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A. F. Dreier

J. W. Schmidt
USDA-ARS, john.w.schmidt@ars.usda.gov

Lenis Alton Nelson
University of Nebraska-Lincoln, lnelson1@unl.edu

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NOVEMBER 1979

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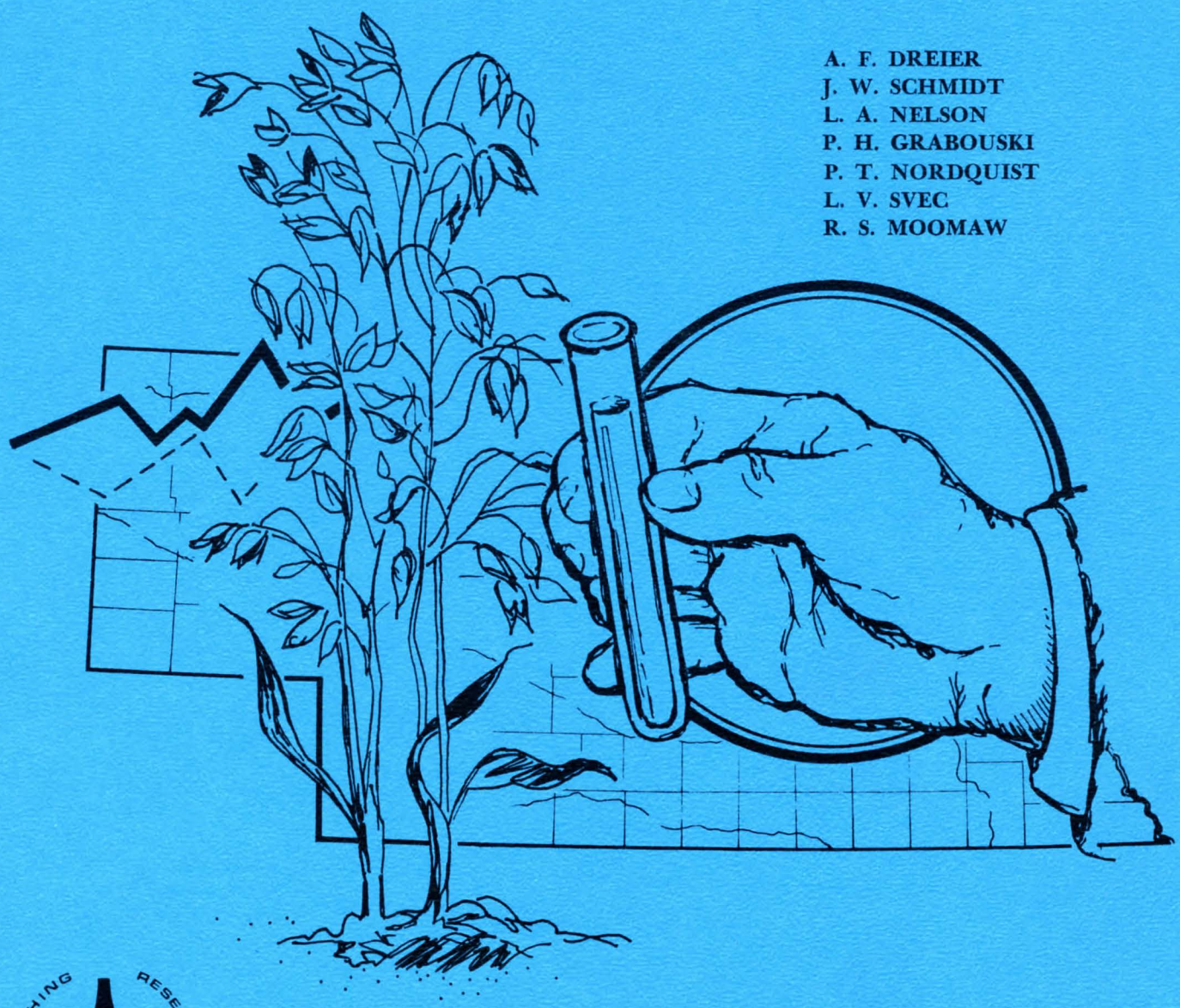
NEBRASKA VARIETAL TESTS OF FALL-SOWN SMALL GRAINS 1979

A. F. DREIER
J. W. SCHMIDT
L. A. NELSON
P. H. GRABOUSKI
P. T. NORDQUIST
L. V. SVEC
R. S. MOOMAW



TEACHING RESEARCH EXTENSION
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Leo E. Lucas, Director

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This circular is a progress report of varietal tests conducted by the variety evaluation and small grain breeding projects of the Agricultural Experiment Station. Cooperating were the Agronomy Department and the Northeast, South Central, North Platte, and Panhandle Stations. The Outstate Testing Circular series is being replaced with Extension Circulars.

Acknowledgment is made to V. A. Johnson for results obtained in experiments conducted in cooperation with the U. S. Department of Agriculture, Agricultural Research Service; to C. R. Fenster for results obtained at the High Plains and Northwest Agricultural Laboratories and to County Agents and others who assisted in these tests. Special acknowledgment is made to the farmer cooperators who furnished land for the off-station trials.

NEBRASKA WHEAT PRODUCTION

The following data were obtained from Nebraska Agricultural Statistics. Acreages and yield averages include both spring and winter wheat. Separate report series for spring and winter wheats began in 1909 and were discontinued in 1962.

Year	Planted 000 acres (hectares)	Harvested 000 acres (hectares)	Average yield bu/A (kg/ha)
1866	---- ----	43 (17)	14.0 (942)
1870	---- ----	170 (69)	11.5 (773)
1880	---- ----	1520 (616)	8.5 (572)
1890	---- ----	1775 (719)	12.0 (807)
1900	---- ----	2750 (1114)	14.7 (921)
1910	---- ----	2885 (1168)	15.8 (1063)
1920	3883 (1573)	3593 (1455)	16.8 (1130)
1930	4077 (1651)	3974 (1609)	18.8 (1264)
1940	3278 (1328)	2643 (1070)	13.1 (881)
1950	4346 (1760)	4051 (1641)	21.8 (1466)
1955	3484 (1411)	3141 (1272)	24.9 (1675)
1956	3549 (1437)	3324 (1346)	19.5 (1312)
1957	3294 (1334)	2920 (1183)	27.0 (1816)
1958	3620 (1466)	3442 (1394)	33.0 (2220)
1959	3408 (1380)	3104 (1257)	22.0 (1480)
1960	3306 (1339)	3011 (1219)	28.5 (1917)
1961	3339 (1352)	3220 (1304)	24.5 (1648)
1962	3060 (1239)	2760 (1118)	19.5 (1312)
1963	3244 (1314)	2815 (1140)	21.5 (1446)
1964	3147 (1275)	3871 (1163)	24.5 (1648)
1965	3273 (1326)	2727 (1104)	20.0 (1345)
1966	2980 (1207)	2860 (1158)	35.0 (2354)
1967	3520 (1426)	3265 (1322)	26.5 (1782)
1968	3240 (1312)	3070 (1243)	32.0 (2152)
1969	2910 (1179)	2650 (1073)	31.5 (2119)
1970	2565 (1039)	2410 (976)	38.0 (2556)
1971	2539 (1028)	2434 (986)	42.0 (2825)
1972	2742 (1111)	2509 (1016)	37.0 (2489)
1973	2800 (1134)	2680 (1085)	35.0 (2354)
1974	3000 (1215)	2900 (1175)	34.0 (2287)
1975	3200 (1296)	3070 (1243)	32.0 (2152)
1976	3400 (1377)	2950 (1195)	32.0 (2152)
1977	3300 (1337)	2950 (1195)	35.0 (2354)
1978	2900 (1174)	2600 (1053)	32.0 (2152)
1979 1/	3000 (1215)	2600 (1053)	33.0 (2220)

1/ August 1 estimate.

NEBRASKA VARIETAL TESTS OF FALL-SOWN SMALL GRAINS 1979

This circular is a progress report of winter wheat and winter barley variety tests conducted throughout Nebraska. Entries included varieties and promising experimental strains from the breeding programs of the Nebraska and other Experiment Stations. The state has been divided into 8 districts for purposes of varietal testing and recommendation. Locations of these districts and the 1979 variety tests are shown on the map (Page 4).

Trials were located on Experiment Stations and private farms. Names of cooperators and dates of planting and harvest are shown in Table 1. The soil type, soil test data and fertilizer applied for the 1979 crop are shown in Table 2.

Tests on Experiment Stations were drill strips 75 to 100 feet (23 to 30 meters) long. Other plots were of the nursery type consisting of 6 rows 10 to 15 feet (3 to 5 meters) in length. Plots were replicated 4 to 6 times, depending on location.

Wheat was seeded under generally favorable moisture conditions in the fall of 1978 except in Southwest Nebraska. Here April through August rainfall was only 76% of normal. Wheat seedbeds were loose and dry.

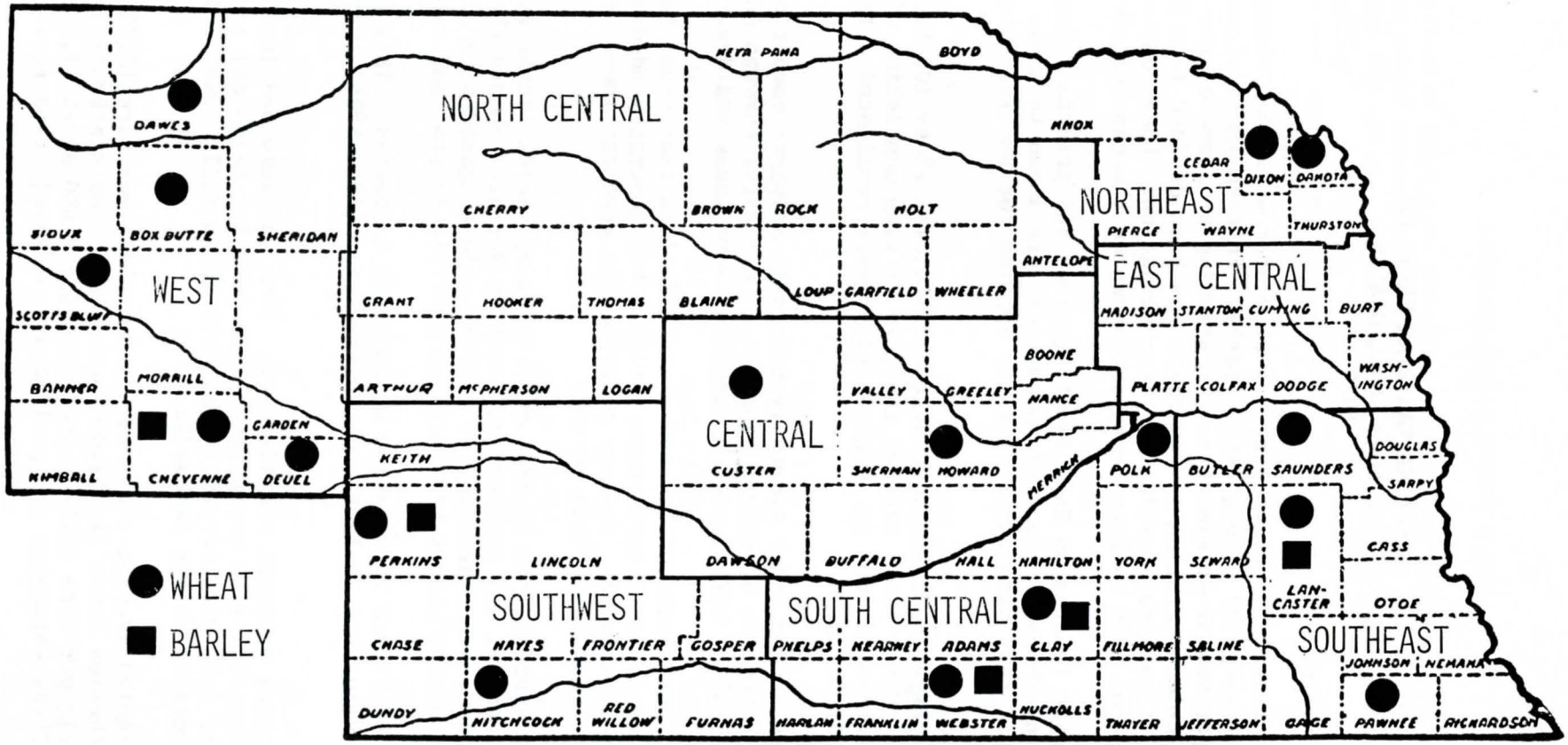
Fall weather continued dry and wheat made less than usual fall growth. Winter moisture and snow cover were variable but generally adequate except in East Central Nebraska. January temperatures were the lowest of record. Spring growth began later than normal.

Areas of winterkilled fields or portions of fields became evident in April. East Central and sections of Southern Nebraska showed the most damage. Wheat plants were weakened by extreme cold combined with lack of snow cover. The weakened plants were more susceptible to root and crown rots.

A total of 87% of the planted acreage was harvested. This compares with the 88% harvested in 1978 and the five-year (1977-1979) average of 93%.

Early spring moisture was adequate. June was warm and dry. Wheat headed and ripened 1 to 2 weeks later than normal. Rains and lack of hot winds in early July were favorable for late grain fill. July rains delayed harvest, especially in the Panhandle.

The estimated average yield was 33.0 bushels per acre (2220 kg/ha) from 2,600,000 harvested acres (1,053,000 hectares). Comparable figures for 1978 were 32 bushels per acre (2152 kg/ha) from 2,550,000 acres (1,032,750 hectares). These estimates are preliminary and subject to revision.



NEBRASKA CROP TESTING DISTRICTS AND LOCATIONS OF 1979 WINTER WHEAT & WINTER BARLEY VARIETY TESTS.

Table 1. Locations and dates of planting of winter wheat and winter barley variety tests. 1979.

County	Cooperator	Planted	Harvested
	Winter Wheat		
Dakota	Leland George, South Sioux City	Sept. 25	July 9
Dixon	Northeast Station	Sept. 25	------
Pawnee	Galen Bernadt, Steinauer	Oct. 3	July 9
Lancaster	Paul Nordstrom, Waverly	Sept. 29	------
Saunders	Mead Field Laboratory	Sept. 26	------
Polk	Duane Jones, Osceola	Sept. 25	July 11
Clay	South Central Station	Sept. 21	July 19
Webster	Wendell Lockhart, Bladen	Sept. 20	July 13
Howard	Ray Leth, St. Paul	Sept. 25	July 18
Custer	Don Cantrell, Merna	Sept. 13	July 12
Hitchcock	Tom Baker, Trenton	Sept. 14	July 9
Lincoln	North Platte Station	Sept. 13	July 16
Perkins	Ralph Holzfaster, Paxton	Sept. 14	July 10
Deuel	Floyd Stohr, Chappell	Sept. 12	July 23
Cheyenne	High Plains Agricultural Laboratory	Sept. 15	July 28
Scotts Bluff	Bob Roberts, McGrew	Sept. 13	-------
Box Butte	Northwest Agricultural Laboratory	Sept. 12	July 26
Dawes	Ralph Rhoads, Chadron	Sept. 14	July 18
	Winter Barley		
Lancaster	Agricultural Experiment Station	Sept. 26	-------
Clay	South Central Station	Sept. 21	-------
Webster	Wendell Lockhart, Bladen	Sept. 20	July 13
Lincoln	North Platte Station	Sept. 15	-------
Perkins	Ralph Holzfaster, Paxton	Sept. 14	July 10
Cheyenne	High Plains Agricultural Laboratory	Sept. 14	July 26

Average yields by Crop Reporting Districts were as follows:

District	Yield				
	1975	1976	1977	1978	1979
	bu/A (kg/ha)	bu/A (kg/ha)	bu/A (kg/ha)	bu/A (kg/ha)	bu/A (kg/ha)
Northwest	32.7 (2199)	31.0 (2085)	33.7 (2267)	34.4 (2314)	31.0 (2085)
North	24.8 (1668)	25.8 (1735)	32.1 (2159)	32.0 (2152)	26.0 (1749)
Northeast	27.6 (1856)	30.0 (2018)	30.4 (2044)	29.4 (1977)	30.0 (2018)
Central	30.8 (2072)	33.6 (2260)	36.8 (2475)	33.7 (2267)	35.0 (2354)
East	33.7 (2267)	30.4 (2045)	30.7 (2065)	29.0 (1951)	37.0 (2489)
Southwest	35.7 (2401)	29.4 (1977)	38.9 (2616)	33.3 (2240)	33.0 (2220)
South	28.3 (1903)	33.3 (2240)	40.8 (2744)	29.1 (1957)	35.0 (2354)
Southeast	27.9 (1877)	36.5 (2455)	31.5 (2119)	29.4 (1977)	33.3 (2240)
State	32.0 (2152)	32.0 (2152)	35.0 (2354)	32.0 (2152)	33.0 (3220)

Table 2. Soil series, cropping history, soil test data and fertilizer applied winter wheat variety tests. 1979.

County	Soil Type	1978 crop	Soil test 1/ pH	P ppm	Nitrate N lb/A (kg/ha)	Organic matter %	Fertilizer N+P+K lb/A (kg/ha)
Dakota	Onawa silty clay loam	Wheat	8.0	---	--- ---	2.7	0+50+0 (0+56+0)
Pawnee	Pawnee clay loam (eroded)	Idle	6.3	2	75 (84)	1.9	40+20+40 (45+22+45)
Polk	Holder silt loam	Idle	5.3	11	151 (169)	3.0	0+20+0 (0+22+0)
Clay	Crete silty clay loam	Fallow	---	9	169 (189)	0.1	0+0+0
Webster	Holdrege silt loam	Wheat	---	10	128 (143)	0.4	100+0+0 (112+0+0) 2/
Howard	Ortello fine sandy loam	Fallow	---	5	66 (74)	0.7	60+12+0 (70+13+0)
Custer	Kenesaw silt loam	Fallow	5.8	45	237 (266)	1.6	0+0+0 3/
Hitchcock	Keith silt loam	Fallow	6.5	22	119 (133)	2.1	0+0+0
Lincoln	Holdrege silt loam	Fallow	---	---	--- ---	---	60+40+0 (67+45+0)
Perkins	Kuma silt loam	Fallow	6.1	44	124 (139)	2.0	0+0+0
Deuel	Keith-Kuma silt loam	Fallow	7.1	148	107 (120)	2.3	0+0+0
Cheyenne	Keith silt loam	Fallow	---	---	--- ---	---	0+0+0
Box Butte	Keith very fine sandy loam	Fallow	6.7	20	166 (186)	0.9	40+0+0 (45+0+0)
Dawes	Keith silt loam	Fallow	7.7	8	79 (89)	1.6	0+0+0

1/ P and organic matter determinations for 0-6 inch (0-15 cm) depth. Nitrate N is for 6-foot depth (183 cm) except 3 foot (91 cm) for Deuel, Scotts Bluff and Dawes Counties and 5 foot (152 cm) for Box Butte County.

2/ Anhydrous ammonia before soil sampled.

3/ Fertilized before sampling.

Winter Wheat Varieties

The State-Federal Division of Agricultural Statistics makes an annual survey of wheat varieties planted. The ten-year summary of Nebraska data is shown in Table 3. This gives an indication of changes in popularity of varieties. It should be recognized that acreages of many individual varieties are concentrated in specific areas of the state. Other varieties such as Scout 66 and Centurk are widely distributed over all areas.

Characteristics of named wheat varieties included in current Nebraska tests are summarized in Table 4. These characteristics are applicable to varieties when grown in their area of adaptation. When taken out of their area of adaptation varieties may have different maturity, winterhardiness, or straw strength ratings. Several varieties adapted in western Nebraska have poor straw when grown in eastern Nebraska under more humid conditions. Races of rust and other diseases are under constant change. Varieties which in the past were resistant to stem rust are now susceptible. As rust races change, presently resistant varieties may become susceptible.

Long-time yield data, other agronomic characteristics, and current market demands were considered in the listing of wheat varieties for Nebraska shown on the map (Page 10). These varieties are considered the best available for general use in the areas shown. This map and information in Table 4 in conjunction with yield data for specific areas provide the basis for variety selection.

Brief descriptions of winter wheat varieties are given in NebGuide G 73-24. Recent changes in suggested varieties include Bennett, Centurk 78, Larned and Roughrider.

Bennett (NE73644) was selected from the cross of a sister line to Buckskin with Homestead and released in 1978. The purpose of the cross was to combine the stem rust resistance of both parents. It is not so resistant to soil borne mosaic as Homestead but is superior in straw strength to either parent. Kernel weight is high. Bennett is an early, moderately winter-hardy variety best adapted to south central and southeastern Nebraska. Bennett appears to be capable of carrying a high level of Hessian fly infestation without showing the lodging found in other susceptible varieties.

Centurk 78 (NE69291) is an increase from a 5-head selection from Centurk. It was released in 1978. It has been extensively tested and yield performance has consistently slightly exceeded Centurk.

Larned was selected in Kansas and released in 1976. The pedigree is Scout x Ottawa backcrossed to Scout 4 times. Larned is similar to Scout with improved straw strength and a much higher level of Hessian fly resistance.

Roughrider was developed in North Dakota and released in 1975. It has a higher level of winterhardiness than varieties currently grown in Nebraska. It is a late variety and under Nebraska conditions, would have a lower yield potential, except when winterkilling was severe.

Table 3. Estimated percentage of Nebraska winter wheat acreage planted to each variety. 1970-1979.

Variety	% of acreage									
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Centurk & Centurk 78	----	----	2.0	22.5	31.0	33.5	32.9	35.4	39.6	41.4
Scout & Scout 66	30.6	37.2	36.9	28.8	30.2	30.3	29.0	24.1	23.3	25.4
Buckskin	----	----	----	----	.1	.8	2.5	4.2	3.7	5.1
Lancer	27.6	22.4	23.6	17.0	13.0	8.9	7.6	6.4	7.4	4.8
Gage	12.4	10.7	6.3	5.4	4.9	6.2	7.1	5.7	3.3	3.9
Warrior	12.4	10.2	11.3	10.2	9.5	7.0	5.0	5.5	5.8	3.7
Lancota	----	----	----	----	----	----	.2	1.5	2.5	2.5
Sage	----	----	----	----	----	.2	.9	1.7	1.7	2.5
Eagle	----	----	----	----	1.2	1.5	1.3	2.0	1.4	2.1
Scoutland	----	----	1.6	1.6	3.2	4.6	4.5	3.4	2.2	2.0
Homestead	----	----	----	----	----	.2	1.0	1.7	1.5	1.6
Agate	----	----	----	----	----	----	----	----	.1	.7
Sentinel	----	----	----	----	.1	.6	.7	1.0	.6	.7
Baca	----	----	----	----	----	----	.6	.8	1.5	.4
HiPlains	----	----	----	----	.1	1.0	1.6	1.6	1.4	.4
Trapper	5.4	8.7	10.2	6.0	3.3	2.1	1.7	1.6	.9	.4
Cheyenne	1.8	1.1	1.1	1.1	.8	.7	.4	.4	.7	.3
Tam 101	----	----	----	----	----	----	----	.1	.3	.3
Lindon	----	----	----	----	----	----	----	----	.2	.2
Pawnee	1.3	.8	.5	.4	.3	.4	.4	.4	.3	.2
Turkey	.1	----	.1	----	----	----	.1	.1	.5	.2
Vona	----	----	----	----	----	----	----	----	----	.2
Others 1/	8.4	8.9	6.4	7.0	2.3	2.0	2.5	1.6	.8	.8
Private varieties	----	----	----	----	----	----	----	.8	.3	.2

1/ Other varieties planted for 1979 include Bennett, Bison, Caprock, Larned, Nebred, Newton, Omaha, Ottawa, Parker, Ranger, Sturdy, Trison, Triumph, Wichita.

Table 4. Characteristics of winter wheat varieties included in Nebraska tests. 1979. 1/

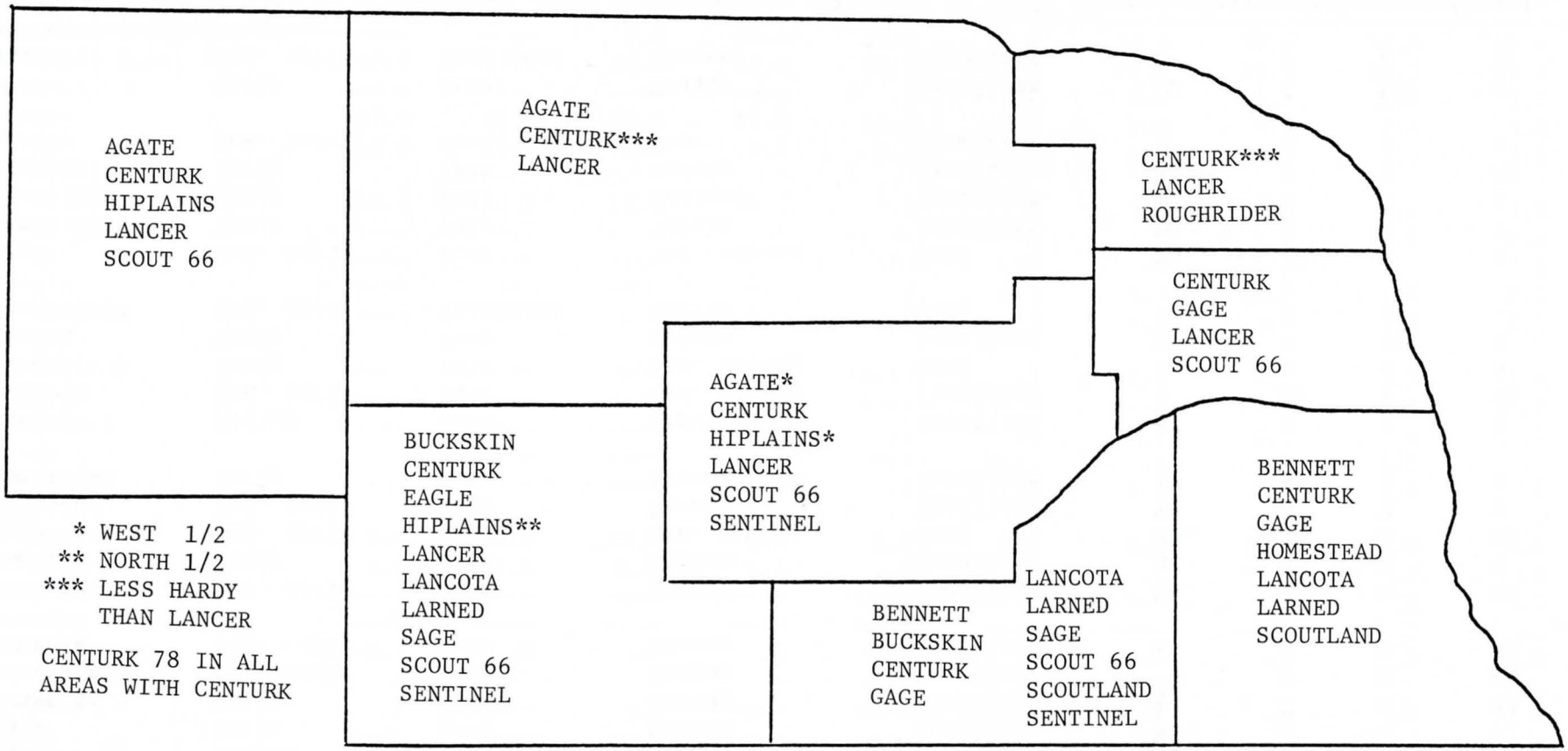
Variety	Relative				Resistance to 2/			
	Maturity	Winter-hardiness	Straw strength	Milling & baking qualities	Hessian fly	Leaf rust	Stem rust	Soil borne mosaic 3/
Agate	Medium	Good	Medium	Good	MR	S	R	MS
Baca	Early	Fair	Medium	Excellent	MS	S	R	S
Bennett	Early	Good	Strong	Exellent	4/	S	R	MR
Buckskin	Med. early	Fair	Strong	Excellent	MR	S	R	MR
Centurk	Med. early	Good	Strong	Excellent	MS	S	R	MS
Centurk 78	Med. early	Good	Strong	Excellent	MS	S	R	MS
Eagle	Early	Fair	Medium	Excellent	MS	S	R	S
Gage	Med. early	Fair	Med. Strong	Good	MR	MR	R	MS
HiPlains	Med. early	Good	Strong	Excellent	MR	S	R	S
Homestead	Early	Fair	Strong	Excellent	S	S	R	R
Lancer	Medium	Good	Strong	Excellent	S	S	R	S
Lancota	Med. early	Fair	Med. Strong	Excellent	S	MR	R	MS
Larned	Early	Fair	Med. Strong	Good	R	S	R	S
Lindon	Early	Poor	Medium	Excellent	MR	S	MR	S
Roughrider	Med. late	Excellent	Medium	Good	S	S	R	--
Sage	Med. early	Fair	Med. strong	Good	MS	MS	R	S
Scout 66	Early	Fair	Medium	Excellent	MS	S	R	S
Scoutland	Early	Fair	Medium	Excellent	MS	S	R	S
Sentinel	Early	Fair	Strong	Excellent	S	S	R	MS
Turkey	Med. late	Good	Poor	Excellent	S	S	S	S
Vona	Early	Poor	Medium	Excellent	MR	S	MR	S
Warrior	Med. early	Very good	Strong	Excellent	R	S	S	S

1/ These apply to area of adaptation. When varieties are taken out of their adapted area, relative maturities, straw strength and other characteristics are subject to variations. Abnormal disease or insect infestations also cause differences in expression of plant characteristics.

2/ R = resistant, S = susceptible, MR = moderately resistant, MS = moderately susceptible.

3/ Based on limited observation and yield data.

4/ Carries high level of fly infestation without characteristic straw breakage found in other varieties.



SUGGESTED WINTER WHEAT VARIETIES FOR NEBRASKA

Winter Wheat Performance

Yield and other data by districts are shown in Tables 5 through 11. Results of 1979 trials are shown along with period-of-years data, where appropriate.

Test weight data are shown in Table 12. Kernel weight data are shown in Table 13. Protein content for 1979 is shown in Table 14 and 1971-1979 protein data are summarized in Table 14. Plant height is shown in Table 15 and survival and lodging data in Table 16.

Yielding ability of different varieties cannot be measured with absolute accuracy because of variations in soil fertility, moisture and other factors. For this reason, small differences in yield have no significance. Unless the difference in yield of two varieties is greater than the difference required for significance shown in the tables, little confidence can be placed in the superiority of the one over the other in that particular test. These differences are shown at the 5% level, meaning that differences as large or larger could be expected through chance alone in 1 of 20 trials.

Two trials were seeded in Northeast Nebraska. The Dixon County trial had poor emergence and no survival. The Dakota County trial had some stand problems but recovery was good and yields were excellent (Table 5). Yield data are also shown for 1976 and 1977.

Southeast District trials were seeded in Saunders, Lancaster and Pawnee Counties. The Saunders County trial had little fall growth and severe winterkilling and was abandoned. Spotted winterkilling in Lancaster County made accurate yield checks impossible. Good yields were produced in Pawnee County (Table 6).

Buckskin, Larned and Agate had the highest 1979 yields. Many varieties had equivalent four-year average yields. Bennett, Larned, Sage, Buckskin, Centurk and Centurk 78 had average 1976-1979 yields of 50 bushels or more (3360 kg/ha).

South Central District trials in Polk County and Webster represented widely different environmental conditions (Table 7). In Polk County, all varieties had good survival. Straw growth was heavy and many varieties lodged early. Lindon and Vona were high-yielding. Yield levels in Clay County were much lower. Buckskin and Lancer were highest in yield. Poor survival reduced yields of some varieties, especially Vona. In Webster County, moderately good yields were produced and varietal yield differences were not marked.

Many varieties had equivalent four-year average yields. Bennett and Lindon were highest in 1976-1979 average yield.

The two Central District trials represented different environments (Table 8). Soil variability was high in Howard County and yield differences were nonsignificant. Conditions were favorable in Custer County and an average yield of 61 bushels (4100 kg/ha) was produced. Vona, Larned, Lindon, Sage were most productive under these conditions. This is an area of greatly differing seasonal conditions. Many varieties have equivalent long-time records. Centurk, Centurk 78, Larned, Warrior, Bennett, Scout 66 and Buckskin had the highest four-year average yields.

Three trials were harvested in the Southwest District (Table 9). Conditions at seeding were very dry in Hitchcock County. There was little stooling but favorable conditions for grain filling resulted in a satisfactory yield. Yields in Lincoln and Perkins County were high. Buckskin, Centurk 78 and Agate had the highest 1979 average yields.

Centurk 78 and Centurk had the highest four-year average yields. Many varieties had comparable records for this period.

Four trials were harvested in the Panhandle (Table 10). A trial in Scotts Bluff County was abandoned because of poor stands. Conditions in Deuel, Cheyenne and Box Butte County were favorable. High fertility in Dawes County was followed by moisture stress in late June. This was the major factor in varietal performance at this location.

In the average of four 1979 trials, Vona, Lindon, Centurk 78 and Centurk were highest in yield. All responded well to favorable growing conditions. Centurk, Centurk 78 and Lindon had the highest four-year average performance records (Table 11).

Statewide averages give an indication of whether a variety has broad adaptation. Many varieties have wide adaptation and do well over an extened range of conditions. Others are more specific in their requirements. Often, factors other than yield determine specific areas of adaptation. Performance of varieties in Nebraska was summarized on the basis of three broad areas: the entire state, the eastern one-half, and the western one-half. The Northeast District represents a set of special conditions and results were not included in statewide summaries.

Eleven varieties were included at all 13 test locations in 1979. Average yields were as follows: Buckskin 49 (3300), Centurk 78 49 (3300), Larned 48 (3230), Centurk 48 (3230), Agate 47 (3160), Lancer 47 (3160), Scout 66 46 (3090), Sage 46 (3090), Bennett 45 (3030), Lancota 42 (2820) and Turkey 40 (2690) bushels per acre (kg/ha). Previous year high average yields were as follows: 1978 Centurk 78 and Centurk 43 (2890), 1977 Buckskin, Sage, Larned and Bennett 43 (2890), 1976 Bennett 50 (3360), 1975 Lindon 50 (3360), 1975 Lindon 50 (3360), 1974 Centurk, Sage and Lancota 49 (3300), 1973 Sage 47 (3160), 1972 Centurk and Buckskin 48 (3230); 1971, 1970 and 1969 Centurk 57 (3830), 52 (3500), 42 (2820) bushels per acre (kg/ha) respectively.

In four Southeast and South Central District trials Buckskin, Larned and Lancer were most productive with yields of 47 (3160), 46 (3090) and 45 (3030) bushels per acre (kg/ha) respectively. Other varieties produced as follows: Agate 44 (2960), Scout 66 44 (2960), Bennett 43 (2890), Centurk 43 (2890), Sage 43 (2890), Centurk 78 43 (2890), Lancota 43 (2890), Sentinel 43 (2890), Gage 43 (2890), Homestead 42 (2820), and Turkey 37 (2490).

In nine experiments in the western one-half of Nebraska, Vona produced 52 (3500) and Centurk 78 51 (3430) bushels per acre (kg/ha). Other varieties yielded as follows: Centurk 50 (3360), Lindon 50 (3360), Buckskin 49 (3300), Larned 49 (3300), Agate 48 (3230), Lancer 47 (3160), Sage 47 (3160), Bennett 46 (3090), Scout 66 46 (3090), HiPlains 46 (3090), Lancota 42 (2820) and Turkey 41 (2760) bushels per acre (kg/ha).

Buckskin and Larned had good yield records in all parts of Nebraska in 1979. Centurk and Centurk 78 were consistently among the top varieties all over the state. Conditions for late grain fill favored later varieties, especially in eastern Nebraska. Agate and Lancer had better than usual relative yields in that area. Seasonal conditions did not favor Bennett. It had an excellent four-year average record especially in southern and eastern Nebraska. Vona and Lindon were erratic in performance. These varieties are very productive under favorable conditions. In other trials, winterkilling and other stresses caused reduced yields.

Test weights of wheat varieties in each trial are shown in Table 12. These were generally high. Low test weights in Clay County were at least partially due to poor cleaning.

Kernel weights from 12 locations are included in Table 13. All except Clay County are high, reflecting favorable grain-filling conditions. Agate had the heaviest kernels followed by the Scout types and Bennett.

Grain protein data are shown in Table 14. Protein content was low at many locations. As shown in Table 15, grain protein was lower than far any other year for the 1971-1979 period. Turkey and Lancota were consistently high in protein.

Plant height data are included in Table 16. Survival and lodging data are shown in Table 17. Lodging was severe in Polk County. Early lodging at this location reduced yields of affected varieties.

Winter Barley Performance

Yield data for three of the six winter barley variety trials are shown in Table 18. Trials in Lancaster and Clay Counties had severe winterkilling. Actual survivals in Webster County were higher than the early spring readings shown. Excellent yields were produced in Perkins County. Data for trials since 1975 are shown in Table 19.

THE METRIC SYSTEM

Data in this circular are given in currently used U.S. units followed by the metric units in parentheses ( ). Equivalents and conversions used were as follows:

1 centimeter	=	0.394 inches	mm = inches x 25.4
1 meter	=	39.37 inches	cm = inches x 2.54
1 hectare	=	2.471 acres	ha = acres x 0.405
1 kilogram	=	2.205 pounds	kg = acres x 0.405
1 hectoliter	=	2.838 pounds	hl = bushels x 0.352

kilograms/hectoliter (kg/hl) = lb/bu x 1.287
kilograms/hectare (kg/ha) = bu/A x 53.81 (48# bushel)
kilograms/hectare (kg/ha) = bu/A x 67.26 (60# bushel)

Table 5. Northeast District winter wheat variety tests. 1976-1979. No 1978 data.

Variety	Knox County 1976		1977 average (2 tests)			Dakota County 1979					1976-79 average (4 tests)	
	Yield bu/A (kg/ha)	Weight lb/bu (kg/hl)	Surv. %	Yield bu/A (kg/ha)	Weight lb/bu (kg/hl)	Ht. in (cm)	Yield bu/A (kg/ha)	Weight lb/bu (kg/hl)	Protein %	Grams 1000 seeds	Yield bu/A (kg/ha)	Weight lb/bu (kg/hl)
Agate	38 (2560)	58.8 (75.7)	68	46 (3090)	59.4 (76.4)	27 (69)	50 (3360)	62.8 (80.8)	10.0	36.5	45 (3030)	60.3 (77.6)
Buckskin	37 (2490)	57.3 (73.7)	43	42 (2820)	57.6 (74.1)	29 (74)	55 (3700)	62.7 (80.7)	9.3	33.1	45 (3030)	59.2 (76.2)
Centurk	42 (2820)	58.1 (74.8)	63	42 (2820)	57.0 (73.4)	28 (71)	54 (3630)	62.7 (80.7)	9.4	29.2	46 (3090)	59.3 (76.3)
HiPlains	30 (2020)	55.7 (71.7)	--	--	----	--	--	----	----	----	--	----
Lancer	35 (2350)	58.1 (74.8)	82	39 (2620)	58.2 (74.9)	28 (71)	47 (3160)	63.1 (81.2)	9.6	30.6	40 (2690)	59.8 (77.0)
Roughrider	--	----	95	40 (2690)	57.6 (74.1)	29 (74)	49 (3300)	62.7 (80.7)	10.5	29.7	--	----
Sage	47 (3160)	60.0 (77.2)	--	--	----	--	--	----	----	----	--	----
Scout 66	46 (3090)	59.9 (77.1)	32	43 (2890)	58.3 (75.0)	30 (76)	48 (3230)	62.9 (81.0)	9.4	32.9	46 (3090)	60.4 (77.7)
Sentinel	--	----	31	31 (2090)	56.2 (72.3)	26 (66)	47 (3160)	62.0 (79.8)	10.4	31.1	--	----
Nebar (w. barley)	48 (2580)	48.5 (62.4)	Tr.	0	----	--	--	----	----	----	--	----
Dif. req. sig.	9.6 (646)	----	17.1	10.8 (726)	N.S.	2.2 (6)	N.S.	----	0.9	0.9	N.S.	N.S.

Location of tests (counties): 1976 Knox, 1977 Dixon, Knox, 1979 Dakota.

Table 6. Southeast and East Central District winter wheat variety tests. 1974-1979.

Variety	Grain yield bu/A (kg/ha)							Weight lb/bu (kg/hl)
	1974	1975	1976	1977	1978	1979	1976-79 average (8 tests)	1976-79 average (8 tests)
Bennett	-- ----	-- ----	60 (4040)	53 (3560)	50 (3360)	43 (2890)	52 (3500)	59.3 (76.3)
Larned	-- ----	46 (3090)	53 (3560)	51 (3430)	53 (3560)	50 (3360)	52 (3500)	59.0 (75.9)
Sage	72 (4840)	46 (3090)	55 (3700)	54 (3630)	49 (3300)	47 (3160)	51 (3430)	59.8 (77.0)
Buckskin	70 (4710)	45 (3030)	52 (3500)	50 (3360)	47 (3160)	51 (3430)	50 (3360)	58.8 (75.7)
Centurk	65 (4370)	46 (3090)	56 (3770)	52 (3500)	47 (3160)	45 (3030)	50 (3360)	58.4 (75.2)
Centurk 78	-- ----	-- ----	53 (3560)	51 (3430)	50 (3360)	44 (2960)	50 (3360)	58.4 (75.2)
Scout 66	67 (4510)	45 (3030)	51 (3430)	49 (3300)	48 (3230)	47 (3160)	49 (3300)	59.2 (76.2)
Homestead	61 (4100)	46 (3090)	56 (3770)	47 (3160)	49 (3300)	42 (2820)	49 (3300)	58.5 (75.3)
Sentinel	65 (4370)	44 (2960)	55 (3700)	47 (3160)	50 (3360)	43 (2890)	49 (3300)	58.0 (74.6)
Agate	67 (4510)	47 (3160)	47 (3160)	48 (3230)	46 (3090)	49 (3300)	48 (3230)	59.9 (77.1)
Scoutland	64 (4300)	45 (3030)	51 (3430)	48 (3230)	47 (3160)	44 (2960)	48 (3230)	59.9 (77.1)
Lancota	73 (4910)	47 (3160)	51 (3430)	49 (3300)	47 (3160)	43 (2890)	48 (3230)	59.1 (76.1)
Lancer	66 (4440)	41 (2760)	48 (3230)	45 (3030)	49 (3300)	47 (3160)	47 (3160)	59.3 (76.3)
Gage	-- ----	47 (3160)	48 (3230)	46 (3090)	42 (2820)	43 (2890)	45 (3030)	58.0 (74.6)
Turkey	45 (3030)	31 (2090)	35 (2350)	36 (2420)	39 (2620)	38 (2560)	37 (2490)	57.9 (74.5)
Lindon	-- ----	48 (3230)	51 (3430)	51 (3430)	47 (3160)	-- ----	-- ----	---- ----
Vona	-- ----	-- ----	-- ----	48 (3230)	44 (2960)	-- ----	-- ----	---- ----
Dif. sig.	6.3 (424)	6.2 (417)	9.3 (626)	5.1 (343)	6.0 (404)	5.1 (343)	3.9 (262)	0.8 (1.0)

Location of tests (counties): 1974 Lancaster, Saunders; 1975 Saline, Saunders, Butler; 1976 Gage, Saunders; 1977 Nemaha, Saunders, Jefferson; 1978 Johnson, Seward; 1979 Pawnee.

Table 7. South Central District winter wheat variety tests. 1976-1979.

Variety	Grain yield bu/A (kg/ha)					Weight lb/bu (kg/hl)	
	Polk County 1979	Clay County 1979	Webster County 1979	1979 average (3 tests)	1976-79 average (10 tests)	1979 average (3 tests)	1976-79 average (10 tests)
Bennett	56 (3770)	31 (2090)	43 (2890)	43 (2890)	44 (2960)	57.8 (74.4)	57.9 (74.5)
Lindon	71 (4780)	33 (2220)	42 (2820)	49 (3300)	43 (2890)	59.1 (76.1)	58.6 (75.4)
Scoutland	51 (3430)	32 (2150)	43 (2890)	42 (2820)	41 (2760)	58.6 (75.4)	59.0 (75.9)
Sage	49 (3300)	31 (2090)	46 (3090)	42 (2820)	41 (2760)	58.4 (75.2)	58.7 (75.4)
Centurk 78	59 (3970)	28 (1880)	41 (2760)	43 (2890)	41 (2760)	56.9 (73.2)	56.9 (73.2)
Scout 66	51 (3430)	33 (2220)	43 (2890)	42 (2820)	40 (2690)	58.1 (74.8)	58.0 (74.6)
Larned	53 (3560)	32 (2150)	48 (3230)	44 (2960)	40 (2690)	58.4 (75.2)	57.8 (74.4)
Homestead	54 (3630)	27 (1820)	44 (2960)	42 (2820)	40 (2690)	56.7 (73.0)	57.4 (73.9)
Eagle	55 (3700)	28 (1880)	41 (2760)	41 (2760)	39 (2620)	58.4 (75.2)	58.1 (74.8)
Centurk	56 (3770)	29 (1950)	43 (2890)	43 (2890)	39 (2620)	57.3 (73.7)	56.9 (73.2)
Buckskin	53 (3560)	39 (2620)	46 (3090)	46 (3090)	39 (2620)	58.5 (75.3)	56.8 (73.1)
Sentinel	59 (3970)	25 (1680)	43 (2890)	42 (2820)	39 (2620)	56.6 (72.8)	56.5 (72.7)
Agate	47 (3160)	34 (2290)	45 (3030)	42 (2820)	37 (2490)	58.3 (75.0)	58.5 (75.3)
Lancer	48 (3230)	39 (2620)	47 (3160)	45 (3030)	37 (2490)	58.8 (75.7)	58.1 (74.8)
Lancota	54 (3630)	32 (2150)	41 (2760)	42 (2820)	37 (2490)	58.2 (74.9)	57.7 (74.3)
Gage	54 (3630)	32 (2150)	40 (2690)	42 (2820)	36 (2420)	57.8 (74.4)	56.1 (72.2)
Turkey	40 (2690)	34 (2290)	34 (2290)	36 (2420)	28 (1880)	57.6 (74.1)	56.2 (72.3)
Vona	67 (4510)	26 (1750)	42 (2820)	45 (3030)	-- ----	56.4 (72.6)	---- ----
Dif. sig.	6.3 (424)	3.8 (256)	5.6 (377)	N.S.	4.5 (303)	1.2 (1.5)	1.5 (1.9)

Location of tests (Counties): 1976 Thayer, Clay; 1977 York, Clay, Phelps; 1978 Clay, Harlan; 1979 Polk, Clay, Webster.

Table 8. Central District winter wheat variety tests. 1974-1979.

Variety	Grain yield, bu/A (kg/ha)					Weight lb/bu (kg/hl)		
	Howard County 1979	Custer County 1979	1979 average (2 tests)	1976-79 average (6 tests)	1974-79 average (8 tests)	1979 average (2 tests)	1976-79 average (6 tests)	1974-79 average (8 tests)
Centurk	36 (2420)	60 (4040)	48 (3230)	45 (3030)	51 (3430)	58.9 (75.8)	59.6 (76.7)	60.3 (77.6)
Scout 66	30 (2020)	61 (4100)	46 (3090)	43 (2890)	49 (3300)	59.8 (77.0)	59.7 (76.8)	60.6 (78.0)
Warrior	31 (2090)	57 (3830)	44 (2960)	44 (2960)	49 (3300)	59.1 (76.1)	58.9 (75.8)	59.9 (77.1)
Buckskin	35 (2350)	62 (4170)	49 (3300)	42 (2820)	49 (3300)	59.3 (76.3)	58.8 (75.7)	59.8 (77.0)
Sage	29 (1950)	65 (4370)	47 (3160)	41 (2760)	48 (3230)	59.6 (76.7)	59.7 (76.8)	60.5 (77.9)
HiPlains	33 (2220)	59 (3970)	46 (3090)	39 (2620)	47 (3160)	59.5 (76.5)	59.4 (76.4)	60.1 (77.3)
Eagle	32 (2150)	64 (4300)	48 (3230)	40 (2690)	46 (3090)	59.4 (76.4)	59.5 (76.6)	60.4 (77.7)
Sentinel	29 (1950)	63 (4240)	46 (3090)	41 (2760)	46 (3090)	58.4 (75.2)	58.0 (74.6)	59.2 (76.2)
Lancer	33 (2220)	60 (4040)	47 (3160)	40 (2690)	45 (3030)	59.9 (77.1)	58.9 (75.8)	60.1 (77.3)
Lancota	32 (2150)	57 (3830)	45 (3030)	38 (2560)	45 (3030)	59.0 (75.9)	59.0 (75.9)	60.0 (77.2)
Agate	36 (2420)	57 (3830)	47 (3160)	39 (2620)	45 (3030)	57.7 (74.3)	58.8 (75.7)	59.4 (76.4)
Turkey	32 (2150)	45 (3030)	39 (2620)	33 (2220)	36 (2420)	58.4 (75.2)	58.1 (74.8)	58.8 (75.7)
Larned	34 (2290)	66 (4440)	50 (3360)	44 (2960)	-- ----	59.5 (76.6)	59.6 (76.7)	---- ----
Centurk 78	36 (2420)	63 (4240)	50 (3360)	44 (2960)	-- ----	59.1 (76.1)	59.2 (76.2)	---- ----
Bennett	28 (1880)	52 (4170)	45 (3030)	43 (2890)	-- ----	58.9 (75.8)	59.3 (76.3)	---- ----
Lindon	30 (2020)	65 (4370)	48 (3230)	40 (2690)	-- ----	60.4 (77.7)	59.8 (77.0)	---- ----
Vona	34 (2290)	68 (4570)	51 (3430)	-- ----	-- ----	59.3 (76.3)	---- ----	---- ----
Dif. sig.	N.S.	7.0 (471)	N.S.	6.1 (410)	5.3 (356)	N.S.	N.S.	1.0 (1.3)

Location of tests (Counties): 1974-1977 Custer; 1978 Sherman, Logan; 1979 Howard, Custer

Table 9. Southwest District winter wheat variety tests. 1976-1979.

Variety	Grain yield bu/A (kg/ha)					Weight lb/bu (kg/hl)	
	Hitchcock County 1979	Lincoln County 1979	Perkins County 1979	1979 average (3 tests)	1976-79 average (11 tests)	1979 average (3 tests)	1976-79 average (11 tests)
Centurk 78	38 (2560)	57 (3830)	55 (3700)	50 (3360)	47 (3160)	60.7 (78.1)	60.2 (77.5)
Centurk	37 (2490)	54 (3630)	54 (3630)	48 (3230)	45 (3030)	59.7 (76.8)	59.8 (77.0)
Lindon	37 (2490)	52 (3500)	46 (3090)	45 (3030)	44 (2960)	60.7 (78.1)	60.7 (78.1)
Larned	37 (2490)	49 (3300)	54 (3630)	47 (3160)	44 (2960)	60.0 (77.2)	60.0 (77.2)
Bennett	37 (2490)	55 (3700)	44 (2960)	45 (3030)	44 (2960)	59.3 (76.3)	59.9 (77.1)
Lancota	36 (2420)	46 (3090)	43 (2890)	42 (2820)	44 (2960)	60.4 (77.7)	59.9 (77.1)
Buckskin	41 (2760)	56 (3770)	60 (4040)	52 (3500)	44 (2960)	60.6 (78.0)	59.4 (76.4)
Eagle	36 (2420)	47 (3160)	43 (2890)	42 (2820)	43 (2890)	60.1 (77.3)	60.7 (78.1)
Scout 66	37 (2490)	49 (3300)	54 (3630)	47 (3160)	43 (2890)	60.7 (78.1)	60.6 (78.0)
Sage	38 (2560)	57 (3830)	49 (3300)	48 (3230)	43 (2890)	60.7 (78.1)	60.2 (77.5)
Agate	41 (2760)	54 (3630)	53 (3560)	49 (3300)	43 (2890)	59.7 (76.8)	59.4 (76.4)
Sentinel	34 (2290)	49 (3300)	45 (3030)	43 (2890)	43 (2890)	58.6 (75.4)	58.8 (75.7)
HiPlains	36 (2420)	56 (3770)	50 (3360)	47 (3160)	41 (2760)	60.4 (77.7)	59.7 (76.8)
Warrior	39 (2620)	49 (3300)	51 (3430)	46 (3090)	41 (2760)	59.7 (76.8)	59.1 (76.1)
Lancer	41 (2760)	53 (3560)	51 (3430)	48 (3230)	40 (2690)	60.8 (78.2)	59.5 (76.6)
Turkey	37 (2490)	42 (2820)	49 (3300)	43 (2890)	34 (2290)	60.0 (77.2)	58.5 (75.3)
Vona	36 (2420)	59 (3970)	50 (3360)	48 (3230)	-- ----	61.0 (78.5)	---- ----
Dif. sig.	N.S.	8.1 (545)	6.1 (410)	5.4 (363)	4.1 (276)	1.3 (1.7)	0.9 (1.2)

Location of tests (Counties): 1976 Frontier, Lincoln; 1977 Lincoln, Dundy, Keith; 1978 Furnas, Lincoln, Chase; 1979 Hitchcock, Lincoln, Perkins.

Table 10. West District winter wheat variety tests. 1979.

Variety	Grain yield, bu/A (kg/ha)				1979 average 4 tests	
	Deuel County 1979	Cheyenne County 1979	Box Butte County 1979	Dawes County 1979	Yield bu/A (hg/ha)	Weight lb/bu (kg/hl)
Agate	43 (2890)	55 (3700)	56 (3770)	36 (2420)	48 (3230)	61.3 (78.9)
Baca	40 (2690)	52 (3500)	47 (3160)	36 (2420)	44 (2960)	61.0 (78.5)
Bennett	44 (2960)	51 (3430)	52 (3500)	44 (2960)	48 (3230)	60.5 (78.0)
Buckskin	44 (2960)	55 (3700)	53 (3560)	39 (2620)	48 (3230)	61.4 (79.0)
Centurk	48 (3230)	57 (3830)	58 (3900)	45 (3030)	52 (3500)	51.0 (78.5)
Centurk 78	50 (3360)	58 (3900)	57 (3830)	47 (3160)	53 (3560)	61.2 (78.8)
HiPlains	40 (2690)	52 (3500)	51 (3430)	34 (2290)	44 (2960)	61.0 (78.5)
Lancer	42 (2820)	56 (3770)	52 (3500)	36 (2420)	47 (3160)	61.6 (79.3)
Lancota	35 (2350)	51 (3430)	50 (3360)	30 (2020)	42 (2820)	60.7 (78.1)
Larned	45 (3030)	55 (3700)	56 (3770)	44 (2960)	50 (3360)	61.1 (78.6)
Lindon	45 (3030)	48 (3900)	59 (3970)	56 (3770)	55 (3700)	61.9 (79.7)
Sage	38 (2560)	55 (3700)	52 (3500)	37 (2490)	46 (3090)	61.1 (78.6)
Scout 66	40 (2690)	53 (3560)	53 (3560)	38 (2560)	46 (3090)	61.1 (78.6)
Turkey	39 (2620)	49 (3300)	48 (3230)	28 (1880)	41 (2760)	60.4 (77.7)
Vona	45 (3030)	55 (3700)	64 (4300)	61 (4110)	56 (3770)	61.4 (79.0)
Dif. req. sig.	8.0 (538)	6.5 (437)	9.9 (666)	14.3 (962)	5.3 (356)	0.6 (0.8)

Table 11. West District winter wheat variety tests. 1974-79.

Variety	Grain yield, bu/A (kg/ha)							Weight lb/bu (kg/hl)
	1974 average (5 tests)	1975 average (5 tests)	1976 average (6 tests)	1977 average (5 tests)	1978 average (5 tests)	1979 average (4 tests)	1976-79 average (20 tests)	1976-79 average (20 tests)
Lindon	-- ----	46 (3090)	44 (2960)	33 (2220)	47 (3160)	55 (3700)	45 (3030)	60.5 (77.9)
Centurk 78	-- ----	-- ----	47 (3160)	34 (2290)	46 (3090)	53 (3560)	45 (3030)	60.0 (77.2)
Centurk	41 (2760)	45 (3030)	45 (3030)	35 (2350)	47 (3160)	52 (3500)	45 (3030)	59.6 (76.7)
Buckskin	39 (2620)	43 (2890)	43 (2890)	38 (2560)	44 (2960)	48 (3230)	43 (2890)	59.8 (77.0)
Larned	-- ----	-- ----	39 (2620)	37 (2490)	44 (2960)	50 (3360)	43 (2890)	59.6 (76.7)
Bennett	-- ----	-- ----	43 (2890)	35 (2350)	45 (3030)	48 (3230)	43 (2890)	59.4 (76.4)
Agate	37 (2490)	39 (2620)	40 (2690)	37 (2490)	43 (2890)	48 (3230)	42 (2820)	59.6 (76.7)
Lancer	36 (2420)	39 (2620)	41 (2760)	35 (2350)	42 (2820)	47 (3160)	41 (2760)	60.1 (77.3)
Sage	38 (2560)	44 (2960)	42 (2820)	35 (2350)	42 (2820)	46 (3090)	41 (2760)	60.1 (77.3)
Scout 66	40 (2690)	43 (2890)	39 (2620)	36 (2420)	42 (2820)	46 (3090)	41 (2760)	59.9 (77.1)
HiPlains	38 (2560)	42 (2820)	43 (2890)	32 (2150)	41 (2760)	44 (2960)	40 (2690)	59.9 (77.1)
Baca	41 (2760)	43 (2890)	40 (2690)	35 (2350)	42 (2820)	44 (2960)	40 (2690)	59.9 (77.1)
Lancota	37 (2490)	39 (2620)	41 (2760)	33 (2220)	43 (2890)	42 (2820)	40 (2690)	59.2 (76.2)
Turkey	33 (2220)	35 (2350)	37 (2490)	29 (1950)	35 (2350)	41 (2760)	36 (2420)	58.9 (75.8)
Vona	-- ----	-- ----	-- ----	36 (2420)	47 (3160)	56 (3770)	-- ----	---- ----
Roughrider	-- ----	-- ----	-- ----	32 (2150)	38 (2560)	-- ----	-- ----	---- ----
Dif. sig.	3.6 (242)	4.1 (276)	3.7 (249)	3.8 (256)	5.4 (363)	5.3 (356)	2.9 (195)	0.8 (1.0)

Location of tests (counties): 1974 Cheyenne, Kimball, Box Butte (2), Sheridan; 1975 Cheyenne (2), Morrill, Box Butte, Dawes; 1976 Deuel, Cheyenne (2), Scotts Bluff, Box Butte, Sheridan; 1977 Kimball, Cheyenne, Morrill, Box Butte, Dawes; 1978 Garden, Cheyenne, Box Butte (2), Sheridan; 1979 Deuel, Cheyenne, Box Butte, Dawes.

Table 12. Test weight of winter wheat varieties in Nebraska tests. 1979.

Variety	Test weight, lb/bu 1/													
	Pawnee County	Polk County	Clay County	Webster County	Howard County	Custer County	Hitchcock County	Lincoln County	Perkins County	Deuel County	Cheyenne County	Box Butte County	Dawes County	Average 13 tests
Agate	60.6	60.2	53.5	61.2	57.5	57.8	60.1	57.5	61.5	62.2	62.0	62.0	59.0	59.6
Baca	----	----	----	----	----	----	----	----	----	61.8	61.0	61.3	60.0	----
Bennett	59.1	60.3	52.9	60.1	56.5	61.3	59.8	56.5	61.5	61.3	61.0	60.5	59.5	59.3
Buckskin	58.8	60.2	54.4	60.9	56.6	62.0	60.7	59.5	61.6	61.9	61.5	61.3	61.0	60.0
Centurk	58.3	59.9	52.5	59.5	57.2	60.6	60.3	57.0	61.9	62.1	61.5	61.0	59.0	59.3
Centurk 78	58.5	60.1	51.1	59.6	57.1	61.1	60.3	60.0	61.8	62.0	61.5	62.3	59.5	59.6
Eagle	----	60.8	53.8	60.6	57.5	61.3	60.6	57.5	62.2	----	----	----	----	----
Gage	58.0	59.8	52.3	61.2	----	----	----	----	----	----	----	----	----	----
HiPlains	----	----	----	----	57.5	61.4	60.6	59.5	61.2	61.6	61.5	61.3	59.5	----
Homestead	58.7	59.7	50.6	59.9	----	----	----	----	----	----	----	----	----	----
Lancer	59.7	60.4	54.3	61.6	57.5	62.2	61.2	59.5	61.7	62.2	62.0	62.0	60.3	60.4
Lancota	59.4	60.7	52.7	61.3	56.8	61.2	59.9	59.5	61.9	61.8	61.0	61.0	59.0	59.7
Larned	59.0	60.4	54.2	60.5	57.3	61.7	60.5	58.0	61.5	62.0	61.5	61.5	59.5	59.8
Lindon	----	61.2	54.5	61.5	58.6	62.1	61.9	57.0	63.1	62.9	62.5	62.0	60.0	----
Sage	59.8	60.7	53.4	61.2	57.0	62.2	60.4	59.5	62.3	61.7	61.0	61.5	60.0	60.1
Scout 66	59.5	60.7	52.8	60.9	57.4	62.2	60.7	59.5	61.9	61.9	61.0	60.8	60.5	60.0
Scoutland	59.9	61.7	53.2	61.0	----	----	----	----	----	----	----	----	----	----
Sentinel	58.2	59.9	50.0	59.9	55.9	60.8	59.1	56.5	60.3	----	----	----	----	----
Turkey	59.3	59.8	52.3	60.1	57.5	59.3	59.6	59.0	61.4	60.8	61.0	61.3	58.3	59.2
Vona	----	59.3	50.0	59.9	57.5	61.0	61.2	59.0	62.7	62.0	61.5	62.3	59.8	----
Warrior	----	----	----	----	57.3	60.9	60.2	57.0	61.8	----	----	----	----	----
Dif. sig.	----	----	1.9	----	----	----	----	----	----	0.7	N.S.	----	----	0.5

1/ Metric conversion for test weight 1.287 x lb/bu kilograms/hectoliter.

Table 13. Kernel weight of winter wheat varieties in Nebraska tests. 1979.

Variety	Weight of 1000 kernels, grams												
	Pawnee County	Polk County	Clay County	Webster County	Howard County	Custer County	Hitchcock County	Lincoln County	Perkins County	Deuel County	Box Butte County	Dawes County	Average 12 tests
Agate	31.8	31.3	29.9	31.0	34.9	32.6	34.7	39.9	38.7	37.9	39.4	32.7	34.6
Baca	----	----	----	----	----	----	----	----	----	32.9	34.2	30.5	----
Bennett	29.6	29.4	29.5	30.6	32.7	31.9	32.4	35.3	35.1	35.3	36.3	31.1	32.4
Buckskin	27.6	28.6	27.5	31.3	32.4	30.5	32.0	34.6	35.1	34.6	34.9	30.5	31.6
Centurk	24.3	27.4	24.5	25.6	28.8	24.8	28.7	26.6	30.5	31.0	31.5	26.5	27.5
Centurk 78	23.9	27.0	24.0	25.9	28.2	25.9	26.9	28.8	30.2	30.2	33.8	26.0	27.6
Eagle	----	30.9	31.2	31.4	32.9	31.9	33.5	33.2	35.4	----	----	----	----
Gage	27.0	27.6	28.8	29.5	32.2	----	----	----	----	----	----	----	----
HiPlains	----	----	----	----	----	27.8	27.3	32.8	32.5	32.4	33.6	28.8	----
Homestead	28.8	26.4	29.4	29.8	----	----	----	----	----	----	----	----	----
Lancer	28.2	27.4	27.6	28.8	31.4	27.8	29.6	34.3	32.2	31.9	33.2	28.3	30.1
Lancota	29.8	30.6	30.5	30.0	32.7	31.2	29.4	34.1	35.2	33.9	33.6	30.6	31.8
Larned	31.0	28.0	30.8	30.6	35.0	31.3	34.3	34.8	37.3	37.5	39.2	34.0	33.7
Lindon	----	25.1	28.1	26.1	28.8	26.3	28.1	27.5	31.9	31.6	31.3	27.8	----
Sage	31.5	29.2	30.8	31.5	31.8	32.2	32.4	35.8	34.7	33.6	35.1	32.5	32.6
Scout 66	32.4	29.4	31.6	31.4	34.9	31.7	33.8	36.8	37.0	36.0	36.0	33.2	33.7
Scoutland	29.8	27.8	29.7	29.8	----	----	----	----	----	----	----	----	----
Sentinel	27.5	28.2	27.5	28.3	30.0	29.1	31.6	30.4	31.3	----	----	----	----
Turkey	27.4	27.1	26.6	26.1	31.2	26.5	27.9	31.3	31.7	33.5	34.3	28.0	29.3
Vona	----	26.5	28.5	27.1	29.2	26.4	27.5	29.9	32.1	32.2	32.1	25.2	----
Warrior	----	----	----	----	32.1	27.8	30.3	31.4	33.0	----	----	----	----
Dif. sig.	1.3	2.2	0.9	1.4	2.1	1.5	1.7	----	1.0	1.5	3.8	1.3	0.9

Table 14. Protein content of winter wheat varieties in Nebraska tests. 1979.

Variety	Pawnee County	Polk County	Clay County	Webster County	Howard County	Custer County	Hitchcock County	Lincoln County	Perkins County	Deuel County	Box Butte County	Dawes County	Average 12 tests
Agate	11.4	12.4	12.2	9.3	8.5	12.9	11.6	11.1	7.8	10.5	11.7	15.0	11.2
Baca	----	----	----	----	---	----	----	----	---	9.8	13.1	14.4	----
Bennett	11.7	11.6	12.4	9.7	8.9	12.7	11.7	12.0	8.7	11.0	13.2	14.3	11.5
Buckskin	11.5	12.0	12.3	9.4	9.1	12.3	11.2	10.9	9.3	10.2	12.5	15.1	11.3
Centurk	11.3	11.3	12.2	8.9	8.7	13.0	11.0	11.3	7.7	11.4	11.7	14.8	11.1
Centurk 78	11.3	11.1	12.1	9.4	8.7	12.4	11.0	11.0	7.5	10.7	12.1	14.2	11.0
Eagle	----	11.3	12.8	9.4	9.6	12.4	11.6	12.5	9.0	----	----	----	----
Gage	11.7	11.6	12.9	9.7	---	----	----	----	---	----	----	----	----
HiPlains	----	----	----	----	9.0	12.1	11.6	11.1	8.1	11.0	12.8	15.4	----
Homestead	11.8	12.7	12.7	9.5	---	----	----	----	---	----	----	----	----
Lancer	11.5	11.1	12.2	8.5	9.0	11.7	11.6	11.3	7.8	10.6	12.0	14.9	11.0
Lancota	12.1	10.9	13.3	9.9	9.7	13.2	12.3	12.4	9.0	10.6	13.2	15.8	11.9
Larned	11.0	12.3	12.1	8.5	8.8	12.2	11.4	11.6	8.0	10.2	13.0	14.2	11.1
Lindon	----	11.2	12.5	9.5	8.9	12.4	11.3	11.3	8.4	10.6	12.6	14.6	----
Sage	11.8	11.6	12.6	9.4	9.1	12.4	11.6	12.2	8.5	10.5	13.1	14.5	11.4
Scout 66	11.0	12.3	12.2	8.6	9.5	12.5	11.3	11.7	8.4	10.6	12.9	14.4	11.3
Scoutland	11.9	11.9	12.8	9.3	---	----	----	----	---	----	----	----	----
Sentinel	12.2	10.8	12.4	9.6	9.3	13.0	11.9	12.3	8.5	----	----	----	----
Turkey	12.6	12.2	13.1	10.0	9.6	13.8	12.6	11.5	8.3	11.9	12.8	16.0	12.0
Vona	----	11.1	12.0	8.8	8.8	11.6	10.6	11.1	7.7	9.8	11.6	13.3	----
Warrior	----	----	----	----	9.0	12.9	12.1	11.1	8.0	----	----	----	----
Dif. sig.	N.S.	N.S.	0.4	N.S.	N.S.	0.7	0.6	----	N.S.	N.S.	1.1	0.8	0.3

Protein on 14% moisture basis.

Table 15. Protein content of winter wheat varieties in Nebraska tests. 1971-1979.

Variety	1971 14 tests	1972 13 tests	1973 12 tests	1974 13 tests	1975 13 tests	1976 12 tests	1977 15 tests	1978 11 tests	1979 12 tests	1976-79 average
Agate	----	----	12.4	11.8	12.9	13.2	12.9	13.4	11.2	12.7
Baca	----	----	----	11.9	12.8	----	----	----	----	----
Bennett	----	----	----	----	----	12.8	13.1	13.4	11.5	12.7
Buckskin	11.5	11.7	12.4	11.6	12.7	12.8	12.7	13.5	11.3	12.6
Centurk	11.5	11.7	12.0	11.8	12.9	12.8	12.5	13.1	11.1	12.4
Centurk 78	----	----	----	----	----	12.6	12.5	13.1	11.0	12.3
Eagle	12.0	11.9	12.5	12.6	13.4	----	----	----	----	----
HiPlains	11.2	11.9	12.2	11.6	13.1	13.3	----	----	----	----
Homestead	12.2	12.2	12.9	12.6	----	----	----	----	----	----
Lancer	11.3	11.5	12.2	11.6	12.9	12.9	12.7	13.2	11.0	12.5
Lancota	----	12.6	13.3	12.9	13.7	13.5	13.4	14.1	11.9	13.2
Larned	----	----	----	----	----	12.6	12.4	12.8	11.1	12.2
Lindon	----	----	----	----	12.5	12.5	12.5	13.1	----	----
Sage	----	----	12.7	12.3	13.3	12.8	12.9	13.1	11.4	12.6
Scout 66	11.5	11.8	12.1	11.8	13.0	12.7	12.6	13.1	11.3	12.4
Scoutland	12.3	12.4	12.7	12.6	13.7	----	----	----	----	----
Sentinel	12.2	12.3	13.0	12.4	13.6	----	----	----	----	----
Turkey	12.1	12.0	13.1	12.1	12.9	14.1	13.4	13.9	12.0	13.4
Vona	----	----	----	----	----	----	----	12.7	----	----
Average	11.8	12.0	12.6	12.1	13.1	12.9	12.9	13.3	11.3	12.6
Dif. sig.	----	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2

Protein on 14% moisture basis.

Table 16. Height of winter wheat varieties in Nebraska tests. 1979.

Variety	Plant height, inches (centimeters)										
	Pawnee County	Polk County	Clay County	Webster County	Howard County	Custer County	Hitchcock County	Perkins County	Deuel County	Dawes County	Average 10 tests
Agate	42 (107)	42 (107)	33 (84)	40 (102)	37 (94)	40 (102)	29 (74)	37 (94)	36 (91)	32 (81)	37 (94)
Baca	-- ---	-- ---	-- --	-- ---	-- ---	-- ---	-- --	-- --	36 (91)	34 (86)	-- --
Bennett	36 (91)	42 (107)	26 (66)	34 (86)	33 (84)	35 (89)	26 (66)	30 (76)	32 (81)	34 (86)	33 (84)
Buckskin	43 (109)	45 (114)	33 (84)	40 (102)	39 (99)	39 (99)	30 (76)	38 (97)	36 (91)	32 (81)	38 (97)
Centurk	39 (99)	43 (109)	28 (71)	37 (94)	37 (94)	37 (94)	27 (69)	34 (86)	35 (89)	31 (79)	35 (89)
Centurk 78	38 (96)	43 (109)	27 (69)	36 (91)	36 (91)	36 (91)	28 (71)	33 (84)	35 (89)	31 (79)	34 (86)
Eagle	-- ---	43 (109)	29 (74)	35 (89)	37 (94)	37 (94)	27 (69)	32 (81)	-- --	-- --	-- --
Gage	40 (102)	46 (117)	30 (76)	37 (94)	-- ---	-- ---	-- --	-- --	-- --	-- --	-- --
HiPlains	-- ---	-- ---	-- --	-- ---	38 (97)	38 (97)	30 (76)	36 (91)	36 (91)	35 (89)	-- --
Homestead	35 (89)	42 (107)	26 (66)	32 (81)	-- ---	-- ---	-- --	-- --	-- --	-- --	-- --
Lancer	43 (109)	45 (114)	34 (86)	40 (102)	39 (99)	38 (97)	30 (76)	36 (91)	38 (97)	34 (86)	38 (97)
Lancota	40 (102)	46 (117)	32 (81)	38 (97)	36 (91)	36 (91)	30 (76)	34 (86)	34 (86)	32 (81)	36 (91)
Larned	39 (99)	45 (114)	30 (76)	37 (94)	38 (97)	37 (94)	28 (71)	33 (84)	35 (89)	32 (81)	35 (89)
Lindon	-- ---	37 (94)	24 (61)	30 (76)	31 (79)	33 (84)	24 (61)	30 (76)	30 (76)	32 (81)	-- --
Sage	39 (99)	47 (119)	27 (69)	37 (94)	37 (94)	39 (99)	30 (76)	34 (86)	34 (86)	32 (81)	36 (91)
Scout 66	42 (107)	44 (112)	32 (81)	39 (99)	38 (97)	38 (97)	28 (71)	35 (89)	36 (91)	34 (86)	37 (94)
Scoutland	39 (99)	45 (114)	31 (79)	38 (97)	-- ---	-- ---	-- --	-- --	-- --	-- --	-- --
Sentinel	39 (99)	43 (109)	26 (66)	34 (86)	33 (84)	33 (84)	25 (64)	31 (79)	-- --	-- --	-- --
Turkey	46 (117)	44 (112)	35 (89)	43 (109)	43 (109)	41 (104)	36 (91)	39 (99)	37 (94)	33 (84)	40 (102)
Vona	-- ---	36 (91)	22 (56)	29 (74)	29 (74)	31 (79)	24 (61)	27 (69)	29 (74)	29 (74)	-- ---
Warrior	-- ---	-- ---	-- --	-- ---	37 (94)	39 (99)	29 (74)	37 (94)	-- --	-- --	-- ---
Dif. sig.	2.3 (6)	3.0 (8)	1.7 (4)	2.0 (5)	4.0 (10)	3.1 (8)	2.3 (6)	1.6 (4)	2.3 (6)	3.9 (10)	1.3 (3)

Table 17. Survival and lodging of winter wheat varieties in Nebraska tests. 1979.

Variety	Survival %			Lodging %								
	Clay County	Webster County	Howard County	Polk County	Clay County	Webster County	Howard County	Custer County	Perkins County	Deuel County	Dawes County	Average 8 tests
Agate	95	83	90	37	2	2	6	37	2	0	0	11
Baca	--	--	--	--	-	-	--	--	--	18	37	--
Bennett	85	87	84	54	2	T	1	4	0	0	7	9
Buckskin	83	85	83	41	6	3	9	9	7	8	6	11
Centurk	78	86	86	36	7	2	15	3	0	3	13	10
Centurk 78	76	87	85	25	9	2	11	7	0	3	6	8
Eagle	66	87	83	64	4	1	2	13	0	--	--	--
Gage	69	83	81	42	4	2	--	--	--	--	--	--
HiPlains	--	--	--	--	-	-	3	0	0	0	0	--
Homestead	71	86	--	90	3	T	--	--	--	--	--	--
Lancer	88	86	82	39	4	1	4	0	4	8	4	8
Lancota	66	89	86	27	5	2	3	1	2	3	0	5
Larned	73	90	87	60	5	1	6	20	6	13	33	18
Lindon	59	85	86	T	4	0	1	0	0	0	0	1
Sage	70	85	83	78	3	1	2	16	0	12	22	17
Scout 66	74	85	86	66	6	4	11	11	20	24	48	24
Scoutland	71	83	--	42	4	4	--	--	--	--	--	--
Sentinel	76	86	88	19	3	T	2	6	0	--	--	--
Turkey	97	87	85	85	7	7	25	51	43	12	24	32
Vona	36	83	85	9	5	0	T	0	0	0	0	2
Warrior	--	--	85	--	-	-	11	0	0	--	--	--
Dif. sig.	8.6	N.S.	N.S.	32.2	2.2	3.0	7.8	16.9	9.4	7.5	22.2	10.3

Table 18. Winter barley variety tests. 1975-1979.

Variety	1975 3 tests		1976 4 tests		1977 3 tests		1978 6 tests		1979 3 tests	
	Surv. %	Yield bu/A (kg/ha)	Surv. %	Yield bu/A (kg/ha)	Surv. %	Yield bu/A (kg/ha)	Surv. %	Yield bu/A (kg/ha)	Surv. %	Yield bu/A (kg/ha)
Kearney	94	53 (2850)	57	33 (1780)	85	37 (1990)	55	24 (1290)	36	42 (2260)
Nebar	81	72 (3870)	62	37 (1990)	71	53 (2850)	50	30 (1610)	30	38 (2040)
Paoli	85	69 (3710)	45	36 (1940)	50	42 (2260)	--	-- ----	--	-- ----
NE76103 1/	--	-- ----	--	-- ----	75	55 (2960)	72	38 (2040)	34	49 (2640)
NE76129 2/	--	-- ----	--	-- ----	65	44 (2370)	63	41 (2210)	36	48 (2580)
NE76138 3/	--	-- ----	--	-- ----	83	62 (3340)	72	42 (2260)	35	45 (2420)
NE76141 4/	--	-- ----	--	-- ----	82	58 (3120)	68	34 (1830)	34	49 (2640)
NE76142 4/	--	-- ----	--	-- ----	86	58 (3120)	74	32 (1720)	29	50 (2690)
NE76143 4/	--	-- ----	--	-- ----	73	52 (2800)	68	36 (1940)	31	48 (2580)
NE76144 5/	--	-- ----	--	-- ----	66	52 (2800)	66	38 (2040)	28	51 (2740)
NE76145 5/	--	-- ----	--	-- ----	57	50 (2690)	60	38 (2040)	23	45 (2420)
NE76146 6/	--	-- ----	--	-- ----	70	50 (2690)	66	38 (2040)	26	36 (1940)
NE76147 6/	--	-- ----	--	-- ----	80	59 (3170)	78	43 (2310)	34	49 (2640)
NE76148 7/	--	-- ----	--	-- ----	82	64 (3440)	66	38 (2040)	39	55 (2960)
NE76156 7/	--	-- ----	--	-- ----	79	60 (3230)	63	38 (2040)	34	48 (2580)
NE76162 7/	--	-- ----	--	-- ----	63	52 (2800)	60	38 (2040)	34	48 (2580)
Centurk (w.w.)	--	-- ----	99	57 (3830)	98	61 (4100)	97	39 (2620)	91	55 (3700)
Dif. req. sig.	--	9.5 (511)	N.S.	11.1 (597)	15	11.5 (619)	15.3	8.9 (479)	N.S.	N.S.

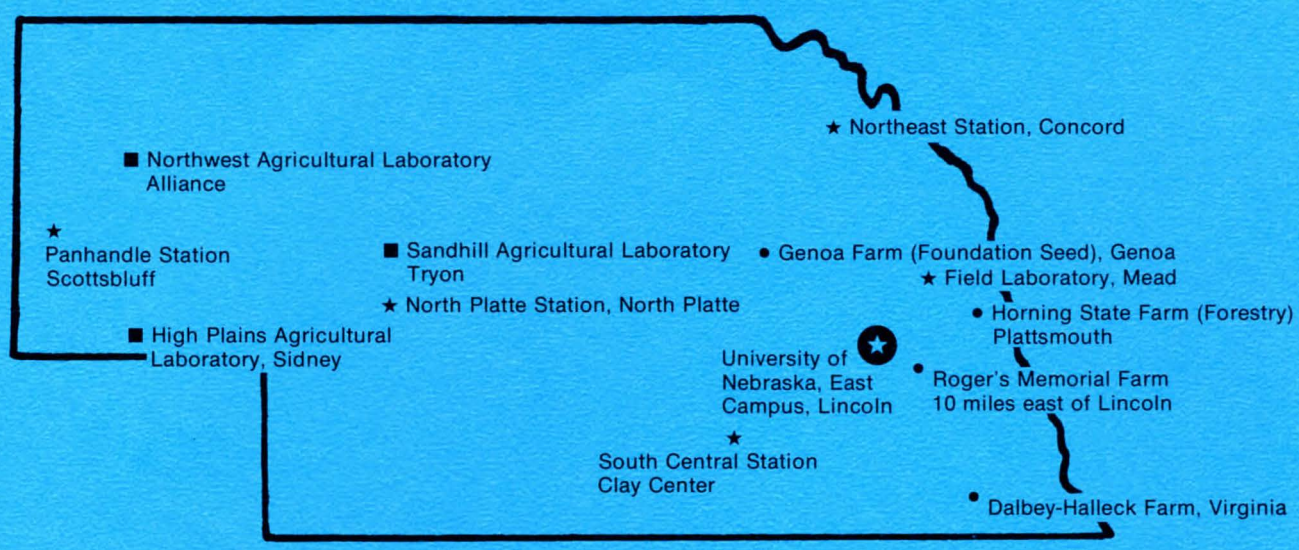
1/ Hudson Sel/3/Sabbaton/Meimi//Decatur
2/ Sabbaton/Meimi//Decatur/3/Paoli
3/ Dicktoo/Reno//Shonan/Randolph/3/OAC 2-11/Decatur
4/ Decatur/Chase/3/Sabbaton/Meimi//Will
5/ Decatur/Chase/3/Mo. 1222//Sabbaton/Meimi
6/ Decatur/Chase//OAC 2-11/Decatur
7/ Sabbaton/Meimi//Will/3/Sabbaton/Meimi//Decatur

Table 19. Winter barley variety tests. 1979.

Variety	Webster County			Perkins County		Cheyenne County		Average	
	Survival %	Ldg. %	Yield bu/A (kg/ha)	Survival %	Yield bu/A (kg/ha)	Survival %	Yield bu/A (kg/ha)	Height in (cm)	Weight lb/bu (kg/hl)
Kearney	11	73	39 (3000)	73	53 (2850)	25	34 (1830)	33 (84)	48.7 (62.7)
Nebar	4	2	27 (1450)	73	58 (3120)	12	28 (1510)	29 (74)	47.0 (60.5)
NE76103 1/	14	2	56 (3010)	73	55 (2960)	15	35 (1880)	31 (79)	48.9 (62.9)
NE76129 2/	11	14	41 (2210)	76	66 (3550)	20	38 (2040)	27 (69)	46.1 (59.3)
NE76138 3/	10	1	46 (2480)	73	54 (2910)	22	36 (1940)	29 (74)	48.1 (61.9)
NE76141 4/	7	2	46 (2480)	78	57 (3070)	17	45 (2420)	31 (79)	44.1 (56.8)
NE76142 4/	18	9	59 (3170)	55	52 (2800)	15	38 (2040)	33 (84)	43.6 (56.1)
NE76143 4/	11	2	47 (2530)	61	58 (3120)	22	39 (3000)	31 (79)	44.9 (57.8)
NE76144 5/	5	2	49 (2640)	61	62 (3340)	18	41 (2210)	32 (81)	47.6 (61.3)
NE76145 5/	7	5	50 (2690)	55	60 (3230)	8	25 (1350)	30 (76)	47.7 (61.4)
NE76146 6/	6	11	32 (1720)	63	57 (3070)	9	18 (970)	28 (71)	48.1 (61.9)
NE76147 6/	11	1	42 (2260)	65	57 (3070)	27	47 (2530)	28 (71)	46.5 (59.8)
NE76148 7/	18	4	60 (3230)	74	58 (3120)	25	48 (2580)	29 (74)	48.6 (62.5)
NE76156 7/	10	2	47 (2530)	83	63 (3390)	10	34 (1830)	31 (79)	49.9 (64.2)
NE76162 7/	11	4	56 (3010)	76	67 (3610)	2	16 (860)	30 (76)	48.3 (62.1)
Centurk w.w.	89	2	48 (3010)	94	48 (3010)	89	68 (4270)	35 (89)	59.2 (76.2)
Dif. sig.	7.7	8.9	6.3 (339)	15.0	8.2 (441)	N.S.	19.0 (1020)	1.9 (5)	2.1 (2.7)

1/ Hudson Sel/3/Sabbaton/Meimi//Decatur.
2/ Sabbaton/Meimi//Decatur/3/Paoli.
3/ Dicktoo/Reno//Shonan/Randolph/3/OAC 2-11/Decatur.
4/ Decatur/Chase/3/Sabbaton/Meimi//Will.
5/ Decatur/Chase/3/Mo. 1222//Sabbaton/Meimi.
6/ Decatur/Chase//OAC 2-11/Decatur.
7/ Sabbaton/Meimi//Will/3/Sabbaton/Meimi//Decatur.

Agricultural Research for All of Nebraska



The agricultural research division of the Institute of Agriculture and Natural Resources is the Nebraska Agricultural Experiment Station. The Experiment Station relies on its research centers and field laboratories to provide applied knowledge for development of Nebraska's largest industry—agriculture. In addition, many Nebraska farmers cooperate by furnishing land and other facilities for research projects. This provides information from areas not well represented by stations.

The Cooperative Extension Service transmits data to users through District and County Extension Offices. Area and County Extension Agents are available to provide additional interpretation and more specific recommendations.

Nebraska is a large state and has great variation due to topography and the continental type of climate. The elevation ranges from 1,000 feet to near a mile high in the northwest portion of the state, rainfall varies from 14 to 40 inches per year, and the soil types vary from sands to heavy clays. The research program thus is broad in subject matter and geography, resulting in the need for various stations and satellite locations.

The Cooperative Extension Service provides information and educational programs to all people without regard to race, color or national origin.