 4364)	75.3	75.7	32.5	12.4	79	0	155	228	5	791	1	4
Zg 4293-73	74.9	74.3	30.5	12.9	72	0	152	228	4	787	1	5
Disponent	74.2	78.3	34.1	12.3	94	3	163	238	3	692	5	5
Moslavka (Zg 4240-73)	73.2	74.7	31.7	12.3	77	13	152	228	4	749	1	6
NR 72-837	73.1	73.9	36.8	12.1	85	5	160	238	2	702	2	3
Partizanka	72.9	80.9	33.9	12.1	93	38	156	228	3	809	4	5
Slavia (ST-VUR 37)	72.8	73.4	38.9	11.5	95	45	160	238	3	853	3	5
Iulia	72.6	81.9	43.8	13.0	92	25	153	228	3	632	4	4
NR 73-5028 (Samson)	71.3	77.5	34.3	12.2	92	48	155	228	2	719	4	4
Sadovo-1	71.2	77.8	47.0	12.3	94	48	154	228	3	669	6	5
Yubiley	69.1	79.1	39.3	12.1	89	15	155	228	3	654	4	6
Ticonderoga	68.1	69.7	34.4	11.4	105	45	161	238	3	647	2	2
Lindon	64.9	82.3	39.9	13.9	105	25	157	228	2	688	3	4
Nap Hal/Atlas 66	63.6	81.0	30.8	15.0	102	43	156	228	3	773	3	5
F53-70	62.0	80.8	40.5	14.8	104	38	156	228	3	731	3	3
Mironovskaya 808	61.6	74.9	36.0	11.8	128	65	160	238	4	703	2	4
F54-70	60.1	79.4	25.8	11.7	101	65	156	228	3	940	4	4
NE 73640	58.6	78.6	34.0	14.5	104	63	153	228	2	1004	5	5
Absolvent	57.9	76.2	38.8	13.5	102	63	158	234	3	665	5	5
Krasnodarskaya 39	57.5	74.4	35.7	12.5	105	63	159	234	2	731	7	4
Bezostaya 1	56.2	77.1	38.7	12.9	102	68	158	234	4	720	5	5
Blueboy	53.8	69.6	30.7	11.8	111	65	158	234	3	738	6	4
Newton (KS 73112)	51.7	76.8	34.2	14.5	97	53	152	228	3	841	7	4
Budifen	51.6	69.8	27.1	12.4	96	33	162	238	5	718	5	4
Atlas 66	50.1	76.9	33.7	13.6	121	70	155	228	4	745	2	5
CI 13449/Centurk	45.8	69.1	25.2	12.4	103	68	157	228	3	859	5	4
Lerma Rojo 64	43.1	74.5	37.4	14.6	92	65	148	228	7	770	8	6
Mean	64.6	76.4	35.3	12.8	97.0	40.2	156.2	230.8	3.2	744.4	3.7	4.3
L.S.D. of the cultivar means (.05)	7.3	1.8	2.8		3.8	15.7	0.5	-	0.6	82.4	-	-
Coefficient of variation (%)	8.0	1.7	5.7		2.8	27.9	0.2	-	13.1	7.9	-	-

[a] One replication only.

YUGOSLAVIA

Novi Sad

COOPERATOR: S. Borojevic.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 10, 1977.

PRECIPITATION DURING CYCLE OF TEST: 564 mm.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 42 kg/ha; P = 42 kg/ha; K = 42 kg/ha. A (14:14:14) compound was used.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: Not reported.

DISEASE DEVELOPMENT: Leaf rust and Mildew were apparent.

INSECT, WEED OR PEST PROBLEMS: Not reported.

DATE OF HARVEST: July 18, 1978.

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
Test weight	.45**			
N	120			
1000-kernel weight	.62**	.65**		
N	120	120		
Protein	-.19	.13	-.13	
N	30	30	30	
Flowering	-.37**	-.22*	-.36**	.28
N	105	105	105	30

** Significant at the 1% level.

* Significant at the 5% level.

Table 69. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Novi Sad, Yugoslavia in 1978.

Cultivars	Yield q/ha	Test weight kg/hl	1000-kernel weight g	Protein %	Adjusted lysine/protein (%)	Date of flowering days from Jan. 1	Leaf rust Sev.(%)	Leaf rust Resp.	Mildew Sev.(0-9)	Septoria Sev.(0-9)
Zlatoklasa (Zg 4364)	62.2	76.4	30.1	15.4	2.99	143	16	S	0	1
NR 72-837	60.4	76.2	37.4	16.8	2.89	151	31	S	3	1
Zg 4293-73	60.2	75.0	29.7	15.2	2.72	142	33	S-VS	0	0
Slavyanka	59.8	81.3	38.9	14.8	3.05	145	85	VS	4	1
Zg 887-73	59.8	73.7	28.0	15.3	2.84	145	36	S-VS	0	1
Yubiley	59.7	80.1	39.6	15.4	2.86	144	23	VS	5	1
Sadovo-1	59.5	79.0	42.4	13.9	2.75	143	70	VS	7	2
Iulia	59.4	81.9	37.7	15.3	2.92	144	45	VS	4	1
F53-70	58.8	81.6	39.0	17.1	2.86	146	25	S-VS	3	1
Martonvasari 4	58.6	82.2	36.7	14.0	2.64	145	75	VS	4	2
Moslavka (Zg 4240-73)	58.5	74.1	30.4	15.9	2.71	142	33	S-VS	0	0
Partizanka	58.4	82.6	34.2	16.1	2.95	144	8	M-S	5	1
Absolvent	57.4	81.7	37.9	15.3	3.02	144	63	VS	6	1
Newton (KS 73112)	53.8	78.7	30.1	14.8	3.10	146	24	S	7	1
Bezostaya 1	53.6	81.1	37.4	14.8	2.81	144	11	MR-S	6	1
F54-70	52.5	81.9	36.1	17.0	2.79	145	25	S-VS	3	1
NR 73-5028 (Samson)	52.4	77.1	29.1	15.4	2.81	144	70	VS	5	2
Mironovskaya 808	51.6	78.3	33.2	14.6	3.09	148	69	S-VS	2	1
Slavia (ST-VUR 37)	50.6	74.7	34.7	16.0	3.04	149	56	S-VS	4	1
NE 73640	48.6	81.2	34.2	16.0	2.73	145	14	MS-S	7	1
Krasnodarskaya 39	48.5	80.9	33.4	15.0	2.74	148	69	S-VS	5	2
Lindon	47.8	80.7	27.8	14.6	2.92	146	13	S	4	1
Blueboy	46.5	73.9	29.1	13.7	3.00	148	78	S-VS	8	1
Atlas 66	41.8	80.9	34.1	17.9	2.89	147	14	M-S	3	1
Ticonderoga	41.5	74.5	26.7	14.4	2.90	150	73	VS	2	1
Lerma Rojo 64	40.6	77.2	36.2	15.8	2.84	137	9	M-S	6	1
Disponent	37.7	75.7	26.1	17.3	2.83	153	78	VS	7	1
Nap Hal/Atlas 66	36.1	80.0	26.3	20.5	3.01	150	55	VS	5	1
CI 13449/Centurk	33.0	72.5	27.2	14.7	2.99	147	8	S	4	1
Budifen	27.9	68.4	22.4	15.9	2.92	150	82	VS	7	1
Mean	51.2	78.1	32.9	15.6	2.89	145.8	44.2		4.1	1.1
L.S.D. of cultivar means (.05)	7.6	2.0	3.2	1.4[a]	0.12[a]	0.7	-		-	-
Coefficient of variation (%)	10.6	1.8	6.9	8.8	4.2	0.3	-		-	-

[a] Standard deviation.

YUGOSLAVIA

Zagreb

COOPERATOR: J. Potocanac.

DATE OF PLANTING (EFFECTIVE GERMINATION): October 24, 1977.

PRECIPITATION DURING CYCLE OF TEST: Not reported.

AMOUNT OF IRRIGATION APPLIED: None.

FERTILIZER USED: N = 222 kg/ha; P = 90 kg/ha; K = 90 kg/ha. A (9:18:18) compound was used along with 27% KAN which consists of NH_4NO_3, $CaCO_3$, and $MgCO_3$.

GENERAL DESCRIPTION OF CLIMATIC CONDITIONS DURING TEST: The autumn conditions were very dry and were followed by mild conditions during the winter. The spring months were rainy and cold which contributed to a 12 day delay in maturity.

DISEASE DEVELOPMENT: Conditions were favorable for the development of Powdery mildew, rusts, and Septoria.

INSECT, WEED OR PEST PROBLEMS: None.

DATE OF HARVEST: July 27, 1978.

AREA HARVESTED FOR YIELD: 4.0 square meters.

DATES WHEN DIFFERENT NOTES WERE TAKEN:

Winter survival	- April 11, 1978	Lodging	- June 20, 1978
Mildew	- May 26, 1978	Leaf rust	- July 5, 1978
Stripe rust	- May 31, 1978	Stem rust	- July 12, 1978
Septoria	- June 7, 1978		

Correlation Coefficients

N = No. of observations	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening
Test weight	.11							
N	30							
1000-kernel weight	.27	.62**						
N	30	30						
Protein	-.06	.33	-.02					
N	30	30	30					
Plant height	-.58**	.23	.06	-.02				
N	120	30	30	30				
Lodging	-.66**	.11	-.21	.56**	.59**			
N	120	30	30	30	120			
Flowering	-.17	-.08	-.35	-.29	.40*	.03		
N	30	30	30	30	30	30		
Ripening	-.14	.35	.07	-.02	.23	-.01	.38*	
N	30	30	30	30	30	30	30	
Winter survival	.12	.00	-.09	.05	.10	-.00	.12	.08
N	120	30	30	30	120	120	30	30

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

Table 70. Agronomic, grain quality, and disease data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Zagreb, Yugoslavia in 1978.

Cultivar	Yield q/ha	Test[a] weight kg/hl	1000-[a] 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[a] Sev(%)	Leaf rust[a] Resp	Stem rust[a] Sev(%)	Stem rust[a] Resp	Mildew[a] Sev(0-9)	Septoria[a] Sev. (0-9)
Zlatoklasa (Zg 4364)	52.4	74.6	35.8	14.9	79	3	149	193	100	20	R	5	R	1	5
NR 72-837	51.8	73.2	40.3	13.7	93	0	156	192	99	25	R	30	R	3	2
Moslavka (Zg 4240-73)	48.9	70.8	36.8	16.2	84	0	148	195	100	15	R	10	R	2	3
Yubiley	48.3	75.2	42.5	14.8	91	0	149	192	100	10	MR	50	S	6	4
Zg 4293-73	48.2	68.4	33.5	15.6	74	0	149	193	98	60	MR	5	R	1	3
Zg 887-73	42.1	69.8	40.5	14.7	85	18	149	192	100	5	MR	10	R	2	2
Slavyanka	37.5	75.6	39.8	14.7	103	18	150	191	99	60	MS	60	MS	4	2
Sadovo-1	37.4	73.6	45.8	14.4	101	15	149	191	100	0	-	20	MR	6	5
F53-70	34.3	77.0	39.5	15.8	108	65	151	194	100	15	MS	40	MS	4	3
Martonvasari 4	33.9	74.0	37.3	15.1	107	55	150	194	100	85	MS	45	MS	6	2
Iulia	32.0	74.4	39.0	16.3	106	50	149	191	99	10	MR	10	MR	7	4
Bezostaya 1	31.9	74.0	35.0	15.4	104	80	151	193	100	10	MR	15	MS	5	4
F54-70	29.9	75.6	36.5	17.4	110	68	151	198	100	30	MS	80	MS	5	5
NR 73-5028 (Samson)	29.9	70.4	39.0	12.8	98	66	150	191	99	0	-	50	R	5	3
Ticonderoga	29.6	59.2	27.5	12.0	100	25	155	191	100	90	MS	85	MS	3	3
Partizanka	28.8	76.6	36.5	13.2	101	15	151	194	100	20	MS	35	MR	5	3
Slavia (ST-VUR 37)	26.8	72.4	39.3	14.1	104	78	154	193	100	0	-	40	R	2	3
Blueboy	26.6	68.4	30.3	13.8	110	89	153	197	100	40	MS	20	MR	6	2
Disponent	24.8	74.0	33.3	14.7	102	25	161	201	100	80	MS	20	R	5	4
Atlas 66	24.1	74.6	35.8	16.4	123	90	154	194	100	20	MS	50	MR	4	3
Newton (KS 73112)	24.1	71.6	37.0	13.9	103	49	149	190	100	0	-	80	MR	5	3
Nap Hal/Atlas 66	23.9	76.0	30.8	17.4	108	90	156	191	100	50	MR	30	MS	4	3
CI 13449/Centurk	23.8	74.4	44.8	12.2	110	75	153	192	100	0	-	25	MR	4	5
Absolvent	23.4	76.0	44.5	12.4	104	51	151	198	99	65	MS	60	MS	4	3
Mironovskaya 808	23.3	71.2	37.3	15.3	121	90	157	192	100	75	MS	70	MR	4	4
Budifen	23.3	62.0	24.0	11.4	100	18	156	190	100	40	MR	20	R	6	4
Lindon	21.6	68.4	24.5	15.1	102	91	152	191	100	0	-	40	R	6	5
Lerma Rojo 64	21.2	66.4	35.5	17.6	98	92	145	188	99	0	-	10	MR	7	4
NE 73640	18.9	72.8	33.3	16.7	107	92	151	191	96	0	-	35	MR	7	4
Krasnodarskaya 39	18.3	72.6	34.8	14.0	113	84	155	197	98	0	-	55	MS	6	4
Mean	31.4	72.1	36.4	14.7	101.5	49.6	151.8	193.0	99.3	27.5		36.8		4.5	3.5
L.S.D. of cultivar means (.05)	9.3	-	-		8.1	28.3	-	-	N.S.			-		-	-
Coefficient of variation (%)	21.1	-	-		5.7	40.6	-	-	1.6			-		-	-

[a] One replication only.

Table 71. Summary of average yield in quintals per hectare for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978.

Cultivars	Kabul, Afghanistan	Herat, Afghanistan	Algiers, Algeria	Balcarce, Argentina	Bordenave, Argentina	Vienna, Austria	Tolbukhin, Bulgaria	Prince Edward Island, Canada	Lethbridge Alberta, Canada	Chillan, Chile
Yubiley	29.8	36.1	14.9	1.8	44.5	64.8	97.3	19.5	69.8	44.7
NR 72-837	26.5	48.3	15.4	28.2	32.9	77.7	96.5	4.1	54.5	46.9
Slavia (ST-VUR 37)	25.6	35.4	13.1	13.7	30.8	70.8	78.3	7.2	59.5	34.8
Martonvasari 4	28.7	44.6	16.5	3.1	41.2	69.9	70.5	25.8	60.9	39.5
Sadovo-1	31.3	38.9	15.9	2.0	38.6	59.4	79.7	18.3	60.3	42.3
Partizanka	31.9	48.3	14.9	2.7	44.4	64.7	77.2	17.5	61.8	36.1
Slavyanka	32.6	40.0	13.2	3.9	37.8	69.8	82.7	16.5	57.2	41.3
Absolvent	32.4	48.3	13.4	8.0	36.5	58.7	73.7	21.8	60.9	41.6
Iulia	25.6	39.5	14.9	14.8	36.4	64.6	74.8	13.8	56.3	45.0
Ticonderoga	30.7	29.8	12.0	17.8	19.8	75.2	85.3	25.4	65.4	44.7
Zlatoklasa (Zg 4364)	29.5	39.7	9.6	2.6	38.2	68.3	88.9	6.0	56.6	43.7
Bezostaya 1	27.2	45.6	15.2	6.1	36.2	61.9	70.2	22.1	57.7	42.2
Lindon	31.7	37.5	14.2	5.1	32.1	71.8	68.7	13.7	49.4	40.6
Disponent	20.3	36.2	8.8	19.3	27.5	69.4	71.0	12.3	52.5	42.7
Blueboy	27.9	26.3	17.1	5.2	32.6	61.7	71.6	12.3	57.0	55.9
NR 73-5028 (Samson)	26.6	55.3	18.7	3.7	37.0	70.7	61.6	0.0	50.1	32.9
Newton (KS 73112)	26.8	52.0	14.4	17.7	36.0	64.3	66.3	12.3	47.9	46.1
Moslavka (Zg 4240-73)	37.6	38.0	12.1	1.5	37.5	66.8	91.9	3.1	45.4	28.5
F53-70	24.0	19.1	14.3	12.1	26.1	59.8	80.7	20.7	53.9	41.4
Mironovskaya 808	20.6	13.6	13.1	10.0	25.1	68.8	71.0	34.5	52.5	46.1
CI 13449/Centurk	25.9	25.3	16.2	6.4	32.5	68.1	66.2	10.9	54.8	47.4
Zg 4293-73	34.0	42.3	12.1	0.9	38.3	72.5	88.6	2.7	58.2	28.2
F54-70	23.3	21.5	13.1	11.5	26.1	65.5	74.7	19.4	56.5	38.6
Zg 887-73	33.6	48.7	12.3	1.4	39.2	77.4	90.7	0.0	37.5	25.5
Krasnodarskaya 39	19.2	38.9	11.4	4.8	28.5	57.1	62.9	24.5	58.7	34.2
NE 73640	25.5	29.7	16.7	17.4	31.8	62.0	59.3	18.6	55.1	33.7
Budifen	24.9	50.4	16.2	18.6	29.0	46.1	56.6	0.0	0.0	39.7
Atlas 66	21.2	16.5	14.6	5.0	24.6	48.9	52.8	0.0	38.1	42.7
Nap Hal/Atlas 66	17.5	10.4	10.7	5.1	15.9	44.2	85.8	0.0	36.8	32.9
Lerma Rojo 64	29.7	45.2	13.8	0.9	37.5	52.3	46.0	0.0	0.0	14.6
Means	27.4	36.7	14.0	8.4	33.2	64.4	74.7	12.8	51.0	39.2

Table 71. Summary of average yield in quintals per hectare for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Temuco, Chile	Male Ripnany, Czechoslovakia	Sedlec, Czechoslovakia	Bohnshausen,[a] East Germany	Orgerus, France	Martonvasar, Hungary	Szeged, Hungary	Hamadan, Iran	Karaj, Iran	Sulaimaniya, Iraq	Milano, Italy
Yubiley	45.3	71.7	69.7	61.5	85.1	56.4	52.7	34.1	55.4	39.0	66.3
NR 72-837	63.0	75.8	79.9	74.0	82.5	73.9	56.0	51.2	44.8	28.1	65.4
Slavia (ST-VUR 37)	46.9	72.6	82.4	69.2	81.3	58.7	52.9	49.9	47.1	29.6	58.4
Martonvasari 4	64.2	67.5	79.1	73.5	79.1	63.1	46.8	49.1	45.5	39.4	56.6
Sadovo-1	44.7	68.8	64.8	62.6	86.8	50.4	51.8	32.9	56.9	35.5	61.2
Partizanka	39.1	63.0	69.6	59.9	79.3	51.8	40.3	47.4	44.5	42.2	53.7
Slavyanka	45.2	64.9	68.0	63.1	72.9	59.3	57.0	48.0	48.2	35.5	59.0
Absolvent	50.9	60.9	68.8	48.2	75.9	51.9	52.1	47.4	49.9	35.0	63.2
Iulia	52.4	73.6	71.2	55.1	71.6	54.5	57.1	51.2	34.8	33.5	54.4
Ticonderoga	53.5	75.2	74.1	67.6	59.8	65.6	49.2	50.8	38.8	33.4	59.4
Zlatoklasa (Zg 4364)	40.2	71.5	67.3	61.8	72.4	64.9	55.7	37.0	43.8	34.4	57.1
Bezostaya 1	53.2	60.2	62.7	56.1	69.1	45.8	51.4	40.6	46.6	32.8	50.9
Lindon	48.7	59.4	79.6	61.8	56.9	35.8	41.9	47.0	48.9	36.0	49.7
Disponent	65.5	66.1	73.9	58.0	76.5	39.0	34.4	41.2	44.7	26.1	36.0
Blueboy	60.8	60.9	65.0	46.6	85.2	44.9	44.3	59.9	46.0	37.5	55.3
NR 73-5028 (Samson)	33.3	70.0	79.9	59.5	67.5	64.7	50.9	53.4	47.0	41.0	57.3
Newton (KS 73112)	44.0	55.7	63.1	52.3	68.0	42.3	41.3	53.3	45.1	31.0	43.2
Moslavka (Zg 4240-73)	19.8	83.5	69.8	56.0	72.8	60.6	44.4	25.4	44.1	39.5	61.7
F53-70	59.7	61.7	71.6	55.4	69.8	56.0	46.0	48.3	45.3	26.6	54.9
Mironovskaya 808	44.7	56.0	75.2	56.6	65.9	52.8	59.1	49.9	42.5	23.3	42.5
CI 13449/Centurk	44.8	65.9	77.2	51.7	56.8	51.7	47.6	52.7	49.3	38.6	48.4
Zg 4293-73	26.6	71.1	60.9	46.6	65.6	63.8	45.6	32.5	41.3	32.7	52.0
F54-70	47.9	64.1	68.4	59.9	63.7	55.2	45.6	40.4	36.8	25.5	48.1
Zg 887-73	19.6	71.5	78.6	68.4	62.0	64.0	48.8	45.0	50.4	44.1	54.3
Krasnodarskaya 39	45.0	56.9	62.1	44.9	47.7	44.0	32.1	44.1	44.4	33.4	44.6
NE 73640	48.6	57.6	64.3	49.2	43.6	56.8	46.9	46.4	44.7	29.2	37.1
Budifen	51.0	53.4	49.0	38.3	58.0	25.5	26.7	53.7	50.9	30.6	20.5
Atlas 66	43.7	41.5	59.7	37.3	61.6	49.6	57.1	37.2	45.5	27.1	41.5
Nap Hal/Atlas 66	41.0	40.5	46.9	33.5	46.9	35.7	41.3	23.3	36.4	17.7	31.0
Lerma Rojo 64	14.3	26.8	50.4	45.0	62.8	38.3	53.3	46.5	50.8	42.8	42.9
Means	45.3	63.0	68.4	55.8	68.2	52.6	47.7	44.7	45.7	33.4	50.9

[a] Not included in overall means.

Table 71. Summary of average yield in quintals per hectare for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Rieti, Italy	Morioka Iwate, Japan	Suwon, Korea	Beirut,[a] Lebanon	Toluca,[a] Mexico	Kathmandu, Nepal	Wageningen, The Netherlands	Vollebekk,[a] Norway	Islamabad,[a] Pakistan	Przeclaw, Poland	Warsaw, Poland
Yubiley	35.0	37.7	33.5	21.6	58.3	38.7	43.1	7.2	43.7	41.6	62.1
NR 72-837	24.2	39.7	38.4	9.6	67.2	36.9	39.4	2.1	23.7	45.8	53.9
Slavia (ST-VUR 37)	34.2	38.7	39.0	0.0	50.7	39.9	47.5	10.6	27.4	51.4	70.7
Martonvasari 4	27.4	38.4	36.1	17.9	53.3	48.7	38.9	18.7	39.3	43.0	64.0
Sadovo-1	32.3	37.1	45.2	16.9	48.2	48.0	43.8	2.7	30.4	42.4	59.5
Partizanka	30.3	38.6	35.6	21.7	44.5	48.9	50.4	10.8	43.7	42.3	52.6
Slavyanka	21.0	38.1	39.3	16.1	53.5	42.5	42.3	10.7	31.1	40.6	46.9
Absolvent	22.7	29.8	38.0	9.8	43.8	45.3	42.6	18.5	40.8	37.1	58.0
Iulia	24.5	36.2	36.8	0.0	47.3	38.4	38.5	6.3	40.8	40.0	70.2
Ticonderoga	23.8	36.8	37.9	0.0	31.7	36.4	46.0	13.3	30.4	45.4	35.6
Zlatoklasa (Zg 4364)	21.3	34.8	28.1	6.8	45.5	27.2	48.5	0.0	32.6	31.7	36.8
Bezostaya 1	26.0	30.6	34.1	10.8	38.4	42.0	36.7	11.2	39.3	40.8	62.2
Lindon	30.0	36.7	34.1	12.0	45.5	39.1	45.2	9.5	32.6	39.5	46.9
Disponent	26.8	42.9	28.8	0.0	0.0	29.0	45.1	3.2	25.2	50.1	73.8
Blueboy	16.7	34.1	33.6	20.6	55.1	43.8	40.2	8.2	40.8	31.2	49.4
NR 73-5028 (Samson)	27.3	25.3	41.8	34.7	29.2	48.7	44.7	0.0	33.4	33.4	40.8
Newton (KS 73112)	22.5	34.4	35.0	35.6	63.7	55.9	22.4	0.6	34.8	26.8	51.5
Moslavka (Zg 4240-73)	28.5	27.2	19.9	17.1	40.6	32.4	45.5	0.0	43.0	32.4	48.9
F53-70	21.6	31.5	31.2	14.1	43.8	32.7	31.4	13.0	27.4	37.6	58.2
Mironovskaya 808	22.8	33.8	27.7	0.0	32.8	41.6	42.5	24.8	24.5	39.0	68.3
CI 13449/Centurk	14.7	34.0	32.8	20.6	38.4	54.5	45.3	5.6	36.3	33.1	31.8
Zg 4293-73	18.6	23.4	32.4	7.9	31.0	32.5	43.0	0.0	30.4	43.9	38.7
F54-70	23.6	32.4	29.6	6.3	42.0	29.2	31.1	14.8	34.1	29.5	59.1
Zg 887-73	27.6	8.0	33.0	31.1	35.0	38.0	46.3	0.0	46.0	26.8	26.9
Krasnodarskaya 39	11.9	29.7	33.1	0.0	24.1	36.7	34.4	17.7	39.3	37.9	47.4
NE 73640	18.1	34.1	32.9	16.8	41.3	41.1	29.4	6.8	31.9	31.0	42.5
Budifen	32.8	26.4	23.0	33.2	61.8	59.4	50.1	0.0	34.1	31.3	48.2
Atlas 66	24.5	27.7	26.0	19.1	27.0	44.9	33.6	0.0	24.5	29.5	35.5
Nap Hal/Atlas 66	15.9	21.5	21.5	19.0	31.7	29.7	23.2	0.0	20.8	25.8	37.4
Lerma Rojo 64	24.3	0.0	6.1	44.9	19.7	34.8	30.4	0.0	32.6	3.2	0.0
Means	24.4	31.3	32.2	15.3	42.9	40.6	40.0	7.2	33.8	36.1	49.3

[a] Not included in overall means.

Table 71. Summary of average yield in quintals per hectare for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Fundulea, Romania	Bethlehem, South Africa	Madrid, Spain	Svalof, Sweden	Zurich, Switzerland	Erzurum, Turkey	Eskisehir, Turkey	Davis, California, U.S.A.	Akron, Colorado, U.S.A.	Ft. Collins, Colorado, U.S.A.
Yubiley	55.8	25.4	54.3	55.6	65.3	30.6	41.8	69.9	24.4	50.1
NR 72-837	57.3	16.4	44.0	50.5	61.7	30.4	38.2	68.1	21.7	46.5
Slavia (ST-VUR 37)	62.4	16.3	56.3	52.1	66.0	26.6	38.7	68.8	20.9	42.7
Martonvasari 4	54.0	23.5	49.5	40.3	59.0	30.6	37.5	66.9	23.4	51.6
Sadovo-1	56.9	23.5	53.9	40.6	62.5	33.3	39.3	85.5	22.6	42.9
Partizanka	51.4	27.1	45.5	46.5	64.7	34.0	41.4	74.3	22.2	47.3
Slavyanka	53.5	22.5	36.7	39.9	58.7	30.9	35.7	67.5	23.4	42.6
Absolvent	50.8	24.6	38.8	58.9	51.9	31.5	35.2	72.9	24.9	48.9
Iulia	54.0	19.7	34.7	44.9	60.5	30.1	35.6	56.8	21.8	42.2
Ticonderoga	49.6	14.9	25.6	54.2	46.1	31.7	41.2	64.1	20.0	54.4
Zlatoklasa (Zg 4364)	63.7	25.6	36.1	24.4	56.5	30.3	42.9	68.8	20.7	46.7
Bezostaya 1	49.1	21.0	42.2	45.7	52.7	33.3	39.6	72.1	24.9	53.7
Lindon	49.0	21.6	32.5	44.9	42.4	28.3	38.7	73.4	23.1	63.6
Disponent	42.8	10.6	37.8	62.1	68.8	25.0	33.7	58.5	21.2	49.1
Blueboy	47.2	25.3	54.6	43.7	55.8	24.0	30.9	55.1	24.8	49.1
NR 73-5028 (Samson)	54.5	25.1	32.2	50.0	54.4	28.1	33.5	89.5	12.2	42.9
Newton (KS 73112)	47.7	24.8	44.3	27.6	50.1	27.3	33.7	94.9	23.2	69.1
Moslavka (Zg 4240-73)	58.1	22.6	39.3	33.0	57.4	20.7	38.4	67.4	18.3	44.4
F53-70	47.7	18.0	40.9	43.8	53.3	24.8	39.2	49.8	21.6	43.2
Mironovskaya 808	47.7	12.8	38.8	41.3	54.5	25.9	31.6	48.7	19.8	55.4
CI 13449/Centurk	43.8	25.0	28.1	47.3	26.9	33.6	39.5	55.6	23.3	47.7
Zg 4293-73	57.8	17.8	27.1	22.9	57.0	21.4	36.1	71.9	17.0	37.6
F54-70	47.7	16.4	44.3	38.8	54.9	23.7	31.8	49.0	20.1	49.2
Zg 887-73	53.9	28.8	36.4	49.2	57.2	27.7	36.0	71.8	0.0	8.3
Krasnodarskaya 39	48.1	15.4	29.4	38.3	44.4	21.7	32.9	46.5	26.0	44.4
NE 73640	43.5	21.9	29.2	41.0	43.5	26.7	31.0	55.4	21.6	53.1
Budifen	26.5	22.7	48.9	59.1	45.5	21.8	46.9	60.7	0.0	4.3
Atlas 66	41.4	18.6	34.5	36.0	45.7	17.1	28.3	30.0	13.1	29.9
Nap Hal/Atlas 66	42.5	12.0	24.9	18.8	40.0	16.8	21.3	56.2	7.3	26.3
Lerma Rojo 64	13.2	28.3	37.7	14.6	42.6	26.7	24.9	79.2	0.0	0.0
Means	49.1	20.9	39.3	42.4	53.3	27.2	35.8	65.0	18.8	42.9

Table 71. Summary of average yield in quintals per hectare for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Brookston, Indiana, U.S.A.	Hutchinson, Kansas, U.S.A.	Billings, Montana, U.S.A.	Ithaca, New York, U.S.A.	Rowan Co., 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	25.4	28.9	80.2	34.0	40.7	17.0	38.2	62.8	66.9	48.7
NR 72-837	0.0	19.4	67.6	36.4	37.8	18.8	32.8	69.1	63.7	63.1
Slavia (ST-VUR 37)	0.0	20.4	77.4	29.6	46.2	13.5	45.8	62.5	62.6	65.8
Martonvasari 4	31.5	21.6	78.4	32.8	37.9	13.6	28.5	40.2	63.3	61.2
Sadovo-1	25.6	24.0	69.8	26.7	39.6	15.1	19.4	59.1	71.7	61.7
Partizanka	30.3	25.1	77.1	25.1	40.9	14.6	26.0	56.3	63.7	59.5
Slavyanka	21.4	18.6	76.6	32.8	37.3	14.9	23.7	42.8	70.3	64.4
Absolvent	31.3	22.0	71.7	35.5	39.0	15.0	20.6	51.5	56.1	71.4
Iulia	14.8	22.6	70.5	23.5	42.2	13.3	38.3	57.8	58.8	56.3
Ticonderoga	16.3	14.0	70.1	27.0	52.7	15.7	17.4	57.7	46.9	65.3
Zlatoklasa (Zg 4364)	0.0	24.7	68.7	23.6	34.7	13.0	31.3	58.9	70.4	57.6
Bezostaya 1	30.9	15.3	70.7	27.1	38.3	16.7	21.0	49.5	67.7	56.1
Lindon	27.9	29.4	77.2	35.2	39.6	18.7	12.7	60.4	49.3	74.6
Disponent	14.1	13.7	65.1	26.5	42.1	11.4	34.7	70.2	33.4	61.9
Blueboy	20.3	22.6	78.1	17.8	40.2	15.1	23.1	55.3	47.1	48.1
NR 73-5028 (Samson)	4.9	18.4	81.7	2.7	34.4	15.6	18.9	55.0	41.4	24.6
Newton (KS 73112)	30.3	29.6	64.5	27.3	35.6	17.7	30.4	46.1	56.4	62.5
Moslavka (Zg 4240-73)	0.0	25.0	66.9	21.1	26.9	8.8	22.6	47.9	77.4	42.5
F53-70	29.5	20.6	63.6	28.5	38.9	16.6	20.2	41.4	42.5	54.9
Mironovskaya 808	28.9	17.4	72.7	27.3	50.1	17.2	14.9	34.6	37.9	70.9
CI 13449/Centurk	25.4	13.2	75.0	32.0	45.6	18.6	11.4	44.6	40.1	65.3
Zg 4293-73	0.0	24.7	67.9	29.2	27.8	8.3	10.4	47.0	71.1	25.4
F54-70	30.7	21.1	65.2	26.6	37.1	16.1	21.9	44.4	43.0	48.8
Zg 887-73	0.0	18.1	77.4	0.6	3.2	10.6	11.4	54.6	78.6	0.0
Krasnodarskaya 39	29.3	17.3	72.7	26.1	39.7	15.2	21.8	45.6	61.1	60.0
NE 73640	31.3	26.1	66.6	23.9	35.0	19.6	10.5	33.9	42.5	58.1
Budifen	0.0	6.5	61.2	0.0	4.2	2.9	40.2	54.2	40.2	0.0
Atlas 66	0.0	14.7	57.3	19.3	28.6	14.7	9.3	25.6	29.1	11.7
Nap Hal/Atlas 66	0.0	13.0	50.8	18.4	22.7	12.2	8.0	32.0	30.8	0.0
Lerma Rojo 64	0.0	0.0	71.3	0.0	0.0	0.0	5.8	0.0	0.0	0.0
Means	16.7	19.6	70.5	23.9	34.6	14.0	22.4	48.7	52.8	48.0

Table 71. Summary of average yield in quintals per hectoare for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Concluded.

Cultivars	Odessa, U.S.S.R.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia	Cultivar yield mean 52 sites	
						q/ha	% of Bezostaya 1
Yubiley	64.6	77.5	69.1	59.7	48.3	48.7	111.7
NR 72-837	63.0	91.1	73.1	60.4	51.8	48.4	111.0
Slavia (ST-VUR 37)	61.2	93.5	72.8	50.6	26.8	47.2	108.3
Martonvasari 4	59.9	76.4	77.6	58.6	33.9	47.0	107.8
Sadovo-1	61.1	70.5	71.2	59.5	37.4	46.7	107.1
Partizanka	60.3	60.0	72.9	58.4	28.8	46.0	105.5
Slavyanka	58.6	72.7	76.3	59.8	37.5	45.1	103.4
Absolvent	56.1	69.7	57.9	57.4	23.4	45.1	103.4
Iulia	59.5	73.9	72.6	59.4	32.0	44.8	102.8
Ticonderoga	59.0	93.1	68.1	41.5	29.6	44.4	101.8
Zlatoklasa (Zg 4364)	52.0	79.0	75.3	62.2	52.4	43.9	100.7
Bezostaya 1	53.6	67.4	56.2	53.6	31.9	43.6	100.0
Lindon	58.9	72.6	64.9	47.8	21.6	43.3	99.3
Disponent	45.2	91.6	74.2	37.7	24.8	42.8	98.2
Blueboy	56.0	74.9	53.8	46.5	26.6	42.7	97.9
NR 73-5028 (Samson)	66.4	73.3	71.3	52.4	29.9	42.4	97.2
Newton (KS 73112)	50.4	57.7	51.7	53.8	24.1	42.4	97.2
Moslavka (Zg 4240-73)	57.2	76.1	73.2	58.5	48.9	42.0	96.3
F53-70	51.4	64.6	62.0	58.8	34.3	41.4	95.0
Mironovskaya 808	43.0	76.3	61.6	51.6	23.3	41.4	95.0
CI 13449/Centurk	63.4	75.0	45.8	33.0	23.8	40.8	93.6
Zg 4293-73	50.9	76.1	74.9	60.2	48.2	40.3	92.4
F54-70	45.0	62.8	60.1	52.5	29.9	39.8	91.3
Zg 887-73	46.0	91.2	78.1	59.8	42.1	39.7	91.1
Krasnodarskaya 39	52.8	65.5	57.5	48.5	18.3	38.6	88.5
NE 73640	45.2	63.1	58.6	48.6	18.9	38.6	88.5
Budifen	35.1	58.1	51.6	27.9	23.3	33.2	76.1
Atlas 66	41.5	58.2	50.1	41.8	24.1	32.2	73.9
Nap Hal/Atlas 66	32.7	53.3	63.6	36.1	23.9	28.2	64.7
Lerma Rojo 64	0.0	44.6	43.1	40.6	21.2	24.5	56.2
Means	51.7	72.0	64.6	51.2	31.4	41.5	95.2

Table 72. Summary of yield rankings for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978.

Cultivars	Kabul, Afghanistan	Herat, Afghanistan	Algiers, Algeria	Balcarce, Argentina	Bordenave, Argentina	Vienna, Austria	Tolbukhin, Bulgaria	Prince Edward Island, Canada	Lethbridge Alberta, Canada	Chillan, Chile	Temuco, Chile
Yubiley	10	20	10	26	1	16	1	8	1	7	15
NR 72-837	18	5	8	1	16	1	2	22	18	3	3
Slavia (ST-VUR 37)	20	21	20	8	21	6	12	20	7	22	14
Martonvasari 4	13	10	4	22	3	8	20	2	4	19	2
Sadovo-1	8	15	7	25	5	24	11	11	6	12	19
Partizanka	6	5	10	23	2	17	13	12	3	21	25
Slavyanka	4	12	19	20	8	9	9	13	11	16	16
Absolvent	5	5	18	12	12	25	16	6	4	14	10
Iulia	20	14	10	7	13	18	14	14	15	6	8
Ticonderoga	9	22	26	4	29	3	8	3	2	7	6
Zlatoklasa (Zg 4364)	12	13	29	24	7	12	5	21	13	9	24
Bezostaya 1	15	8	9	14	14	21	21	5	10	13	7
Lindon	7	18	16	16	19	5	22	15	23	17	11
Disponent	28	19	30	2	24	10	18	16	20	10	1
Blueboy	14	24	2	15	17	22	17	16	12	1	4
NR 73-5028 (Samson)	17	1	1	21	11	7	26	25	22	25	26
Newton (KS 73112)	16	2	14	5	15	19	23	16	24	4	21
Moslavka (Zg 4240-73)	1	17	24	27	9	14	3	23	25	27	28
F53-70	24	27	15	9	25	23	10	7	19	15	5
Mironovskaya 808	27	29	20	11	27	11	18	1	20	4	19
CI 13449/Centurk	19	25	5	13	18	13	24	19	17	2	18
Zg 4293-73	2	11	24	29	6	4	6	24	9	28	27
F54-70	25	26	20	10	25	15	15	9	14	20	13
Zg 887-73	3	4	23	28	4	2	4	25	27	29	29
Krasnodarskaya 39	29	15	27	19	23	26	25	4	8	23	17
NE 73640	22	23	3	6	20	20	27	10	16	24	12
Budifen	23	3	5	3	22	29	28	25	29	18	9
Atlas 66	26	28	13	18	28	28	29	25	26	10	22
Nap Hal/Atlas 66	30	30	28	16	30	30	7	25	28	25	23
Lerma Rojo 64	11	9	17	29	9	27	30	25	29	30	30

Table 72. Summary of yield rankings for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Male Ripnany, Czechoslovakia	Sedlec, Czechoslovakia	Bohnshausen, East Germany	Orgerus, France	Martonvasar Hungary	Szeged, Hungary	Hamadan, Iran	Karaj, Iran	Sulaimaniya, Iraq	Milano, Italy	Rieti, Italy
Yubiley	6	14	10	3	12	9	26	2	7	1	1
NR 72-837	2	2	1	4	1	5	6	18	24	2	16
Slavia (ST-VUR 37)	5	1	3	5	10	8	9	10	22	8	2
Martonvasari 4	12	5	2	7	7	18	11	14	6	11	9
Sadovo-1	11	21	7	1	20	11	27	1	11	5	4
Partizanka	17	15	11	6	18	27	14	21	3	16	5
Slavyanka	15	18	6	10	9	4	13	9	11	7	24
Absolvent	19	16	23	9	17	10	14	6	13	3	20
Iulia	4	12	19	13	15	2	6	30	15	14	13
Ticonderoga	3	9	5	24	2	14	8	27	16	6	17
Zlatoklasa (Zg 4364)	7	19	8	12	3	6	25	24	14	10	23
Bezostaya 1	21	24	16	15	22	12	22	12	18	18	12
Lindon	22	4	8	26	28	24	16	8	10	19	6
Disponent	13	10	14	8	26	28	21	19	27	28	11
Blueboy	19	20	24	2	23	23	1	13	9	12	27
NR 73-5028 (Samson)	10	2	13	17	4	13	3	11	4	9	10
Newton (KS 73112)	26	23	20	16	25	25	4	17	20	23	21
Moslavka (Zg 4240-73)	1	13	17	11	8	22	29	23	5	4	7
F53-70	18	11	18	14	13	19	12	16	26	13	22
Mironovskaya 808	25	8	15	18	16	1	9	25	29	25	19
CI 13449/Centurk	14	7	21	27	19	16	5	7	8	20	29
Zg 4293-73	9	26	24	19	6	20	28	26	19	17	25
F54-70	16	17	11	20	14	20	23	28	28	21	18
Zg 887-73	7	6	4	22	5	15	19	5	1	15	8
Krasnodarskaya 39	24	25	27	28	24	29	20	22	16	22	30
NE 73640	23	22	22	30	11	17	18	19	23	27	26
Budifen	27	29	28	25	30	30	2	3	21	30	3
Atlas 66	28	27	29	23	21	2	24	14	25	26	13
Nap Hal/Atlas 66	29	30	30	29	29	25	30	29	30	29	28
Lerma Rojo 64	30	28	26	21	27	7	17	4	2	24	15

Table 72. Summary of yield rankings for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Morioka Iwate, Japan	Suwon, Korea	Beirut, Lebanon	Toluca, Mexico	Kathmandu, Nepal	Wageningen The Netherlands	Vollebekk, Norway	Islamabad, Pakistan	Przeclaw, Poland	Warsaw, Poland	Fundulea, Romania	Bethlehem South Africa
Yubiley	7	15	7	4	17	13	14	2	9	7	7	5
NR 72-837	2	5	21	1	20	19	20	29	3	12	5	23
Slavia (ST-VUR 37)	3	4	25	8	15	4	11	24	1	2	2	25
Martonvasari 4	5	9	12	7	5	20	2	8	6	5	9	11
Sadovo-1	8	1	14	9	7	12	19	21	7	8	6	11
Partizanka	4	10	6	13	4	1	9	2	8	13	13	3
Slavyanka	6	3	16	6	11	17	10	20	11	19	12	15
Absolvent	21	6	20	14	8	15	3	5	17	11	14	10
Iulia	11	8	25	10	18	21	16	5	12	3	9	19
Ticonderoga	9	7	25	23	22	6	6	21	4	26	15	27
Zlatoklasa (Zg 4364)	12	24	23	11	30	3	22	16	21	25	1	4
Bezostaya 1	20	12	19	19	12	22	8	8	10	6	16	18
Lindon	10	12	18	11	16	9	12	16	13	19	17	17
Disponent	1	23	25	30	29	10	18	26	2	1	26	30
Blueboy	14	14	8	5	10	18	13	5	23	15	23	6
NR 73-5028 (Samson)	26	2	3	26	5	11	22	15	18	22	8	7
Newton (KS 73112)	13	11	2	2	2	30	21	12	27	14	19	9
Moslavka (Zg 4240-73)	24	29	13	18	26	7	22	4	20	16	3	14
F53-70	19	21	17	14	24	25	7	24	16	10	19	21
Mironovskaya 808	17	25	25	22	13	16	1	27	14	4	19	28
CI 13449/Centurk	16	19	8	19	3	8	17	11	19	28	24	8
Zg 4293-73	27	20	22	25	25	14	22	21	5	23	4	22
F54-70	18	22	24	16	28	26	5	13	25	9	19	23
Zg 887-73	29	17	5	21	19	5	22	1	27	29	11	1
Krasnodarskaya 39	22	16	25	28	21	23	4	8	15	18	18	26
NE 73640	14	18	15	17	14	28	15	19	24	21	25	16
Budifen	25	27	4	3	1	2	22	13	22	17	29	13
Atlas 66	23	26	10	27	9	24	22	27	25	27	28	20
Nap Hal/Atlas 66	28	28	11	23	27	29	22	30	29	24	27	29
Lerma Rojo 64	30	30	1	29	23	27	22	16	30	30	30	2

Table 72. Summary of yield rankings for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Continued.

Cultivars	Madrid, Spain	Svalof, Sweden	Zurich, Switzerland	Erzurum, Turkey	Eskisehir, Turkey	Davis California, U.S.A.	Akron, Colorado, U.S.A.	Ft. Collins, Colorado, U.S.A.	Brookston, Indiana, U.S.A.	Hutchinson, Kansas, U.S.A.	Billings, Montana, U.S.A.
Yubiley	3	4	3	8	3	11	5	8	13	3	2
NR 72-837	10	7	6	10	13	14	14	16	21	17	21
Slavia (ST-VUR 37)	1	6	2	19	10	12	18	22	21	16	5
Martonvasari 4	5	20	8	8	14	17	6	7	1	13	3
Sadovo-1	4	19	5	3	8	3	11	20	12	9	18
Partizanka	7	11	4	1	4	5	12	14	6	5	8
Slavyanka	18	21	9	7	17	15	6	23	15	18	9
Absolvent	14	3	20	6	19	7	2	12	2	12	13
Iulia	21	13	7	12	18	21	13	24	18	10	16
Ticonderoga	29	5	22	5	5	18	21	4	17	25	17
Zlatoklasa (Zg 4364)	20	27	13	11	2	12	19	15	21	7	19
Bezostaya 1	11	12	19	3	6	8	2	5	4	23	15
Lindon	23	13	28	13	10	6	10	2	11	2	7
Disponent	16	1	1	21	20	20	17	10	19	26	25
Blueboy	2	16	14	23	27	25	4	10	16	10	4
NR 73-5028 (Samson)	24	8	17	14	22	2	26	20	20	19	1
Newton (KS 73112)	8	26	21	16	20	1	9	1	6	1	26
Moslavka (Zg 4240-73)	13	25	10	28	12	16	23	17	21	6	22
F53-70	12	15	18	22	9	26	15	19	8	15	27
Mironovskaya 808	14	17	16	20	25	28	22	3	10	21	11
CI 13449/Centurk	27	10	30	2	7	23	8	13	13	27	10
Zg 4293-73	28	28	12	27	15	9	24	25	21	7	20
F54-70	8	22	15	24	24	27	20	9	5	14	24
Zg 887-73	19	9	11	15	16	10	28	28	21	20	5
Krasnodarskaya 39	25	23	25	26	23	29	1	17	9	22	11
NE 73640	26	18	26	17	26	24	15	6	2	4	23
Budifen	6	2	24	25	1	19	28	29	21	29	28
Atlas 66	22	24	23	29	28	30	25	26	21	24	29
Nap Hal/Atlas 66	30	29	29	30	30	22	27	27	21	28	30
Lerma Rojo 64	17	30	27	17	29	4	28	30	21	30	14

Table 72. Summary of yield rankings for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Concluded.

Cultivars	Ithaca, New York, U.S.A.	Rowan Co. No. 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.	Odessa, U.S.S.R.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia
Yubiley	4	8	7	4	3	8	21	2	7	14	6	4
NR 72-837	1	17	2	6	2	9	8	4	5	8	2	2
Slavia (ST-VUR 37)	8	3	21	1	4	12	4	5	1	10	19	17
Martonvasari 4	5	16	20	9	25	11	12	8	8	2	10	10
Sadovo-1	15	11	14	19	6	3	11	6	18	13	7	8
Partizanka	19	7	19	10	10	9	14	7	25	9	12	16
Slavyanka	5	18	17	11	23	6	7	12	16	3	4	7
Absolvent	2	13	16	17	15	16	2	14	19	22	13	24
Iulia	22	5	22	3	8	14	17	9	14	11	8	11
Ticonderoga	14	1	11	21	9	19	5	10	2	15	25	15
Zlatoklasa	21	22	23	7	7	5	16	18	6	4	1	1
Bezostaya 1	13	15	8	16	16	7	18	16	20	24	15	12
Lindon	3	11	3	23	5	17	1	11	17	16	22	27
Disponent	17	6	25	5	1	27	10	23	3	6	27	19
Blueboy	26	9	14	12	11	18	22	15	13	25	23	18
NR 73-5028 (Samson)	27	23	12	20	12	23	25	1	15	12	17	13
Newton (KS 73112)	11	20	5	8	19	15	9	21	28	26	14	20
Moslavka (Zg 4240-73)	23	26	27	13	17	2	23	13	10	7	11	3
F53-70	10	14	9	18	24	21	19	19	22	18	9	9
Mironovskaya 808	11	2	6	22	26	26	3	26	9	19	18	25
CI 13449/Centurk	7	4	4	24	21	25	5	3	12	29	29	23
Zg 4293-73	9	25	28	27	18	4	24	20	10	5	3	5
F54-70	16	19	10	14	22	20	20	25	24	20	16	13
Zg 887-73	28	29	26	24	13	1	27	22	4	1	4	6
Krasnodarskaya 39	18	10	13	15	20	13	13	17	21	23	21	30
NE 73640	20	21	1	26	27	21	15	23	23	21	20	29
Budifen	29	28	29	2	14	24	27	28	27	27	30	25
Atlas 66	24	24	18	28	29	29	26	27	26	28	24	20
Nap Hal/Atlas 66	25	27	24	29	28	28	27	29	29	17	28	22
Lerma Rojo 64	29	30	30	30	30	30	27	30	30	30	26	28

Table 73. Yield means and descriptive statistics for the 30 cultivars grown at 52 sites in the Tenth International Winter Wheat Performance Nursery in 1978.

Cultivars	Mean (q/ha)	Standard deviation	Variance	Corrected sum of squares	Low	High	Coefficient of variation (%)
Yubiley	48.7	20.09	403.58	82734	1.3	100.4	41.2
NR 72-837	48.4	22.33	498.75	102243	0.0	101.2	46.1
Slavia (ST-VUR 37)	47.2	22.30	497.29	101945	0.0	101.3	47.2
Martonvasari 4	47.0	19.19	368.08	75456	2.2	92.9	40.8
Sadovo-1	46.7	19.82	392.64	80490	1.3	96.6	42.4
Partizanka	46.0	18.95	359.10	73615	0.7	84.7	41.2
Slavyanka	45.1	19.30	372.57	76377	3.0	85.2	42.8
Absolvent	45.1	18.13	328.70	67384	5.7	91.8	40.2
Iulia	44.8	19.16	367.13	75263	2.9	84.3	42.8
Ticonderoga	44.4	20.94	438.44	89880	8.8	103.0	47.1
Zlatoklasa (Zg 4364)	43.9	21.52	463.16	94947	0.0	91.6	49.0
Bezostaya 1	43.6	17.23	296.72	60828	0.0	81.9	39.5
Lindon	43.3	18.59	345.61	70850	4.0	89.0	42.9
Disponent	42.8	21.51	462.67	94847	4.7	102.5	50.3
Blueboy	42.7	19.22	369.39	75726	3.8	94.3	45.0
NR 73-5028 (Samson)	42.4	21.95	481.83	98775	0.0	97.6	51.7
Newton (KS 73112)	42.4	17.56	308.22	63186	6.5	105.1	41.4
Moslavka (Zg 4240-73)	42.0	22.40	501.78	102866	0.0	98.8	53.4
F53-70	41.4	17.58	308.95	63334	7.6	83.6	42.5
Mironovskaya 808	41.4	19.22	369.53	75754	5.8	81.2	46.4
CI 13449/Centurk	40.8	18.94	358.68	73529	5.2	85.4	46.5
Zg 4293-73	40.3	22.35	499.33	102362	0.0	94.0	55.4
F54-70	39.8	17.22	296.45	60772	9.7	84.4	43.3
Zg 887-73	39.7	26.40	697.20	142228	0.0	96.0	66.5
Krasnodarskaya 39	38.6	16.89	285.32	58490	2.3	74.7	43.7
NE 73640	38.6	15.17	229.98	47147	7.2	76.4	39.3
Budifen	33.2	20.63	425.64	87255	0.0	73.3	62.2
Atlas 66	32.2	16.45	270.65	55483	0.0	72.4	51.0
Nap Hal/Atlas 66	28.2	17.72	314.09	64074	0.0	88.0	62.9
Lerma Rojo 64	24.5	22.34	499.03	102301	0.0	88.4	91.3

Table 74. Summary of regional yield means (q/ha) and rankings for the 30 cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978.

Cultivars	Northern Europe		Southern Europe		Middle East		Far East		North America		Southern Hemisphere		Cultivar mean over 52 sites
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	
Number of sites	12		12		8		2		13		5		
Yubiley	62.9	5	56.0	1	38.2	13	35.9	10	43.3	1	32.4	7	48.7
NR 72-837	66.2	3	56.0	1	38.0	14	39.2	2	36.7	11	37.5	1	48.4
Slavia (ST-VUR 37)	68.9	1	51.3	6	36.6	17	38.9	3	38.2	10	28.5	20	47.2
Martonvasari 4	63.0	4	50.0	9	40.5	6	37.4	5	39.6	6	34.3	3	47.0
Sadovo-1	61.0	8	52.7	5	39.5	9	40.6	1	39.4	7	30.2	14	46.7
Partizanka	60.5	9	48.0	12	42.3	1	37.3	6	40.2	4	29.9	18	46.0
Slavyanka	59.8	11	50.7	8	39.2	10	38.6	4	36.6	13	30.2	14	45.1
Absolvent	59.3	12	46.6	13	40.6	4	33.3	16	39.8	5	32.3	8	45.1
Iulia	61.5	6	48.2	11	36.1	19	36.4	9	36.7	11	33.6	5	44.8
Ticonderoga	61.5	6	45.6	17	36.6	17	37.3	6	38.7	8	30.2	14	44.4
Zlatoklasa (Zg 4364)	57.4	15	52.9	4	35.6	20	31.9	19	35.1	20	30.1	17	43.9
Bezostaya 1	56.0	17	46.5	14	38.4	11	32.1	18	38.7	8	31.7	10	43.6
Lindon	58.2	14	41.6	22	38.4	11	35.6	11	40.4	3	29.6	19	43.3
Disponent	67.8	2	36.5	27	32.0	26	36.8	8	36.4	16	33.1	6	42.8
Blueboy	55.8	18	44.0	18	37.0	16	33.9	13	36.6	13	36.0	2	42.7
NR 73-5028 (Samson)	56.7	16	46.5	14	41.7	3	32.4	17	33.4	23	26.4	24	42.4
Newton (KS 73112)	50.1	25	42.2	20	40.6	4	34.6	12	40.9	2	33.7	4	42.4
Moslavka (Zg 4240-73)	58.5	13	53.2	3	34.5	21	24.1	27	30.8	25	22.0	28	42.0
F53-70	55.7	19	45.8	16	32.5	25	31.4	20	34.6	22	31.4	11	41.4
Mironovskaya 808	60.0	10	42.0	21	31.1	27	31.2	21	36.6	13	27.7	22	41.4
CI 13449/Centurk	53.2	23	39.7	23	39.9	8	33.5	15	35.3	18	31.2	12	40.8
Zg 4293-73	54.3	21	49.7	10	34.1	23	27.2	24	31.0	24	22.4	27	40.3
F54-70	53.9	22	43.6	19	29.0	29	31.2	21	35.3	18	28.1	21	39.8
Zg 887-73	55.4	20	51.2	7	40.4	7	18.7	29	22.7	26	22.9	26	39.7
Krasnodarskaya 39	50.8	24	38.8	24	33.9	24	31.1	23	36.2	17	25.6	25	38.6
NE 73640	49.6	26	38.6	25	34.3	22	33.6	14	34.9	21	30.7	13	38.6
Budifen	45.9	27	31.7	29	42.3	1	24.9	26	18.4	29	32.2	9	33.2
Atlas 66	42.7	28	37.7	26	29.7	28	27.0	25	21.6	28	26.9	23	32.2
Nap Hal/Atlas 66	37.1	29	34.3	28	21.6	30	21.5	28	21.9	27	21.4	29	28.2
Lerma Rojo 64	30.9	30	27.6	30	37.7	15	2.6	30	12.3	30	19.1	30	24.5
Mean	55.8		45.0		36.4		31.7		34.1		29.4		41.5
L.S.D. of cultivar means (.05)	7.9		6.5		5.9		10.1		7.0		9.7		3.5
Coefficient of variation (%)	10.5		13.6		17.7		19.4		16.1		18.7		14.2

Table 75. Summary of agronomic, quality, and yield data for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978.

Cultivars	Yield		Test weight		1000-kernel weight		Protein		Adjusted lysine/protein		Plant height		Lodging	
	q/ha	% of Bezostaya 1	kg/hl	rank	g	rank	%	rank	%	rank	cm	rank	%	rank
Number of sites	52		26		28		40		5		41		20	
Yubiley	48.7	111.7	79.4	14	40.2	9	13.5	21	2.91	10	85.2	6	7.9	7
NR 72-837	48.4	111.0	76.9	19	41.5	6	13.8	17	2.95	6	84.1	5	3.1	3
Slavia (ST-VUR 37)	47.2	108.3	75.7	26	42.1	3	12.8	27	2.91	10	90.1	12	13.0	12
Martonvasari 4	47.0	107.8	81.0	3	40.6	8	14.0	14	2.68	29	98.7	22	20.3	18
Sadovo-1	46.7	107.1	79.7	11	46.7	1	13.3	25	2.67	30	89.8	11	8.8	8
Partizanka	46.0	105.5	81.6	1	37.4	14	13.6	20	2.84	17	89.3	10	10.8	11
Slavyanka	45.1	103.4	80.6	5	40.9	7	14.1	11	2.82	19	95.4	17	9.0	9
Absolvent	45.1	103.4	80.7	4	42.5	2	13.9	15	2.77	25	96.2	19	20.7	19
Iulia	44.8	102.8	81.1	2	41.7	5	14.5	7	2.80	20	90.2	13	14.2	14
Ticonderoga	44.4	101.8	72.6	30	35.2	19	12.2	30	2.93	8	94.0	16	13.8	13
Zlatoklasa (Zg 4364)	43.9	100.7	76.6	21	33.2	23	13.9	15	2.80	20	73.1	4	5.0	5
Bezostaya 1	43.6	100.0	80.5	6	42.0	4	14.0	13	2.74	27	97.1	20	24.0	20
Lindon	43.3	99.3	80.3	9	30.5	29	13.3	24	2.92	9	95.4	18	31.4	25
Disponent	42.8	98.2	75.7	25	34.1	22	14.3	9	2.88	12	90.8	14	4.2	4
Blueboy	42.7	97.9	75.9	24	35.9	17	12.7	28	2.96	5	103.9	28	28.2	22
NR 73-5028 (Samson)	42.4	97.2	79.2	15	35.1	20	13.7	18	2.88	12	87.8	7	17.6	17
Newton	42.4	97.2	79.6	12	35.3	18	14.1	11	2.97	4	91.8	15	25.2	21
Moslavka (Zg 4240-73)	42.0	96.3	74.9	28	32.9	26	14.4	8	2.79	24	73.0	3	1.8	1
Mironovskaya 808	41.4	95.0	77.7	18	39.7	10	13.7	18	2.98	3	117.6	30	49.8	30
F53-70	41.4	95.0	80.4	8	39.3	12	15.5	3	2.80	20	100.2	26	16.4	15
CI 13449/Centurk	40.8	93.6	76.3	22	33.0	24	13.1	26	3.03	1	100.0	25	31.7	26
Zg 4293-73	40.3	92.4	76.0	23	31.8	27	14.3	9	2.80	20	64.3	1	2.1	2
F54-70	39.8	91.3	80.5	7	37.9	13	15.5	3	2.85	16	100.7	27	17.0	16
Zg 887-73	39.7	91.1	75.7	27	32.9	25	13.4	22	2.83	18	72.6	2	7.1	6
Krasnodarskaya 39	38.6	88.5	78.9	16	37.4	15	13.4	22	2.94	7	99.6	24	28.8	23
NE 73640	38.6	88.5	80.1	10	34.9	21	15.0	6	2.77	25	99.0	23	41.1	28
Budifen	33.2	76.1	72.6	29	30.8	28	12.4	29	3.02	2	88.0	8	9.2	10
Atlas 66	32.2	73.9	78.7	17	36.4	16	16.2	2	2.86	15	115.2	29	47.3	29
Nap Hal/Atlas 66	28.2	64.7	79.4	13	28.2	30	18.1	1	2.88	12	98.1	21	28.9	24
Lerma Rojo 64	24.5	56.2	76.7	20	39.7	11	15.1	5	2.70	28	88.9	9	33.6	27
Mean	41.5 (42.1)[a]	95.2 (96.5)[a]	78.2[b]		37.0[b]		14.1[b]		2.86		92.4[b]		19.0 (18.6)[a]	
L.S.D. of cultivar means (.05)	3.5 (3.3)		1.3		1.6		0.5		0.16		2.6		10.4 (10.1)	
Coefficient of variation (%)	14.2(14.1)		1.9		6.3		8.5		4.4		5.6		65.0(65.5)	

[a] Means and analyses in parentheses exclude Lerma Rojo 64.

[b] Analyses excluding Lerma Rojo 64 do not differ.

Table 75. Summary of agronomic, quality, and yield data for cultivars grown in the Tenth International Winter Wheat Performance Nursery in 1978. Concluded.

Cultivars	Flowering		Ripening		Shattering		Winter survival		Frost damage	
	days from Jan. 1	rank	days from Jan. 1	rank	%	rank	%	rank	0-9	rank
Number of sites	40		25		7		24		10	
Yubiley	159.0	11	205.6	7	3.4	11	83.5	13	1.3	15
NR 72-837	165.0	27	210.5	29	2.3	5	77.1	21	1.1	4
Slavia (ST-VUR 37)	164.4	25	210.1	27	6.3	22	79.4	20	1.2	8
Martonvasari 4	158.5	9	206.3	8	3.2	10	86.4	6	1.3	15
Sadovo-1	157.9	7	206.7	13	4.4	18	82.2	15	1.3	15
Partizanka	159.4	12	207.3	14	1.2	2	85.5	9	1.1	4
Slavyanka	158.2	8	206.5	9	3.9	15	83.2	14	1.6	22
Absolvent	161.2	18	207.9	17	5.6	19	85.1	10	1.3	15
Iulia	158.8	10	207.5	15	4.0	16	81.5	17	1.3	15
Ticonderoga	166.2	29	210.4	28	6.1	21	81.5	17	1.1	4
Zlatoklasa (Zg 4364)	157.6	5	205.4	6	3.4	11	76.8	22	2.1	24
Bezostaya 1	161.5	20	208.8	20	3.5	13	86.4	5	1.2	8
Lindon	160.0	14	207.9	16	2.6	8	85.6	8	1.2	8
Disponent	169.5	30	214.3	30	2.3	5	82.0	16	1.2	13
Blueboy	160.9	16	208.5	19	10.8	26	80.1	19	1.2	13
NR 73-5028 (Samson)	157.6	5	205.0	3	1.6	3	70.3	25	1.2	8
Newton	159.7	13	206.6	11	1.9	4	83.7	12	1.5	21
Moslavka (Zg 4240-73)	155.3	1	205.3	5	7.0	23	71.8	23	2.6	25
Mironovskaya 808	165.3	28	210.1	26	13.8	29	93.3	1	1.0	2
F53-70	161.0	17	209.4	23	12.7	28	86.7	4	1.2	8
CI 13449/Centurk	161.4	19	208.3	18	7.6	24	84.2	11	1.3	15
Zg 4293-73	155.7	3	204.6	2	3.8	14	71.8	24	2.1	23
F54-70	161.6	21	210.1	25	12.2	27	88.4	3	1.1	4
Zg 887-73	155.4	2	205.1	4	5.6	19	46.8	28	3.7	29
Krasnodarskaya 39	164.3	24	209.2	22	4.0	16	85.9	7	0.9	1
NE 73640	160.5	15	206.5	10	2.4	7	88.8	2	1.0	2
Budifen	164.6	26	210.1	24	0.8	1	46.0	29	2.6	25
Atlas 66	162.1	22	209.1	21	8.9	25	64.9	26	3.1	28
Nap Hal/Atlas 66	163.1	23	206.6	12	15.8	30	60.9	27	2.6	25
Lerma Rojo 64	155.8	4	203.9	1	3.0	9	24.5	30	5.7	30
Mean	160.7 (160.9)[a]		207.8[b]		5.5[b]		76.8 (78.6)[a]		1.7 (1.6)[a]	
L.S.D. of cultivar means (.05)	1.7 (1.5)		1.5		8.0		9.5 (9.0)		0.8 (0.8)	
Coefficient of variation (%)	1.3 (1.2)		0.9		102.6		9.9 (9.8)		38.9 (42.4)	

[a] Means and analyses in parentheses exclude Lerma Rojo 64.

[b] Analyses excluding Lerma Rojo 64 do not differ.

Table 76. Correlation coefficients for yield, protein, and other agronomic traits combined over 58 nursery sites of the Tenth International Winter Wheat Performance Nursery in 1978.

Trait	Yield	Test weight	1000-kernel weight	Protein	Plant height	Lodging	Flowering	Ripening	Shattering	Winter survival
Test weight	.27**									
N	3705									
1000-kernel weight	.42**	.29**								
N	3690	2822								
Protein	-.26**	-.21**	-.16**							
N	1392	1155	962							
Plant height	.30**	.24**	.03	-.14**						
N	5580	3442	3513	1274						
Lodging	-.03	-.04	-.12**	.23**	.36**					
N	2967	2226	2282	800	2938					
Flowering	-.20**	-.11**	-.21**	-.12**	-.05**	-.07**				
N	5499	3427	3616	1334	5098	2789				
Ripening	-.26**	-.19**	-.17**	-.02	-.14**	-.03	.98**			
N	3629	2191	2820	843	3598	2361	3682			
Shattering	-.20**	.01	-.12**	-.20**	.20**	-.09*	-.10**	-.14**		
N	1075	534	774	237	1015	775	1103	947		
Winter survival	.56**	.30**	.06*	-.17**	.53**	.21**	-.14**	-.24**	-.12**	
N	2755	1678	1685	705	2406	1681	2456	1883	626	
Frost damage	.04	-.10**	-.01	.05	-.17**	.14**	-.19**	-.17**	-.12*	-.35**
N	1136	836	1016	329	1166	956	1166	1046	390	686

*, significant at the .05 probability level.

**, significant at the .01 probability level.

N = Number of paired comparisons.

Table 77. Reaction of International Winter Wheat Performance Nursery cultivars to yellow rust (Puccinia striiformis) in 1978.

Cultivars	Kabul, Afghanistan		Herat, Afghanistan	Balcarce, Argentina		Bordenave, Argentina	Chillan, Chile		Temuco Chile		Male Ripnany Czechoslovakia		Bohnshausen East Germany	
	Sev	%:Resp	Sev %	Sev	%:Resp	Sev %	Sev	%:Resp	Sev	%:Resp	Sev	%:Resp	Sev	%:Resp
Number of replications	4		4	4		4	1		1		4		2	
F53-70	0		1	50	MS	2	50	MS	0		0		0	
Blueboy	0		0	40	MS	5	0		5	MR	0		1	0-MR
Krasnodarskaya 39	1	0-R	1	80	S	6	40	MS	5	MR	0		2	MR
Atlas 66	3	0-S	1	92	S	18	80	S	30	MR	0		2	MR
Mironovskaya 808	4	0-S	1	30	MR	0	0		1	R	0		0	
F54-70	0		1	60	MR-S	0	5	MS	1	R	0		0	
Lindon	0		0	99	S	6	80	S	1	R	0		1	0-MR
Yubiley	0		0	48	MS	1	0		0		0		0	
Zg 887-73	13	0-S	4	80	S	0	0		0		10	VR	0	
Iulia	1	0-R	1	60	MS	4	0		5	MR	0		0	
Moslavka (Zg 4240-73)	0		0	90	S	0	0		0		0		2	MR
NE 73640	1	0-MR	2	99	S	15	40	MS	30	MR	0		0	
Bezostaya 1	1	0-S	2	50	MS	0	0		1	MR	0		0	
Sadovo-1	0		1	3	MS	0	0		0		0		0	
Zlatoklasa (Zg 4364)	3	0-MS	1	99	S	30	40	S	1	MS	0		0	
Zg 4293-73	0		0	90	S	18	0		0		6	VR	0	
Lerma Rojo 64	0		2	63	MS	0	0		0		0		0	
Martonvasari 4	0		0	13	MS	1	0		0		0		0	
Slavyanka	0		0	40	MS-S	0	40	S	70	S	0		0	
NR 72-837	1	0-MR	1	1	MS	0	0		0		0		0	
Slavia (ST-VUR 37)	0		3	0		0	0		0		0		0	
Ticonderoga	38	MS-S	8	6	MS	8	10	MS	60	MS	0		4	MR
Disponent	0		0	0		0	0		0		0		0	
Partizanka	0		1	55	MS	3	0		0		0		0	
Nap Hal/Atlas 66	3	0-MS	4	48	MS	0	40	S	1	MR	0		2	R-MR
NR 73-5028 (Samson)	0		0	80	MS-S	0	0		0		0		0	
Budifen	0		0	43	MR	0	0		1	MR	0		0	
Newton	0		1	0		0	0		1	MR	0		0	
Absolvent	0		0	75	MS	1	0		1	MR	0		0	
CI 13449/Centurk	0		4	80	MS-S	20	40	S	90	S	10	VR	3	MR
Means	2.2		1.2	52.4		4.5	15.5		10.1		0.9		0.5	

Table 77. Reaction of International Winter Wheat Performance Nursery cultivars to yellow rust (Puccinia striiformis) in 1978. Continued.

Cultivars	Martonvasar, Hungary		Rieti, Italy	Toluca, Mexico		Wageningen, Netherlands	Warsaw, Poland		Fundulea, Romania		Madrid, Spain		Zurich, Switzerland	
	Sev	%:Resp	Sev %	Sev	%:Resp	Sev %	Sev	%:Resp	Sev	%:Resp	Sev	%:Resp	Sev	%:Resp
Number of replications	1		4	2		4	4		4		4		4	
F53-70	30	MS	0	0	0-R	18	0		1	R	35	MR-S	5	0-M
Blueboy	60	MS	5	15	MR	13	0		28	MR-MS	15	MR-S	13	M-MS
Krasnodarskaya 39	70	S	10	35	S	6	24	MR-MS	35	MS	58	0-S	40	S
Atlas 66	90	S	0	10	R-MS	0	13	MR-MS	48	S	53	MS-S	5	0-M
Mironovskaya 808	50	MS	0	13	MR-MS	0	0		1	R	28	MR-S	5	0-MS
F54-70	40	MS	0	5	MR	14	0		8	R	53	S	5	0-M
Lindon	40	S	0	35	MR	8	23	MS	78	S	83	MS-S	60	VS
Yubiley	30	MS	0	1	R	1	0		1	R	30	MR-MS	3	0-M
Zg 887-73	1	R	0	1	R	0	0		5	R	80	S	13	0-MS
Iulia	20	MS	5	18	MR-MS	0	0		2	R	45	MR-S	5	0-M
Moslavka (Zg 4240-73)	1	R	0	1	R	0	0		25	MS	68	S	5	0-M
NE 73640	50	S	0	40	MR-MS	14	30	MS-S	38	MS-S	88	S	55	S-VS
Bezostaya 1	50	MS	5	10	R-MS	19	0		8	R	63	MS-S	13	M-MS
Sadovo-1	50	S	0	20	MS	5	0		5	R	23	MR-S	5	0-M
Zlatoklasa (Zg 4364)	1	VR	5	3	0-MS	0	14	MR-MS	33	MS	58	MS-S	8	0-M
Zg 4293-73	-	VR	0	1	R	0	18	MS	24	MS	59	R-S	8	0-M
Lerma Rojo 64	5	R-MR	0	10	R	20	-		1	R	20	MR-MS	8	0-MS
Martonvasari 4	40	MS	0	50	MR-S	11	16	MR-MS	1	R	43	MS-S	10	M
Slavyanka	10	MR-MS	30	1	R	8	20	MS	33	MS	58	MS-S	15	M-MS
NR 72-837	10	MR	0	1	R	6	0		25	MS	18	MR-S	0	
Slavia (ST-VUR 37)	40	MS	0	0	0-R	0	0		1	R	5	MR	0	
Ticonderoga	80	S	25	70	S	45	28	MS-S	40	MS	70	S	60	VS
Disponent	5	MR	0	0	0-R	0	0		1	R	7	0-MR	0	
Partizanka	5	R-MR	8	5	R-MR	9	20	MR-MS	13	MR	63	MS-S	13	M-MS
Nap Hal/Atlas 66	20	MS	0	13	MS	8	28	MS-S	34	R-MS	75	S	30	MS-S
NR 73-5028 (Samson)	35	MS	0	28	S	0	16	MR-MS	28	R-MR	80	S	23	M-S
Budifen	5	R-MS	0	0		0	0		4	R	0		0	
Newton	5	MR	0	10	R	8	25	MS	21	MS	19	MS-S	5	0-M
Absolvent	10	MR-MS	0	10	R-MS	4	16	MS	1	R	30	MR-MS	13	M-MS
CI 13449/Centurk	10	MR-MS	13	60	MS-S	21	31	MR-MS	61	S	85	S	60	VS
Means	29.8		3.5	21.3		7.8	11.0		20.0		46.9		16.0	

Table 77. Reaction of International Winter Wheat Performance Nursery cultivars to yellow rust (Puccinia striiformis) in 1978. Concluded.

Cultivars	Eskisehir, Turkey		Corvallis, Oregon U.S.A.		Pullman, Washington U.S.A.	Krasnodar, U.S.S.R.	Severity (%) Cultivar mean over 20 sites	Severity (%) High score
	Sev %	Resp	Sev %	Resp	Sev %	Sev %		
Number of replications	4		1		2	4		
F53-70	0		60	S	13	0	13.2	60
Blueboy	1	0-MR	40	MS	25	0	13.2	60
Krasnodarskaya 39	34	MR-S	20	M	13	9	24.3	80
Atlas 66	50	S	20	MR	8	0	25.9	92
Mironovskaya 808	28	MS-S	20	MR	3	0	8.9	50
F54-70	9	0-S	20	M	6	0	11.3	60
Lindon	0		20	MS	18	3	27.6	99
Yubiley	0		30	M	1	0	7.6	48
Zg 887-73	45	0-S	0		10	0	13.0	80
Iulia	0		20	M	50	0	11.7	60
Moslavka (Zg 4240-73)	3	0-MR	60	S	3	0	13.5	90
NE 73640	70	S	60	S	70	18	35.9	99
Bezostaya 1	3	0-MS	40	S	10	1	13.6	63
Sadovo-1	0		60	S	13	0	9.2	60
Zlatoklasa (Zg 4364)	16	0-S	40	MS	3	2	18.3	99
Zg 4293-73	0		99	S	50	17	21.5	99
Lerma Rojo 64	18	0-S	80	S	-	-	13.3	80
Martonvasari 4	0		99	S	10	1	14.7	99
Slavyanka	0		99	S	15	8	23.4	99
NR 72-837	9	0-S	20	M	8	1	5.1	25
Slavia (ST-VUR 37)	1	0-MR	20	MR	5	0	3.8	40
Ticonderoga	78	S	60	S	80	24	37.7	80
Disponent	3	0-MS	40	MS	3	0	2.9	40
Partizanka	8	0-S	40	S	10	3	12.7	63
Nap Hal/Atlas 66	45	S	40	MS	23	1	20.4	75
NR 73-5028 (Samson)	0		0		25	21	16.8	80
Budifen	0		60	MS	1	0	5.7	60
Newton	10	0-S	40	MS	15	0	8.0	40
Absolvent	3	0-S	80	S	13	1	12.8	80
CI 13449/Centurk	18	0-S	80	S	35	38	37.9	90
Means	14.9		45.6		18.4	5.0	16.1	

Table 78. Reaction of International Winter Wheat Performance Nursery cultivars to leaf rust (Puccinia recondita) in 1978.

Cultivar	Balcarce, Argentina		Bordenave, Argentina		Tolbukhin, Bulgaria		Chillan, Chile		Bohnshausen, East Germany		Martonvasar, Hungary		Szeged, Hungary		Rieti, Italy
	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Resp	Sev
Number of replications	4		4		1		1		2		1		4		4
F53-70	0		18	MS-S	1	R	0		0		5	MR	1	O-MR	8
Blueboy	13	MS	28	MS-S	25	S	60	S	0		5	MR	0		45
Krasnodarskaya 39	0		60	S	99	VS	10	MS	1	MR	5	R	8	MR-MS	23
Atlas 66	0		25	S	0		5	MS	0		1	R	4	MR-MS	23
Mironovskaya 808	0		55	S	70	VS	0		0		10	MS	4	MR	20
F54-70	0		14	MR-MS	1	R	0		0		1	R	1	O-MR	18
Lindon	0		48	MS-S	1	R	0		0		1	R	4	O-MR	13
Yubiley	0		2	R	1	R	0		0		0		1	O-MR	10
Zg 887-73	0		23	MS	5	R	0		0		0		0		3
Iulia	0		55	S	65	VS	30	S	0		0		3	MR	23
Moslavka (Zg 4240-73)	0		1	O-R	5	M	0		2	MR	0		1	O-MR	13
NE 73640	0		25	MS-S	80	VS	0		0		1	MR	0		0
Bezostaya 1	0		33	S	40	S	10	MS	0		1	MR	4	MR-MS	28
Sadovo-1	0		50	S	99	VS	0		0		15	MS	23	MR-MS	30
Zlatoklasa (Zg 4364)	0		3	O-R	10	M	0		0		1	MR	0	O-R	5
Zg 4293-73	0		23	MS-S	10	M	40	S	0		0		0	O-R	15
Lerma Rojo 64	38	MS-S	33	S	25	M	0		0		5	MS	10	MR	0
Martonvasari 4	0		60	S	99	VS	10	MS	0		10	MS	28	MR	33
Slavyanka	0		50	S	40	MS	1	MS	0		5	MS	28	MR-MS	5
NR 72-837	50	MR	43	MS-S	5	M	10	MS	0		0		2	MR-MS	15
Slavia (ST-VUR 37)	83	S	55	S	50	MS	60	S	2	R-MR	0	O-R	23	O-MR	58
Ticonderoga	63	S	92	S	99	VS	90	S	4	MR-M	30	MS	60	MS-S	45
Disponent	13	MS	3	R-MR	50	MS	10	MS	0		20	S	1	O-MR	38
Partizanka	0		1	O-R	5	M	0		0		0		1	O-MR	8
Nap Hal/Atlas 66	80	S	30	MS-S	1	R	20	MS	0		0		8	MR-MS	0
NR 73-5028 (Samson)	0		60	S	99	VS	0		1	MR	1	MR	23	MS	30
Budifen	0		38	S	50	VS	0		0		1	MR	1	O-MR	35
Newton	65	S	58	S	65	VS	60	S	0		0	O-R	1	O-MR	13
Absolvent	0		16	MS-S	50	VS	40	MS	0		0	O-M	10	MR-MS	8
CI 13449/Centurk	33	MS-S	5	R-MS	99	VS	60	S	1	R	10	MS	24	MR-MS	0
Mean	14.5		33.4		43.0		17.2		0.3		4.3		8.9		18.6

Table 78. Reaction of International Winter Wheat Performance Nursery cultivars to leaf rust (Puccinia recondita) in 1978. Continued.

Cultivar	Morioka, Iwate Japan		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa		Madrid, Spain		Hutchinson, Kansas U.S.A.		Stillwater, Oklahoma, U.S.A.	
	Sev	%:Resp	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	
F53-70	0		2	R	19	MR-MS	10	R	0		0	0-MR	6	MR	2	S
Blueboy	10	M-S	2	R-MR	10	MR	1	R	5	0-S	12	MR-S	75	MS-S	14	S
Krasnodarskaya 39	11	M-S	2	R	20	MR-MS	45	S	2	0-S	0		92	S	23	S
Atlas 66	0		2	R	16	MR-MS	9	R	3	0-S	0		9	MR	3	S
Mironovskaya 808	11	MS-S	3	R-MR	13	MR-MS	83	S	0		1	0-MR	9	MR	21	S
F54-70	1	0-MS	1	R	19	MR-MS	9	R	0	0-S	0		5	R-MR	3	S
Lindon	0	0-R	2	R	15	MR-MS	1	R	3	0-S	0		92	S	25	S
Yubiley	0		1	R	24	MR-MS	6	R	0	0-S	0		7	R-MR	2	0-S
Zg 887-73	31	S-VS	2	R	30	MS-S	9	MR	1	0-S	0		48	MR-S	33	S
Iulia	39	S-VS	2	R	28	MS-S	28	MS	7	S	0	0-S	65	MR-S	16	S
Moslavka (Zg 4240-73)	2	0-M	1	R	26	MR-MS	5	R	1	0-S	1	0-S	8	MR	2	S
NE 73640	0		0		13	MR-MS	8	MR-MS	1	0-S	0		78	S	18	S
Bezostaya 1	5	MR-M	2	R-MR	33	MS	43	S	2	0-S	3	0-S	50	0-MS	11	S
Sadovo-1	5	M-MS	3	R-MR	30	MS	85	VS	1	0-S	18	0-S	99	S	28	S
Zlatoklasa (Zg 4364)	1	0-M	2	R-MR	23	MS-S	10	R	0		0		19	MR-MS	4	S
Zg 4293-73	4	0-M	2	R	30	MS	1	R	3	MR-S	0		48	MS	14	S
Lerma Rojo 64	0		5	R-MR	-		8	MR	0		0		-		-	
Martonvasari 4	3	0-M	3	R-MR	25	MR-MS	99	VS	2	0-S	1	0-MS	78	S	16	S
Slavyanka	0		2	R-MR	28	MS	9	R	0	0-S	0		99	S	29	S
NR 72-837	0	0-R	2	R	24	MR-MS	5	R	0		0		10	MR	15	S
Slavia (ST-VUR 37)	2	R-MR	3	R	38	MS-S	9	MR	5	MS-S	53	S	95	S	28	S
Ticonderoga	61	S-VS	8	MR-M	18	MS	65	S	16	S	0		97	S-VS	58	S
Disponent	0		3	R-MR	28	MR-MS	99	VS	0	0-S	0		30	MR-MS	11	S
Partizanka	0		1	R	30	MS-S	5	R	2	0-S	0		3	R-MR	4	0-S
Nap Hal/Atlas 66	0		3	R-MR	28	MS	5	R	1	0-S	0		14	MR-MS	5	S
NR 73-5028 (Samson)	28	S-VS	2	R	30	MS	99	S	2	S	0		90	S	18	S
Budifen	43	S-VS	2	R-MR	35	MS	85	S	1	0-S	0	0-S	70	S	18	S
Newton	5	MR-MS	2	R	23	MS-S	23	MR	2	0-S	0		48	MR-MS	15	S
Absolvent	10	0-S	1	R	23	MS	50	S	1	0-S	0	0-MR	53	MS-S	14	S
CI 13449/Centurk	81	S-VS	4	R-MR	15	MR-MS	10	MR	3	0-S	0		95	S	35	S
Mean	11.7		2.2		23.7		30.7		2.0		2.9		51.2		16.6	

Table 78. Reaction of International Winter Wheat Performance Nursery cultivars to leaf rust (Puccinia recondita) in 1978. Concluded.

Cultivars	Pullman, Washington, U.S.A.	Krasnodar, U.S.S.R.		Mironovski U.S.S.R.	Odessa, U.S.S.R.		Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Severity (%)	
											Cultivar mean over 21 sites	High Score
	Sev %	Sev %	Resp	Sev (0-9)	Sev %	Resp	Sev %	Resp	Sev %	Resp		
Number of replications	2	4		4	4		4		1			
F53-70	1	4	VR-M	1	3	MR-M	25	S-VS	15	MS	5.6	25
Blueboy	13	54	M-MS	3	69	VS	78	S-VS	40	MS	26.5	78
Krasnodarskaya 39	3	68	M-MS	4	91	VS	69	S-VS	0		29.9	99
Atlas 66	1	0	VR-R	1	6	MR-M	14	M-S	20	MS	6.6	25
Mironovskaya 808	1	82	M-S	4	99	VS	69	S-VS	75	MS	29.7	99
F54-70	1	20	R-M	2	24	MR-VS	25	S-VS	30	MS	8.2	30
Lindon	1	0	O-MR	1	1	MR	13	O-S	0		10.4	92
Yubiley	1	1	VR-R	1	19	MR-VS	23	O-VS	10	MR	5.1	24
Zg 887-73	1	5	R-M	-	14	MR-VS	36	S-VS	5	MR	11.6	48
Iulia	5	81	M-S	4	91	VS	45	VS	10	MR	28.1	91
Moslavka (Zg 4240-73)	1	7	R	1	6	MR-M	33	S-VS	15	R	6.0	33
NE 73640	1	19	O-MS	2	45	M-VS	14	MS-S	0		14.3	80
Bezostaya 1	3	69	M-MS	3	91	VS	11	MR-S	10	MR	21.2	91
Sadovo-1	1	75	MS	4	99	VS	70	VS	0		34.7	99
Zlatoklasa (Zg 4364)	1	2	R	1	11	MR-VS	16	S	20	R	6.0	23
Zg 4293-73	3	1	O-MR	0	10	S-VS	33	S-VS	60	MR	14.0	60
Lerma Rojo 64	-	-		-	-		9	M-S	0		8.7	38
Martonvasari 4	3	75	M-MS	4	99	VS	75	VS	85	MS	38.2	99
Slavyanka	3	8	VR-MS	2	18	M-VS	85	VS	60	MS	22.3	99
NR 72-837	1	2	VR-MR	1	9	MR-VS	31	S	25	R	11.9	50
Slavia (ST-VUR 37)	8	21	R-S	3	35	VS	56	S-VS	0		32.3	95
Ticonderoga	8	82	MR-MS	4	99	VS	73	VS	90	MS	55.0	99
Disponent	1	97	MS-S	4	99	VS	78	VS	80	MS	31.4	99
Partizanka	1	1	R-MR	1	13	M-VS	8	M-S	20	MS	4.8	30
Nap Hal/Atlas 66	1	2	R-MS	-	19	MR-M	55	VS	50	MR	15.9	80
NR 73-5028 (Samson)	1	50	O-MS	4	99	VS	70	VS	0		33.4	99
Budifen	3	80	MS-S	-	99	VS	82	VS	40	MR	32.4	99
Newton	3	45	M-MS	4	69	VS	24	S	0		24.6	69
Absolvent	1	59	M-S	4	74	VS	63	VS	65	MS	25.5	74
CI 13449/Centurk	5	25	O-MS	4	99	VS	8	O-S	0		29.0	99
Mean	2.6	35.5		2.6	51.9		44.2		27.5		20.8	

Table 79. Reaction of International Winter Wheat Performance Nursery cultivars to stem rust (Puccinia graminis tritici) in 1978.

Cultivars	Balcarce, Argentina		Bordenave, Argentina		Male Ripnany, Czechoslovakia		Rieti, Italy	Toluca, Mexico	
	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Sev	Resp
Number of replications	4		4		4		4	2	
F53-70	60	S	20	O-S	0		38	5	MS-S
Blueboy	80	S	10	O-S	0		55	18	MR-S
Krasnodarskaya 39	73	S	8	O-S	0		55	30	MS
Atlas 66	10	S	0	O-MR	10	VR	38	0	
Mironovskaya 808	83	S	13	O-S	10	VR	38	5	MR-MS
F54-70	45	MS-S	28	S	10	VR-R	55	30	MS
Lindon	0		0		0		30	0	
Yubiley	43	S	0		5	VR-R	18	10	R-MS
Zg 887-73	0		3	O-MS	0		0	0	O-R
Iulia	58	MS-S	10	O-S	38	R	3	18	MS-S
Moslavka (Zg 4240-73)	0		0		10	R	3	0	O-MS
NE 73640	0		0		10	R	0	0	
Bezostaya 1	43	S	3	O-MS	0		38	18	MS-S
Sadovo-1	90	S	0		40	R-MR	20	15	O-S
Zlatoklasa (Zg 4364)	0		0		10	R	3	0	O-R
Zg 4293-73	0		0		0		0	0	
Lerma Rojo 64	3	MS	0		10	R	5	0	
Martonvasari 4	73	S	0		5	R	63	40	MS-S
Slavyanka	83	S	0		20	R	23	30	S
NR 72-837	23	MR	0		23	R	43	0	
Slavia (ST-VUR 37)	6	MR	1	O-MS	33	R	15	0	O-MR
Ticonderoga	48	S	3	O-MS	20	R	73	8	MS
Disponent	10	MR	0		14	VR	0	0	O-MR
Partizanka	11	MS	1	O-MS	10	R	20	38	S
Nap Hal/Atlas 66	13	MS-S	0		0		13	0	O-MS
NR 73-5028 (Samson)	20	MS	0		10	R	35	20	MS
Budifen	13	R-MR	0		10	R	28	30	MR-S
Newton	18	MS	0		20	R	20	0	O-R
Absolvent	20	MS-S	4	O-MS	10	R	43	25	MS
CI 13449/Centurk	1	S	5	O-MS	0		13	5	O-MS
Mean	30.7		3.6		10.9		26.0	13.0	

Table 79. Reaction of International Winter Wheat Performance Nursery cultivars to stem rust (Puccinia graminis tritici) in 1978. Concluded.

Cultivar	Fundulea, Romania		Bethlehem South Africa		Madrid, Spain		Eskisehir, Turkey		Zagreb, Yugoslavia		Severity %	
	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Resp	Sev	Resp	Cultivar mean over 10 sites	High Score
Number of replications	4		4		4		4		1			
F53-70	9	MS	30	S	21	S	25	S	40	MS	24.8	60
Blueboy	40	VS	14	S	13	MS-S	38	S	20	MR	28.7	80
Krasnodarskaya 39	45	VS	20	S	1	O-MR	35	S	55	MS	32.1	73
Atlas 66	6	MR	8	S	0		5	O-S	50	MR	12.7	50
Mironovskaya 808	40	S	23	S	1	O-MR	25	MS-S	70	MR	31.0	83
F54-70	11	MR-MS	40	S	5	O-S	18	O-S	80	MS	32.2	80
Lindon	7	S	1	O-S	0		15	O-S	40	R	9.2	40
Yubiley	9	R	4	S	5	O-S	18	O-S	50	S	16.1	50
Zg 887-73	5	R	0		0		0		10	R	1.8	10
Iulia	5	R-MR	23	S	0		18	MS-S	10	MR	18.0	58
Moslavka (Zg 4240-73)	5	R	0		0		3	O-MS	10	R	3.0	10
NE 73640	9	MR	4	O-S	0		5	O-MS	35	MR	6.3	35
Bezostaya 1	9	MS	8	S	6	O-S	30	MS-S	15	MS	16.8	43
Sadovo-1	10	MR	8	O-S	13	MS-S	9	O-MS	20	MR	22.4	90
Zlatoklasa (Zg 4364)	5	R	1	O-S	0		5	O-S	5	R	2.9	10
Zg 4293-73	8	R	0		0		3	O-S	5	R	1.5	8
Lerma Rojo 64	6	R	4	S	0		0		10	MR	3.8	10
Martonvasari 4	58	VS	10	S	1	O-MS	26	MS-S	45	MS	31.9	73
Slavyanka	5	R-MR	2	S	0		10	O-S	60	MS	23.2	83
NR 72-837	6	R-MR	48	S	0		28	S	30	MR	19.9	48
Slavia (ST-VUR 37)	5	R	25	S	1	MS-S	15	MS-S	40	R	14.1	40
Ticonderoga	48	VS	58	S	1	O-S	25	O-S	85	MS	36.6	85
Disponent	1	R	7	S	1	O-MR	8	O-S	20	R	6.0	20
Partizanka	9	MS	9	S	0		3	O-MS	35	MR	13.5	38
Nap Hal/Atlas 66	6	MR	16	S	0		0		30	MS	7.8	30
NR 73-5028 (Samson)	10	MS-S	14	O-S	0		15	O-S	50	R	17.4	50
Budifen	5	R	20	S	0		5	O-S	20	R	13.0	30
Newton	9	MS	2	O-S	1	R-MS	30	MS-S	80	MR	17.9	80
Absolvent	50	VS	4	O-S	0	O-MR	23	S	60	MS	23.8	60
CI 13449/Centurk	30	MS-S	24	S	0		40	MS-S	25	MR	14.2	40
Mean	15.6		14.1		2.3		15.8		36.8		16.8	

Table 80. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1978.

Cultivars	Vienna, Austria	Tolbukhin,[a] Bulgaria Sev %	Tolbukhin,[a] Bulgaria Resp	Prince Edward[a] Island, Canada	Male Ripnany, Czechoslovakia	Sedlec, Czechoslovakia	Bohnshausen, East Germany	Cambridge, England
Number of replications	4	1		2	4	4	2	1
F53-70	2	25	M	0	3	7	7	2
Blueboy	5	90	VS	1	7	8	9	8
Krasnodarskaya 39	5	50	VS	1	6	8	7	5
Atlas 66	2	15	S	-	3	6	6	2
Mironovskaya 808	2	20	S	0	1	4	3	2
F54-70	2	15	MS	0	2	7	7	5
Lindon	3	10	MS	0	6	8	7	2
Yubiley	4	40	VS	0	4	8	7	3
Zg 887-73	0	0		-	1	0	3	3
Iulia	3	20	MS	0	3	8	8	3
Moslavka (Zg 4240-73)	0	0		0	1	0	3	8
NE 73640	3	30	VS	0	6	8	8	4
Bezostaya 1	4	40	VS	0	4	8	8	8
Sadovo-1	6	90	VS	1	6	8	8	6
Zlatoklasa (Zg 4364)	0	0		0	1	0	4	4
Zg 4293-73	0	0		0	1	0	3	2
Lerma Rojo 64	6	65	VS	-	3	9	7	6
Martonvasari 4	3	65	VS	0	3	7	7	2
Slavyanka	4	35	VS	1	2	7	7	3
NR 72-837	1	0		0	2	2	4	2
Slavia (ST-VUR 37)	3	1	MR	0	3	7	8	4
Ticonderoga	3	1	MR	0	3	5	7	4
Disponent	5	10	M	0	6	8	8	4
Partizanka	3	25	MS	0	5	8	7	3
Nap Hal/Atlas 66	4	30	VS	-	5	8	8	4
NR 73-5028 (Samson)	3	65	VS	-	5	8	8	4
Budifen	5	25	VS	0	7	8	8	4
Newton	5	40	MS	0	7	9	9	9
Absolvent	4	25	VS	0	5	7	8	9
CI 13449/Centurk	3	25	S	2	4	8	7	5
Mean	3.0	28.6		0.2	3.8	6.2	6.4	4.3

[a] Not included in the overall means.

Table 80. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1978. Continued.

Cultivars	Martonvasar, Hungary	Szeged, Hungary	Morioka Iwate, Japan	Wageningen, Netherlands	Przeclaw,[a] Poland (%)	Warsaw, Poland	Fundulea, Romania	Madrid, Spain	Svalof, Sweden	Zurich, Switzerland
Number of replications	4	4	4	4	4	4	4	4	4	4
F53-70	6	6	2	0	0	4	4	2	0	3
Blueboy	8	9	5	3	0	7	7	5	4	8
Krasnodarskaya 39	8	8	5	3	25	4	5	0	1	7
Atlas 66	5	5	3	0	0	4	2	3	0	4
Mironovskaya 808	4	5	2	0	0	2	2	0	0	3
F54-70	5	7	2	0	0	2	4	1	0	4
Lindon	8	8	1	1	0	2	5	0	0	6
Yubiley	7	7	3	0	0	5	5	2	1	5
Zg 887-73	1	0	0	0	0	0	1	0	0	1
Iulia	7	7	4	0	45	2	4	1	1	4
Moslavka (Zg 4240-73)	1	3	3	0	0	0	1	1	0	1
NE 73640	8	8	3	1	0	4	5	0	0	4
Bezostaya 1	7	8	4	1	30	3	5	2	1	6
Sadovo-1	8	9	4	1	0	2	6	3	1	5
Zlatoklasa (Zg 4364)	1	4	0	0	0	4	2	0	0	1
Zg 4293-73	1	4	2	0	0	0	1	0	0	1
Lerma Rojo 64	9	7	2	3	0	-	7	6	2	9
Martonvasari 4	7	8	3	0	0	2	5	1	0	4
Slavyanka	6	7	3	0	0	1	6	1	0	4
NR 72-837	4	8	0	0	0	2	1	0	0	3
Slavia (ST-VUR 37)	5	7	2	1	0	3	4	0	0	4
Ticonderoga	5	5	1	0	0	2	3	2	0	5
Disponent	7	7	0	1	0	0	6	0	1	2
Partizanka	7	8	4	0	0	2	6	1	0	3
Nap Hal/Atlas 66	7	6	4	2	0	2	4	1	0	5
NR 73-5028 (Samson)	5	9	0	0	0	2	6	0	0	3
Budifen	8	7	4	0	0	7	7	6	1	3
Newton	9	9	5	2	43	8	8	2	3	6
Absolvent	7	7	4	1	0	4	6	1	1	6
CI 13449/Centurk	7	8	1	0	0	1	4	0	1	5
Mean	5.8	6.6	2.5	0.6	4.8	2.6	4.4	1.3	0.6	3.9

[a] Not included in the overall means.

Table 80 . Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to powdery mildew (Erysiphe graminis) in 1978. Concluded.

Cultivars	Krasnodar, U.S.S.R.	Mironovski, U.S.S.R.	Odessa, U.S.S.R.	Monsheim, West Germany	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia	Severity (0-9) Cultivar mean over 21 sites	Severity (0-9) High score
Number of replications	4	4	3	4	4	4	1		
F53-70	5	4	4	3	3	3	4	3.5	7
Blueboy	8	4	4	7	6	8	6	6.5	9
Krasnodarskaya 39	6	4	4	7	7	5	6	5.1	8
Atlas 66	3	3	1	3	2	3	4	3.0	6
Mironovskaya 808	3	3	1	3	2	2	4	2.3	5
F54-70	4	4	4	4	4	3	5	3.6	7
Lindon	5	4	0	7	3	4	6	4.1	8
Yubiley	7	4	4	3	4	5	6	4.5	8
Zg 887-73	0	-	0	1	1	0	2	0.7	3
Iulia	7	4	4	3	4	4	7	4.2	8
Moslavka (Zg 4240-73)	1	1	0	1	1	0	2	1.3	8
NE 73640	7	4	1	7	5	7	7	4.8	8
Bezostaya 1	7	4	4	5	5	6	5	5.0	8
Sadovo-1	8	4	3	6	6	7	6	5.4	9
Zlatoklasa (Zg 4364)	0	1	0	1	1	0	1	**1.2**	4
Zg 4293-73	0	0	0	1	1	0	1	0.9	4
Lerma Rojo 64	-	-	-	8	8	6	7	6.2	9
Martonvasari 4	6	4	4	3	3	4	6	3.9	8
Slavyanka	5	4	2	6	3	4	4	3.8	7
NR 72-837	5	4	0	1	2	3	3	2.2	8
Slavia (ST-VUR 37)	6	3	0	5	3	4	2	3.5	8
Ticonderoga	4	4	0	5	2	2	3	3.1	7
Disponent	6	2	3	6	5	7	5	4.2	8
Partizanka	7	4	4	2	4	5	5	4.2	8
Nap Hal/Atlas 66	7	-	0	4	3	5	4	4.2	8
NR 73-5028 (Samson)	4	1	2	5	4	5	5	3.8	9
Budifen	9	-	3	8	5	7	6	5.4	9
Newton	8	4	5	7	7	7	5	6.4	9
Absolvent	7	4	5	4	5	6	4	5.0	9
CI 13449/Centurk	7	4	1	7	5	4	4	4.1	8
Mean	5.1	3.3	2.2	4.3	3.7	4.1	4.5	3.9	

Table 81. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to Septoria (Septoria tritici, Septoria nodorum) in 1978.

Cultivars	Balcarce, Argentina	Prince Edward Island, Canada	Chillan, Chile	Temuco, Chile	Bohnshausen, East Germany	Szeged, Hungary	Przeclaw, Poland %	Warsaw, Poland
Number of replications	4	2	1	1	2	4	4	4
F53-70	4	2	4	4	1	3	25	6
Blueboy	4	1	3	3	2	4	33	5
Krasnodarskaya 39	4	3	5	1	2	3	38	6
Atlas 66	4	-	7	2	3	2	23	4
Mironovskaya 808	3	2	2	1	1	2	18	2
F54-70	4	3	4	1	1	0	23	6
Lindon	3	9	4	5	2	6	15	7
Yubiley	8	3	7	7	1	4	45	8
Zg 887-73	5	-	7	9	2	9	40	9
Iulia	6	3	3	3	1	2	28	4
Moslavka (Zg 4240-73)	7	2	6	7	2	7	45	8
NE 73640	5	4	6	2	2	4	58	8
Bezostaya 1	5	2	6	5	2	0	35	6
Sadovo-1	5	7	6	9	1	4	45	7
Zlatoklasa (Zg 4364)	6	1	3	3	2	7	35	9
Zg 4293-73	8	2	3	9	2	9	43	9
Lerma Rojo 64	9	-	9	9	6	0	75	-
Martonvasari 4	4	3	6	7	0	0	38	7
Slavyanka	4	3	7	7	2	0	50	9
NR 72-837	5	4	5	7	2	0	25	6
Slavia (ST-VUR 37)	5	1	6	4	1	0	38	5
Ticonderoga	4	2	2	3	2	0	28	7
Disponent	6	1	5	2	4	0	48	3
Partizanka	5	3	6	7	1	0	30	7
Nap Hal/Atlas 66	4	-	6	3	6	0	65	6
NR 73-5028 (Samson)	6	-	6	9	2	0	43	8
Budifen	6	3	8	7	4	5	48	5
Newton	7	6	7	5	0	0	53	7
Absolvent	5	2	7	6	2	4	48	6
CI 13449/Centurk	4	3	5	0	2	0	43	7
Mean	5.2	2.8	5.4	4.9	1.8	2.5	39.1	6.4

Table 81. Reaction (0-9) of International Winter Wheat Performance Nursery cultivars to Septoria (Septoria tritici, Septoria nodorum) in 1978. Concluded.

Cultivars	Corvallis, Oregon, U.S.A.	Weihenstephan, West Germany	Novi Sad, Yugoslavia	Zagreb, Yugoslavia	Severity (0-9) Cultivar mean over 11 sites	Severity (0-9) High score
Number of replications	1	4	4	1		
F53-70	8	3	1	3	3.5	8
Blueboy	8	4	1	2	3.4	8
Krasnodarskaya 39	7	4	2	4	3.7	7
Atlas 66	8	5	1	3	3.9	8
Mironovskaya 808	8	4	1	4	2.7	8
F54-70	8	4	1	5	3.4	8
Lindon	8	4	1	5	4.9	9
Yubiley	8	6	1	4	5.2	8
Zg 887-73	9	5	1	2	5.8	9
Iulia	8	4	1	4	3.5	8
Moslavka (Zg 4240-73)	8	6	0	3	5.1	8
NE 73640	9	5	1	4	4.5	9
Bezostaya 1	8	5	1	4	4.0	8
Sadovo-1	9	5	2	5	5.5	9
Zlatoklasa (Zg 4364)	8	4	0	5	4.4	9
Zg 4293-73	9	5	0	3	5.4	9
Lerma Rojo 64	9	6	1	4	5.9	9
Martonvasari 4	8	4	2	2	3.9	8
Slavyanka	8	5	1	2	4.4	9
NR 72-837	7	3	1	2	3.8	7
Slavia (ST-VUR 37)	8	5	1	3	3.5	8
Ticonderoga	9	2	1	3	3.2	9
Disponent	8	5	1	4	3.5	8
Partizanka	9	5	1	3	4.3	9
Nap Hal/Atlas 66	9	5	1	3	4.3	9
NR 73-5028 (Samson)	8	4	2	3	4.8	9
Budifen	8	4	1	4	5.0	8
Newton	8	4	1	3	4.4	8
Absolvent	8	5	1	3	4.5	8
CI 13449/Centurk	9	4	1	5	3.6	9
Mean	8.2	4.3	1.1	3.5	4.3	

Table 82. Reaction of International Winter Wheat Performance Nursery cultivars to Dwarf Bunt (*Tilletia contraversa*) at Logan, Utah, U.S.A. in 1978.

Cultivars	Dwarf Bunt[b/] infection %
F53-70	85
Blueboy	20
Krasnodarskaya 39	95
Atlas 66	50
Mironovskaya 808	90
F54-70	65
Lindon	95
Yubiley	50
Zg887-73	15
Iulia	80
Moslavka	45
NE73640	90
Bezostaya 1	55
Sadovo-1	25
Zlatoklasa	15
Zg4293-73	25
Lerma Rojo 64	2
Martonvasari 4	50
Slavyanka	30
NR 72-837	50
Slavia (ST-VUR 37)	50
Ticonderoga	30
Disponent	55
Partizanka	50
Nap Hal/Atlas 66	25
NR 73-5028 (Samson)	60
Budifen	70
Newton	90
Absolvent	65
CI 13449/Centurk	45
Mean	52.4
Standard deviation	26.4
Coefficient of variation (%)	50.3

[a/] Data were provided by Dr. Wade G. Dewey.

[b/] Infections resulting from artificial inoculation of plants.

Table 83. Quality data for the cultivars in the Tenth Interna... Winter Wheat Performance Nursery grown at Fuchsenbigl (Vienna), Austria in 1978.[1/]

Cultivars	Wet gluten %	Swelling[2/] number Q_0/Q_{30}	Test-weight kg/hl	Zeleny value
F 53-70	39.0	22/27	83.70	65
Blueboy	32.7	1/0	78.05	24
Krasnodarskaya 39	37.3	15/10	83.90	65
Atlas 66	59.0	0/0	82.50	49
Mironovskaya 808	38.4	17/13	81.90	66
F54-70	38.5	20/15	83.90	66
Lindon	31.5	18/12	84.50	69
Yubiley	28.7	17/13	82.90	33
Zg 887-73	33.3	5/1	81.50	22
Iulia	42.5	5/1	84.30	52
Moslavka (Zg 4240-73)	35.6	15/11	80.70	35
NE 73640	40.0	25/20	84.30	70
Bezostaya 1	33.8	19/14	83.90	63
Sadovo-1	32.6	3/1	82.90	46
Zlatoklasa (Zg 4364)	32.6	15/10	81.90	37
Zg 4293-73	33.9	2/0	81.70	27
Lerma Rojo 64	42.9	0/0	83.30	45
Martonvasari 4	33.8	24/19	84.70	70
Slavyanka	36.0	23/18	83.90	68
NR 72-837	32.8	16/12	81.30	65
Slavia	31.7	6/1	80.90	26
Ticonderoga	32.1	8/3	77.45	9
Disponent	32.9	12/6	81.90	31
Partizanka	32.9	19/14	84.70	65
Nap Hal/Atlas 66	55.8	0/0	82.10	15
NR 73-5028 (Samson)	34.4	21/15	83.70	63
Budifen	31.3	7/3	77.05	23
Newton	34.7	17/12	83.70	60
Absolvent	33.9	20/15	83.50	66
CI 13449/Centurk	31.1	17/12	81.90	39

[1/] Data provided by Dr. R. Hron.

[2/] According to Berliner.

Table 84. Agronomic and baking quality data for the cultivars in the Tenth International Winter Wheat Performance Nursery grown at Lincoln, New Zealand in 1978-1979.[1/]

Cultivar	Establishment %	Heading date	Grain yield g	1000-kernel wt g	Flour Protein %	Flour yield	Baking[2/] score	Relative yield[3/] of flour protein per plot (%)
F53-70	80	Nov.11	375*[4/]					
Blueboy	100	11	570	54	10.2	poor	46	88
Krasnodarskaya 39	70	15	295**					
Atlas 66	100	20	450	50	12.3	v.poor	44	84
Mironovskaya 808	85	21	390*					
F54-70	100	19	395*					
Lindon	100	8	435					
Yubiley	100	7	440					
Zg 887-73	75	6	345**					
Iulia	100	8	425*					
Moslavka	90	Oct.26	140**					
NE 73640	90	Nov.15	340**					
Bezostaya 1	100	9	575	59	11.5	good	38	100
Sadovo-1	90	6	400*					
Zlatoklasa	100	6	270**					
Zg 4293-73	100	Oct.31	150**					
Lerma Rojo 64	100	25	270**					
Martonvasari 4	100	Nov. 7	430					
Slavyanka	100	7	495	58	11.4	good	35	85
NR 72-837	75	23	410*	57	10.1	good	39	63
Slavia	100	14	570	55	8.9	v.poor	32	77
Ticonderoga	90	20	605	51	8.7	v.poor	33	80
Disponent	100	25	490	51	10.2	v.good	39	76
Partizanka	85	8	520	54	11.2	good	37	88
Nap Hal/Atlas 66	95	20	275**					
NR 73-5028 (Samson)	100	7	550	51	11.1	good	40	92
Budifen	100	14	900**	50	8.8	poor	33	120
Newton	100	12	455					
Absolvent	100	8	430					
CI 13449/Centurk	100	11	590	52	10.1	v.poor	31	90
Kopara (local check)	100	20	665	48	10.9	good	40	110

1/ Data provided by Dr. G. M. Wright.

2/ Bakers need flours or blends scoring at least 35.

3/ Relative to Bezostaya 1.

4/ * or ** denote significant t-test differences from Bezostaya 1 at the 5% or 1% levels, respectively.

Table 85. Protein and dough quality data for the 30 cultivars in the Tenth International Winter Wheat Performance Nursery grown at Svalof, Sweden in 1978.[1/]

Cultivars	Protein in dry matter		Gluten content	Falling number,	Flour yield	Flour test	Dough, g/100 g	Bread			
	Wheat %	Flour %	%	sec.	%	weight	flour	Weight[2/] g	Volume[2/] ml	Form[3/] (1-7)	Porosity[4/] (1-8)
F53-70	18.2	17.8	43.2	416	68	438	169	137	710	5	6
Blueboy	15.8	13.6	39.0	396	57	355	167	137	852	6	7
Krasnodarskaya 39	14.9	14.4	37.7	459	68	448	170	143	757	5	6
Atlas 66	18.1	17.2	52.4	428	46	343	168	146	840	6	6
Mironovskaya 808	15.3	14.1	37.2	553	67	427	169	144	963	6	6
F54-70	18.7	18.3	45.3	580	67	437	168	141	874	5	5
Lindon	16.5	15.8	40.9	458	67	421	168	143	748	5	6
Yubiley	15.0	13.3	33.8	369	58	385	166	143	647	4	6
Zg 887-73	14.5	13.4	40.7	397	68	447	170	145	672	5	6
Iulia	16.5	16.2	50.9	499	70	428	169	135	870	6	6
Moslavka	16.0	14.7	40.1	349	50	337	166	143	813	5	5
NE 73640	18.9	17.9	43.9	423	68	441	168	144	790	5	6
Bezostaya 1	15.7	15.0	37.8	454	69	437	169	144	727	5	6
Sadovo-1	14.7	13.7	38.6	377	65	426	168	141	773	5	5
Zlatoklasa	15.5	13.6	34.0	392	52	349	162	141	786	5	6
Zg 4293-73	15.5	13.8	38.2	394	55	347	161	138	757	5	6
Lerma Rojo 64	20.0	18.5	56.3	404	52	325	165	142	640	1	3
Martonvasar 4	15.8	15.0	36.9	522	68	435	169	145	837	5	6
Slavyanka	16.8	15.4	39.9	456	64	422	169	140	752	5	6
NR 72-837	16.3	15.1	37.3	528	66	427	168	139	689	5	5
Slavia	13.4	11.5	31.6	331	55	356	162	138	713	5	5
Ticonderoga	14.6	11.6	33.5	380	53	346	164	146	550	2	4
Disponent	15.3	13.8	37.1	350	66	436	167	142	718	5	6
Partizanka	15.4	14.7	37.0	452	68	431	168	138	815	5	6
Nap Hal/Atlas 66	21.7	19.0	57.3	643	48	343	170	-	-	-	-
Samson	17.4	16.8	43.3	345	66	417	171	142	941	6	6
Budifen	13.9	13.2	31.7	380	59	346	160	139	640	4	7
Newton	18.6	17.2	40.6	242	64	416	168	146	714	4	5
Absolvent	16.2	12.9	31.2	396	49	358	167	145	585	4	7
CI 13449/Centurk	15.1	14.2	35.6	386	69	450	166	143	606	4	6

1/ Data submitted by Dr. Bo Kristiansson.

2/ Calculated on 100 g flour.

3/ Form: Scale 1-7, 7 is the best value.

4/ Porosity acc. to Dallman: Scale 1-8, 8 the smallest pores.

Table 86. Milling, mixing and baking data for the Tenth International Winter Wheat Performance Nursery composited samples harvested at Fort Collins, CO, USA, 1978.

Cultivars	Flour yield %	Mill type	Protein		Ash %	Agtron	$KBrO_3$ mg	Absorption %	Mix time			Volume[1/] cc	External	Grain	Texture
			Wheat %	Flour %					Bake time	Mixograph Time	Mixograph Tol.				
F53-70	73.1	Good	16.86	16.67	.512	54	1.0	63	4 2/3	3 2/3	2	1070	VG	G -	G +
Blueboy	--	V. poor	14.37	13.22	.591	57	1.0	55	2 1/3	2 1/3	1	860	F -	F +	G -
Krasnodarskaya 39	72.0	Good	13.75	12.98	.514	71	.25	61	5	4	3-	905	F +	G +	G +
Atlas 66	--	V. poor	21.79	21.93	.633	44	1.5	60	1 1/2	1	1	980	G -	F +	F
Mironovskaya 808	72.2	Good	15.43	14.71	.523	62	1.0	61	3 3/4	2 2/3	2	1045	VG	VG	VG-
F54-70	73.1	Good	17.03	16.60	.502	56	.50	63	4	3	2+	945	F	G	G +
Lindon	70.4	Fair	14.93	14.09	.479	71	.75	60	4	3	3	990	G +	VG	VG
Yubiley	72.4	V. poor	14.79	13.54	.565	70	.75	57.5	4 1/3	3 1/3	2	915	G -	VG-	VG
Iulia	70.5	Poor	18.10	17.02	.505	54	1.25	64	2	1 2/3	2	1010	G	G -	G +
Moslavka	--	V. poor	16.04	14.28	.586	71	1.25	56	3	2 1/2	1	945	G -	VG	VG-
NE 73640	73.3	Good	17.02	15.19	.472	75	.50	62	4	3 1/2	2+	1030	VG	VG	VG
Bezostaya 1	74.1	Good	14.88	14.12	.477	70	.75	63	4 1/4	3 2/3	2+	910	G -	G -	G -
Sadovo 1	71.1	Good	15.23	14.22	.519	67	1.25	63	3	2 2/3	2	915	F +	VG	VG
Zlatoklasa	67.5	V. poor	15.81	14.24	.588	58	1.0	56	4 1/2	3 1/3	2	890	F -	VG-	VG
Zg 4293-73	--	V. poor	15.33	13.57	.595	66	1.25	55	2 1/3	2	1-	895	F -	VG	VG
Martonvasari 4	72.3	Good	15.35	14.07	.507	69	.25	60	3 3/4	3 1/3	3-	975	G	G	VG-
Slavyanka	73.1	Good	16.25	14.70	.505	63	.50	61	4 1/3	3	3	925	G	G +	VG
NR 72-837	69.0	Good	16.21	14.87	.577	51	1.25	62	4	3	2	875	F	F	G
Slavia	--	V. poor	16.32	14.25	.535	62	1.25	56	2 1/3	2 1/3	2-	980	G -	G -	G
Ticonderoga	--	V. poor	15.19	13.91	.549	74	1.25	57	1 3/4	1 1/3	1	800	F -	F +	F +
Disponent	69.2	Good-	17.35	16.14	.560	56	.75	59	3 3/4	2 2/3	1+	910	G	G +	G +
Partizanka	74.4	Good-	14.37	13.46	.468	70	.25	60	4	3 1/3	2+	950	VG-	VG	VG
Nap Hal/Atlas 66	--	V. poor	23.15	20.90	.551	34	4.0	56	1	2/3	1	490	P -	P -	P -
Samson	71.3	Good-	15.97	14.80	.477	66	.50	61	4	2 2/3	3	920	G	VG	VG
Newton	72.1	Good-	14.82	13.48	.430	72	.50	61	3 3/4	3 1/3	2	955	G +	G	G +
Absolvent	72.3	Good-	14.81	13.93	.428	73	.25	60	4 1/4	3	3	895	F	G	G +
CI 13449/Centurk	--	V. poor	15.08	13.28	.549	55	1.0	55	4	3 1/3	3-	885	F +	G +	G +

Analytical data on 14% moisture basis.

1/ Average of two loaves.

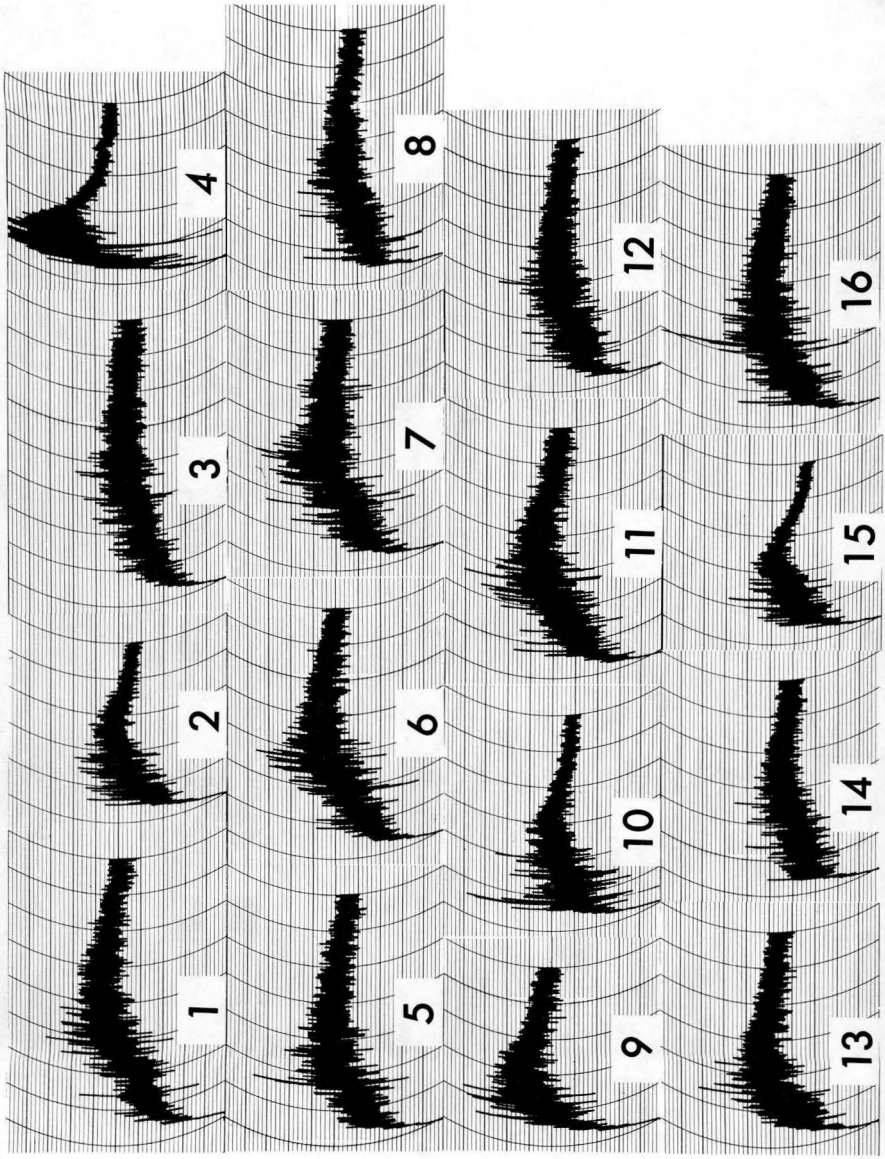


Figure 3. Mixograph curves for the cultivars in the Tenth International Winter Wheat Performance Nursery grown at Fort Collins, Colorado, U.S.A., in 1978.

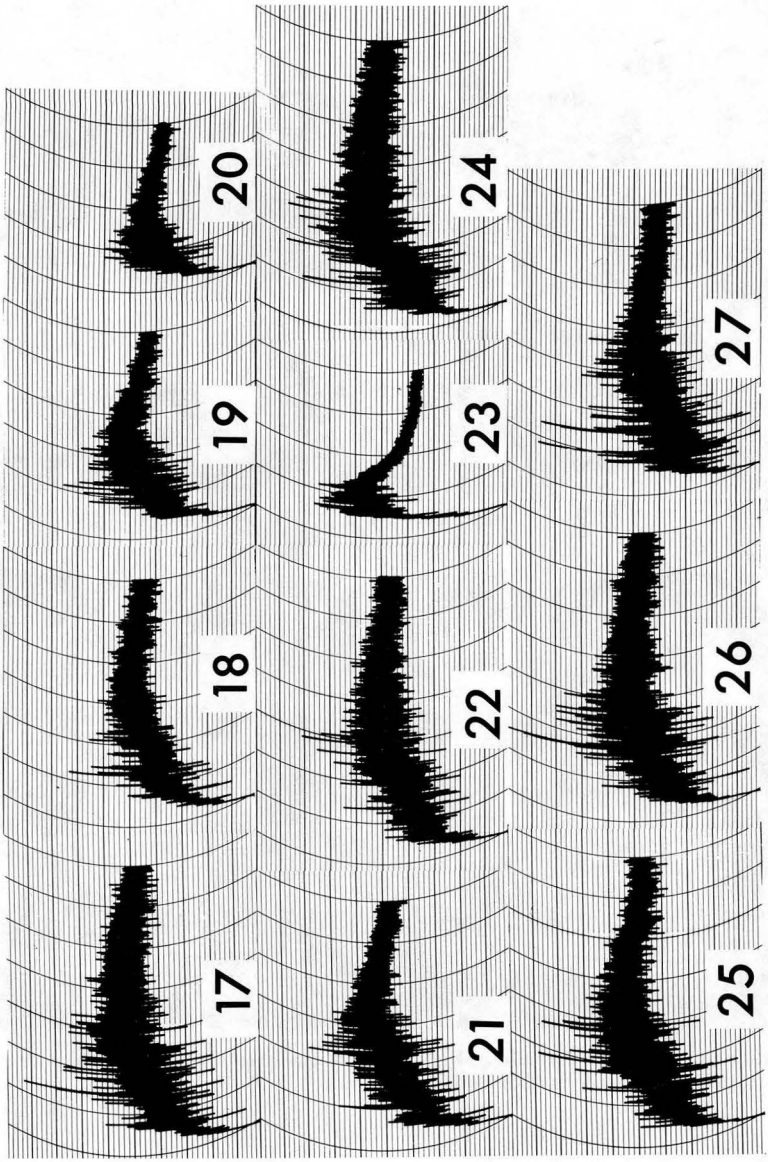


Figure 3 (continued).

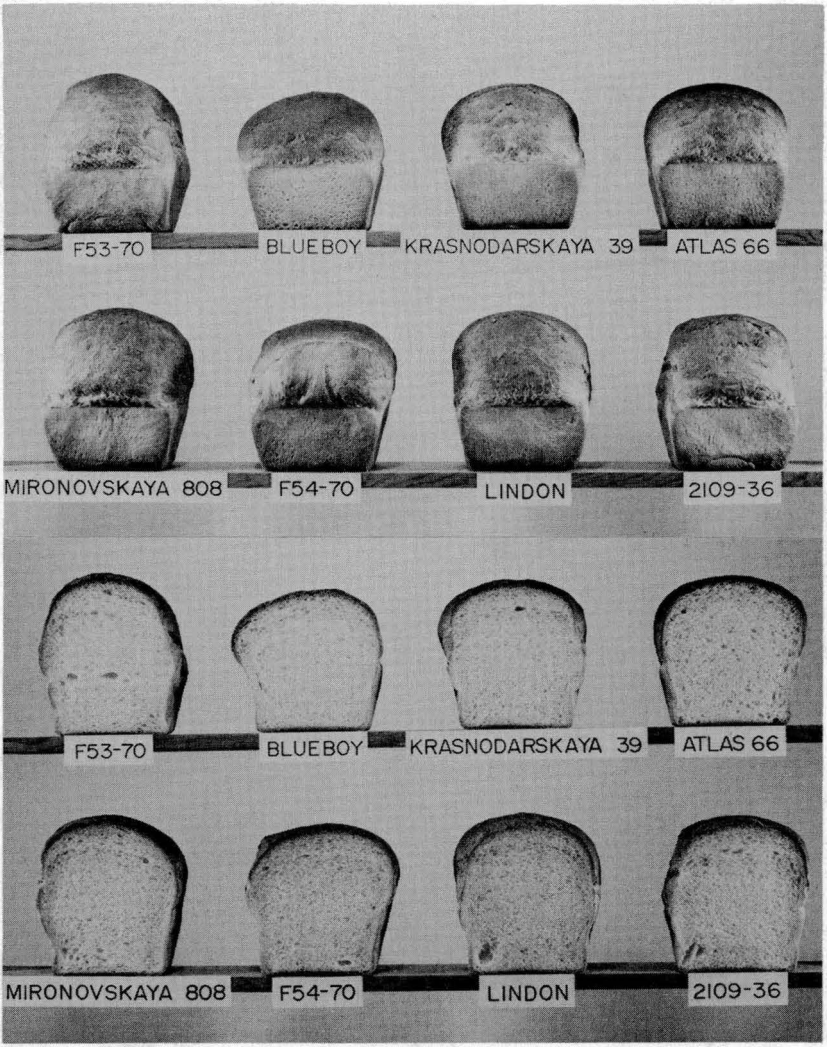


Figure 4. Bread from the cultivars in the Tenth International Winter Wheat Performance Nursery grown at Fort Collins, Colorado, U.S.A., in 1978.

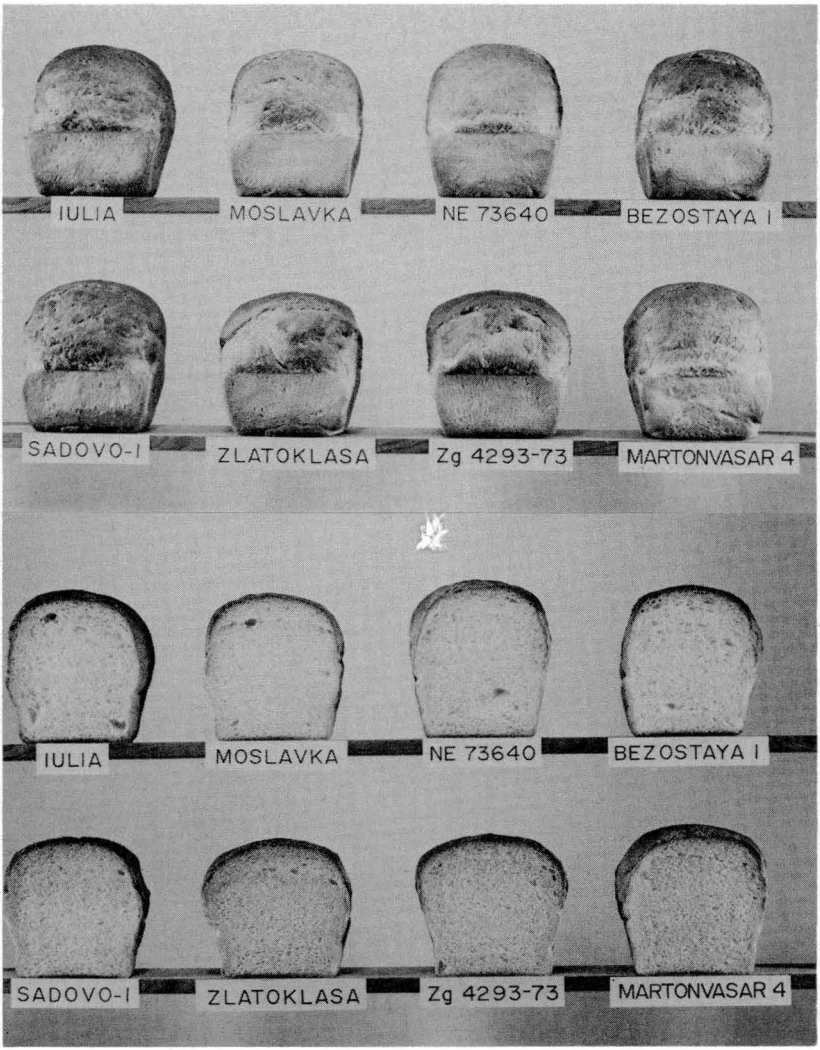


Figure 4 (continued).

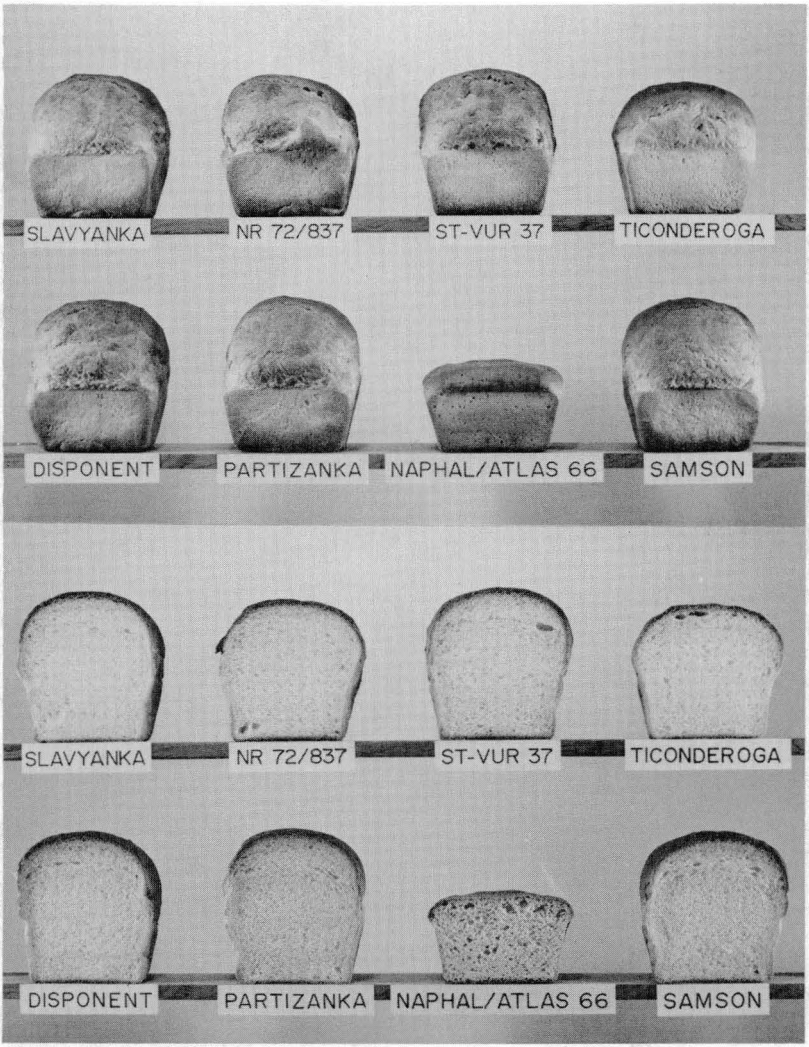


Figure 4 (Continued).

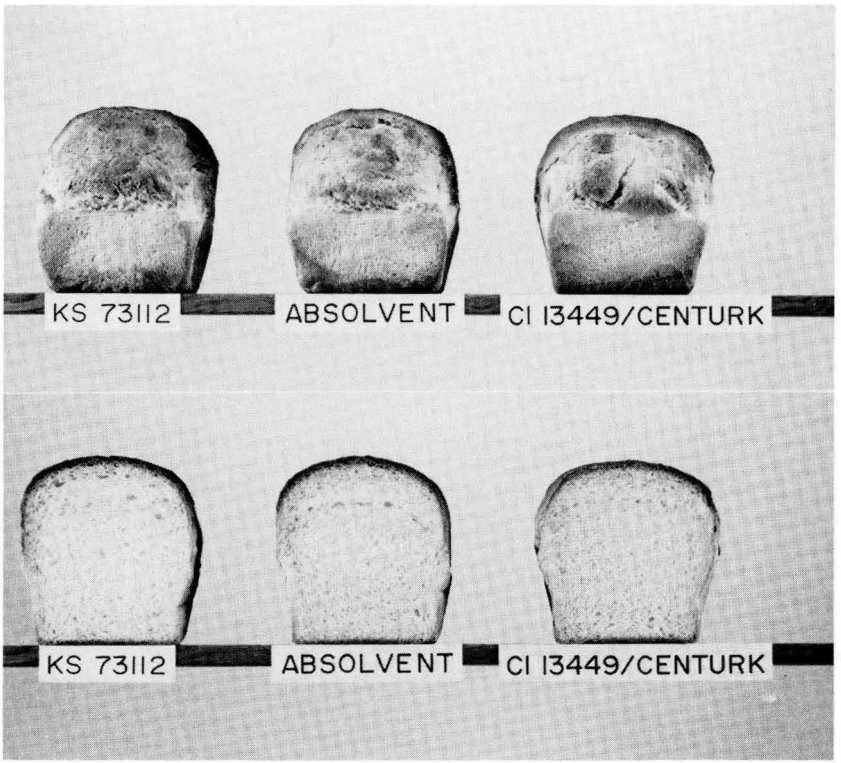


Figure 4 (Continued).

Table 87. Two-year means and rankings of grain yield (q/ha) expressed on a regional basis for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.

Cultivars	Northern Europe		Southern Europe		Middle East		Far East		North America		Southern Hemisphere		Cultivar mean over 49 sites
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha
Number of sites	12		10		8		2		13		4		
Yubiley	60.5	1	58.1	1	41.7	3	39.7	3	42.9	1	28.9	3	48.9
Sadovo-1	58.6	2	54.0	6	42.4	1	41.9	1	39.8	3	26.5	6	46.8
Iulia	58.3	3	51.8	7	38.5	8	37.9	10	37.1	7	28.9	3	44.9
Bezostaya 1	54.5	9	49.0	9	40.2	5	39.0	6	40.9	2	29.1	2	44.8
Zlatoklasa (Zg 4364)	56.7	5	56.4	4	38.2	10	30.8	12	35.2	10	25.6	9	44.7
Lindon	55.7	7	48.1	10	39.7	6	39.0	6	39.1	4	26.1	7	44.1
Blueboy	53.5	10	46.7	12	41.0	4	40.3	2	39.1	4	29.5	1	43.8
Moslavka (Zg 4240-73)	57.3	4	57.5	2	38.3	9	21.6	15	31.8	13	22.2	15	43.3
Mironovskaya 808	55.2	8	45.6	13	33.2	15	39.6	4	36.9	8	25.9	8	41.8
F53-70	51.9	12	49.7	8	35.6	13	39.4	5	34.7	12	26.7	5	41.7
Zg 887-73	55.9	6	56.5	3	42.0	2	15.9	16	25.2	15	24.9	11	41.6
Zg 4293-73	52.9	11	54.3	5	37.0	11	23.3	14	30.7	14	20.3	17	40.9
F54-70	50.8	13	47.7	11	32.6	16	38.1	9	34.9	11	23.6	12	40.3
Krasnodarskaya 39	47.2	14	41.2	16	36.3	12	38.2	8	38.0	6	23.5	13	39.4
NE 73640	47.2	14	42.7	15	34.5	14	34.5	11	35.4	9	25.4	10	38.8
Atlas 66	43.1	16	43.8	14	31.2	17	25.6	13	23.8	16	22.6	14	33.9
Lerma Rojo 64	31.2	17	34.0	17	39.0	7	3.3	17	13.8	17	20.4	16	26.5
Mean	52.4		49.2		37.7		32.2		34.1		25.3		41.5
L.S.D. of the cultivar means (.05)	6.6		7.8		4.8		13.8		6.1		N.S.		3.3
Coefficient of variation (%)	9.4		12.4		17.3		11.3		15.6		17.2		13.3
F test: Cultivar	9.39**		5.95**		4.02**		5.38**		11.24**		1.15^{ns}		18.75**
Year x cultivar	1.36^{ns}		3.01**		0.83^{ns}		2.56*		0.96^{ns}		0.68^{ns}		1.59^{ns}
Location x cultivar	2.77**		2.31**		2.34**		2.12^{ns}		3.39**		2.91**		3.37**

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Balcarce, Argentina		Bordenave, Argentina		Vienna, Austria		Tolbukhin, Bulgaria	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	45.3	1	42.9	9	6.3	11	34.6	1	55.6	4	82.9	1
Sadovo-1	42.0	7	43.7	6	3.9	12	31.3	7	50.6	11	69.5	6
Iulia	41.0	9	42.1	11	19.3	1	30.5	9	48.4	12	68.1	8
Bezostaya 1	37.3	12	47.3	4	12.2	7	30.8	8	51.5	9	61.2	11
Zlatoklasa (Zg 4364)	42.3	6	43.2	8	3.1	13	31.4	5	51.3	10	79.3	3
Lindon	43.1	3	42.4	10	10.9	9	30.1	10	56.8	3	59.2	12
Blueboy	37.7	11	41.1	12	13.1	4	32.4	3	45.4	14	63.4	10
Moslavka (Zg 4240-73)	44.1	2	44.3	5	1.4	16	31.8	4	54.1	5	79.4	2
Mironovskaya 808	33.2	17	24.8	16	12.5	6	24.9	16	52.3	7	57.2	13
F53-70	35.0	14	34.3	14	15.2	3	25.7	15	46.1	13	69.0	7
Zg 887-73	43.1	3	49.9	1	1.8	14	33.9	2	61.2	1	78.2	4
Zg 4293-73	42.4	5	47.5	3	1.0	17	31.4	5	56.9	2	76.8	5
F54-70	38.9	10	29.1	15	12.6	5	26.8	13	52.3	7	66.7	9
Krasnodarskaya 39	35.3	13	43.3	7	10.1	10	26.5	14	44.9	15	53.7	14
NE 73640	34.8	15	35.9	13	17.6	2	28.7	12	53.7	6	49.3	16
Atlas 66	34.3	16	23.0	17	11.4	8	22.6	17	40.1	17	51.0	15
Lerma Rojo 64	41.4	8	48.9	2	1.6	15	29.4	11	42.8	16	32.7	17
Mean	39.5		40.2		9.1		29.6		50.8		64.6	
L.S.D. of the cultivar means (.05)	NS		12.1		7.9		NS		9.6		9.2	
Coefficient of variation (%)	19.3		18.8		30.8		12.4		10.1		6.2	
F test:												
Cultivars	2.0^{ns}		4.0**		5.2**		1.0^{ns}		3.1*		18.7**	
Year x cultivar	1.1^{ns}		2.3**		7.2**		6.1**		3.1**		4.7**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Prince Edward Island, Canada		Lethbridge, Alberta, Canada		Chillan, Chile		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Orgerus, France	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	14.6	8	58.1	1	41.0	7	95.6	3	76.4	3	81.8	2
Sadovo-1	17.2	6	50.3	4	41.2	5	91.2	6	67.5	10	82.2	1
Iulia	11.5	11	46.5	9	41.2	5	88.4	7	75.5	5	72.9	4
Bezostaya 1	26.1	2	52.6	2	42.2	4	82.5	8	70.0	8	69.0	7
Zlatoklasa (Zg 4364)	4.7	12	47.1	7	33.5	9	93.3	4	67.0	11	76.4	3
Lindon	13.7	10	44.1	13	32.8	12	76.3	13	86.0	1	61.5	12
Blueboy	14.3	9	49.0	5	44.1	2	76.6	11	75.2	6	72.0	6
Moslavka (Zg 4240-73)	2.7	13	39.0	14	25.8	15	104.9	1	67.8	9	72.3	5
Mironovskaya 808	38.6	1	47.5	6	45.0	1	76.5	12	75.6	4	59.3	14
F53-70	20.7	4	44.5	11	42.6	3	79.9	10	62.5	15	67.5	8
Zg 887-73	0.0	16	27.3	16	27.2	13	96.8	2	80.9	2	64.9	10
Zg 4293-73	2.4	14	44.3	12	23.6	16	92.2	5	70.3	7	66.0	9
F54-70	17.2	6	46.3	10	33.3	11	81.5	9	60.9	16	61.7	11
Krasnodarskaya 39	22.1	3	50.8	3	34.5	8	71.7	15	62.9	14	46.7	17
NE 73640	20.4	5	47.0	8	27.0	14	75.1	14	65.0	12	49.4	16
Atlas 66	1.1	15	33.2	15	33.4	10	59.3	16	63.1	13	56.1	15
Lerma Rojo 64	0.0	16	0.0	17	18.8	17	50.5	17	36.1	17	59.8	13
Mean	13.4		42.9		34.5		81.9		68.4		65.9	
L.S.D. of the cultivar means (.05)	6.9		8.8		13.6		9.9		19.8		14.0	
Coefficient of variation (%)	43.5		9.3		19.7		5.8		7.5		8.9	
F test:												
Cultivars	21.6**		19.8**		3.1*		17.4**		2.7*		4.7**	
Year x cultivar	1.3^{ns}		4.3**		3.5**		3.8**		13.2**		5.1**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Martonvasar, Hungary		Szeged, Hungary		Hamadan, Iran		Karaj, Iran		Sulaimaniya, Iraq		Milano, Italy	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	59.7	6	59.0	7	31.6	14	62.0	3	45.3	4	54.0	1
Sadovo-1	56.3	11	57.6	9	29.4	16	70.6	1	46.5	3	48.8	3
Iulia	56.9	9	59.5	6	42.6	2	51.1	15	34.8	11	44.0	7
Bezostaya 1	49.2	14	55.3	10	36.9	8	55.7	8	40.3	6	43.3	8
Zlatoklasa (Zg 4364)	65.4	2	62.0	3	33.3	12	54.9	9	39.7	8	44.8	5
Lindon	52.7	13	53.2	13	37.4	7	58.2	5	37.7	9	41.8	10
Blueboy	48.9	15	51.5	14	49.2	1	58.0	6	40.2	7	47.6	4
Moslavka (Zg 4240-73)	63.8	3	61.7	4	21.6	17	59.9	4	43.4	5	48.9	2
Mironovskaya 808	59.3	7	58.3	8	40.2	4	50.9	16	25.7	17	41.6	11
F53-70	57.3	8	54.1	12	41.7	3	51.7	13	32.8	13	44.1	6
Zg 887-73	67.8	1	59.8	5	38.1	6	64.4	2	46.7	2	42.4	9
Zg 4293-73	63.0	4	55.3	10	30.2	15	52.4	11	36.3	10	38.2	13
F54-70	56.4	10	49.4	16	34.9	10	45.7	17	31.4	15	41.6	11
Krasnodarskaya 39	41.9	17	38.6	17	38.3	5	57.8	7	33.4	12	37.4	14
NE 73640	61.0	5	51.2	15	36.4	9	52.0	12	32.3	14	33.3	17
Atlas 66	54.9	12	64.4	1	34.4	11	51.4	14	28.4	16	36.1	15
Lerma Rojo 64	46.5	16	62.9	2	32.6	13	54.2	10	48.5	1	35.0	16
Mean	56.5		56.1		35.8		55.9		37.8		42.5	
L.S.D. of the cultivar means (.05)	12.8		12.2		10.3		11.1		8.3		NS	
Coefficient of variation (%)	11.1		19.3		19.6		16.0		14.2		10.4	
F test:												
Cultivars	2.7*		2.4*		3.2*		2.6*		5.9**		2.3^{ns}	
Year x cultivar	3.7**		1.1^{ns}		1.9*		1.4^{ns}		2.1*		5.3**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Rieti, Italy		Morioka, Iwate, Japan		Suwon, Korea		Kathmandu, Nepal		Wageningen, The Netherlands		Przeclaw, Poland	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	31.4	4	44.0	3	34.9	7	28.8	8	48.7	7	42.8	3
Sadovo-1	32.1	2	42.1	5	41.6	1	36.7	2	51.9	3	43.3	2
Iulia	25.4	11	40.9	6	34.3	9	25.6	14	44.8	9	42.1	4
Bezostaya 1	28.9	6	39.6	7	38.3	4	32.8	3	42.4	11	41.5	6
Zlatoklasa (Zg 4364)	22.8	16	36.3	12	24.4	12	22.7	15	55.8	2	37.5	11
Lindon	33.1	1	44.4	2	32.8	10	30.2	7	48.0	8	43.9	1
Blueboy	24.2	14	45.1	1	34.9	7	37.1	1	50.2	5	35.1	13
Moslavka (Zg 4240-73)	28.1	7	28.3	15	13.9	16	26.5	13	49.2	6	38.8	10
Mironovskaya 808	30.6	5	43.1	4	35.7	6	31.7	4	43.1	10	39.6	8
F53-70	25.4	11	38.9	8	40.0	2	21.7	16	39.7	12	39.0	9
Zg 887-73	26.3	9	10.6	16	21.9	13	27.1	11	56.0	1	39.9	7
Zg 4293-73	26.2	10	29.0	14	16.9	15	26.7	12	51.1	4	41.9	5
F54-70	28.1	7	38.2	9	38.0	5	18.7	17	39.3	13	34.9	16
Krasnodarskaya 39	19.2	17	37.6	10	39.0	3	28.2	9	39.1	14	37.0	12
NE 73640	23.8	15	37.1	11	31.5	11	31.2	6	28.2	17	35.0	14
Atlas 66	31.7	3	32.8	13	17.4	14	31.3	5	36.7	15	35.0	14
Lerma Rojo 64	25.4	11	3.9	17	2.6	17	27.3	10	34.8	16	17.5	17
Mean	27.2		34.8		29.3		28.5		44.6		37.9	
L.S.D. of the cultivar means (.05)	NS		8.4		16.8		7.5		9.4		NS	
Coefficient of variation (%)	31.1		8.3		15.0		21.6		7.7		4.8	
F test:												
Cultivars	1.1^{ns}		17.0**		3.5**		3.8**		6.0**		1.9^{ns}	
Year x cultivar	1.4^{ns}		7.6**		13.0**		1.3^{ns}		6.6**		48.0**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa		Svalof, Sweden		Zurich, Switzerland		Erzurum, Turkey	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	45.8	3	54.6	2	33.8	3	49.0	1	54.8	1	45.0	1
Sadovo-1	41.8	7	52.4	5	29.6	8	38.7	10	54.6	2	42.9	3
Iulia	53.1	1	52.3	6	24.6	12	41.8	6	52.1	4	41.7	4
Bezostaya 1	44.0	4	46.4	11	31.2	5	41.5	7	48.9	8	44.1	2
Zlatoklasa (Zg 4364)	32.0	13	58.1	1	34.2	2	32.7	15	49.0	6	38.3	8
Lindon	36.8	10	50.8	7	30.5	6	45.0	4	32.6	17	38.6	7
Blueboy	37.8	9	42.7	14	28.4	10	45.9	3	49.0	6	37.4	11
Moslavka (Zg 4240-73)	38.3	8	54.6	2	29.7	7	36.1	13	53.1	3	38.2	9
Mironovskaya 808	48.6	2	39.1	16	21.3	17	43.1	5	49.7	5	32.0	14
F53-70	42.1	6	48.3	9	23.3	13	40.1	8	47.7	9	38.1	10
Zg 887-73	23.4	16	49.4	8	36.8	1	46.4	2	46.7	11	40.1	5
Zg 4293-73	27.5	15	54.5	4	25.2	11	28.4	16	43.9	12	33.3	13
F54-70	43.5	5	48.2	10	21.7	16	35.2	14	46.8	10	33.8	12
Krasnodarskaya 39	33.2	11	42.8	13	22.7	15	37.3	11	37.8	15	30.5	16
NE 73640	32.9	12	44.7	12	28.5	9	36.7	12	38.7	14	31.2	15
Atlas 66	30.2	14	42.2	15	22.9	14	39.5	9	43.6	13	23.0	17
Lerma Rojo 64	5.1	17	18.4	17	31.8	4	7.7	17	34.6	16	38.9	6
Mean	36.2		47.0		28.0		38.0		46.1		36.9	
L.S.D. of the cultivar means (.05)	19.5		10.2		6.1		12.9		8.4		10.0	
Coefficient of variation (%)	16.3		8.5		10.2		17.8		8.2		11.3	
F test:												
Cultivars	2.9*		7.1**		5.5**		4.8**		5.7**		2.9*	
Year x cultivar	9.8**		5.8**		4.1**		3.2**		4.5**		5.1**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Eskisehir, Turkey		Davis, California, U.S.A.		Akron, Colorado, U.S.A.		Fort Collins, Colorado, U.S.A.		Brookston, Indiana, U.S.A.		Hutchinson, Kansas, U.S.A.	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	32.6	1	67.9	5	17.4	6	48.9	3	35.4	10	31.2	1
Sadovo-1	27.4	9	73.8	2	17.4	6	37.4	10	36.3	9	30.6	3
Iulia	28.8	5	55.0	11	17.5	5	34.4	11	29.5	11	28.9	6
Bezostaya 1	27.4	9	64.9	8	18.7	2	50.3	2	40.9	2	23.7	11
Zlatoklasa (Zg 4364)	31.3	2	64.0	9	13.5	12	32.9	12	18.4	15	24.7	9
Lindon	30.0	3	68.4	4	18.7	2	48.2	5	37.5	6	30.5	4
Blueboy	27.6	8	56.1	10	17.0	9	48.5	4	40.3	3	29.5	5
Moslavka (Zg 4240-73)	28.4	7	67.1	7	11.2	13	31.5	13	19.4	14	22.3	13
Mironovskaya 808	27.3	11	43.2	16	15.1	10	51.9	1	39.6	5	21.2	14
F53-70	29.8	4	49.3	14	17.1	8	38.7	9	37.3	8	27.0	7
Zg 887-73	26.9	13	71.4	3	0.0	16	4.2	16	21.9	12	15.2	16
Zg 4293-73	27.3	11	67.3	6	9.9	14	23.4	15	17.0	16	22.4	12
F54-70	28.6	6	48.3	15	14.8	11	42.3	8	37.4	7	26.6	8
Krasnodarskaya 39	23.4	15	50.6	13	20.1	1	44.2	7	42.0	1	24.7	9
NE 73640	21.9	16	53.7	12	18.7	2	45.8	6	39.9	4	30.7	2
Atlas 66	24.0	14	33.2	17	8.4	15	26.8	14	21.4	13	17.3	15
Lerma Rojo 64	20.1	17	77.5	1	0.0	16	0.0	17	15.0	17	0.0	17
Mean	27.2		59.5		13.9		35.8		31.1		23.9	
L.S.D. of the cultivar means (.05)	NS		11.6		6.8		15.3		15.1		11.3	
Coefficient of variation (%)	12.7		16.1		20.2		18.7		11.8		14.3	
F test:												
Cultivars	1.2^{ns}		9.7**		7.3**		9.0**		3.8**		4.2**	
Year x cultivar	6.0**		1.3^{ns}		5.3**		4.6**		15.0**		9.7**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Billings, Montana, U.S.A.		Ithaca, New York, U.S.A.		Rowan Co. North Carolina, U.S.A.		Stillwater, Oklahoma, U.S.A.		Corvallis, Oregon, U.S.A.		Pullman, Washington, U.S.A.	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	79.4	4	36.4	1	38.4	2	27.6	9	48.7	1	52.4	1
Sadovo-1	76.4	7	27.0	4	36.3	4	28.4	5	31.2	7	51.4	3
Iulia	73.7	12	26.5	6	35.9	5	24.2	11	46.9	2	49.1	5
Bezostaya 1	77.5	5	25.7	8	34.3	8	28.5	3	37.7	5	47.2	7
Zlatoklasa (Zg 4364)	76.5	6	27.3	3	32.4	10	22.0	12	43.8	3	47.9	6
Lindon	81.8	2	32.4	2	35.7	6	29.4	1	15.1	16	51.6	2
Blueboy	81.2	3	24.3	11	38.0	3	29.1	2	28.3	10	49.3	4
Moslavka (Zg 4240-73)	74.3	11	21.7	14	24.9	15	17.9	14	38.4	4	41.1	10
Mironovskaya 808	76.0	9	26.6	5	41.2	1	24.9	10	23.6	13	27.9	15
F53-70	62.4	14	25.1	9	32.6	9	28.2	6	27.7	11	37.8	13
Zg 887-73	88.1	1	0.3	16	13.3	16	7.2	16	29.2	8	43.1	9
Zg 4293-73	76.4	7	24.8	10	25.8	13	17.3	15	26.4	12	39.7	11
F54-70	61.9	15	25.9	7	30.9	12	28.2	6	32.8	6	38.9	12
Krasnodarskaya 39	75.8	10	24.0	12	35.4	7	28.0	8	28.5	9	44.4	8
NE 73640	70.3	13	23.9	13	31.3	11	28.5	3	14.5	17	32.4	14
Atlas 66	59.8	16	20.2	15	25.1	14	18.7	13	17.8	15	25.7	16
Lerma Rojo 64	52.2	17	0.0	17	8.7	17	0.0	17	18.9	14	3.6	17
Mean	73.2		23.1		30.6		22.8		30.0		40.2	
L.S.D. of the cultivar means (.05)	NS		8.1		14.6		14.1		13.7		12.7	
Coefficient of variation (%)	9.1		21.6		13.2		10.5		18.8		12.6	
F test:												
Cultivars	1.9^{ns}		12.0**		3.2*		3.2*		5.3**		8.6**	
Year x cultivar	8.2**		1.8^{ns}		11.6**		30.9**		5.3**		5.6**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Krasnodar, U.S.S.R.		Mironovski, U.S.S.R.		Odessa, U.S.S.R.		Monsheim, West Germany		Weihenstephan, West Germany		Novi Sad, Yugoslavia	
	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank	q/ha	rank
Yubiley	62.8	6	41.3	10	56.5	1	67.2	2	67.0	7	66.8	4
Sadovo-1	64.1	5	48.2	3	52.1	3	64.4	6	69.1	5	59.6	8
Iulia	56.2	8	46.1	4	51.1	4	65.2	5	69.1	5	61.3	7
Bezostaya 1	60.1	7	44.9	6	49.8	6	60.2	10	57.9	9	57.7	10
Zlatoklasa (Zg 4364)	65.7	3	45.0	5	46.6	10	67.0	3	73.1	4	66.8	4
Lindon	47.7	11	53.5	1	53.1	2	64.0	7	63.6	8	55.6	12
Blueboy	49.8	10	39.5	12	50.9	5	63.2	8	51.7	13	52.3	13
Moslavka (Zg 4240-73)	70.9	2	37.8	13	49.1	7	61.5	9	74.5	3	67.3	3
Mironovskaya 808	41.3	15	51.4	2	41.9	13	66.2	4	57.1	10	55.7	11
F53-70	46.0	12	44.7	7	46.8	9	57.1	13	56.0	12	63.2	6
Zg 887-73	74.2	1	0.0	16	43.5	11	74.9	1	80.0	1	71.6	1
Zg 4293-73	64.9	4	24.2	14	41.7	15	58.4	12	74.7	2	70.1	2
F54-70	45.4	13	41.1	11	42.6	12	56.1	14	56.6	11	58.5	9
Krasnodarskaya 39	52.0	9	44.5	9	47.4	8	59.8	11	51.4	15	51.1	14
NE 73640	44.9	14	44.6	8	40.1	16	54.8	15	51.6	14	50.1	15
Atlas 66	40.5	16	16.8	15	41.9	13	48.0	16	48.6	16	46.4	17
Lerma Rojo 64	23.8	17	0.0	16	15.9	17	39.9	17	45.5	17	49.5	16
Mean	53.6		36.7		45.4		60.5		61.6		59.0	
L.S.D. of the cultivar means (.05)	24.6		21.2		17.5		11.1		8.6		9.6	
Coefficient of variation (%)	9.3		17.4		6.2		5.0		8.0		9.0	
F test:												
Cultivars	2.5*		5.4**		2.3*		4.7**		13.5**		5.9**	
Year x cultivar	22.0**		9.9**		34.0**		11.9**		2.7**		2.9**	

Table 88. Two-year means and rankings of grain yield (q/ha) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Concluded.

Cultivars	Zagreb, Yugoslavia		Cultivar mean over 49 sites
	q/ha	rank	q/ha
Yubiley	53.8	1	48.9
Sadovo-1	48.0	6	46.8
Iulia	43.6	7	44.9
Bezostaya 1	37.7	10	44.8
Zlatoklasa (Zg 4364)	52.2	2	44.4
Lindon	33.6	12	44.1
Blueboy	35.9	11	43.8
Moslavka (Zg 4240-73)	51.4	5	43.3
Mironovskaya 808	31.1	13	41.8
F53-70	42.8	8	41.7
Zg 887-73	51.7	4	41.6
Zg 4293-73	52.0	3	40.9
F54-70	39.8	9	40.3
Krasnodarskaya 39	27.9	17	39.4
NE 73640	28.8	16	38.8
Atlas 66	29.3	15	33.9
Lerma Rojo 64	29.5	14	26.5
Mean	40.5		41.5
L.S.D. of the cultivar means (.05)	10.1		3.3
Coefficient of variation (%)	14.5		13.3
F test:			
Cultivars	8.2**		18.8**
Year x cultivar	2.6**		1.6^{ns}
Location x cultivar			3.4**

Table 89. Two-year means and rankings of test weight (kg/hl) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Bordenave, Argentina		Chillan, Chile		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Martonvasar, Hungary		Szeged, Hungary	
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank
Iulia	78.3	4	84.1	1	83.4	1	78.8	3	79.0	2	80.8	1
Bezostaya 1	79.1	3	83.5	4	81.8	4	79.0	2	77.8	5	80.3	2
Lindon	80.2	2	81.9	8	79.5	11	79.8	1	76.9	8	78.5	10
F53-70	77.2	8	83.6	2	81.9	3	77.5	7	78.5	4	79.5	6
F54-70	77.8	5	83.6	2	81.8	4	77.9	6	78.9	3	79.8	4
NE 73640	77.4	7	80.2	11	81.2	8	78.6	4	79.3	1	79.7	5
Sadovo-1	77.6	6	82.9	6	82.0	2	74.2	16	76.9	8	79.3	7
Yubiley	76.6	10	81.2	10	81.3	7	76.1	9	77.3	6	78.9	8
Krasnodarskaya 39	77.2	8	83.1	5	81.4	6	75.0	11	76.6	11	79.9	3
Atlas 66	75.1	11	82.6	7	79.7	10	78.2	5	77.2	7	78.1	11
Lerma Rojo 64	81.5	1	78.5	13	79.3	13	74.5	14	76.8	10	78.8	9
Mironovskaya 808	74.3	12	81.3	9	79.1	15	77.5	7	75.5	12	76.6	12
Zlatoklasa (Zg 4364)	74.2	13	78.0	14	80.5	9	74.6	13	75.5	12	75.7	13
Zg 887-73	74.1	14	75.5	17	78.7	16	74.7	12	72.1	16	73.8	16
Zg 4293-73	72.8	16	76.5	16	79.2	14	74.3	15	75.0	14	74.6	15
Blueboy	74.1	14	79.0	12	77.3	17	76.0	10	69.7	17	75.5	14
Moslavka (Zg 4240-73)	71.9	17	77.0	15	79.4	12	71.5	17	73.5	15	73.7	17
Mean	76.1		80.9		80.5		76.5		76.2		77.8	
L.S.D. of the cultivar means (.05)	2.8		3.6		2.3		NS		2.3		2.9	
Coefficient of variation (%)	1.3		1.1		0.3		0.9		1.3		2.0	
F test:												
Cultivars	6.3**		5.6**		4.5**		2.3^{ns}		11.6**		6.4**	
Year x Cultivar	7.2**		15.0**		57.4**		39.8**		4.8**		2.9**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 89. Two-year means and rankings of test weight (kg/hl) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Milano, Italy		Rieti, Italy		Wageningen, The Netherlands		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania	
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank
Iulia	80.6	1	78.2	11	81.0	3	79.2	1	75.2	6	80.3	1
Bezostaya 1	79.8	2	80.4	1	80.3	5	76.2	11	76.3	3	79.9	5
Lindon	78.0	8	78.7	9	81.0	3	79.2	1	74.3	8	80.0	3
F53-70	78.4	5	79.3	5	82.3	1	78.2	4	77.2	1	80.0	3
F54-70	79.7	3	80.2	2	81.3	2	78.1	5	76.0	4	80.1	2
NE 73640	79.1	4	78.6	10	80.0	7	78.7	3	71.8	14	79.7	6
Sadovo-1	77.5	9	79.2	6	80.0	7	77.5	7	73.2	10	78.5	8
Yubiley	78.3	6	78.2	11	78.5	12	77.7	6	74.4	7	78.8	7
Krasnodarskaya 39	77.0	10	78.8	7	78.8	11	76.2	11	73.9	9	77.9	9
Atlas 66	78.3	6	80.1	3	80.3	5	74.7	16	75.9	5	77.3	10
Lerma Rojo 64	76.7	11	78.8	7	79.3	10	76.0	14	71.8	14	77.0	11
Mironovskaya 808	76.0	12	80.1	3	79.5	9	76.5	9	76.5	2	74.5	16
Zlatoklasa (Zg 4364)	73.6	14	74.9	15	76.8	15	76.1	13	70.7	16	75.6	13
Zg 887-73	73.8	13	74.2	16	77.3	14	75.8	15	68.3	17	75.8	12
Zg 4293-73	72.5	17	75.9	14	76.8	15	76.4	10	71.9	13	75.2	14
Blueboy	73.4	15	77.2	13	77.5	13	73.6	17	73.1	11	74.0	17
Moslavka (Zg 4240-73)	72.9	16	73.1	17	75.0	17	76.8	8	72.1	12	74.7	15
Mean	76.8		78.0		79.1		77.0		73.8		77.7	
L.S.D. of the cultivar means (.05)	2.2		3.3		2.2		NS		3.9		2.0	
Coefficient of variation (%)	1.5		3.9		1.7		0.8		3.1		0.9	
F test:												
Cultivars	13.6**		4.2**		7.9**		1.9^{ns}		3.6**		12.1**	
Year x Cultivar	3.5**		1.0^{ns}		2.2*		27.0**		2.6**		7.1**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 89. Two-year means and rankings of test weight (kg/hl) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Bethlehem, South Africa		Svalof, Sweden		Zurich, Switzerland		Erzurum, Turkey		Eskisehir, Turkey		Billings, Montana, U.S.A.	
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank
Iulia	75.8	5	82.0	2	81.8	2	80.5	2	83.4	3	81.3	1
Bezostaya 1	78.0	2	80.8	4	80.8	4	80.4	3	83.6	2	80.9	2
Lindon	78.1	1	83.1	1	77.4	11	79.3	6	84.7	1	80.8	3
F53-70	74.6	9	80.5	7	81.4	3	80.6	1	82.2	7	79.1	6
F54-70	73.6	11	80.2	8	82.0	1	80.0	4	82.1	9	79.6	4
NE 73640	75.5	6	80.8	4	79.7	7	79.5	5	82.2	7	78.8	9
Sadovo-1	77.3	3	80.0	9	79.6	8	79.3	6	82.4	4	79.0	7
Yubiley	75.4	7	80.6	6	78.9	10	78.9	8	82.4	4	79.0	7
Krasnodarskaya 39	75.2	8	79.2	15	79.1	9	78.7	9	82.3	6	79.4	5
Atlas 66	73.5	12	80.0	9	80.0	5	74.5	16	81.0	11	78.2	11
Lerma Rojo 64	76.1	4	77.0	17	77.4	11	77.3	10	82.1	9	78.8	9
Mironovskaya 808	69.4	16	81.1	3	80.0	5	73.2	17	79.6	14	77.1	12
Zlatoklasa (Zg 4364)	71.7	14	79.5	13	75.4	15	76.5	12	78.9	16	76.2	13
Zg 887-73	74.0	10	79.7	12	75.7	14	76.0	14	79.7	13	75.8	14
Zg 4293-73	71.1	15	79.3	14	73.8	17	76.3	13	79.9	12	75.4	15
Blueboy	68.2	17	80.0	9	76.2	13	74.7	15	78.2	17	73.5	17
Moslavka (Zg 4240-73)	71.8	13	78.6	16	74.0	16	76.6	11	79.5	15	74.9	16
Mean	74.0		80.3		78.5		77.8		81.4		78.1	
L.S.D. of the cultivar means (.05)	3.2		2.0		2.9		3.5		1.8		2.0	
Coefficient of variation (%)	1.6		1.0		0.7		1.4		1.0		0.9	
F test:												
Cultivars	7.6**		2.9*		7.8**		4.1**		10.5**		12.2**	
Year x Cultivar	6.3**		5.5**		28.5**		9.5**		3.7**		7.9**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 89. Two-year means and rankings of test weight (kg/hl) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Concluded.

Cultivars	Pullman, Washington, U.S.A.		Krasnodar, U.S.S.R.		Odessa, U.S.S.R.		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Cultivar mean over 23 sites
	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl	rank	kg/hl
Iulia	79.8	3	81.6	1	81.3	6	81.9	2	80.8	2	80.4
Bezostaya 1	80.4	2	81.2	2	82.8	1	78.1	8	80.4	4	80.1
Lindon	80.5	1	77.9	11	82.5	2	82.1	1	79.7	6	79.8
F53-70	79.2	5	80.2	5	81.8	3	81.5	3	80.9	1	79.8
F54-70	78.8	6	80.1	6	81.4	5	79.5	5	80.8	2	79.7
NE 73640	78.8	6	79.0	9	81.0	7	79.6	4	79.6	7	79.1
Sadovo-1	78.0	8	80.4	3	81.5	4	78.4	7	78.2	10	78.8
Yubiley	79.3	4	80.0	7	80.7	9	79.3	6	79.5	8	78.8
Krasnodarskaya 39	77.3	10	80.3	4	80.4	10	75.0	16	79.8	5	78.4
Atlas 66	76.5	14	78.8	10	80.8	8	77.1	11	78.9	9	78.1
Lerma Rojo 64	76.3	15	79.3	8	79.1	12	76.8	12	77.8	11	77.8
Mironovskaya 808	76.7	12	76.8	14	80.4	10	77.2	10	76.7	13	77.2
Zlatoklasa (Zg 4364)	75.9	16	77.7	12	77.8	15	77.5	9	77.0	12	76.1
Zg 887-73	77.1	11	77.5	13	78.9	13	76.6	13	73.9	15	75.6
Zg 4293-73	78.0	8	76.4	15	77.9	14	75.7	14	74.8	14	75.6
Blueboy	75.9	16	75.7	16	77.7	16	72.6	17	72.9	17	75.1
Moslavka (Zg 4240-73)	76.6	13	75.5	17	76.7	17	75.6	15	73.7	16	75.0
Mean	78.1		78.7		80.3		78.0		78.0		78.0
L.S.D. of the cultivar means (.05)	2.5		2.4		1.7		2.7		2.0		0.6
Coefficient of variation (%)	1.6		1.4		0.9		1.1		1.4		1.6
F test:											
Cultivars	3.3*		6.1**		10.2**		8.7**		16.9**		71.7**
Year x Cultivar	3.9**		4.2**		4.9**		9.2**		3.2**		0.5^{ns}
Location x Cultivar											1.9**

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 90. Two-year means and rankings of 1000-kernel weight (grams) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Herat, Afghanistan		Balcarce, Argentina		Bordenave, Argentina		Vienna, Austria		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia	
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank
Sadovo-1	47.3	1	31.3	5	45.1	1	50.0	1	51.5	1	52.9	1
Bezostaya 1	44.9	2	32.7	3	39.8	3	43.4	4	44.6	5	48.7	3
Iulia	36.4	5	33.2	2	38.5	4	44.1	3	47.1	2	46.4	4
Yubiley	38.6	3	27.1	13	41.6	2	42.0	6	44.7	4	45.6	5
Mironovskaya 808	31.7	12	28.4	12	32.9	14	40.7	9	45.1	3	52.5	2
F53-70	36.2	6	33.3	1	38.3	6	41.7	7	41.7	8	45.2	7
Lerma Rojo 64	37.9	4	30.9	6	36.7	8	45.0	2	44.5	6	43.5	10
F54-70	31.0	15	32.7	3	38.4	5	42.6	5	42.3	7	45.5	6
Krasnodarskaya 39	34.9	10	30.5	7	37.4	7	41.4	8	39.8	10	44.6	8
Atlas 66	31.3	14	29.7	8	35.2	10	39.0	10	41.4	9	41.8	12
Blueboy	35.6	7	29.6	9	36.4	9	35.8	13	36.9	13	43.8	9
NE 73640	35.0	9	29.0	10	34.4	11	38.3	11	38.0	12	42.2	11
Moslavka (Zg 4240-73)	35.1	8	23.9	16	31.4	15	35.3	14	35.4	15	39.1	13
Zlatoklasa (Zg 4364)	31.4	13	28.6	11	33.3	13	36.9	12	38.2	11	38.1	15
Zg 887-73	27.1	17	26.3	14	33.7	12	33.4	16	35.3	16	39.0	14
Zg 4293-73	32.5	11	23.0	17	30.0	17	35.2	15	36.3	14	36.4	16
Lindon	30.9	16	25.6	15	30.8	16	30.2	17	29.2	17	33.8	17
Mean	35.0		29.1		36.1		39.4		40.5		43.5	
L.S.D. of the cultivar means (.05)	8.3		6.2		4.3		4.8		4.3		3.7	
Coefficient of variation (%)	13.3		1.6		4.0		3.6		1.5		2.6	
F test:												
Cultivars	3.6**		2.5*		8.5**		9.4**		14.9**		19.3**	
Year x Cultivar	2.8**		154.8**		7.9**		10.1**		43.2**		9.7**	

[a/] The data for Lerma Rojo 64 are shown in the table, but were not included in the location means and analyses nor in the overall analyses.

Table 90. Two-year means and rankings of 1000-kernelweight (grams) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Martonvasar, Hungary		Szeged, Hungary		Milano, Italy		Rieti, Italy		Morioka, Iwate, Japan		Suwon, Korea	
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank
Sadovo-1	45.6	1	45.9	1	48.0	1	47.2	1	47.1	1	45.9	2
Bezostaya 1	41.7	4	41.7	2	44.0	2	41.6	5	39.2	5	41.6	3
Iulia	42.0	2	41.3	4	43.3	3	41.8	3	41.3	2	40.8	4
Yubiley	40.8	5	40.8	7	42.3	4	40.2	8	39.3	4	38.4	7
Mironovskaya 808	40.6	6	40.9	5	39.4	8	42.9	2	40.8	3	36.5	10
F53-70	39.2	8	41.4	3	40.3	6	41.8	3	38.5	6	39.7	5
Lerma Rojo 64	42.0	2	40.9	5	40.5	5	41.2	6	37.1	8	48.0	1
F54-70	40.1	7	38.6	8	39.5	7	40.7	7	38.2	7	39.2	6
Krasnodarskaya 39	37.1	10	38.6	8	38.0	9	36.5	14	37.1	8	37.4	9
Atlas 66	38.1	9	37.8	10	36.3	12	39.1	9	34.4	12	37.5	8
Blueboy	30.3	16	36.2	11	37.5	10	38.2	10	34.6	11	35.6	12
NE 73640	37.1	10	35.5	12	37.3	11	37.4	11	35.6	10	35.4	13
Moslavka (Zg 4240-73)	34.1	13	32.7	13	35.3	13	35.5	15	31.5	14	36.3	11
Zlatoklasa (Zg 4364)	34.6	12	32.1	14	32.8	15	34.6	17	31.7	13	34.4	14
Zg 887-73	31.3	15	29.3	17	35.0	14	37.4	11	29.7	16	34.4	14
Zg 4293-73	32.7	14	30.3	16	29.9	17	37.2	13	30.8	15	34.3	16
Lindon	28.2	17	30.4	15	32.0	16	35.3	16	29.4	17	31.1	17
Mean	37.1		37.1		38.2		39.2		36.2		37.4	
L.S.D. of the cultivar means (.05)	3.2		4.1		4.2		5.8		2.1		3.8	
Coefficient of variation (%)	4.4		6.1		4.7		14.1		3.7		6.9	
F test:												
Cultivars	21.5**		13.5**		11.7**		3.0*		48.3**		6.7**	
Year x Cultivar	3.3**		2.9**		4.7**		1.0^{ns}		2.2*		2.0*	

[a/] The data for Lerma Rojo 64 are shown in the table, but were not included in the location means and analyses nor in the overall analyses.

Table 90. Two-year means and rankings of 1000-kernel weight (grams) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Wageningen, The Netherlands		Przeclaw, Poland		Warsaw, Poland		Svalof, Sweden		Zurich, Switzerland		Erzurum, Turkey	
	g	rank	g	rank	g	rank	g	rank	g	rank	g	rank
Sadovo-1	47.3	1	49.5	1	46.5	1	57.3	1	45.3	1	40.7	1
Bezostaya 1	40.6	4	45.9	3	43.7	4	51.1	3	40.9	7	35.3	4
Iulia	40.7	3	45.8	4	46.2	2	51.0	4	44.8	2	36.3	2
Yubiley	38.4	6	46.3	2	43.3	5	50.7	5	41.3	6	35.5	3
Mironovskaya 808	43.2	2	42.0	10	43.3	5	54.7	2	41.7	4	30.5	9
F53-70	37.1	8	42.6	9	44.9	3	49.5	6	41.7	4	34.7	5
Lerma Rojo 64	36.8	9	42.8	7	37.3	10	41.9	15	38.5	9	33.7	7
F54-70	35.8	12	43.1	6	40.7	7	49.0	7	43.0	3	34.2	6
Krasnodarskaya 39	37.5	7	39.5	13	37.2	11	44.8	9	37.8	10	29.5	14
Atlas 66	35.1	13	42.7	8	38.9	9	42.3	13	39.5	8	26.7	17
Blueboy	39.5	5	44.0	5	39.8	8	46.4	8	35.5	11	29.7	12
NE 73640	36.2	10	40.3	12	33.3	14	42.2	14	32.8	14	29.7	12
Moslavka (Zg 4240-73)	32.5	15	38.4	14	34.9	12	40.8	16	33.5	12	30.5	9
Zlatoklasa (Zg 4364)	33.2	14	37.8	15	33.6	13	43.2	11	33.0	13	31.3	8
Zg 887-73	36.2	10	41.0	11	32.1	16	44.4	10	28.9	15	30.0	11
Zg 4293-73	31.1	16	36.7	16	33.0	15	39.4	17	28.1	16	29.3	15
Lindon	30.5	17	34.2	17	28.3	17	42.7	12	26.6	17	27.5	16
Mean	37.2		41.9		38.7		46.9		37.2		32.0	
L.S.D. of the cultivar means (.05)	6.0		5.5		7.0		3.2		6.5		3.7	
Coefficient of variation (%)	2.0		1.5		9.0		4.9		9.7		6.9	
F test:												
Cultivars	5.0**		4.8**		6.0**		24.0**		7.9**		9.2**	
Year x Cultivar	59.9**		63.7**		3.6**		1.7^{ns}		2.9**		2.5**	

[a/] The data for Lerma Rojo 64 are shown in the table, but were not included in the location means and analyses nor in the overall analyses.

Table 90. Two-year means and rankings of 1000-kernel weight (grams) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a] Concluded.

Cultivars	Eskisehir, Turkey		Krasnodar, U.S.S.R.		Odessa, U.S.S.R.		Monsheim, West Germany		Novi Sad, Yugoslavia		Cultivar mean over 23 sites
	g	rank	g	rank	g	rank	g	rank	g	rank	g
Sadovo-1	46.4	1	50.0	1	48.3	1	55.1	1	40.4	2	47.2
Bezostaya 1	40.7	5	43.3	3	42.9	4	48.5	5	39.6	5	42.5
Iulia	41.6	4	43.1	4	43.3	3	48.6	4	40.2	3	42.5
Yubiley	41.8	3	41.9	5	41.6	6	48.1	6	41.2	1	41.4
Mironovskaya 808	42.0	2	36.9	10	41.8	5	51.1	2	34.7	9	40.6
F53-70	39.6	7	40.8	6	39.6	7	46.5	7	40.2	3	40.6
Lerma Rojo 64	38.7	8	45.2	2	43.4	2	49.5	3	39.0	6	40.4
F54-70	39.8	6	40.2	7	39.0	8	45.7	8	38.9	7	39.9
Krasnodarskaya 39	36.4	10	39.9	8	36.9	11	44.9	9	34.9	8	38.0
Atlas 66	33.3	14	37.0	9	34.5	14	42.0	11	34.2	10	36.9
Blueboy	37.5	9	35.2	13	38.2	10	42.3	10	30.4	14	36.9
NE 73640	35.6	11	33.6	16	35.8	12	41.3	12	33.9	11	36.1
Moslavka (Zg 4240-73)	33.3	14	35.3	12	35.4	13	39.0	14	32.9	12	34.4
Zlatoklasa (Zg 4364)	33.3	14	35.1	14	33.0	15	39.0	14	31.5	13	34.4
Zg 887-73	34.4	13	36.6	11	38.7	9	39.1	13	28.7	16	34.0
Zg 4293-73	31.4	17	33.7	15	33.0	15	36.0	17	30.4	14	32.6
Lindon	34.7	12	27.4	17	32.5	17	36.4	16	28.4	17	31.1
Mean	37.6		38.1		38.4		44.0		35.0		38.1
L.S.D. of the cultivar means (.05)	3.0		4.2		2.5		3.1		3.7		1.3
Coefficient of variation (%)	4.7		4.2		3.2		2.9		7.4		6.2
F test:											
Cultivars	15.7**		14.1**		28.2**		29.2**		13.7**		92.0**
Year x Cultivar	2.6**		5.9**		3.7**		5.0**		1.7^{ns}		1.2^{ns}
Location x Cultivar											1.7**

[a] The data for Lerma Rojo 64 are shown in the table, but were not included in the location means and analyses nor in the overall analyses.

Table 91. Two-year means and rankings of grain protein (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Balcarce, Argentina		Bordenave, Argentina		Vienna, Austria		Tolbukhin, Bulgaria		Chillan, Chile		Temuco, Chile	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	15.5	6	15.8	1	18.0	1	16.2	1	14.3	1	13.9	5
F53-70	14.3	12	14.0	2	15.8	4	16.0	3	13.8	2	13.1	6
F54-70	13.8	14	13.3	3	16.0	2	16.1	2	12.8	3	12.8	8
Lerma Rojo 64	15.6	5	12.8	5	15.7	5	15.6	4	12.4	5	17.5	1
NE 73640	14.4	10	12.8	5	16.0	2	15.0	5	12.7	4	12.7	9
Iulia	14.4	10	13.0	4	14.9	7	14.3	6	11.5	13	11.8	13
Moslavka (Zg 4240-73)	19.6	1	12.8	5	14.7	8	13.7	10	11.9	7	15.2	2
Zg 4293-73	16.5	4	12.5	8	13.9	14	13.1	12	11.7	10	14.3	4
Bezostaya 1	14.7	9	12.2	11	14.3	11	13.8	9	11.7	10	12.4	10
Zlatoklasa (Zg 4364)	15.0	8	12.3	10	14.6	9	13.9	8	11.6	12	13.1	6
Mironovskaya 808	12.4	15	12.4	9	15.4	6	12.8	15	11.8	8	11.4	14
Yubiley	16.8	3	12.2	11	13.4	17	13.4	11	11.8	8	12.3	11
Lindon	14.2	13	12.2	11	14.5	10	14.0	7	11.3	14	11.1	15
Zg 887-73	17.4	2	11.0	17	14.0	13	12.9	13	11.1	15	14.8	3
Krasnodarskaya 39	11.5	16	11.4	14	14.3	11	12.9	13	12.0	6	10.5	17
Sadovo-1	15.5	6	11.2	15	13.8	15	12.6	16	10.8	16	12.0	12
Blueboy	10.8	17	11.1	16	13.6	16	12.3	17	10.6	17	11.1	15
Mean	14.8		12.5		14.8		14.0		12.0		12.7	
L.S.D. of cultivar means (.05)	2.2		1.8		1.6		1.1		NS		2.3	
Coefficient of variation (%)	7.1		6.7		5.2		3.8		9.1		8.5	

a/ Data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses, nor in the overall analyses.

Table 91. Two-year means and rankings of grain protein (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Sedlec, Czechoslovakia		Orgerus, France		Martonvasar, Hungary		Szeged, Hungary		Milano, Italy		Rieti, Italy	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	17.3	1	16.6	1	15.8	5	19.3	1	14.0	4	12.1	3
F53-70	16.0	5	16.5	2	16.1	2	17.3	3	13.7	6	12.2	2
F54-70	16.5	3	16.2	3	16.5	1	17.7	2	14.0	4	12.5	1
Lerma Rojo 64	16.2	4	14.9	5	15.9	4	15.7	6	14.6	1	11.3	6
NE 73640	17.0	2	15.3	4	16.1	2	16.9	4	14.5	2	12.1	3
Iulia	14.8	7	14.5	7	15.3	6	15.7	6	13.6	7	11.5	5
Moslavka (Zg 4240-73)	14.6	8	13.7	11	14.5	10	14.7	15	13.0	9	10.7	10
Zg 4293-73	14.6	8	13.8	10	14.9	8	15.1	9	14.3	3	10.9	8
Bezostaya 1	14.3	10	14.4	8	14.5	10	15.3	8	12.6	12	11.0	7
Zlatoklasa (Zg 4364)	14.3	10	13.5	16	15.3	6	14.9	14	12.7	10	10.7	10
Mironovskaya 808	14.3	10	14.6	6	14.9	8	15.9	5	12.1	14	10.7	10
Yubiley	14.0	13	13.6	14	14.5	10	15.1	9	12.7	10	10.5	16
Lindon	13.7	14	13.6	14	14.2	15	15.1	9	12.2	13	10.8	9
Zg 887-73	13.1	16	13.7	11	14.4	13	15.0	13	13.2	8	10.2	17
Krasnodarskaya 39	15.1	6	14.0	9	14.3	14	15.1	9	11.9	16	10.7	10
Sadovo-1	13.5	15	13.7	11	13.7	16	14.0	16	12.1	14	10.7	10
Blueboy	12.9	17	11.4	17	12.8	17	14.0	16	9.7	17	10.6	15
Mean	14.8		14.4		14.9		15.7		12.9		11.2	
L.S.D. of cultivar means (.05)	1.6		0.9		1.8		0.9		1.5		NS	
Coefficient of variation (%)	5.0		3.0		5.8		2.7		5.4		7.0	

[a/] Data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses, nor in the overall analyses.

Table 91. Two-year means and rankings of grain protein (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Morioka, Iwate, Japan		Suwon, Korea		Wageningen, The Netherlands		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	20.3	1	18.4	2	13.0	3	14.9	1	14.4	10	16.1	1
F53-70	18.7	4	15.0	8	13.0	3	13.8	4	17.7	1	15.8	2
F54-70	18.8	3	15.1	7	13.6	2	14.1	3	17.0	3	15.5	4
Lerma Rojo 64	19.6	2	18.7	1	12.3	5	14.9	1	17.3	2	15.7	3
NE 73640	18.0	5	14.7	10	14.4	1	13.8	4	16.5	4	14.9	6
Iulia	17.5	8	14.9	9	11.9	6	13.6	6	15.6	6	15.3	5
Moslavka (Zg 4240-73)	16.8	12	18.0	4	11.1	11	12.4	11	15.4	7	14.2	11
Zg 4293-73	16.2	13	18.4	2	11.1	11	12.8	7	15.9	5	14.3	9
Bezostaya 1	17.7	6	14.7	10	11.4	9	12.8	7	13.9	13	14.5	7
Zlatoklasa (Zg 4364)	15.9	15	15.8	5	10.6	15	12.7	9	15.2	8	14.4	8
Mironovskaya 808	17.0	11	14.4	14	11.7	7	12.7	9	14.2	11	13.3	15
Yubiley	17.3	9	13.9	15	10.8	13	11.8	14	14.2	11	14.3	9
Lindon	15.9	15	14.5	13	10.7	14	12.0	13	13.6	15	13.4	14
Zg 887-73	17.6	7	15.3	6	10.1	16	12.1	12	13.2	17	13.6	13
Krasnodarskaya 39	17.1	10	13.3	17	11.5	8	11.4	16	13.8	14	12.5	16
Sadovo-1	15.7	17	14.7	10	11.3	10	11.5	15	14.6	9	13.7	12
Blueboy	16.0	14	13.9	15	10.1	16	10.3	17	13.6	15	11.7	17
Mean	17.3		15.3		11.7		12.7		15.0		14.2	
L.S.D. of cultivar means (.05)	1.2		NS		2.2		1.1		1.9		1.8	
Coefficient of variation (%)	3.3		9.9		8.8		3.9		5.9		5.8	

[a/] Data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses, nor in the overall analyses.

Table 91. Two-year means and rankings of grain protein (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Bethlehem, South Africa		Svalof, Sweden		Zurich, Switzerland		Erzurum, Turkey		Eskisehir, Turkey		Davis, California, U.S.A.	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	20.0	1	18.3	4	14.5	3	15.2	2	14.0	6	16.1	1
F53-70	15.9	6	18.1	5	14.9	1	13.7	8	14.3	5	14.8	3
F54-70	17.1	3	18.9	2	14.8	2	13.8	6	14.7	3	15.1	2
Lerma Rojo 64	15.2	11	17.6	6	14.2	4	15.0	3	14.8	2	14.8	3
NE 73640	16.6	4	19.0	1	14.2	4	14.4	5	14.7	3	13.6	10
Iulia	15.2	11	16.7	7	13.3	6	13.8	6	15.0	1	13.7	9
Moslavka (Zg 4240-73)	16.0	5	18.7	3	13.1	7	12.7	9	13.3	10	12.4	14
Zg 4293-73	15.7	7	16.3	8	12.8	10	16.3	1	13.7	8	14.0	6
Bezostaya 1	15.3	10	16.3	8	13.1	7	12.6	11	13.8	7	14.0	6
Zlatoklasa (Zg 4364)	14.9	13	15.9	10	12.3	14	15.0	3	13.2	11	14.5	5
Mironovskaya 808	18.4	2	14.7	16	12.5	13	12.7	9	12.1	14	13.8	8
Yubiley	14.0	15	15.1	13	12.8	10	12.2	14	12.8	12	12.8	12
Lindon	15.6	8	15.4	11	13.1	7	11.8	17	12.6	13	12.4	14
Zg 887-73	14.0	15	14.3	17	12.8	10	12.1	16	11.8	15	12.2	16
Krasnodarskaya 39	15.5	9	15.1	13	12.2	16	12.5	12	11.1	16	12.7	13
Sadovo-1	14.4	14	15.0	15	12.3	14	12.3	13	13.6	9	13.3	11
Blueboy	13.9	17	15.3	12	11.5	17	12.2	14	10.8	17	12.1	17
Mean	15.8		16.5		13.1		13.4		13.3		13.6	
L.S.D. of cultivar means (.05)	2.7		2.6		0.8		NS		0.9		2.1	
Coefficient of variation (%)	7.9		7.5		3.0		11.0		3.2		7.4	

[a/] Data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses, nor in the overall analyses.

Table 91. Two-year means and rankings of grain protein (%) for 17 cultivars grown in the International Winter Wheat **Performance** Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Hutchinson, Kansas, U.S.A.		Billings, Montana, U.S.A.		Rowan Co., North Carolina, U.S.A.		Stillwater, Oklahoma, U.S.A.		Pullman, Washington, U.S.A.		Krasnodar, U.S.S.R.	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Atlas 66	19.4	1	18.5	1	17.6	1	19.8	1	15.6	2	17.7	1
F53-70	17.4	3	16.8	3	15.1	4	17.2	7	15.8	1	16.6	3
F54-70	17.7	2	17.0	2	15.2	3	17.4	6	15.4	4	16.7	2
Lerma Rojo 64	.	.	16.4	5	15.0	5	.	.	15.3	5	15.4	4
NE 73640	15.8	7	16.6	4	14.1	6	16.4	10	15.5	3	14.8	6
Iulia	15.8	7	16.3	6	15.3	2	17.5	4	14.4	7	14.9	5
Moslavka (Zg 4240-73)	16.6	5	14.7	14	13.3	14	18.5	2	14.2	8	13.7	11
Zg 4293-73	16.0	6	15.1	10	14.1	6	17.5	4	15.0	6	13.4	12
Bezostaya 1	15.6	9	15.3	8	14.0	8	16.0	12	13.0	12	14.5	7
Zlatoklasa (Zg 4364)	15.0	11	15.1	10	13.9	9	17.8	3	14.1	9	13.2	14
Mironovskaya 808	17.3	4	16.2	7	13.4	13	16.3	11	12.8	13	13.9	9
Yubiley	14.8	12	15.0	13	13.1	15	16.9	8	12.2	14	13.8	10
Lindon	14.6	13	15.2	9	12.4	17	15.3	13	11.9	16	13.4	12
Zg 887-73	15.5	10	14.1	17	13.8	10	16.6	9	11.7	17	12.4	17
Krasnodarskaya 39	14.5	14	15.1	10	13.5	11	14.7	16	13.1	11	14.3	8
Sadovo-1	14.0	15	14.5	15	13.5	11	15.2	14	13.6	10	13.1	15
Blueboy	13.5	16	14.3	16	12.7	16	15.1	15	12.2	14	12.6	16
Mean	15.9		15.6		14.1		16.8		13.8		14.3	
L.S.D. of cultivar means (.05)	1.3		0.7		2.3		1.8		1.6		1.3	
Coefficient of variation (%)	3.9		2.2		7.8		4.9		5.5		4.1	

[a/] Data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses, nor in the overall analyses.

Table 91. Two-year means and rankings of grain protein (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a] Concluded.

Cultivars	Odessa, U.S.S.R.		Monsheim, West Germany		Weihenstephan, West Germany		Novi Sad, Yugoslavia		Zagreb, Yugoslavia		Cultivar mean over 35 sites
	%	rank	%	rank	%	rank	%	rank	%	rank	%
Atlas 66	16.3	1	17.3	2	14.5	3	17.6	1	16.3	2	16.4
F53-70	15.7	3	17.8	1	15.0	1	16.3	3	15.6	4	15.6
F54-70	16.3	1	16.3	5	12.9	9	16.4	2	16.6	1	15.6
Lerma Rojo 64	15.1	4	17.2	3	14.2	4	15.2	5	15.3	6	15.2
NE 73640	14.8	5	17.0	4	15.0	1	15.9	4	15.8	3	15.2
Iulia	14.7	6	15.2	6	12.9	9	14.7	6	15.5	5	14.6
Moslavka (Zg 4240-73)	13.1	13	13.6	8	12.2	13	14.7	6	14.9	7	14.4
Zg 4293-73	13.3	10	13.4	11	13.1	5	14.1	14	14.7	10	14.4
Bezostaya 1	13.5	9	13.7	7	13.0	8	14.3	9	14.9	7	14.0
Zlatoklasa (Zg 4364)	13.3	10	13.3	12	12.6	12	14.2	11	14.6	11	14.0
Mironovskaya 808	12.4	17	13.3	12	12.8	11	14.4	8	14.8	9	13.8
Yubiley	14.0	7	12.9	16	12.0	14	14.3	9	14.2	13	13.6
Lindon	13.3	10	13.2	14	13.1	5	14.1	14	14.5	12	13.4
Zg 887-73	12.8	16	11.8	17	11.6	17	14.2	11	13.7	15	13.4
Krasnodarskaya 39	13.1	13	13.5	9	13.1	5	14.2	11	13.8	14	13.3
Sadovo-1	13.1	13	13.2	14	11.9	15	13.1	16	13.6	16	13.3
Blueboy	13.8	8	13.5	9	11.7	16	13.0	17	12.9	17	12.5
Mean	14.0		14.3		13.0		14.7		14.8		14.2
L.S.D. of cultivar means (.05)	1.4		1.4		1.6		1.1		1.0		0.4
Coefficient of variation (%)	4.8		4.6		5.9		3.4		3.2		10.7

[a] Data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses, nor in the overall analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Balcarce, Argentina		Bordenave, Argentina		Vienna, Austria		Tolbukhin,[b/] Bulgaria	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
Zg 4293-73	67.5	1	60.6	1	70.6	2	63.0	1	65.0	1	66.5	1
Zg 887-73	74.4	3	69.4	2	73.1	3	65.6	2	70.6	2	73.5	2
Moslavka (Zg 4240-73)	83.8	4	70.6	3	65.6	1	67.1	3	72.5	3	79.5	3
Zlatoklasa (Zg 4364)	72.5	2	75.6	4	77.5	4	68.9	4	72.5	3	83.0	4
Yubiley	90.6	5	86.9	5	82.5	5	80.5	5	80.0	5	83.0	4
Lerma Rojo 64	98.1	9	95.0	9	90.0	7	94.4	9	90.6	8	85.5	6
Sadovo-1	95.0	7	90.0	6	85.6	6	86.6	6	82.5	6	95.5	7
Iulia	96.3	8	93.1	7	90.0	7	89.8	8	84.4	7	102.0	12
Lindon	92.5	6	93.8	8	91.3	10	89.1	7	96.9	12	96.5	9
Bezostaya 1	101.3	11	99.4	10	90.6	9	95.0	11	93.1	9	95.5	7
NE 73640	100.0	10	102.5	12	92.5	11	94.9	10	100.0	15	98.5	10
F53-70	101.3	11	105.0	14	96.9	14	95.9	13	93.8	10	112.0	16
F54-70	102.5	13	105.6	15	95.0	12	96.6	14	96.9	12	110.0	14
Krasnodarskaya 39	103.1	14	100.6	11	99.4	15	95.3	12	96.9	12	99.0	11
Blueboy	106.3	15	103.1	13	95.0	12	99.0	15	95.6	11	107.0	13
Atlas 66	112.5	16	119.4	16	101.9	16	109.5	17	112.5	16	110.5	15
Mironovskaya 808	118.1	17	126.9	17	111.9	17	109.4	16	117.5	17	125.0	17
Mean	94.8		93.9		88.7		87.9		89.4		95.4	
L.S.D. of the cultivar means (.05)	7.7		5.6		10.9		10.6		9.0		-	
Coefficient of variation (%)	8.2		6.5		2.0		4.6		5.2		-	
F test:												
Cultivars	31.3**		94.8**		11.6**		17.8**		24.9**		-	
Year x Cultivar	0.9^{ns}		0.7^{ns}		32.0**		6.1**		3.4**		-	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

[b/] These sites are not included in the overall means and analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Chillan, Chile		Temuco, Chile		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Martonvasar,[a/] Hungary		Hamadan, Iran	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
Zg 4293-76	70.0	1	66.4	1	72.1	1	62.3	1	68.8	1	56.4	1
Zg 887-73	72.5	2	73.6	2	81.5	2	71.3	3	77.0	4	61.3	2
Moslavka (Zg 4240-73)	78.8	4	73.6	2	85.0	4	66.3	2	74.3	2	61.8	3
Zlatoklasa (Zg 4364)	78.1	3	78.6	4	82.1	3	72.8	4	75.8	3	62.6	4
Yubiley	100.6	6	88.6	5	91.4	5	77.8	6	85.3	5	72.5	7
Lerma Rojo 64	94.4	5	90.0	6	94.3	6	74.3	5	90.3	7	80.8	12
Sadovo-1	104.4	7	95.7	7	99.5	8	79.3	7	89.8	6	64.5	5
Iulia	105.6	8	99.3	9	94.5	7	83.3	8	91.0	8	78.1	10
Lindon	106.9	9	97.9	8	109.0	10	89.6	10	99.3	12	72.8	8
Bezostaya 1	117.5	12	104.3	10	109.0	10	89.0	9	94.8	9	75.8	9
NE 73640	114.4	10	105.0	11	113.4	14	92.4	11	101.5	13	66.9	6
F53-70	125.6	15	115.7	15	111.0	13	93.4	12	98.0	11	86.5	15
F54-70	118.1	13	112.1	14	105.5	9	95.1	13	95.8	10	80.0	11
Krasnodarskaya 39	119.4	14	110.7	12	110.9	12	96.1	14	101.8	14	81.1	13
Blueboy	116.9	11	111.4	13	116.5	15	103.6	15	106.5	15	85.5	14
Atlas 66	146.3	17	128.6	16	121.8	16	107.5	16	111.8	16	102.8	17
Mironovskaya 808	145.0	16	135.7	17	132.6	17	121.9	17	121.3	17	92.8	16
Mean	107.5		99.8		102.2		87.6		93.1		75.1	
L.S.D. of the cultivar means (.05)	8.2		9.0		2.6		7.4		-		13.1	
Coefficient of variation (%)	5.2		4.2		0.3		2.1		-		10.1	
F test:												
Cultivars	73.6**		38.6**		358.8**		42.4**		-		8.7**	
Year x Cultivar	1.9*		4.1**		50.4**		14.5**		-		2.6**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Karaj, Iran		Sulaimaniya, Iraq		Milano, Italy		Rieti, Italy		Morioka, Iwate, Japan		Suwon, Korea	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
Zg 4293-73	61.3	1	66.3	1	65.6	1	60.0	1	74.8	2	46.7	1
Zg 887-73	73.8	4	77.5	4	76.3	3	71.8	4	70.0	1	54.7	2
Moslavka (Zg 4240-73)	70.0	2	76.9	3	74.4	2	63.5	2	86.6	5	61.4	4
Zlatoklasa (Zg 4364)	71.3	3	70.6	2	76.9	4	68.9	3	85.9	4	55.3	3
Yubiley	80.6	5	90.0	5	86.3	5	76.0	6	100.1	6	73.6	6
Lerma Rojo 64	92.5	9	109.4	11	92.5	6	90.9	15	78.9	3	64.3	5
Sadovo-1	88.1	7	96.9	7	95.0	8	83.3	11	105.3	7	84.6	9
Iulia	86.9	6	96.3	6	94.4	7	77.6	8	106.8	8	80.3	7
Lindon	90.0	8	98.1	8	98.1	9	74.3	5	112.5	10	81.6	8
Bezostaya 1	95.0	10	106.3	9	98.8	10	79.5	10	113.9	11	87.7	10
NE 73640	95.0	10	109.4	11	101.3	11	83.3	11	111.4	9	90.3	12
F53-70	96.3	13	109.4	11	103.1	12	76.6	7	118.9	13	96.1	15
F54-70	96.9	14	108.1	10	105.6	13	83.3	11	120.9	14	90.1	11
Krasnodarskaya 39	95.6	12	109.4	11	106.3	14	79.4	9	115.9	12	95.0	14
Blueboy	98.1	15	110.6	15	106.9	15	90.8	14	128.5	15	91.6	13
Atlas 66	117.5	17	126.3	17	119.4	16	105.6	16	134.6	16	101.7	16
Mironovskaya 808	116.3	16	124.4	16	134.4	17	108.3	17	136.9	17	109.0	17
Mean	89.5		98.5		96.4		80.1		107.7		81.2	
L.S.D. of the cultivar means (.05)	7.1		9.1		8.9		17.5		8.1		14.6	
Coefficient of variation (%)	6.7		5.8		4.6		17.1		2.4		5.9	
F test:												
Cultivars	43.3**		35.8**		35.5**		5.0**		54.5**		12.3**	
Year x Cultivar	1.2^{ns}		2.2*		3.6**		1.4^{ns}		8.6**		8.1**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Kathmandu, Nepal		Wageningen, The Netherlands		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
Zg 4293-73	74.6	2	68.1	1	63.0	1	63.5	1	68.6	1	50.9	1
Zg 887-73	74.8	3	76.9	3	71.8	2	70.1	2	76.5	3	63.3	4
Moslavka (Zg 4240-73)	77.8	4	73.8	2	72.6	4	70.6	3	76.3	2	60.1	2
Zlatoklasa (Zg 4364)	70.9	1	79.4	4	72.5	3	71.0	4	81.3	4	61.0	3
Yubiley	82.6	6	83.1	5	83.6	6	81.8	5	90.6	6	71.8	5
Lerma Rojo 64	84.3	7	88.8	7	77.9	5	88.8	7	88.4	5	92.3	15
Sadovo-1	88.5	8	91.9	10	88.0	7	82.5	6	99.4	8	76.9	6
Iulia	81.1	5	87.5	6	94.1	8	90.4	8	98.8	7	78.9	7
Lindon	96.6	10	90.6	8	95.0	9	91.0	9	103.8	10	85.8	10
Bezostaya 1	96.8	11	91.3	9	95.8	10	97.0	10	101.4	9	88.0	11
NE 73640	100.5	13	98.1	13	99.6	14	103.6	15	108.0	12	89.3	13
F53-70	96.9	12	99.4	14	96.5	11	98.9	12	111.9	15	83.1	8
F54-70	94.6	9	97.5	12	97.9	12	98.1	11	110.0	14	84.9	9
Krasnodarskaya 39	102.1	14	95.6	11	101.9	15	103.5	14	107.8	11	89.9	14
Blueboy	104.0	15	102.5	15	98.5	13	101.9	13	109.8	13	89.1	12
Atlas 66	115.6	17	118.8	17	109.4	16	109.6	16	121.3	16	103.5	17
Mironovskaya 808	106.3	16	115.0	16	120.6	17	127.8	17	130.3	17	99.8	16
Mean	91.5		91.8		91.3		91.3		99.7		79.8	
L.S.D. of the cultivar means (.05)	18.4		10.1		9.3		11.8		9.5		16.5	
Coefficient of variation (%)	10.6		3.9		2.7		5.6		2.3		3.7	
F test:												
Cultivars	4.7**		17.0**		24.4**		19.4**		29.5**		7.3**	
Year x Cultivar	3.2**		6.9**		13.0**		4.7**		14.7**		27.8**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Svalof, Sweden		Zurich, Switzerland		Erzurum, Turkey		Eskisehir, Turkey		Davis, California, U.S.A.		Hutchinson, Kansas U.S.A.	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
Zg 4293-73	50.0	1	64.4	1	59.6	1	48.8	1	68.8	1	60.5	1
Zg 887-73	60.0	5	75.0	4	73.0	3	55.6	2	80.5	4	70.1	2
Moslavka (Zg 4240-73)	59.4	4	73.8	2	62.6	2	61.3	4	78.9	3	71.1	3
Zlatoklasa (Zg 4364)	56.9	2	74.4	3	77.9	4	58.1	3	74.0	2	74.3	4
Yubiley	67.5	6	84.4	5	87.5	5	72.5	5	90.4	5	90.6	5
Lerma Rojo 64	58.8	3	91.9	6	105.4	13	76.3	6	95.8	6	.	.
Sadovo-1	70.0	7	93.8	7	91.3	6	77.5	7	97.6	7	94.3	6
Iulia	70.6	8	96.3	8	95.1	7	82.5	9	99.4	8	98.9	7
Lindon	71.9	9	97.5	9	95.1	7	78.8	8	101.1	10	102.9	10
Bezostaya 1	80.0	13	102.5	10	103.5	10	91.3	15	100.4	9	101.0	8
NE 73640	76.9	10	106.9	13	108.8	15	85.0	10	111.5	13	109.5	14
F53-70	78.1	12	105.6	11	96.8	9	87.5	12	106.8	12	105.4	12
F54-70	76.9	10	106.3	12	104.8	12	90.0	13	111.8	14	103.8	11
Krasnodarskaya 39	81.9	14	107.5	14	107.8	14	87.1	11	106.5	11	106.4	13
Blueboy	85.6	15	110.0	15	104.6	11	90.6	14	111.9	15	102.1	9
Atlas 66	89.4	16	126.3	16	130.4	16	116.3	17	126.4	16	111.5	15
Mironovskaya 808	91.3	17	135.0	17	131.0	17	113.1	16	126.8	17	119.8	16
Mean	72.9		97.5		95.6		81.0		99.5		95.1	
L.S.D. of the cultivar means (.05)	8.4		6.3		12.3		8.0		17.3		5.9	
Coefficient of variation (%)	5.1		2.9		5.4		6.1		6.4		4.1	
F test:												
Cultivars	18.1**		87.2**		25.0**		50.1**		9.1**		77.5**	
Year x Cultivar	4.5**		4.4**		5.0**		2.3**		6.5**		2.0*	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Billings, Montana, U.S.A.		Rowan Co., North Carolina, U.S.A.		Pullman, Washington, U.S.A.		Krasnodar, U.S.S.R.		Odessa, U.S.S.R.		Monsheim West Germany	
	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank	cm	rank
Zg 4293-73	60.9	1	57.9	1	73.9	1	66.6	1	67.8	1	52.9	1
Zg 887-73	75.0	4	64.8	2	74.9	3	79.4	2	74.0	2	60.6	2
Moslavka (Zg 4240-73)	72.4	2	65.4	3	85.6	4	80.5	3	76.1	4	60.8	3
Zlatoklasa (Zg 4364)	74.4	3	68.6	4	89.9	5	82.1	4	74.8	3	64.1	4
Yubiley	86.9	5	82.3	5	101.5	6	95.4	5	93.9	6	70.5	5
Lerma Rojo 64	88.9	6	84.0	6	74.5	2	99.0	6	83.5	5	73.6	6
Sadovo-1	91.9	7	85.4	7	108.4	7	102.8	7	101.8	7	73.8	7
Iulia	92.5	8	86.0	8	110.4	8	107.1	8	104.5	8	75.9	9
Lindon	100.3	12	93.1	10	115.3	9	111.9	10	106.3	9	75.4	8
Bezostaya 1	99.0	10	92.0	9	119.0	11	110.9	9	114.9	14	77.4	10
NE 73640	97.4	9	97.6	12	117.6	10	112.8	11	113.8	10	80.5	11
F53-70	99.6	11	99.5	13	120.3	13	120.1	14	114.3	11	86.3	15
F54-70	101.6	13	100.6	14	120.1	12	119.0	13	116.0	15	84.3	13
Krasnodarskaya 39	102.9	14	97.5	11	123.1	15	120.6	15	114.5	13	80.9	12
Blueboy	105.0	15	103.6	15	120.5	14	117.1	12	114.4	12	84.9	14
Atlas 66	110.5	16	112.0	16	131.9	16	127.6	16	129.8	16	94.5	16
Mironovskaya 808	117.6	17	117.9	17	138.8	17	139.4	17	136.5	17	99.0	17
Mean	93.0		89.0		109.4		105.8		103.3		76.3	
L.S.D. of the cultivar means (.05)	8.9		11.5		3.4		9.0		8.0		5.2	
Coefficient of variation (%)	4.0		4.8		2.8		2.6		3.8		4.3	
F test:												
Cultivars	27.0**		21.0**		284.8**		44.9**		60.4**		52.7**	
Year x Cultivar	5.0**		6.4**		1.1^{ns}		9.3**		3.6**		2.3**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 92. Two-year means and rankings of plant height (cm) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a] Concluded.

Cultivars	Weihenstephan, West Germany		Zagreb, Yugoslavia		Cultivar mean over 36 sites
	cm	rank	cm	rank	cm
Zg 4293-73	72.3	1	70.0	1	63.7
Zg 887-73	82.6	4	82.8	4	71.7
Moslavka (Zg 4240-73)	78.5	2	79.4	3	72.1
Zlatoklasa (Zg 4364)	82.4	3	77.0	2	73.2
Yubiley	88.1	5	89.0	5	84.8
Lerma Rojo 64	93.4	6	95.5	6	88.8
Sadovo-1	93.4	6	96.6	8	90.0
Iulia	93.8	8	102.1	10	91.7
Lindon	101.5	9	96.5	7	94.6
Bezostaya 1	101.8	10	101.6	9	97.8
NE 73640	102.6	11	102.6	11	99.9
F53-70	106.4	14	107.1	13	101.2
F54-70	106.1	13	107.9	14	101.2
Krasnodarskaya 39	104.6	12	108.6	15	101.8
Blueboy	109.6	15	105.4	12	103.6
Atlas 66	122.5	16	120.0	17	116.5
Mironovskaya 808	126.6	17	119.8	16	120.9
Mean	98.3		97.9		92.8
L.S.D. of the cultivar means (.05)	6.9		4.5		2.8
Coefficient of variation (%)	3.1		4.7		5.5
F test:					
Cultivars	43.3**		97.6**		276.9**
Year x cultivar	4.5**		0.8^{ns}		2.4**
Location x cultivar					1.7**

[a] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 93. Two-year means and rankings of lodging (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Lethbridge,[b/] Alberta, Canada		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Morioka, Iwate, Japan		Wageningen, The Netherlands		Przeclaw, Poland	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Zlatoklasa (Zg 4364)	0.5	2	0.0	1	5.3	3	0.0	1	0.0	1	1.3	4
Zg 4293-73	0.5	2	0.0	1	6.1	4	0.0	1	0.0	1	0.0	1
Moslavka (Zg 4240-73)	1.0	11	0.0	1	3.0	1	0.0	1	0.6	6	0.0	1
Zg 887-73	1.0	11	3.8	8	30.0	10	0.0	1	0.0	1	0.0	1
Yubiley	0.5	2	0.0	1	4.8	2	2.5	6	0.0	1	1.5	5
Sadovo-1	0.5	2	0.6	5	6.8	5	7.9	7	0.0	1	5.1	6
Iulia	0.5	2	12.5	12	14.4	8	21.3	8	17.5	12	17.1	8
F54-70	0.5	2	5.0	9	12.5	7	24.4	9	16.3	10	21.1	9
F53-70	0.5	2	6.3	10	11.9	6	36.3	10	16.3	10	11.9	7
Bezostaya 1	0.5	2	2.5	6	26.3	9	38.8	11	11.9	8	29.8	10
Blueboy	2.0	16	14.4	13	30.0	10	41.3	12	8.8	7	30.6	11
Krasnodarskaya 39	1.0	11	3.1	7	32.5	12	42.3	13	12.5	9	47.6	12
Lerma Rojo 64	0.0	1	10.0	11	47.5	13	0.0	1	41.9	13	55.8	14
Lindon	2.0	16	18.1	15	71.9	16	55.0	14	43.0	14	64.0	15
NE 73640	1.5	15	23.1	16	78.8	17	56.8	15	63.5	15	51.8	13
Mironovskaya 808	0.5	2	17.5	14	60.0	14	62.5	16	66.1	16	83.8	17
Atlas 66	1.0	11	23.1	16	61.1	15	73.0	17	78.6	17	77.5	16
Mean	0.8		8.1		28.4		28.9		20.9		27.7	
L.S.D. of the cultivar means (.05)	-		15.8		26.9		38.6		36.6		31.6	
Coefficient of variation (%)	67.7		65.4		50.7		43.6		65.8		26.0	
F test:												
Cultivars	-		2.7*		8.3**		3.9**		4.8**		7.6**	
Year x Cultivar	-		7.8**		3.1**		8.3**		6.2**		16.9**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

[b/] This site is not included in the overall means and analyses.

Table 93. Two-year means and rankings of lodging (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Warsaw, Poland		Fundulea, Romania		Svalof, Sweden		Zurich, Switzerland		Davis California, U.S.A.		Corvallis,[b/] Oregon, U.S.A.	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Zlatoklasa (Zg 4364)	0.0	1	1.3	2	2.8	7	1.3	1	4.4	4	0.0	1
Zg 4293-73	0.0	1	0.0	1	2.0	3	1.3	1	0.6	1	2.5	5
Moslavka (Zg 4240-73)	0.0	1	1.3	2	5.1	9	3.1	4	3.1	3	0.0	1
Zg 887-73	0.0	1	1.9	4	2.1	4	1.3	1	2.5	2	0.0	1
Yubiley	1.3	6	5.0	5	0.4	1	5.0	5	26.3	10	5.0	6
Sadovo-1	0.0	1	8.8	7	2.3	6	5.0	5	11.3	5	5.0	6
Iulia	4.4	8	8.8	7	2.1	4	8.1	8	19.4	9	0.0	1
F54-70	8.8	11	11.9	9	2.8	7	7.5	7	16.3	7	35.0	11
F53-70	2.5	7	6.9	6	1.1	2	11.9	9	16.3	7	32.5	10
Bezostaya 1	5.0	9	26.3	11	9.4	11	29.3	14	30.0	12	10.0	8
Blueboy	11.3	12	25.0	10	22.4	13	16.3	10	28.6	11	45.0	13
Krasnodarskaya 39	23.8	15	41.3	13	18.1	12	18.1	12	31.3	13	15.0	9
Lerma Rojo 64	6.3	10	40.9	12	56.3	17	21.3	13	55.6	17	59.5	15
Lindon	20.0	14	63.1	14	7.8	10	16.3	10	33.8	14	47.5	14
NE 73640	16.3	13	84.4	16	22.4	13	36.1	15	45.0	16	42.5	12
Mironovskaya 808	56.3	17	78.5	15	47.1	16	61.0	17	15.0	6	87.5	16
Atlas 66	37.5	16	92.1	17	36.9	15	58.6	16	35.6	15	92.0	17
Mean	11.7		28.5		11.5		17.5		20.0		28.2	
L.S.D. of the cultivar means (.05)	NS		27.4		NS		21.3		NS		-	
Coefficient of variation (%)	111.5		52.2		76.7		77.8		78.6		108.4	
F test:												
Cultivars	2.3^{ns}		13.0**		1.6^{ns}		7.5**		1.3^{ns}		-	
Year x Cultivar	5.3**		3.0**		12.5**		2.2*		4.6**		-	

a/ The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

b/ This site is not included in the overall means and analyses.

Table 93. Two-year means and rankings of lodging (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Concluded.

Cultivars	Krasnodar, U.S.S.R.		Odessa, U.S.S.R.		Weihenstephan, West Germany		Zagreb, Yugoslavia		Cultivar mean over 14 sites
	%	rank	%	rank	%	rank	%	rank	%
Zlatoklasa (Zg 4364)	49.5	1	0.0	1	0.0	1	1.3	1	4.8
Zg 4293-73	49.5	1	0.0	1	0.0	1	10.0	5	5.0
Moslavka (Zg 4240-73)	49.5	1	0.0	1	10.0	5	1.3	1	5.5
Zg 887-73	50.8	6	0.0	1	2.5	3	8.8	4	7.4
Yubiley	49.5	1	0.0	1	7.5	4	6.3	3	7.8
Sadovo-1	50.8	6	0.0	1	23.8	7	11.3	6	9.5
Iulia	53.6	8	0.0	1	16.3	6	28.1	7	16.0
F54-70	50.0	5	0.6	10	37.5	9	38.1	9	18.0
F53-70	62.5	13	0.0	1	32.5	8	37.5	8	18.1
Bezostaya 1	56.3	9	0.6	10	50.0	12	53.8	11	26.4
Blueboy	58.8	10	3.1	13	48.8	11	51.9	10	27.9
Krasnodarskaya 39	60.0	11	24.3	15	55.0	13	65.6	12	34.0
Lerma Rojo 64	70.0	16	0.0	1	57.5	14	75.9	14	39.4
Lindon	67.5	15	0.6	10	40.0	10	74.9	13	41.1
NE 73640	72.5	17	18.0	14	65.0	16	82.4	16	51.1
Mironovskaya 808	60.0	11	55.3	17	63.8	15	78.6	15	57.5
Atlas 66	66.3	14	34.3	16	66.3	17	85.0	17	59.0
Mean	56.7		8.5		32.4		39.7		24.3
L.S.D. of the cultivar means (.05)	NS		27.1		32.3		40.8		11.9
Coefficient of variation (%)	16.8		157.8		27.0		45.9		51.7
F test:									
Cultivars	0.1^{ns}		3.3*		5.1**		5.3**		23.9**
Year x Cultivar	65.7**		3.6**		12.0**		4.4**		1.5^{ns}
Location x Cultivar									0.9^{ns}

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 94. Two-year means and rankings of winter survival (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.

Cultivars	Herat, Afghanistan		Prince Edward Island, Canada		Lethbridge, Alberta, Canada		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Jokioinen, Finland	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Mironovskaya 808	88.6	5	85.6	1	100.0	1	100.0	1	97.3	1	73.9	1
NE 73640	86.4	11	76.9	3	100.0	1	100.0	1	94.8	6	39.9	5
Bezostaya 1	90.9	3	81.3	2	100.0	1	100.0	1	95.3	4	42.5	4
F54-70	86.9	10	64.1	9	100.0	1	100.0	1	94.9	5	52.4	2
F53-70	90.0	4	72.5	4	100.0	1	100.0	1	93.5	7	37.8	7
Krasnodarskaya 39	86.4	11	66.9	8	99.8	9	100.0	1	84.4	14	45.3	3
Lindon	85.6	13	67.5	7	100.0	1	100.0	1	95.4	3	30.4	10
Yubiley	91.4	2	68.4	6	100.0	1	100.0	1	93.4	8	34.4	8
Sadovo-1	88.3	7	71.9	5	99.8	9	100.0	1	93.0	9	27.0	14
Blueboy	87.8	8	61.3	10	100.0	1	100.0	1	88.5	12	38.1	6
Iulia	85.4	14	59.1	11	98.9	12	100.0	1	96.0	2	33.1	9
Zlatoklasa (Zg 4364)	87.4	9	31.3	12	99.1	11	100.0	1	92.9	10	27.6	13
Moslavka (Zg 4240-73)	88.6	5	26.9	13	92.3	14	100.0	1	89.0	11	28.8	11
Zg 4293-73	82.6	16	23.1	14	96.1	13	100.0	1	85.4	13	23.8	15
Atlas 66	93.0	1	6.9	15	69.4	15	100.0	1	80.5	16	12.3	16
Zg 887-73	82.4	17	0.0	16	35.0	16	95.6	16	82.1	15	28.4	12
Lerma Rojo 64	83.6	15	0.0	16	0.1	17	53.8	17	37.0	17	4.0	17
Mean	87.4		50.8		87.7		97.0		87.8		34.1	
L.S.D. of the cultivar means (.05)	NS		22.4		13.2		15.6		18.2		28.9	
Coefficient of variation (%)	5.7		30.0		7.8		4.4		9.9		35.0	
F test:												
Cultivars	1.0^{ns}		15.3**		40.9**		4.7**		5.4**		2.6*	
Year x Cultivar	2.9**		1.9*		3.3**		12.1**		3.9**		5.2*	

Table 94. Two-year means and rankings of winter survival (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Suwon, Korea		Wageningen, The Netherlands		Vollebekk, Norway		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Mironovskaya 808	84.3	1	88.8	7	90.6	1	97.0	6	80.6	3	100.0	1
NE 73640	68.6	10	88.1	14	71.9	9	96.4	10	80.6	3	100.0	1
Bezostaya 1	84.3	1	91.3	1	80.6	5	97.6	3	75.0	9	100.0	1
F54-70	81.4	4	89.4	3	88.1	3	98.8	1	78.8	6	100.0	1
F53-70	81.4	4	88.1	14	88.8	2	98.0	2	78.8	6	100.0	1
Krasnodarskaya 39	84.3	1	88.8	7	86.3	4	95.4	14	68.8	11	100.0	1
Lindon	74.3	7	88.8	7	68.1	11	97.6	3	81.9	2	100.0	1
Yubiley	70.0	9	89.4	3	69.8	10	97.6	3	80.0	5	100.0	1
Sadovo-1	71.4	8	88.8	7	78.1	6	96.6	9	68.1	12	100.0	1
Blueboy	64.3	11	88.8	7	76.3	7	96.9	7	70.6	10	100.0	1
Iulia	75.7	6	90.0	2	76.3	7	96.3	12	78.8	6	100.0	1
Zlatoklasa (Zg 4364)	45.7	12	89.4	3	61.3	12	96.8	8	83.8	1	100.0	1
Moslavka (Zg 4240-73)	42.9	13	88.8	7	33.8	13	92.6	15	65.0	13	100.0	1
Zg 4293-73	38.6	14	88.8	7	25.0	14	96.4	10	64.4	14	100.0	1
Atlas 66	32.9	15	86.3	16	6.4	15	96.1	13	51.3	15	100.0	1
Zg 887-73	18.6	17	89.4	3	3.1	16	78.8	16	35.0	16	96.3	16
Lerma Rojo 64	28.6	16	71.9	17	0.0	17	51.3	17	28.8	17	48.8	17
Mean	61.6		87.9		59.1		92.9		68.8		96.8	
L.S.D. of the cultivar means (.05)	39.8		NS		14.7		NS		NS		4.0	
Coefficient of variation (%)	13.3		3.5		17.1		2.1		8.3		1.4	
F test:												
Cultivars	2.4*		2.3^{ns}		42.9**		1.2^{ns}		1.9^{ns}		87.6**	
Year x Cultivar	21.0**		6.4**		1.9*		220.6**		35.2**		7.3**	

Table 94. Two-year means and rankings of winter survival (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Continued.

Cultivars	Svalof, Sweden		Erzurum, Turkey		Fort Collins, Colorado, U.S.A.		Brookston, Indiana, U.S.A.		Hutchinson, Kansas, U.S.A.		Lincoln, Nebraska, U.S.A.	
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank
Mironovskaya 808	80.0	10	85.6	15	97.5	1	100.0	1	100.0	1	89.4	2
NE 73640	82.3	7	91.9	7	96.3	4	97.5	6	100.0	1	91.9	1
Bezostaya 1	81.5	9	95.0	1	96.9	3	98.1	5	100.0	1	50.0	6
F54-70	82.4	6	95.0	1	97.5	1	100.0	1	100.0	1	50.6	5
F53-70	87.6	2	90.6	10	95.6	6	100.0	1	100.0	1	49.4	7
Krasnodarskaya 39	75.8	13	86.3	14	88.1	9	98.8	4	98.8	10	82.5	3
Lindon	90.3	1	93.8	3	93.8	7	97.3	7	100.0	1	56.9	4
Yubiley	87.4	3	93.8	3	91.9	8	94.4	8	97.5	12	27.5	9
Sadovo-1	86.1	4	85.6	15	83.1	11	90.0	9	100.0	1	17.5	10
Blueboy	82.0	8	88.8	12	96.3	4	81.9	10	99.8	9	28.1	8
Iulia	85.4	5	91.9	7	86.9	10	68.8	11	100.0	1	5.0	11
Zlatoklasa (Zg 4364)	77.9	12	90.6	10	70.0	13	48.8	14	98.8	10	1.1	12
Moslavka (Zg 4240-73)	74.3	14	83.1	17	71.3	12	50.0	12	96.9	14	0.0	13
Zg 4293-73	74.0	15	91.3	9	64.4	15	46.3	16	97.5	12	0.0	13
Atlas 66	72.1	16	93.8	3	70.0	13	50.0	12	81.9	15	0.0	13
Zg 887-73	79.8	11	87.5	13	10.1	16	48.1	15	65.0	16	0.0	13
Lerma Rojo 64	28.0	17	93.8	3	0.0	17	35.6	17	0.0	17	0.0	13
Mean	78.0		90.5		77.0		76.8		91.0		32.3	
L.S.D. of the cultivar means (.05)	22.2		NS		30.0		NS		16.0		48.6	
Coefficient of variation (%)	12.5		9.1		16.0		13.3		8.4		16.9	
F test:												
Cultivars	3.5**		0.8^{ns}		8.6**		1.2^{ns}		19.5**		4.3**	
Year x Cultivar	4.6**		2.1*		5.3**		37.5**		3.9**		70.2**	

Table 94. Two-year means and rankings of winter survival (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978. Concluded.

Cultivars	Rowan Co., North Carolina, U.S.A.		Mironovski, U.S.S.R.		Odessa, U.S.S.R.		Zagreb, Yugoslavia		Cultivar mean over 22 sites
	%	rank	%	rank	%	rank	%	rank	%
Mironovskaya 808	83.8	6	97.1	1	98.9	2	99.6	6	91.8
NE 73640	85.0	4	86.9	5	97.9	8	97.8	17	87.9
Bezostaya 1	87.5	1	85.9	6	98.1	6	99.5	10	87.7
F54-70	85.0	4	83.4	8	98.0	7	99.8	4	87.6
F53-70	80.0	11	87.3	4	97.5	10	99.6	6	87.1
Krasnodarskaya 39	83.8	6	92.4	2	98.9	2	98.6	16	86.8
Lindon	80.0	11	82.3	9	99.5	1	99.3	12	85.6
Yubiley	87.5	1	78.3	11	98.6	5	99.8	4	84.2
Sadovo-1	83.8	6	85.6	7	95.4	12	99.3	12	82.3
Blueboy	86.3	3	70.4	13	98.9	2	99.5	10	82.1
Iulia	82.5	9	90.0	3	95.4	12	98.9	15	81.6
Zlatoklasa (Zg 4364)	81.3	10	82.1	10	96.8	11	100.0	1	75.7
Moslavka (Zg 4240-73)	80.0	11	72.6	12	97.8	9	99.9	3	71.7
Zg 4293-73	80.0	11	51.8	14	93.3	14	99.0	14	69.3
Atlas 66	77.5	15	42.4	15	92.4	15	100.0	1	64.5
Zg 887-73	36.3	16	0.0	16	77.4	16	99.6	6	52.4
Lerma Rojo 64	22.1	17	0.0	16	32.5	17	99.6	6	33.0
Mean	77.0		69.9		92.2		99.4		77.2
L.S.D. of the cultivar means (.05)	33.3		30.9		28.7		NS		8.1
Coefficient of variation (%)	7.4		19.9		2.0		1.5		10.7
F test:									
Cultivars	2.5*		8.3**		2.9*		1.0^{ns}		28.6**
Year x Cultivar	30.3**		4.4**		205.9**		1.1^{ns}		0.9^{ns}
Location x Cultivar									2.1**

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Balcarce, Argentina		Bordenave, Argentina		Vienna, Austria		Lethbridge, Alberta, Canada	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	119.6	1	102.1	1	275.4	1	282.8	1	137.5	1	161.0	17
Moslavka (Zg 4240-73)	129.0	5	106.4	2	285.0	2	286.8	2	140.3	2	153.9	1
Zg 4293-73	128.9	4	107.8	4	286.0	3	287.6	4	140.6	3	154.4	2
Zg 887-73	125.0	2	107.1	3	286.5	4	287.4	3	143.3	6	156.4	6
Zlatoklasa (Zg 4364)	130.0	9	109.8	6	288.0	5	291.4	5	141.5	4	155.5	5
Sadovo-1	128.5	3	108.3	5	293.0	6	294.6	6	143.4	8	156.4	6
Yubiley	129.5	6	110.4	7	293.5	7	294.8	7	143.6	9	158.5	10
Iulia	130.1	10	115.5	15	297.0	11	297.4	10	142.1	5	154.5	3
Lindon	130.8	11	113.0	9	295.0	8	296.3	9	143.6	9	157.1	8
NE 73640	129.5	6	114.4	12	304.0	14	301.1	14	143.3	6	154.8	4
F53-70	136.5	17	114.0	10	295.5	9	300.0	13	144.9	11	158.3	9
Blueboy	129.9	8	114.1	11	297.5	13	296.0	8	147.3	14	160.0	14
Bezostaya 1	132.8	12	112.1	8	296.5	10	298.6	11	145.9	13	159.0	12
F54-70	132.9	13	115.0	13	297.0	11	299.9	12	145.0	12	158.8	11
Atlas 66	133.8	14	115.4	14	306.5	16	303.1	15	148.9	16	160.4	15
Krasnodarskaya 39	135.1	15	122.5	16	306.0	15	303.6	16	148.4	15	160.5	16
Mironovskaya 808	135.1	15	123.1	17	311.5	17	308.0	17	150.6	17	159.5	13
Mean	131.1		113.0		296.2		296.7		144.5		157.4	
L.S.D. of the cultivar means (.05)	5.6		4.8		4.1		3.7		2.5		2.6	
Coefficient of variation (%)	2.9		3.0		0.0		0.3		0.6		0.8	
F test:												
Cultivars	2.6*		9.4**		32.4**		25.5**		13.4**		7.2**	
Year x Cultivar	1.9*		1.8*		-		11.9**		7.8**		3.7**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Temuco, Chile		Male Ripnany Czechoslovakia		Sedlec, Czechoslovakia		Martonvasar, Hungary		Szeged, Hungary		Hamadan, Iran	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	306.3	1	149.0	7	158.3	1	158.6	17	133.5	1	137.4	7
Moslavka (Zg 4240-73)	313.4	4	147.5	1	158.6	2	146.1	2	141.8	3	135.0	2
Zg 4293-73	311.6	3	148.5	5	159.0	3	146.0	1	141.4	2	134.9	1
Zg 887-73	311.4	2	147.5	1	162.9	11	147.5	5	144.0	10	136.1	5
Zlatoklasa (Zg 4364)	316.0	5	148.0	3	159.9	6	147.3	4	142.6	4	135.8	4
Sadovo-1	319.4	6	149.0	7	159.6	4	146.6	3	143.6	8	136.5	6
Yubiley	319.9	7	150.0	11	159.8	5	147.5	5	144.3	12	137.4	7
Iulia	324.0	10	148.5	5	160.6	7	148.5	8	142.8	5	135.3	3
Lindon	320.5	8	149.5	10	163.5	13	149.1	10	144.1	11	139.0	14
NE 73640	327.9	13	148.1	4	162.4	9	149.8	12	143.5	7	137.4	7
F53-70	327.4	12	149.0	7	162.5	10	148.5	8	143.8	9	138.4	10
Blueboy	323.9	9	150.5	14	165.4	15	150.9	14	145.0	13	140.3	16
Bezostaya 1	327.9	13	150.0	11	163.1	12	149.6	11	145.5	15	138.4	10
F54-70	328.3	15	150.0	11	162.3	8	148.4	7	143.1	6	138.9	13
Atlas 66	327.0	11	151.0	15	166.8	17	150.3	13	146.3	16	138.8	12
Krasnodarskaya 39	330.0	16	153.0	17	165.3	14	151.9	15	147.4	17	139.6	15
Mironovskaya 808	334.3	17	152.5	16	166.3	16	156.9	16	145.3	14	140.6	17
Mean	322.7		149.5		162.4		149.0		144.0		137.6	
L.S.D. of the cultivar means (.05)	8.4		NS		2.9		2.4		3.0		NS	
Coefficient of variation (%)	0.9		0.1		0.5		0.3		1.1		1.0	
F test:												
Cultivars	6.3**		2.4^{ns}		7.3**		10.9**		2.6*		1.9^{ns}	
Year x Cultivar	7.9**		1133.3**		11.3**		25.1**		2.9**		7.8**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Karaj, Iran		Sulaimaniya, Iraq		Milano, Italy		Rieti, Italy		Morioka, Iwate, Japan		Suwon, Korea	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	120.1	1	103.9	1	123.5	1	133.6	2	155.5	1	125.7	1
Moslavka (Zg 4240-73)	121.9	2	114.1	2	130.1	2	133.9	3	158.9	9	137.1	4
Zg 4293-73	123.0	4	118.0	4	130.5	3	133.3	1	156.9	2	137.4	5
Zg 887-73	122.6	3	117.4	3	133.4	5	138.1	7	157.4	4	137.9	7
Zlatoklasa (Zg 4364)	123.3	5	120.4	6	131.6	4	138.4	8	158.6	7	137.6	6
Sadovo-1	123.6	7	118.1	5	133.9	7	136.8	5	157.1	3	136.6	3
Yubiley	123.4	6	120.4	6	136.9	9	136.8	5	158.8	8	139.4	11
Iulia	124.1	9	123.1	11	133.4	5	140.4	12	157.4	4	135.9	2
Lindon	124.0	8	121.3	8	136.4	8	136.3	4	159.3	12	138.7	10
NE 73640	126.5	14	123.1	11	138.9	14	141.3	13	157.8	6	139.7	14
F53-70	124.4	10	127.9	16	137.0	10	139.5	10	159.8	13	138.0	8
Blueboy	126.9	15	121.8	10	138.4	13	142.5	15	160.4	14	139.6	13
Bezostaya 1	125.8	12	121.6	9	138.3	12	139.4	9	159.1	10	140.0	15
F54-70	125.3	11	127.1	15	138.0	11	140.1	11	159.1	10	138.6	9
Atlas 66	127.4	17	126.4	14	139.1	15	142.0	14	160.5	15	142.1	17
Krasnodarskaya 39	126.3	13	124.9	13	142.3	16	143.8	16	162.3	17	139.4	11
Mironovskaya 808	126.9	15	129.1	17	146.6	17	146.9	17	161.9	16	141.4	16
Mean	124.7		122.2		136.5		139.3		159.1		138.7	
L.S.D. of the cultivar means (.05)	3.1		4.1		4.0		5.8		2.1		NS	
Coefficient of variation (%)	0.9		1.2		1.0		3.1		1.0		1.1	
F test:												
Cultivars	2.9*		9.6**		10.9**		3.5*		5.4**		1.4^{ns}	
Year x Cultivar	7.2**		6.7**		7.4**		1.5^{ns}		1.6^{ns}		6.4**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Kathmandu, Nepal		Wageningen, The Netherlands		Przeclaw, Poland		Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	72.1	2	150.5	1	156.8	1	155.5	1	135.5	1	279.0	1
Moslavka (Zg 4240-73)	83.3	4	152.3	3	158.0	2	158.8	4	138.5	2	289.4	2
Zg 4293-73	84.1	5	152.1	2	158.6	4	158.9	5	140.0	4	291.0	4
Zg 887-73	58.0	1	154.5	7	160.1	10	159.6	9	139.5	3	290.5	3
Zlatoklasa (Zg 4364)	90.1	9	152.6	4	159.9	8	159.3	6	140.0	4	292.4	5
Sadovo-1	89.3	8	152.8	5	159.1	6	158.1	2	141.0	7	292.8	6
Yubiley	89.1	7	155.1	8	160.0	9	160.0	10	142.0	9	292.8	6
Iulia	94.9	13	154.3	6	158.9	5	160.1	11	140.0	4	298.3	10
Lindon	96.5	14	155.9	11	160.3	12	159.5	7	142.0	9	297.3	9
NE 73640	94.3	11	155.9	11	158.0	2	158.5	3	141.5	8	300.0	13
F53-70	94.5	12	155.6	9	160.5	14	159.5	7	142.0	9	303.6	14
Blueboy	87.3	6	156.1	13	161.8	16	160.9	13	143.5	14	295.6	8
Bezostaya 1	93.1	10	156.1	13	159.5	7	160.9	13	142.5	12	298.3	10
F54-70	97.5	16	155.8	10	160.1	10	160.5	12	142.5	12	305.0	15
Atlas 66	82.8	3	156.4	15	160.4	13	162.8	16	144.0	15	298.4	12
Krasnodarskaya 39	96.8	15	160.5	17	161.6	15	163.6	17	144.0	15	305.8	16
Mironovskaya 808	97.8	17	159.4	16	162.5	17	162.6	15	146.0	17	309.4	17
Mean	89.3		155.3		160.0		160.2		141.8		297.5	
L.S.D. of the cultivar means (.05)	14.3		2.6		1.7		2.2		2.4		4.2	
Coefficient of variation (%)	3.3		0.7		0.3		0.5		0.0		0.7	
F test:												
Cultivars	4.2**		7.1**		5.3**		4.7**		6.1**		19.0**	
Year x Cultivar	21.4**		5.0**		14.5**		7.6**		-		3.3**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Svalof, Sweden		Zurich, Switzerland		Erzurum, Turkey		Eskisehir, Turkey		Davis, California, U.S.A.		Hutchinson, Kansas, U.S.A.	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	159.0	1	146.0	1	183.4	9	139.1	1	111.9	1	.	.
Moslavka (Zg 4240-73)	163.4	3	148.3	2	183.1	7	142.6	3	119.6	2	128.5	3
Zg 4293-73	163.4	3	149.0	3	183.1	7	143.1	4	121.9	3	127.4	1
Zg 887-73	164.9	9	152.9	7	182.5	5	142.3	2	122.0	4	131.0	7
Zlatoklasa (Zg 4364)	165.0	11	150.6	4	181.6	2	145.1	7	130.5	9	129.1	5
Sadovo-1	164.5	7	150.8	5	181.8	3	143.6	5	127.4	6	128.3	2
Yubiley	164.9	9	153.5	8	181.5	1	146.0	9	129.3	7	131.1	8
Iulia	164.0	5	151.1	6	183.6	11	144.4	6	132.6	11	128.6	4
Lindon	164.4	6	154.3	11	184.5	12	148.1	13	132.3	10	129.5	6
NE 73640	162.1	2	153.6	9	184.8	13	145.8	8	140.5	15	133.1	13
F53-70	164.6	8	154.5	12	183.5	10	146.6	11	127.1	5	133.0	12
Blueboy	166.8	16	155.3	14	185.4	14	148.4	14	129.5	8	132.6	10
Bezostaya 1	166.1	15	155.1	13	181.9	4	147.5	12	135.0	12	131.3	9
F54-70	165.1	12	153.8	10	183.0	6	146.5	10	135.8	13	132.6	10
Atlas 66	165.6	13	155.3	14	185.4	14	148.9	15	139.4	14	137.8	15
Krasnodarskaya 39	168.1	17	157.3	16	185.9	16	150.6	16	142.1	16	133.6	14
Mironovskaya 808	165.6	13	158.0	17	186.6	17	150.6	16	147.4	17	138.4	16
Mean	164.9		153.3		183.6		146.3		132.0		131.6	
L.S.D. of the cultivar means (.05)	2.3		3.2		NS		1.9		11.8		3.0	
Coefficient of variation (%)	0.2		0.5		0.8		1.1		2.3		1.0	
F test:												
Cultivars	3.5*		6.8**		2.0^{ns}		17.0**		3.9**		10.5**	
Year x Cultivar	31.5**		17.3**		4.8**		1.4^{ns}		13.6**		4.3**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Billings, Montana, U.S.A.		Rowan Co., North Carolina, U.S.A.		Stillwater, Oklahoma,[b/] U.S.A.		Krasnodar, U.S.S.R		Odessa, U.S.S.R.		Monsheim West Germany	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	155.3	3	113.6	16	.	.	128.0	1	141.0	1	138.3	1
Moslavka (Zg 4240-73)	153.8	1	103.0	1	111.8	1	132.0	2	145.6	2	146.9	3
Zg 4293-73	154.4	2	103.3	2	113.9	2	132.6	3	145.9	3	146.1	2
Zg 887-73	157.3	7	104.0	3	117.0	6	135.6	6	146.4	6	149.1	6
Zlatoklasa (Zg 4364)	156.6	6	104.3	4	114.9	4	134.9	4	146.4	6	148.1	4
Sadovo-1	158.0	8	104.3	4	114.3	3	136.0	7	146.1	4	148.9	5
Yubiley	158.0	8	107.0	6	117.3	8	136.8	8	147.4	10	153.5	13
Iulia	155.6	4	109.0	8	115.3	5	135.4	5	146.3	5	149.8	7
Lindon	158.5	10	107.8	7	117.0	6	138.5	10	149.4	12	149.8	7
NE 73640	155.8	5	110.5	11	121.5	14	140.0	14	147.3	8	151.5	9
F53-70	159.1	11	111.5	13	119.5	11	138.6	11	147.3	8	154.1	14
Blueboy	160.3	13	109.5	10	119.8	12	138.9	12	151.3	15	152.5	11
Bezostaya 1	160.4	14	109.0	8	118.4	9	139.9	13	149.4	12	154.8	17
F54-70	160.1	12	111.0	12	119.0	10	137.9	9	148.4	11	154.4	15
Atlas 66	160.9	16	111.5	13	126.3	15	140.0	14	150.6	14	153.0	12
Krasnodarskaya 39	160.8	15	111.5	13	120.6	13	142.1	16	152.1	16	152.1	10
Mironovskaya 808	162.1	17	116.3	17	128.4	16	144.0	17	153.0	17	154.6	16
Mean	158.2		108.3		118.4		137.7		148.3		151.2	
L.S.D. of the cultivar means (.05)	2.2		5.6		-		2.6		1.7		3.1	
Coefficient of variation (%)	0.7		1.0		-		0.3		0.5		1.2	
F test:												
Cultivars	12.2**		4.2**		-		13.7**		17.2**		7.6**	
Year x Cultivar	3.1**		22.3**		-		35.9**		4.2**		2.8**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

[b/] This site is not included in the overall means and analyses.

Table 95. Two-year means and rankings of flowering date (days from Jan. 1) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a] Concluded.

Cultivars	Weihenstephan, West Germany		Novi Sad, Yugoslavia		Average number of days from Jan. 1, over 37 sites
	date	rank	date	rank	
Lerma Rojo 64	146.0	1	131.5	1	154.8
Moslavka (Zg 4240-73)	150.6	3	137.5	3	156.1
Zg 4293-73	150.4	2	136.3	2	156.5
Zg 887-73	152.0	4	140.5	10	156.9
Zlatoklasa (Zg 4364)	153.0	8	138.4	5	158.3
Sadovo-1	152.6	6	138.4	5	158.5
Yubiley	153.1	9	139.5	7	159.7
Iulia	152.1	5	138.3	4	159.8
Lindon	155.1	11	140.5	10	160.6
NE 73640	152.8	7	141.7	13	161.5
F53-70	155.3	12	141.0	12	161.6
Blueboy	157.4	15	143.4	14	161.9
Bezostaya 1	156.9	14	140.0	9	161.9
F54-70	155.0	10	139.9	8	162.1
Atlas 66	155.4	13	143.5	16	163.2
Krasnodarskaya 39	158.5	16	143.4	14	164.8
Mironovskaya 808	159.5	17	144.5	17	166.4
Mean	154.4		140.5		160.6
L.S.D. of the cultivar means (.05)	1.9		1.3		1.5
Coefficient of variation (%)	0.2		0.2		1.1
F test:					
Cultivars	18.3**		27.1**		31.8**
Year x Cultivar	22.8**		14.1**		2.2**
Location x Cultivar					3.1**

[a] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 96. Two-year means and rankings of days to ripening for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Kabul, Afghanistan		Herat, Afghanistan		Balcarce, Argentina		Bordenave, Argentina		Vienna, Austria		Tolbukhin,[b/] Bulgaria	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	162.9	1	149.6	1	338.0	1	332.9	1	188.4	1	185.0	1
Zg 4293-73	171.5	9	151.0	2	339.5	2	337.5	2	188.5	2	186.0	3
Moslavka (Zg 4240-73)	171.4	8	151.5	4	339.5	2	338.3	4	188.9	4	186.0	3
Zg 887-73	170.6	6	153.0	8	340.0	4	337.6	3	189.3	5	185.5	2
Zlatoklasa (Zg 4364)	170.6	6	152.3	6	340.0	4	339.1	5	188.8	3	186.0	3
Yubiley	169.6	4	151.1	3	341.0	6	339.1	5	189.9	6	187.0	8
Sadovo-1	169.5	2	151.5	4	341.5	7	339.1	5	192.1	12	186.5	7
NE 73640	169.5	2	157.5	14	342.5	9	344.1	11	190.6	7	186.0	3
Iulia	171.8	11	157.1	12	350.5	15	348.1	14	191.1	8	187.5	9
Lindon	172.1	12	157.5	14	341.5	7	342.3	10	191.3	9	188.0	10
Bezostaya 1	171.5	9	152.8	7	347.6	12	342.1	9	194.4	15	191.0	15
Blueboy	173.4	14	154.8	10	342.5	9	340.5	8	195.6	16	191.0	15
Krasnodarskaya 39	173.4	14	154.5	9	348.0	13	344.1	11	193.1	13	189.0	13
F53-70	173.4	14	157.3	13	351.0	16	350.1	15	191.4	10	188.5	11
Atlas 66	170.4	5	155.3	11	346.5	11	347.8	13	196.4	17	191.0	15
F54-70	173.6	17	158.9	17	353.4	17	350.8	17	194.1	14	188.5	11
Mironovskaya 808	172.8	13	157.8	16	349.0	14	350.6	16	192.0	11	190.0	14
Mean	171.6		154.6		344.6		343.2		191.7		187.8	
L.S.D. of the cultivar means (.05)	1.9		2.8		3.0		5.6		3.0		-	
Coefficient of variation (%)	1.6		1.1		0.1		0.4		0.8		1.1	
F test:												
Cultivars	5.5**		8.9**		22.1**		6.9**		6.2**		-	
Year x Cultivar	0.4[ns]		2.3**		37.0**		13.7**		3.3**		-	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

[b/] These sites are not included in the overall means and analyses.

Table 96. Two-year means and rankings of days to ripening for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Warsaw, Poland		Fundulea, Romania		Bethlehem, South Africa		Svalof, Sweden		Eskisehir, Turkey		Krasnodar, U.S.S.R.	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	204.0	1	174.5	1	319.3	1	218.8	14	187.0	1	171.0	1
Zg 4293-73	209.1	2	177.5	2	330.3	4	215.5	2	187.4	2	178.6	9
Moslavka (Zg 4240-73)	211.5	10	177.5	2	329.4	3	216.9	7	189.0	5	174.0	2
Zg 887-73	210.1	6	178.5	5	332.1	7	216.3	4	188.8	4	176.5	5
Zlatoklasa (Zg 4364)	209.8	3	178.0	4	330.9	5	215.1	1	188.5	3	175.6	3
Yubiley	210.6	9	179.5	8	328.4	2	217.6	10	189.6	6	176.8	7
Sadovo-1	210.1	6	178.5	5	332.5	8	218.1	12	190.6	10	178.5	8
NE 73640	209.8	3	180.0	9	334.1	10	216.0	3	190.3	8	176.6	6
Iulia	210.4	8	178.5	5	337.8	13	216.4	5	190.6	10	179.9	14
Lindon	210.0	5	181.0	10	331.8	6	218.0	11	190.0	7	176.4	4
Bezostaya 1	212.1	12	182.5	12	334.0	9	219.6	17	191.4	14	178.9	10
Blueboy	213.6	15	183.5	16	334.4	11	218.8	14	190.8	12	179.6	12
Krasnodarskaya 39	214.0	16	182.0	11	339.0	14	218.5	13	191.6	15	179.1	11
F53-70	211.8	11	182.5	12	339.1	15	217.5	9	191.1	13	183.1	17
Atlas 66	214.6	17	182.9	15	334.6	12	219.1	16	190.4	9	180.3	15
F54-70	212.4	13	182.5	12	341.0	16	217.1	8	192.1	17	180.9	16
Mironovskaya 808	212.4	13	183.5	16	343.6	17	216.6	6	192.0	16	179.8	13
Mean	211.4		180.5		334.6		217.3		190.3		178.4	
L.S.D. of the cultivar means (.05)	2.5		2.5		5.3		NS		1.8		4.0	
Coefficient of variation (%)	0.4		0.0		0.5		0.4		0.9		0.2	
F test:												
Cultivars	4.0**		7.3**		6.2**		1.6^{ns}		4.8**		3.0*	
Year x Cultivar	7.4**		710.9**		7.5**		14.3**		1.1^{ns}		100.7**	

a/ The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 96. Two-year means and rankings of days to ripening for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Rieti, Italy		Morioka, Iwate, Japan		Suwon, Korea		Kathmandu, Nepal		Wageningen, The Netherlands		Przeclaw, Poland	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	189.9	6	195.8	9	166.3	1	110.6	2	210.0	1	201.5	2
Zg 4293-73	188.4	3	192.3	1	174.6	16	122.3	5	210.0	1	201.6	3
Moslavka (Zg 4240-73)	189.3	4	194.6	7	173.9	15	120.3	4	212.6	8	202.0	7
Zg 887-73	190.1	8	196.1	10	173.4	14	109.6	1	210.1	4	204.8	13
Zlatoklasa (Zg 4364)	189.3	4	194.6	7	172.9	12	127.5	9	213.0	11	202.0	7
Yubiley	188.1	1	193.9	3	170.6	4	126.6	8	212.5	6	203.4	10
Sadovo-1	190.6	10	194.0	5	169.9	2	123.6	6	212.8	9	201.9	5
NE 73640	190.4	9	193.0	2	171.1	6	129.3	10	212.1	5	201.0	1
Iulia	190.8	11	193.9	3	169.9	2	130.0	13	210.0	1	201.8	4
Lindon	188.3	2	196.4	11	171.4	8	134.1	16	213.4	12	203.5	11
Bezostaya 1	189.9	6	196.5	12	171.1	6	133.4	15	212.5	6	205.8	17
Blueboy	191.8	12	198.3	17	173.0	13	126.0	7	215.3	16	205.0	14
Krasnodarskaya 39	191.9	13	194.5	6	170.7	5	135.8	17	215.1	15	204.6	12
F53-70	191.9	13	197.0	14	172.0	10	129.3	10	212.9	10	201.9	5
Atlas 66	191.9	13	197.6	16	177.3	17	119.9	3	214.3	14	205.5	16
F54-70	192.1	16	197.3	15	171.9	9	130.3	14	216.1	17	202.4	9
Mironovskaya 808	193.8	17	196.6	13	172.0	10	129.5	12	214.0	13	205.4	15
Mean	190.5		195.4		172.2		126.7		212.9		203.3	
L.S.D. of the cultivar means (.05)	2.7		1.6		NS		8.2		NS		2.5	
Coefficient of variation (%)	1.5		0.3		0.7		3.5		0.4		0.2	
F test:												
Cultivars	3.2*		10.6**		0.9^{ns}		5.8**		0.1^{ns}		4.0**	
Year x Cultivar	0.8^{ns}		5.2**		16.6**		3.1**		13.7**		25.9**	

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 96. Two-year means and rankings of days to ripening for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/] Continued.

Cultivars	Lethbridge, Alberta, Canada		Male Ripnany, Czechoslovakia		Sedlec, Czechoslovakia		Hamadan, Iran		Karaj, Iran		Sulaimaniya, Iraq	
	date	rank	date	rank	date	rank	date	rank	date	rank	date	rank
Lerma Rojo 64	.	.	198.0	7	216.9	10	187.0	2	169.0	1	142.0	1
Zg 4293-73	196.0	2	195.5	1	213.1	2	190.1	11	169.0	1	151.0	3
Moslavka (Zg 4240-73)	197.0	8	196.0	2	217.1	11	186.8	1	169.0	1	148.9	2
Zg 887-73	198.9	14	196.5	4	215.8	7	189.5	8	169.5	5	151.6	4
Zlatoklasa (Zg 4364)	196.0	2	196.0	2	212.5	1	188.3	4	169.0	1	152.8	6
Yubiley	197.0	8	199.0	10	213.8	3	189.5	8	169.5	5	153.8	8
Sadovo-1	196.5	6	199.0	10	215.5	5	192.3	17	169.5	5	152.0	5
NE 73640	195.5	1	197.5	5	214.5	4	188.9	5	175.5	17	155.8	12
Iulia	196.3	4	197.5	5	215.6	6	187.9	3	173.5	9	152.8	6
Lindon	196.8	7	198.0	7	218.0	13	191.1	13	175.0	16	154.4	9
Bezostaya 1	197.5	11	200.6	17	220.1	14	189.4	7	174.5	15	154.8	10
Blueboy	199.4	15	198.5	9	222.9	16	189.0	6	174.0	12	155.1	11
Krasnodarskaya 39	197.6	12	200.5	15	216.6	8	191.6	14	174.0	12	156.4	13
F53-70	196.3	4	199.0	10	216.6	8	191.9	15	173.5	9	158.9	15
Atlas 66	200.5	16	200.0	14	226.3	17	189.5	8	173.4	8	157.6	14
F54-70	197.6	12	199.5	13	217.1	11	191.0	12	174.0	12	158.9	15
Mironovskaya 808	197.0	8	200.5	15	220.1	14	192.0	16	173.5	9	159.4	17
Mean	197.2		198.4		217.2		189.9		172.3		154.6	
L.S.D. of the cultivar means (.05)	NS		3.3		3.8		NS		2.5		3.6	
Coefficient of variation(%)	0.7		0.0		0.4		1.2		0.2		1.8	
F test:												
Cultivars	2.3^{ns}		2.4*		8.3**		1.1^{ns}		9.1**		6.8**	
Year x Cultivar	3.3**		1246.3**		13.5**		3.5**		42.1**		1.4^{ns}	

a/ The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 96. Two-year means and rankings of days to ripening for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a] Concluded.

Cultivars	Odessa, U.S.S.R.		Weihenstephan,[b] West Germany		Zagreb,[b] Yugoslavia		Average number of days from Jan. 1 over 24 sites
	date	rank	date	rank	date	rank	
Lerma Rojo 64	181.0	1	221.5	1	182.5	1	202.3
Zg 4293-73	184.5	4	221.5	1	188.0	6	203.3
Moslavka (Zg 4240-73)	183.1	3	221.5	1	190.0	14	203.4
Zg 887-73	185.4	5	221.5	1	188.0	6	203.7
Zlatoklasa (Zg 4364)	185.4	5	221.5	1	189.0	11	203.8
Yubiley	188.1	10	221.5	1	189.0	11	204.3
Sadovo-1	188.0	9	222.5	8	185.0	2	204.7
NE 73640	182.3	2	222.5	8	187.5	4	205.1
Iulia	186.6	7	221.5	1	187.0	3	206.0
Lindon	189.3	12	222.5	8	187.5	4	206.1
Bezostaya 1	189.6	14	228.5	14	188.5	8	207.0
Blueboy	190.3	15	228.5	14	190.0	14	207.1
Krasnodarskaya 39	189.3	12	228.5	14	191.0	16	207.5
F53-70	187.9	8	222.5	8	189.0	11	207.6
Atlas 66	190.6	16	225.5	12	188.5	8	207.8
F54-70	188.3	11	225.5	12	191.0	16	208.2
Mironovskaya 808	190.9	17	230.5	17	188.5	8	208.3
Mean	187.5		224.0		188.2		205.9
L.S.D. of the cultivar means (.05)	3.8		-		-		1.3
Coefficient of variation (%)	2.2		1.4		1.1		0.9
F test:							
Cultivars	4.5**		-		-		16.3**
Year x Cultivar	0.7^{ns}		-		-		0.8^{ns}
Location x Cultivar							3.3**

[a] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

[b] These sites are not included in the overall means and analyses.

Table 97. Two-year means and rankings of shattering (%) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.[a/]

Cultivars	Herat, Afghanistan		Lethbridge, Alberta, Canada		Wageningen, The Netherlands		Przeclaw, Poland		Warsaw, Poland		Davis California, U.S.A.		Cultivar mean over 6 sites
	%	rank	%	rank	%	rank	%	rank	%	rank	%	rank	%
Lindon	12.6	11	0.3	5	6.3	1	0.6	3	4.4	3	4.6	12	4.8
Bezostaya 1	8.8	6	0.6	9	16.3	14	1.6	14	2.5	1	0.0	1	5.0
Zg 4293-73	5.0	1	0.3	5	17.5	17	0.8	4	5.6	5	0.9	8	5.0
Zlatoklasa (Zg 4364)	8.4	4	0.0	1	16.3	14	0.8	4	4.4	3	0.3	2	5.0
Yubiley	9.0	8	0.9	10	9.4	4	1.0	7	9.4	6	0.5	5	5.0
Sadovo-1	11.9	9	0.5	7	14.4	11	0.9	6	3.1	2	0.6	6	5.2
Krasnodarskaya 39	8.6	5	0.0	1	12.5	10	1.4	11	11.9	8	0.3	2	5.8
NE 73640	11.9	9	1.1	12	7.5	2	0.4	1	11.9	8	2.4	10	5.9
Iulia	8.0	3	0.5	7	10.6	8	1.5	13	17.5	13	0.3	2	6.4
Moslavka (Zg 4240-73)	6.6	2	0.9	10	14.4	11	1.1	9	13.8	11	2.1	9	6.5
Zg 887-73	8.8	6	0.0	1	11.3	9	1.1	9	21.9	15	3.8	11	7.8
Lerma Rojo 64	24.1	14	0.0	1	14.4	11	0.5	2	20.0	14	0.6	6	9.7
Blueboy	20.0	12	2.1	13	8.8	3	1.6	14	17.3	12	14.0	15	10.6
Atlas 66	22.5	13	3.1	14	16.9	16	1.8	16	13.1	10	12.1	14	11.6
F53-70	28.6	16	4.0	15	10.0	6	1.0	7	27.5	16	11.1	13	13.7
F54-70	26.9	15	8.0	16	9.4	4	1.4	11	36.3	17	23.6	16	17.6
Mironovskaya 808	42.5	17	10.3	17	10.0	6	2.6	17	10.6	7	39.6	17	19.3
Mean	15.0		2.0		12.0		1.2		13.2		7.3		8.4
L.S.D. of the cultivar means (.05)	NS		NS		NS		NS		14.3		NS		NS
Coefficient of variation (%)	64.7		142.4		19.4		61.9		48.9		130.2		74.9
F test:													
Cultivars	1.3^{ns}		1.6^{ns}		0.7^{ns}		1.3^{ns}		3.8^{**}		1.1^{ns}		24.8^{ns}
Year x Cultivar	7.0^{**}		5.5^{**}		26.2^{**}		3.2^{**}		4.4^{**}		10.1^{**}		0.2^{ns}
Location x Cultivar													0.9^{ns}

[a/] The data for Lerma Rojo 64 are shown when available, but were not included in the location means and analyses nor in the overall analyses.

Table 98. Two-year means and rankings of frost damage (0-9) for 17 cultivars grown in the International Winter Wheat Performance Nursery in 1977 and 1978.

Cultivars	Bordenave, Argentina		Male Ripnany, Czechoslovakia		Fundulea, Romania		Eskisehir, Turkey		Cultivar mean over 4 sites
	(0-9)	rank	(0-9)	rank	(0-9)	rank	(0-9)	rank	(0-9)
NE 73640	0.0	1	0.0	1	0.0	1	2.3	7	0.6
Krasnodarskaya 39	0.0	1	0.0	1	0.5	3	2.0	1	0.6
Mironovskaya 808	0.0	1	0.0	1	0.0	1	2.3	7	0.6
Lindon	0.0	1	0.0	1	1.0	5	2.0	1	0.8
Bezostaya 1	0.0	1	0.0	1	1.0	5	2.1	3	0.8
F53-70	0.0	1	0.0	1	0.9	4	2.1	3	0.8
F54-70	0.0	1	0.0	1	1.0	5	2.1	3	0.8
Yubiley	0.1	9	0.0	1	1.3	8	2.1	3	0.9
Iulia	0.0	1	0.0	1	1.5	9	2.4	9	1.0
Blueboy	0.4	12	0.0	1	2.1	10	2.8	11	1.3
Sadovo-1	0.3	11	0.0	1	3.0	11	2.5	10	1.4
Zg 4293-73	0.4	12	0.0	1	4.3	12	3.0	12	1.9
Zlatoklasa (Zg 4364)	0.1	9	0.0	1	4.3	12	3.5	13	2.0
Atlas 66	1.8	14	0.1	14	4.4	14	3.9	14	2.5
Moslavka (Zg 4240-73)	1.9	15	0.1	14	4.4	14	4.5	15	2.7
Zg 887-73	2.1	16	1.9	16	4.5	16	4.9	16	3.3
Lerma Rojo 64	4.5	17	5.0	17	8.0	17	7.5	17	6.3
Mean	0.7		0.4		2.5		3.1		1.7
L.S.D. of the cultivar means (.05)	1.3		2.3		1.9		2.1		1.0
Coefficient of variation (%)	46.4		74.0		12.8		16.8		22.5
F test:									
Cultivars	7.7**		2.6*		11.9**		14.8**		18.1**
Year x Cultivar	15.8**		50.5**		32.3**		4.4**		0.9^{ns}
Location x Cultivar									1.5^{ns}