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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION
Lincoln, Nebraska

COMPARISON OF
WINTER WHEAT VARIETIES GROWN IN COOPERATIVE
NURSERY EXPERIMENTS IN THE
HARD RED WINTER WHEAT REGION
IN 1967

Preliminary report, not for publication^{1/}

^{1/} This is a progress report of cooperative investigations containing data, the interpretation of which may be modified with additional experimentation. Therefore, publication, display, or distribution of any data or any statements herein should not be made without prior written approval of the Crops Research Division, ARS, USDA, and the cooperating agency or agencies concerned.

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By

V. A. Johnson^{1/}

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^{1/} The writer expresses appreciation to Dorothy M. Wilson and Mrs. Katie Meierhenry for their assistance in preparing this report.

PERSONNEL CHANGES

W. Q. Loegering, who for many years has had charge of the Uniform and International Wheat Rust Nurseries, retired from Federal service in 1967. Leadership of the International Rust Nursery program has been assumed by R. A. Kilpatrick, formerly located at College Station, Texas.

R. C. Bellingham, ARS Plant Pathologist stationed at Oklahoma State University, also resigned. Ross has moved to Montana.

J. R. Lofgren, who has assisted E. G. Heyne at Kansas State University for several years, has accepted a position with the Minnesota Agricultural Experiment Station at Crookston.

B. C. Curtis, in charge of the wheat breeding program at Colorado State University, resigned to become Director of Wheat Research for Cargill, Inc. He will continue to headquarter at Fort Collins, Colorado.

G. O. Hinze, Agronomist at the U. S. Central Great Plains Station, Akron, Colorado, has resumed graduate study at Purdue University. He is replaced at the Akron Station by Kenneth Takeda.

B. J. Kolp, in charge of small grains research at the University of Wyoming, Laramie, is on a 2-year foreign assignment in Somalia. In his absence, K. E. Bohnenblust and R. G. Sackett will carry on the small grains work at Laramie.

C. A. Watson, who has directed wheat quality testing at Montana State University, Bozeman, resigned to accept a position with the USDA in Washington, D. C.

R. O. Weibel, University of Illinois, is on a foreign assignment in India. The wheat program will be carried on by C. M. Brown.

W. H. Miller is now the crops specialist at the North Montana Branch Station, Havre, Montana.

Dave Johnston, formerly associated with the wheat project at the University of Minnesota has taken a wheat breeding position with Cargill, Inc.

COOPERATING AGENCIES, STATIONS, AND PERSONNEL
(The asterisk denotes U.S.D.A. employees)

CEREAL CROPS RESEARCH BRANCH, A.R.S., U.S.D.A.:

Wheat Investigations	L. P. Reitz*
Hard Red Winter Wheat Region	V A Johnson*
Rust Investigations	R. A. Kilpatrick*
Quality Investigations	K. F. Finney*

TEXAS AGRICULTURAL EXPERIMENT STATION:

College Station	Texas A & M University	I. M. Atkins * (State Leader)
Soil and Crop Sciences		J. H. Gardenhire
Denton	Substation No. 6	K. A. Lahr
Chillicothe	Substation No. 12	K. B. Porter
Bushland	Southwestern Gr. Plains Field Sta.	N. E. Daniels

NEW MEXICO AGRICULTURAL EXPERIMENT STATION:

Clovis	Plains Substation	R. E. Finkner
		C. H. Hsi

OKLAHOMA AGRICULTURAL EXPERIMENT STATION:

Stillwater	Oklahoma State University	E. L. Smith
Agronomy		E. E. Sebesta*
		B. B. Tucker
		R. M. Oswalt
Botany and Plant Pathology		H. C. Young
Entomology		H. L. Chada*
		E. A. Wood, Jr.*
Biochemistry		D. C. Abbott
Cherokee	Wheat Land Conservation Sta.	E. G. Greer, Jr.
Woodward	Southern Great Plains Field Sta.	R. A. Hunter
Goodwell	Panhandle Agr. Experiment Sta.	R. A. Peck

KANSAS AGRICULTURAL EXPERIMENT STATION:

Manhattan	Kansas State University	E. G. Heyne
Agronomy		T. L. Walter
		E. D. Hansing
Plant Pathology		L. E. Browder*
		J. R. Burleigh*
Entomology		R. H. Painter
		H. W. Somsen*
Flour and Feed Milling Industries		J. A. Shellenberger
		J. A. Johnson
		A. B. Ward
Hays	Ft. Hays Branch Station	R. W. Livers
Garden City	Garden City Agr. Exp. Station	W. D. Stegmeier
Colby	Colby Branch Station	J. R. Lawless

COLORADO AGRICULTURAL EXPERIMENT STATION:

Ft. Collins	Colorado State University	
Agronomy		
Akron	U.S. Central Gr. Plains Sta.	K. Takeda
Hesperus	San Juan Basin Branch Sta.	K. Schliebe
Springfield	Southeastern Colo. Branch Sta.	H. O. Mann

IOWA AGRICULTURAL EXPERIMENT STATION:

Ames	Iowa State University	
Agronomy		R. E. Atkins

NEBRASKA AGRICULTURAL EXPERIMENT STATION:

Lincoln	University of Nebraska	
Agronomy		V. A. Johnson*
		J. W. Schmidt
		M. R. Morris
		P. J. Mattern
North Platte	North Platte Exp. Station	P. T. Nordquist
Alliance	Box Butte Exp. Station	P. L. Ehlers
Concord	Northeast Nebr. Exp. Sta.	U. U. Alexander

WYOMING AGRICULTURAL EXPERIMENT STATION:

Laramie	University of Wyoming	
Div. of Plant Science (Crops)		K. E. Bohnenblust
		R. G. Sackett
(Plant Pathology & Horticulture)		G. H. Bridgman
Cheyenne	Archer Substation	Alan Herold
Gillette	Gillette Substation	L. R. Landers
Sheridan	Sheridan Substation	L. R. Richardson

SOUTH DAKOTA AGRICULTURAL EXPERIMENT STATION:

Brookings	South Dakota State University	
Agronomy		D. G. Wells
Plant Pathology		G. W. Buchenau
Highmore	Central Substation	Frank Holmes
Presho	South Central Research Farm	Harry Geise

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION:

Fargo	North Dakota State University	
Agronomy		G. S. Smith
		R. C. Frohberg
Dickinson	Dickinson Substation	T. J. Conlon
Williston	Williston Substation	A. A. Schneiter

MONTANA AGRICULTURAL EXPERIMENT STATION:

Bozeman	Montana State University	
Plant and Soil Science		J. R. Welsh
		C. R. Haun
Moccasin	Central Montana Branch Station	A. L. Dubbs
Havre	North Montana Branch Station	W. H. Miller

IDAHO AGRICULTURAL EXPERIMENT STATION:

Aberdeen	Aberdeen Branch Station	D. W. Sunderman*
Tetonia	Tetonia Branch Station	B. A. McCallum

MINNESOTA AGRICULTURAL EXPERIMENT STATION:

St. Paul Institute of Agriculture
Agronomy and Plant Genetics R. E. Heiner*
Waseca Southern Experiment Sta. J. R. Thompson

ILLINOIS AGRICULTURAL EXPERIMENT STATION:

Urbana University of Illinois
Agronomy C. M. Brown
Plant Pathology W. M. Bever

MISSOURI AGRICULTURAL EXPERIMENT STATION:

Columbia University of Missouri
Field Crops J. M. Poehlman

CANADA DEPARTMENT OF AGRICULTURE:

Lethbridge Alberta Agr. Exp. Station M. N. Grant

ACCESSION NUMBERS ASSIGNED

The last Accession Number listing for hard red winter wheats appeared in the 1964 report. Hard winter wheats assigned numbers since 1964 appear in the listing that follows:

<u>C. I. NO.</u>	<u>NAME OR PEDIGREE</u>	<u>STATE NO.</u>	<u>SOURCE</u>
13869	(Bk-Rex x Rio-Rex) x Utah 1752-53	A5598-35-10	Idaho
13870	"	A5598-36-3	"
13871	"	A5598-36-6	"
13872	Bulk Winterhardiness 1904-7	---	Mont.
13873	(Alicel x Rex P-80) x Cnn ³ Sel. 34	ID 9130	Idaho
13874	Triumph x C.I. 12406	OK 627514	Okla.
13875	"	OK 627530	"
13876	Danne Selection	OKC-129-16	"
13877	"	OKC-150-6	"
13878	C.I. 12703 x KF-Sol-Wi-Hope-Cnn-Wi ²	TX60C4968	Texas
13879	"	TX60C4965	"
13880	Westmont ² x P.I. 178383, 8-10-8	MT6619	Mont.
13998	Trader (Wrr x Sk-Cnn ²)	NB64322	Nebr.
13999	Trapper (Wrr x Sk-Cnn ²)	NB64323	"
14000	Winalta Selection	---	So. Dakota
14001	So. Dak. Selection	SD56-497	"
14002	"	SD56-758	"
14051	{ (Hs x Tk) x Rdt } x (Of x Eg)	217-61-19-5	Utah
14052	"	217-61-7-14	"
14157	Shawnee (Ottowa Sel.)	KS 60770	Kans.

NEW VARIETIES

The Kansas Agricultural Experiment Station and the Agricultural Research Service approved the release of Kansas growers of Ottawa Selection KS60770 under the name "Shawnee". It has been assigned the C. I. number 14157. Shawnee is similar to Ottawa in all agronomic traits but possesses distinctly better quality than Ottawa.

First distribution of foundation seed of two new winter wheat varieties was made by the Nebraska Agricultural Experiment Station and the Agricultural Research Service in the summer of 1967. They are Guide (Cnn² x Ky-Mta) C. I. 13856 and Scout 66, C. I. 13996. Decision to release these varieties was made by the Nebraska Experiment Station and A. R. S. in December, 1966. Guide is an early-maturing variety with moderately short stiff straw and excellent quality. It is resistant to currently prevalent stem rust races. Scout 66 is a composite of 85 selections from the Scout variety. It is similar to Scout in all characteristics but is more uniform in height, maturity, and milling and baking properties. It is equal to or superior to Scout in yield, winterhardiness and quality.

The Nebraska and Colorado Agricultural Experiment Stations and A. R. S. also approved the release of Trader (Wrr x Sk-Cnn², NB64322), C. I. 13998 and Trapper (Wrr x Sk-Cnn², NB64323), C. I. 13999 in 1967. Both varieties are similar to their Warrior parent in appearance. They combine high yield with excellent stem rust resistance, winterhardiness, and quality. Trapper is the more winterhardy of the two. Foundation and registered seed of Trader and Trapper will be available for general distribution to Nebraska and Colorado growers in the summer of 1968.

The Oklahoma Agricultural Experiment Station released the winter wheat variety Triumph x Triticum - Agropyron elongatum, C. I. 13523, under the name "Agent" in 1967. Agent is very productive and highly resistant to leaf rust but lacks winterhardiness and quality. It is intended as a special purpose variety for use in southeastern Oklahoma where resistance to leaf rust is particularly important.

The Crops Research Division, A. R. S., participated in the development of all of these newly released varieties and the release of all of them except Agent.

THE 1967 CROP YEAR

The 1967 winter wheat crop year was characterized by subnormal moisture throughout most of the fall, winter, and spring. Severe freezes on April 21-24 and again on May 1-2 caused severe damage to the wheat crop in western Nebraska and Kansas, eastern Colorado and parts of Oklahoma and Texas. Cool temperatures with timely rains in May permitted excellent recovery of much of the freeze-damaged wheat in Nebraska, Kansas and Colorado.

Continued drought throughout the winter and early spring in the southwest caused irreparable damage to the dryland wheat in the Texas panhandle, eastern New Mexico, western Oklahoma, and southwest Colorado. Abandonment of wheat in these areas was heavy and yields were sharply reduced. While the drought was widespread in Kansas, severe damage to the wheat was mainly restricted to limited areas of south central, southwestern, and extreme west central Kansas.

Leaf rust was present on the wheat over the entire region. Dry weather in the south advanced maturity of the wheat and held down infection severity. Leaf rust became more severe in the northern areas where the wheat was later and conditions for development more favorable. Stem rust remained generally light throughout the region except in late-maturing fields of susceptible varieties in the northern areas.

<u>State</u>	<u>Seeded acres 1,000</u>	<u>Harvested acres 1,000</u>	<u>Aband- onment %</u>	<u>Yield per harvested acre bu.</u>	<u>Produc- tion (bu.) 1,000</u>
New Mexico	372	141	62.1	28.0	3,948
Texas	5,578	3,326	40.4	16.0	53,216
Colorado	3,304	1,941	41.3	19.5	37,850
Oklahoma	6,480	5,217	19.5	17.0	88,689
Kansas	13,146	11,081	15.7	20.0	221,620
Wyoming	318	270	15.1	26.0	7,020
Nebraska	3,583	3,325	7.2	26.5	88,112
South Dakota	875	831	5.0	35.0	29,085
Montana	2,877	2,807	2.4	30.0	84,210

Data from U.S.D.A. Statistical Reporting Service, Crop Reporting Board
Cr Pr 2-1 (67) Washington, D. C.

The severity of the drought in the southwest is reflected in the acreage abandonment figures for winter wheat shown above. Much of the harvested wheat in New Mexico was from irrigated acres which is reflected in the comparatively high acre yields. Nearly one-third of the Texas harvested wheat acres also were from irrigated land. Low acreage abandonment and relatively high acre yields were recorded in Nebraska, South Dakota and Montana.

UNIFORM QUALITY SERIES

This is comprised of newly released varieties and advanced experimental varieties under consideration for release to growers. These are grown with appropriate check varieties at most cooperating stations in the region. Seed in the amount of 10 pounds of each variety is submitted from each station to the Hard Winter Wheat Quality Laboratory for evaluation. Varieties grown in each district in 1967 are listed.

<u>Central District</u>		<u>Northern District</u>	
Comanche*	11673	Warrior*	13190
Guide	13856	Winalta	13670
Nbr x Cnn-Ky-Mta	13857	Trader (Wrr x Sk-Cnn ²) (NB64322)	13998
Shawnee (KS60770)	14157	Trapper (Wrr x Sk-Cnn ²) (NB64323)	13999
Concho x Triumph ²	KS644	Sk x Cnn ²	NB64365
Parker	13285	BWH 1904-7	MT639

Southern District

Comanche*	11673
Danne Sel. 129-16	13875

*Check variety

SOUTHERN REGIONAL PERFORMANCE NURSERY

The nursery was grown in 25 tests at 23 sites. Both irrigated and dryland tests were seeded at Bushland, Texas and at Clovis, New Mexico. At each site the dryland nursery was lost from drought. In contrast to this situation, the nursery at Fort Collins, Colorado was abandoned because of excessive precipitation. The nursery at Ames, Iowa was abandoned because heavy winterkill and hail destroyed or severely damaged nurseries at Stillwater, Oklahoma, Garden City, Kansas, Springfield, Colorado, and Burlington, Colorado. Pedigrees and C. I. or Selection numbers for entries in the 1967 SRPN appear in the listing that follows:

<u>Entry No.</u>	<u>Pedigree</u>	<u>C. I. or Sel. No.</u>	<u>Source</u>
1	Kharkof	1442	Check
2	Early Blackhull	8856	Check
3	Comanche	11673	Check
4	Scout	13546	Nebr.
5	Scout Reselection	13886	Colo.
6	"	13887	"
7	Scout 66	13996	Nebr.
8	Guide (Cnn ² x Ky-Mta)	13856	"
9	Nbr x Cnn-Ky-Mta	13857	"
10	Shawnee (Ottawa Selection)	(KS60770) 14157	Kans.
11	Concho x Triumph ²	KS644	"
12	Triumph	12132	Okla.
13	Triumph x C. I. 12406	(OK627514) 13874	"
14*	Triumph x C. I. 12406	(OK627530) 13875	"
15	Danne Selection	(OKC-129-16) 13876	"
16*	"	(OKC-150-6) 13877	"
17**	Trader (Wrr x Sk-Cnn ²)	(NB64322) 13998	Nebr.
18**	Trapper (")	(NB64323) 13999	"

* New entry in 1967

** Entered from the Northern Regional Performance Nursery.

Data Obtained

Denton--Precipitation was below normal in every month from October through April. The deficiency for the winter wheat crop season (September-May) was 7 inches at Denton. Temperatures were favorable throughout the period. Leaf rust became heavy by maturity but stem rust remained light. Mildew was sufficiently heavy for readings.

Chillicothe--After a wet September (6.34 inches of rain) dry conditions prevailed throughout the fall and winter. Precipitation was above normal in April but May was again dry. The deficiency for the winter wheat season was nearly 8 inches. Diseases were of no consequence at Chillicothe.

Bushland--Only 7.6 inches of rain fell at Bushland between September, 1966, and May, 1967. Nearly one-half of the total occurred in April. The dryland nursery was abandoned due to the drought, but fairly good yields were recorded in the irrigated test which had a 3-inch preplant irrigation and 3+ inch irrigations in November, March, April, and two in May. The irrigated test was fertilized with 120 lbs. of nitrogen, preplant application.

Clovis--Good stands were obtained on the irrigated test. The dryland test was a failure due to the drought. Temperatures at Clovis reached lows of 30° F. on April 22, 28° on April 24, 30° on May 1 and 29° on May 2 causing some freeze damage. Very high yields were made with one variety exceeding 93 bushels per acre.

Oklahoma Stations--The SRPN was grown at Stillwater, Cherokee and Woodward. The nurseries at all locations were seeded at the normal time with soil moisture adequate for good emergence and early fall growth. Drought stress was evident during the late fall and winter months but rains in April and May permitted good recovery. Subfreezing temperatures occurred in late April and early May but there was little or no evidence of freeze injury in the nurseries. Diseases and insects were of no consequence in the Cherokee and Woodward nurseries. At Stillwater, powdery mildew and greenbugs in April probably caused some damage. A hail storm on May 14 produced severe damage to the nursery at Stillwater. The nursery was harvested to provide seed for quality evaluation but yields were not recorded.

Manhattan--Dry soil conditions prevailed at seeding time. The nursery emerged slowly but quite uniformly. It made only limited growth in the fall and winter. Soil moisture was exhausted by late April and heading and blooming were irregular. Precipitation in late May and June favored the late varieties. Freezing temperatures on April 22 caused some damage with the earlier varieties most affected.

Hays--There was good soil moisture at seeding time. The winter and spring were dry. Severe freezes on April 24 and May 2 produced serious damage, especially in the earlier varieties. The late May to harvest period was very wet at Hays. There was a mild leaf rust infection but no insect problems.

Garden City--Less-than-normal fall growth occurred because of cool temperatures following seeding and subnormal soil moisture. Stand establishment was good following a 1-inch rain on October 18. There was excellent snow cover during the coldest periods of the winter but subsequent drifting exposed large portions of the nursery. Very uneven spring growth and drought stress was

apparent in the nursery -- probably related to the uneven winter snow cover and uneven distribution of army and pale western cutworms. Larvae counts ranged from 5-10 per square foot in exposed areas to less than 1 larva per square foot in areas covered by snow. Aerial application of Endrin was made in mid-April. Temperatures of 24 and 26° F. on May 1 and 2 caused some damage to varieties of the Triumph maturity. Some stem rust appeared late in the season. The nursery was completely destroyed by hail storms on July 2 and 3.

Colby--The freezes in April and May did less damage at Colby than at Hays probably due to the later growth and development of the wheat at Colby. The fall, winter and early spring were dry. Stem rust became heavy on late tillers of susceptible varieties. Late rains favored the later maturing varieties in the nursery.

Fort Collins--An excellent nursery was established in the fall at Fort Collins. Conditions during the spring and summer were too good. Continuing cool weather and too much rain produced rank growth and after blooming when the heads begin to fill all varieties lodged permanently and were not harvested. Leaf and stem rust became very heavy. The leaf rust infection was natural but the stem rust was mostly from an artificially created epidemic.

Akron--Good fall stands were obtained. Cool fall temperatures permitted only limited growth of the wheat. The winter was very mild. Excellent spring growth was supported by stored soil moisture until late spring rains came. The freezes on April 23 and May 1 caused heavy killing of tillers in the early varieties. Much retillering occurred and the early varieties made respectable yields although not as good as the less damaged late maturing ones. Heading was erratic as a result of the retillering and was not recorded. Precipitation was heavy in June and July and caused some lodging. Brown necrosis became heavy on several Hope-derived stem rust resistant varieties in the nursery. Stem rust came in late and caused little damage.

Burlington--A severe hail storm completely destroyed the SRPN grown for the first time at Burlington.

Springfield--Hail on June 16 destroyed the nursery at Springfield.

Julesburg--Fall stands were thin but uniformly so. The very dry winter and spring permitted only fair tillering of varieties accounting in part for the below-normal yields. Freeze damage occurred but was not as severe as at Akron. Hail in mid-July caused 10-15% grain loss which appeared to be similar for all varieties. Diseases, particularly leaf rust, occurred early but are not believed to have produced much reduction in yield. Stem rust developed late in the season.

Yellow Jacket--This replaces the nursery on the western slope of the Rocky Mountains in Colorado which was formerly grown at Hesperus. Soil moisture during the fall and early winter was adequate but the remainder of the winter and spring were dry. Some precipitation was received in early June. There were no disease or insect problems.

Mead--Field testing formerly conducted at Lincoln was moved to Mead, 30 miles north of Lincoln, in 1967. The SRPN was seeded on oat ground and the dry fall, winter, and early spring revealed considerable soil variation on the nursery site. Good late spring precipitation occurred and normal yields were

made by varieties in the nursery. Both leaf and stem rust became heavy enough for readings to be made. Grain yields and test weights did not appear to be measurably affected by the rust.

North Platte--Good conditions prevailed throughout the winter wheat crop season at North Platte. The early varieties in the nursery showed some damage from the late spring freezes while the later varieties escaped with no measurable effects.

Alliance--There were also favorable conditions throughout the season at Alliance. Timely precipitation and cool temperatures resulted in the highest grain yields probably ever recorded at the Alliance station. The wheat was not far enough developed to be affected by the freezes, except for leaf burn.

Columbia--Growing conditions were not reported. Grain yields were high and some lodging occurred.

Ames--Good fall stands were obtained but there was only limited fall growth. The dry fall did not provide sufficient moisture for strong plant development. Winter survival was poor in the more tender varieties and the nursery was not harvested. Both leaf and stem rust were present.

Urbana--There was no winterkilling at Urbana. Spring precipitation was adequate for fairly high yields. A late epidemic of stem rust caused some damage especially in the later susceptible varieties.

Table 1.--Yield and other data for varieties grown in the southern regional performance nursery at 22 stations in the hard red winter wheat region in 1967.

Denton, Texas
Four replications

C. I. or Sel. No.	Date : April	Plant : In.	Mildew : %	Rust : Leaf %	Stem : %	Weight : per bushel	Av. acre yield : 1967	Av. acre yield : 1966-1967	No. years : grown	Percent : of Kharkof
						Lbs.	Bu.	Bu.		
13874	4	36	T	60	0(E)	60	40.3	35.1	2	156.7
13877	3	37	20	70	20	60	39.4	--	1	153.3
13546	9	36	T	70	5	59	39.3	31.6	7	132.6
13886	8	37	5	70	2	58	38.4	31.2	3	148.4
13856	7	34	15	90	0(E)	59	37.1	32.9	4	160.1
13857	1	34	T	80	0(E)	60	37.1	30.1	4	146.3
13875	4	36	T	60	0(E)	61	37.1	--	1	144.4
13996	7	36	T	70	0	59	36.5	29.1	3	145.8
KS644	4	36	5	70	5	61	35.9	31.1	2	138.6
12132	6	35	10	70	0(E)	60	35.0	30.4	7	123.3
13887	8	37	T	70	0	59	35.0	28.1	3	136.0
8856	6	36	10	60	0	60	33.6	30.8	31	130.3
13876	6	33	20	70	0(E)	60	32.1	29.7	2	132.4
11673	14	36	40	40	2	59	31.2	26.7	27	127.8
13998	12	36	40	70	2	57	30.1	--	1	117.1
13999	13	35	10	70	2	58	29.6	--	1	115.2
1442	13	38	20	50	2	57	25.7	22.4	31	100.0
14157	13	34	15	50	0	59	23.7	20.9	2	93.1

L.S.D. .05 = 4.4 bushels; C.V. = 9.0%

Chillicothe, Texas
Four replications

C. I. or Sel. No.	Date		Plant height	Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
	Headed	Ripe	In.	Lbs.	Bu.	Bu.		
	April	May						
13546	14	15	30	60.5	29.2	22.2	7	142.8
12132	11	11	29	61.5	28.5	21.7	7	139.8
13996	14	15	29	60.5	28.3	21.0	3	176.8
13887	16	16	30	60.0	28.0	20.7	3	170.2
13874	8	9	27	61.0	25.8	20.9	2	141.4
13998	25	27	29	59.0	25.5	--	1	113.8
KS644	11	12	29	62.0	24.3	19.3	2	130.8
13876	12	14	27	62.0	24.3	20.3	2	137.6
13856	11	12	23	60.0	24.1	19.2	4	154.0
13857	10	11	24	60.0	23.8	18.7	4	149.5
13877	10	10	25	61.0	23.1	--	1	103.1
1442	27	30	31	59.5	22.4	14.8	29	100.0
14157	18	20	30	60.5	22.0	16.7	2	113.2
11673	19	22	31	60.5	21.3	16.9	29	117.1
8856	10	12	31	60.0	21.1	17.5	29	108.9
13886	15	15	31	60.5	19.4	16.5	3	147.0
13999	26	28	29	59.0	19.4	--	1	86.6
13875	11	11	28	61.0	18.4	--	1	82.1

L.S.D. .05 = 9.1 bushels; C.V. = 27.1%.

Bushland, Texas
Three replications, irrigated

C. I. or Sel. No.	Date headed	Plant height	Straw yield	Straw- grain ratio	Survival dryland ^{1/}	Weight per bushel	Av. acre yield: 1967	1966- 1967	No. years: grown	Percent of Kharkof
	April:	In.	Tons/A:		%	Lb.	Bu.	Bu.		
14157	5/1	37	3.87	1.83	48	60.8	70.6	62.8	2	158.8
13996	30	35	3.19	1.70	45	62.0	62.4	59.2	2	149.7
13876	26	35	3.04	1.67	14	61.2	61.1	56.4	2	142.6
13886	30	38	3.36	1.89	50	61.5	59.5	55.6	2	140.5
13857	30	36	3.13	1.75	65	60.9	59.4	57.2	3	127.8
13999	5/12	39	3.85	2.18	38	62.2	58.8	--	1	144.5
13887	5/1	37	3.14	1.83	45	61.8	57.2	53.0	2	132.7
13877	26	37	2.79	1.64	30	61.5	56.9	--	1	139.8
13874	24	36	2.93	1.73	20	61.1	56.4	57.2	2	144.6
11673	5/8	37	3.49	2.09	48	59.9	56.0	53.2	15	113.9
13546	30	35	3.21	1.90	45	61.8	55.4	56.6	4	131.5
13875	28	36	3.07	1.90	24	60.8	54.0	--	1	132.7
13856	28	35	2.85	1.77	45	62.5	53.8	52.8	3	118.8
12132	27	37	3.02	1.91	23	60.9	53.2	50.0	4	113.3
KS644	25	37	2.99	1.91	23	60.9	52.2	46.9	2	118.5
13998	5/10	39	3.59	2.32	45	59.9	52.1	--	1	128.0
8856	21	38	2.68	1.83	48	60.8	49.0	43.4	15	94.7
1442	5/14	40	3.83	3.14	40	59.1	40.7	39.6	15	100.0

^{1/} Survival notes, taken on 4/15/67, represent general condition as well as survival. There had been no effective precipitation from seeding to April 1. The dryland nursery was abandoned.

L.S.D. .05 = 8.1 bushels; C.V. = 8.8%.

Clovis, New Mexico
Four replications, irrigated

C. I. or Sel. No.	Date		Plant height	Weight per bushel	Av. acre yield		No.	Percent
	Headed	Ripe			1967	1966- 1967	years	of
	April	June	In.	Lb.	Bu.	Bu.		Kharkof
13998	5/10	24	46	60	93.2	--	1	112.6
13999	5/10	22	45	60	85.6	--	1	103.4
14157	5/2	20	46	62	83.1	75.6	2	91.8
1442	5/12	24	52	59	82.8	82.4	5	100.0
13876	28	15	39	63	81.4	85.0	2	103.2
13996	29	15	43	63	80.9	80.2	2	97.3
13886	29	16	42	63	80.4	81.4	2	98.8
13887	29	15	43	63	78.1	82.3	2	99.9
13546	29	16	42	63	72.9	81.7	5	111.9
13874	27	15	42	63	72.8	72.8	2	88.4
13875	28	15	41	63	70.4	--	1	85.0
13856	28	14	41	62	69.1	73.3	3	95.7
11673	5/4	17	46	62	63.3	69.9	5	91.3
13877	27	15	39	63	62.0	--	1	74.9
13857	28	15	40	62	58.7	70.4	3	90.4
12132	28	15	42	62	58.3	61.4	5	85.7
KS644	27	15	42	63	56.4	59.8	2	72.6
8856	25	15	42	62	54.1	63.5	5	85.4

L.S.D. .05 = 10.6 bushels; C.V. = 9.7%.

Stillwater, Okla.; Garden City, Kans.; and Ames, Iowa
Miscellaneous agronomic data

C. I. :	Stillwater			Garden City:		Ames	
or :	Date :	Leaf Rust:		Date :	Winter :	Rust	
Sel. No.:	headed:	Sev.:	Type:	headed :	survival:	Leaf:	Stem
	:April :	% :		May :	% :	% :	% :
1442	26	25	4	22	43	60	50
8856	14	10	4	10	9	70	35
11673	22	5	4	18	5	60	45
13546	17	10	4	17	7	40	Tr.
13886	17	5	4	16	4	35	Tr.
13887	18	10	4	18	11	30	5
13996	18	5	4	17	6	30	5
13856	11	10	4	10	15	40	10
13857	13	20	4	12	14	45	10
KS60770	22	10	4	17	8	60	10
KS644	13	10	4	10	11	25	30
12132	14	10	4	12	17	35	25
13874	11	5	4	15	7	35	30
13875	14	5	4	14	45	30	35
13876	14	15	4	14	8	35	30
13877	11	10	4	14	33	60	15
NB64322	29	5	4	22	86	40	Tr.
NB64323	30	10	4	22	90	45	Tr.

Note: Hail on May 14 severely damaged Stillwater nursery.
Yields not recorded.
Hail on July 2 and 3 destroyed nursery at Garden City.
Nursery at Ames abandoned due to heavy winterkilling of most entries.

Cherokee, Oklahoma

Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	April	In.	Lbs.	Bu.	Bu.		
13996	20	26	58.8	41.4	41.2	3	161.9
13999	30	29	59.3	39.9	--	1	156.5
13876	16	25	60.5	38.8	38.3	2	160.4
13875	16	28	61.0	38.5	--	1	151.0
13887	22	28	58.3	37.5	36.6	3	145.1
13877	15	26	60.6	36.3	--	1	142.4
12132	17	25	60.7	35.4	35.3	7	148.8
11673	25	25	58.7	33.8	37.5	20	134.0
13856	19	24	60.3	33.6	36.7	4	147.9
8856	15	29	60.0	32.8	33.6	20	137.6
13546	23	25	58.1	32.5	36.7	7	164.7
13886	22	26	58.6	32.5	34.4	3	145.0
13998	30	28	58.4	31.9	--	1	125.1
KS644	15	29	60.9	31.6	31.1	2	130.4
13874	15	24	60.3	30.8	35.5	2	148.8
13857	18	22	59.8	29.8	35.6	4	145.7
14157	25	27	55.7	25.9	33.2	2	139.0
1442	5/5	27	59.9	25.5	23.9	20	100.0

L.S.D. .05 = 9.2 bushels; C.V. = 19.2%.

Woodward, Oklahoma
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	April	In.	Lbs.	Bu.	Bu.		
13886	25	26	60.8	49.5	47.3	3	140.8
13546	20	29	60.2	46.3	46.3	7	146.6
13996	24	30	60.2	43.6	45.9	3	135.1
13887	26	29	60.0	43.2	45.1	3	133.2
13876	18	25	60.5	39.8	47.2	2	136.6
13857	18	26	59.9	39.2	44.5	4	124.8
13874	19	24	60.3	39.2	47.6	2	137.8
13999	5/6	25	60.3	39.1	--	1	117.4
13877	19	24	60.0	38.8	--	1	116.5
13998	5/6	26	60.0	38.8	--	1	116.5
11673	30	26	59.7	36.6	38.2	31	117.4
14157	29	27	59.0	36.6	40.8	2	117.9
KS644	17	25	60.5	35.9	40.5	2	117.2
13875	20	25	60.4	35.6	--	1	106.9
13856	18	22	59.6	33.8	40.1	4	123.4
1442	5/6	31	59.9	33.3	34.6	36	100.0
12132	18	26	59.8	32.6	37.6	7	124.4
8856	16	29	59.5	32.4	38.3	36	109.1

L.S.D. .05 = 7.8 bushels; C.V. = 14.4%.

Manhattan, Kansas
Four replications

C. I. or Sel. No.	Date headed : May	Weight per bushel : Lb.	Av. acre yield 1967 : Bu.	1966- 1967 : Bu.	No. years grown	Percent of Kharkof
13999	26	56.9	36.7	--	1	127.9
13998	26	56.9	34.8	--	1	121.3
13546	24	58.0	33.0	31.9	7	114.2
13996	23	58.6	32.8	32.8	3	104.1
13886	24	58.6	31.4	31.6	3	100.1
13887	24	57.6	31.4	31.5	3	98.2
11673	26	56.6	29.3	32.8	31	117.8
1442	26	57.4	28.7	34.3	36	100.0
14157	23	57.5	27.1	32.9	2	96.1
8856	20	59.1	25.4	28.4	36	110.3
13876	19	58.6	24.9	30.9	2	90.1
12132	17	58.5	21.6	23.8	7	101.5
13857	19	58.3	21.4	25.7	4	92.8
13856	17	57.6	19.8	26.9	4	100.3
KS644	16	59.2	18.3	21.9	2	63.8
13877	19	58.4	18.3	--	1	63.8
13874	17	58.3	18.2	22.1	2	64.5
13875	19	58.3	16.3	--	1	56.8
NB64322	26	56.9	34.8	--	1	121.3

L.S.D. .05 = 6.9 bushels; C.V. = 15.6%.

Hays, Kansas
Four replications

C. I. or Sel. No.	Date : May	Plant head : In.	Estimated freeze damage : %	Lodging : Degrees ^{1/}	Shattering : score ^{2/}	Weight : per bushel : Lbs.	Av. acre yield : 1967 : Bu.	1966-1967 : Bu.	No. : years : grown	Percent : of Kharkof
13999	18	26	0	67	1.2	59.4	37.5	--	1	148.8
13998	19	25	6	72	1.2	58.7	33.5	--	1	132.9
13546	11	27	5	67	1.0	59.6	28.7	18.1	6	152.1
13887	12	26	14	67	1.0	58.7	27.7	17.0	3	129.5
13996	11	25	7	72	1.0	59.2	25.9	16.9	3	130.6
14157	16	26	5	70	1.0	57.5	25.9	16.0	2	99.1
1442	22	26	5	68	1.0	57.5	25.2	16.1	30	100.0
13886	11	25	10	70	1.4	59.1	24.2	16.0	3	126.6
11673	16	26	7	64	2.7	57.3	23.9	15.0	26	121.7
8856	10	26	46	74	1.4	56.0	14.6	10.1	30	113.6
13856	11	22	50	80	2.2	57.3	14.3	10.3	3	84.9
13877	12	22	65	77	1.0	57.5	13.1	--	1	52.0
13876	10	22	47	79	1.5	55.8	12.4	8.4	2	52.2
13857	11	23	35	77	1.2	57.2	11.5	8.8	3	88.5
13875	12	23	62	80	1.0	55.8	8.8	--	1	34.9
13874	10	24	72	81	1.0	54.9	7.6	7.9	2	62.7
KS644	10	24	62	81	1.1	55.7	7.1	6.1	2	48.0
12132	11	23	69	81	1.0	55.3	6.8	5.5	6	105.1

^{1/} 90° = erect; 0 = 100% on the ground.

^{2/} 1 = no shattering; 5 = severe shattering.

L.S.D. .05 = 4.3 bushels; C.V. = 15.5%.

Colby, Kansas
Four replications

C. I. or Sel. No.	Date headed	Plant height	Lodging score	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	May	In.		Lb.	Bu.	Bu.		
13999	24	31	0.8	59.5	35.6	--	1	138.0
13998	24	30	1.0	59.0	34.0	--	1	131.8
13856	19	29	0.5	59.5	29.2	30.8	3	117.9
14157	20	30	0.5	58.0	28.1	28.1	2	110.8
13857	20	28	1.5	59.0	26.4	26.0	3	106.3
13887	19	29	0.8	59.5	26.0	26.7	2	105.1
1442	26	32	2.3	57.0	25.8	25.4	15	100.0
13546	18	29	1.0	59.5	25.1	25.9	5	113.0
13996	18	29	1.0	60.0	24.5	25.4	2	100.2
13877	22	28	1.8	59.5	23.8	--	1	92.2
8856	19	31	1.3	59.5	23.7	20.6	15	94.3
13876	21	28	1.3	57.5	23.7	24.2	2	95.5
13874	19	28	1.0	58.5	22.6	24.1	2	94.9
13886	19	29	0.8	59.5	22.4	23.7	2	93.3
13875	20	29	0.8	59.0	22.2	--	1	86.0
11673	21	30	2.5	58.5	20.1	21.6	14	99.7
KS644	19	27	1.5	57.5	18.9	18.5	2	73.0
12132	20	28	1.3	57.5	17.8	20.6	5	91.9

1/ 0-9 scale; 0 = no lodging, 9 = complete lodging.

L.S.D. .05 = 3.0 bushels; C.V. = 8.5%.

Akron, Colorado
Four replications

C. I. or Sel. No.	Plant height In.	Weight per bushel Lbs.	Average acre yield 1967 Bu.	No. years grown	Percent of Kharkof
1442	39	58.8	53.0	23	100.0
13998	35	61.1	52.1	1	98.3
13999	35	60.4	51.7	1	97.5
13856	30	60.2	46.7	2	77.3
13546	33	59.4	43.5	5	103.3
13886	32	60.0	42.1	1	79.4
14157	32	58.9	42.0	1	79.2
13857	31	59.1	41.6	2	74.5
13887	30	59.1	40.7	1	76.8
13877	29	60.7	40.4	1	76.2
11673	36	57.9	40.3	20	103.6
13996	30	59.0	40.3	1	76.0
13876	28	58.9	39.1	1	73.8
13875	30	60.0	36.5	1	68.9
8856	35	56.9	36.3	23	106.0
KS644	31	60.1	34.8	1	65.7
12132	29	59.7	34.3	5	79.4
13874	30	57.8	30.6	1	57.7

L.S.D. .05 = 5.0 bushels; C.V. = 8.7%.

Julesburg, Colorado
Four replications

C. I. or Sel. No.	Date headed	Plant height	Leaf rust Severity	Response	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	: May	: In.	: %	:	: Lbs.	: Bu.	: Bu.	:	:
13998	6/4	37	15	8	59.3	30.2	--	1	111.4
13996	27	34	10	8	59.8	29.1	38.9	2	107.9
13999	6/4	37	15	8	60.3	29.1	--	1	107.4
13856	28	34	10	8	59.9	27.5	36.1	2	100.1
1442	6/6	38	10	8	59.2	27.1	36.1	2	100.0
13886	28	34	10	8	59.6	26.8	36.9	2	102.4
13887	28	34	10	8	59.9	26.5	36.5	2	101.1
13876	28	33	20	8	58.3	26.2	38.2	2	105.8
13546	27	32	5	8	59.6	26.0	35.5	2	98.3
14157	30	35	10	8	59.4	25.1	36.2	2	100.4
13857	30	33	15	8	60.3	24.2	32.2	2	89.3
13877	28	33	20	8	59.8	23.7	--	1	87.5
11673	6/1	35	5	8	57.8	21.4	32.7	2	90.6
13875	29	33	5	3	60.3	20.2	--	1	74.5
12132	28	33	20	8	60.3	19.3	31.6	2	87.7
KS644	28	31	15	8	60.7	19.2	31.4	2	87.0
8856	28	34	10	8	59.4	18.2	31.0	2	85.9
13874	28	33	5	3	60.3	17.4	32.2	2	89.2

1/ 3 = moderately resistant; 8 = susceptible.

L.S.D. .05 = 3.4 bushels; C.V. = 10.0%.

Yellow Jacket, Colorado
Four replications

C. I. or Sel. No.	Weight : per : : bushel:	Av. acre yield: 1967 : 1966- : 1967	No. : years: : grown:	Percent of Kharkof
	: Lbs. :	Bu. :	Bu. :	:
13546	59.1	38.0	33.2	2 111.8
13887	59.0	36.0	32.5	2 109.4
13999	58.2	36.0	--	1 111.8
13996	59.5	34.9	32.1	2 107.9
13886	59.7	33.9	31.8	2 107.1
13998	58.3	33.1	--	1 102.8
11673	56.2	32.3	28.0	2 94.3
1442	58.8	32.2	29.7	2 100.0
14157	57.3	31.6	28.6	2 96.1
13856	58.1	31.0	28.6	2 96.1
13877	58.8	30.7	--	1 95.3
13874	57.0	30.1	29.3	2 98.5
12132	57.0	29.3	28.2	2 94.8
13857	58.4	28.9	28.1	2 94.6
13876	57.1	28.7	28.5	2 95.8
13875	58.4	27.1	--	1 84.2
8856	56.1	26.7	27.2	2 91.4
KS644	58.0	25.9	25.8	2 86.9

L.S.D. .05 = 11.6 bushels; C.V. = 13.0%.

Lincoln (Mead), Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Rust Leaf	Stem	Bunt per 1/	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	May	In.				Lb.	Bu.	Bu.		
13996	24	32	50S	2MR	19	61.7	47.0	47.8	3	118.8
14157	26	32	40S	30MS	42	60.7	46.3	45.5	2	108.6
13876	24	30	25S	10S	46	62.3	44.0	41.4	2	98.7
13886	24	32	50S	2MR	33	61.6	43.9	45.8	3	114.7
11673	26	34	20S	20MS	13	59.9	43.0	45.1	30	118.7
13998	28	38	60S	2MR	43	59.4	42.4	--	1	110.4
13887	24	32	50S	2MR	34	60.8	41.8	45.2	3	117.2
13546	24	32	50S	2MR	30	61.1	41.7	43.9	7	146.6
13856	24	30	50S	TrR	57	60.7	41.5	45.0	4	116.9
13999	28	36	60S	2MR	29	60.0	40.9	--	1	106.5
13877	23	31	20S	10S	65	62.5	38.9	38.9	1	101.3
13857	24	29	60S	2R	28	61.0	38.8	44.9	4	116.3
1442	28	36	40S	60S	46	60.6	38.4	41.9	35	100.0
13874	23	32	20S	10S	61	62.1	36.5	38.5	2	89.4
13875	23	31	30S	10S	62	61.9	36.2	--	1	94.3
8856	24	33	30S	10S	55	61.9	36.1	32.3	35	116.6
KS644	23	32	20S	10S	69	61.9	35.4	37.0	2	88.3
12132	24	33	20S	10S	55	61.3	34.8	38.0	7	110.1

1/ Data from an inoculated bunt nursery at Lincoln, Nebraska.

L.S.D. .05 = 6.6 bushels; C.V. = 11.6%.

North Platte, Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1967	Av. acre yield 1966- 1967	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.	Bu.		
14157	6	38	62.1	53.3	48.8	2	114.4
13998	7	39	60.2	51.4	--	1	125.4
13999	7	38	60.9	48.8	--	1	119.0
13856	5	34	60.4	47.7	48.9	4	123.7
13887	5	34	61.3	46.6	47.7	3	120.9
13996	5	33	61.8	46.3	48.2	3	121.4
13886	5	34	61.2	46.2	47.0	3	120.7
13546	5	34	61.2	46.0	48.2	7	162.1
11673	6	36	59.6	41.9	42.8	27	114.6
1442	11	41	58.8	41.0	42.6	30	100.0
13876	5	33	59.3	39.4	43.4	2	101.8
13875	5	32	61.3	36.8	--	1	89.8
13857	5	32	60.4	34.0	40.0	4	112.9
13874	5	32	60.5	33.5	40.2	2	94.4
13877	6	31	60.5	33.1	--	1	80.7
8856	6	36	60.8	32.8	38.8	30	102.1
12132	5	32	60.5	31.4	36.9	7	119.7
KS644	5	33	61.0	31.2	35.0	2	82.0

L.S.D. .05 = 5.7 bushels; C.V. = 9.8%.

Alliance, Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	: June	: In.	: Lbs.	: Bu.	: Bu.	:	:
13886	10	46	62.2	62.5	49.6	3	140.7
13887	11	47	62.1	61.9	48.5	3	138.6
13546	11	45	61.7	61.0	50.9	6	137.8
13996	11	44	62.4	60.3	49.0	3	141.4
14157	14	49	61.3	57.8	46.9	2	120.9
12132	10	44	62.3	57.5	40.6	6	100.7
13999	14	50	59.6	55.3	--	1	123.7
13876	9	43	61.1	55.0	44.7	2	115.1
13856	13	44	61.6	54.8	45.5	4	130.3
13998	14	51	59.5	53.1	--	1	118.8
13857	14	41	60.9	50.5	42.2	4	122.0
13877	9	42	62.5	49.8	--	1	111.4
13874	11	41	60.5	48.5	39.1	2	100.8
8856	11	47	62.0	47.4	39.1	29	94.0
11673	14	48	60.1	47.0	40.8	26	101.0
KS644	11	43	62.4	46.8	34.7	2	89.3
13875	11	43	61.0	46.2	--	1	103.4
1442	16	52	59.1	44.7	38.8	29	100.0

L.S.D. .05 = 6.5 bushels; C.V. = 8.7%.

Columbia, Missouri

Four replications

C. I. or Sel. No.	Date headed	Plant height	Lodging %	Weight per bushel	Av. acre yield 1967	Av. acre yield 1966- 1967	No. years grown	Percent of Kharkof
	May	In.		Lbs.	Bu.	Bu.		
13857	20	38	38	59.0	65.9	52.1	4	148.3
13886	24	41	28	58.0	64.9	55.7	3	161.2
13996	24	40	30	58.0	63.9	53.6	3	153.0
13546	24	40	30	57.0	63.1	52.8	4	145.4
13875	19	40	25	60.0	62.1	--	1	185.9
13856	20	40	28	56.0	59.5	51.4	4	143.3
13877	20	39	29	59.0	59.4	--	1	177.8
13876	19	39	29	57.0	58.4	48.9	2	184.5
13887	24	39	38	57.0	56.4	46.2	3	134.4
13874	18	40	21	58.0	55.1	50.3	2	189.6
12132	20	41	33	57.0	54.1	50.9	4	134.4
KS644	18	39	26	59.0	52.9	52.7	2	198.7
8856	23	41	55	58.0	48.7	44.7	4	129.6
14157	24	42	38	55.5	47.2	46.7	2	176.0
11673	24	41	53	54.0	41.0	40.7	4	134.6
13999	29	41	38	53.0	37.6	--	1	112.6
13998	29	40	49	52.5	36.4	--	1	109.0
1442	29	41	68	51.5	33.4	26.5	4	100.0

L.S.D. .05 = 9.1 bushels; C.V. = 12.1%.

Urbana, Illinois
Three replications

C. I. or Sel. No.	Date headed	Plant height	Lodging	Stem rust	Weight per bushel	Av. acre yield: 1967	1966- 1967	No. years: grown	Percent of Kharkof
	: May	: In.	: %		: Lbs.	: Bu.	: Bu.	:	
13996	29	43	2	R	63	59.7	57.7	3	127.2
13546	29	45	10	MR	60	57.3	58.3	7	117.7
13856	27	45	17	MR	61	54.0	53.5	4	115.7
8856	27	47	13	S	64	53.9	49.0	7	102.1
13887	30	44	13	MR	60	53.2	48.0	3	113.3
12132	25	44	22	S	62	52.0	43.2	7	102.4
13874	25	44	37	MS	62	51.8	51.7	2	123.2
13877	25	43	32	R	62	51.5	--	1	143.5
KS644	25	45	32	S	63	50.8	49.4	2	117.6
14157	31	49	3	MS	62	50.4	52.6	2	125.4
13857	27	41	37	R	62	49.9	52.5	4	113.1
11673	6/1	49	27	MS	59	49.5	50.5	7	108.3
13998	6/2	47	8	R	59	48.2	--	1	134.3
13875	26	45	22	MS	62	47.0	--	1	130.9
13886	30	43	10	MR	61	46.1	51.5	3	115.4
13999	6/2	46	12	R	59	45.9	--	1	127.9
13876	27	42	40	S	60	42.9	39.8	2	94.8
1442	6/5	49	15	VS	55	35.9	42.0	7	100.0

L.S.D. .05 = 9.0 bushels; C.V. = 6.3%.

Summary of Nursery Yields

Individual station yields, state averages and ranks, and regional average yields for 18 varieties grown in the SRPN in 1967 appear in table 2. Varieties are arranged according to their regional average yields. Scout 66, Scout, and the Colorado Scout selections continue to show high yield capacity and broad regional adaptation. Despite conditions that favored the late maturing varieties at several locations, Scout 66 and Scout produced the highest average yields in the region. The later maturing NB64323 (Trapper) and NB64322 (Trader) ranked fourth and sixth respectively with 42-bushel average yields.

Two-year average yields for varieties in the SRPN are shown in table 3. Again the Scout wheats produced the highest regional yields, all exceeding 40 bushels per acre. Guide (C. I. 13856) and Shawnee (KS60770) have identical 2-year averages of 39.5 bushels per acre.

Summary of Agronomic Data

Highest average bushel weights were made by C. I. 13877, Scout 66 and KS644, all with 60.4 pound averages (table 4). Kharkof produced the lightest test weight grain. Early Blackhull, Triumph, the Danne Selections, and Triumph derivatives were the earliest heading on the average although Guide and C. I. 13857 were as early as some. The Danne wheats, Guide and C. I. 13857 had the shortest straw and Scout 66 lodged slightly the least. All entries were similar in leaf rust infection severity. Trader, Trapper, the Scouts, Guide, and C. I. 13857 had low average stem rust infections.

Table 2.--Summary of average yields in bushels per acre made by 18 varieties grown in the southern regional performance nursery in 17 trials in 1967 with state averages and rank.

Variety	C. I.	Texas					Oklahoma			
	or	Den-	Chilli-	Bush-	Aver-	Rank	Chero-	Wood-	Aver-	Rank
	Sel. No.	ton	cothe	land	age		kee	ward	age	
Irrig.										
Scout 66	13996	36.5	28.3	62.4	42.4	1	41.4	43.6	42.5	1
Scout	13546	39.3	29.2	55.4	41.3	2	32.5	46.3	39.4	5
Scout Reselection	13887	35.0	28.0	57.2	40.1	4-5	37.5	43.2	40.4	3
Wrr x Sk-Cnn ² (NB64323)	13999	29.6	19.4	58.8	35.9	15-16	39.9	39.1	39.5	4
Scout Reselection	13886	38.4	19.4	59.5	39.1	8	32.5	49.5	41.0	2
Wrr x Sk-Cnn ² (NB64322)	13998	30.1	25.5	52.1	35.9	15-16	31.9	38.8	35.4	9
Shawnee (KS60770)	14157	23.7	22.0	70.6	38.8	10	25.9	36.6	31.3	17
Guide	13856	37.1	24.1	53.8	38.3	11	33.6	33.8	33.7	15
Danne Sel. (OKC-129-16)	13876	32.1	24.3	61.1	39.2	7	38.8	39.8	39.3	6
Nbr x Cnn-Ky-Mta	13857	37.1	23.8	59.4	40.1	4-5	29.8	39.2	34.5	12
Danne Sel. (OKC-150-6)	13877	39.4	23.1	56.9	39.8	6	36.3	38.8	37.6	7
Comanche	11673	31.2	21.3	56.0	36.2	14	33.8	36.6	35.2	10
Triumph x C.I. 12406(OK627514)	13874	40.3	25.8	56.4	40.8	3	30.8	39.2	35.0	11
Kharkof	1442	25.7	22.4	40.7	29.6	18	25.5	33.3	29.4	18
Triumph x C.I. 12406(OK627530)	13875	37.1	18.4	54.0	36.5	13	38.5	35.6	37.1	8
Triumph	12132	35.0	28.5	53.2	38.9	9	35.4	32.6	34.0	13
Early Blackhull	8856	33.6	21.1	49.0	34.6	17	32.8	32.4	32.6	16
Concho x Triumph ²	KS644	35.9	24.3	52.2	37.5	12	31.6	35.9	33.8	14

Table 2.--(Continued).

C. I.	Kansas					Colorado					New Mexico	
or Sel. No.	Man- hattan	Hays	Colby	Aver- age	Rank	Yellow: Jacket	Akron	Jules- burg	Aver- age	Rank	Clovis	Rank
											Irrig.	
13996	32.8	25.9	24.5	27.7	5	34.9	40.3	29.1	34.8	6	80.9	6
13546	33.0	28.7	25.1	28.9	3	38.0	43.5	26.0	35.8	4	72.9	9
13887	31.4	27.7	26.0	28.4	4	36.0	40.7	26.5	34.4	7	78.1	8
13999	36.7	37.5	35.6	36.6	1	36.0	51.7	29.1	38.9	1	85.6	2
13886	31.4	24.2	22.4	26.0	8	33.9	42.1	26.8	34.3	8	80.4	7
13998	34.8	33.5	34.0	34.1	2	33.1	52.1	30.2	38.5	2	93.2	1
14157	27.1	25.9	28.1	27.0	6	31.6	42.0	25.1	32.9	9	83.1	3
13856	19.8	14.3	29.2	21.1	11	31.0	46.7	27.5	35.1	5	69.1	12
13876	24.9	12.4	23.7	20.3	12	28.7	39.1	26.2	31.3	12-13	81.4	5
13857	21.4	11.5	26.4	19.8	13	28.9	41.6	24.2	31.6	10-11	58.7	15
13877	18.3	13.1	23.8	18.4	14	30.7	40.4	23.7	31.6	10-11	62.0	14
11673	29.3	23.9	20.1	24.4	9	32.3	40.3	21.4	31.3	12-13	63.3	13
13874	18.2	7.6	22.6	16.1	15	30.1	30.6	17.4	26.0	18	72.8	10
1442	28.7	25.2	25.8	26.6	7	32.2	53.0	27.1	37.4	3	82.8	4
13875	16.3	8.8	22.2	15.8	16	27.1	36.5	20.2	27.9	14	70.4	11
12132	21.6	6.8	17.8	15.4	17	29.3	34.3	19.3	27.6	15	58.3	16
8856	25.4	14.6	23.7	21.2	10	26.7	36.3	18.2	27.1	16	54.1	18
KS644	18.3	7.1	18.9	14.8	18	25.9	34.8	19.2	26.6	17	56.4	17

Table 2.--(Concluded).

C. I.	Nebraska					Illinois		Missouri		17-
or Sel. No.	Lincoln	Alli- ance	North Platte	Aver- age	Rank	Urbana	Rank	Columbia	Rank	trial average
(Mead)										
13996	47.0	60.3	46.3	51.2	2	59.7	1	63.9	3	44.6
13546	41.7	61.0	46.0	49.6	5	57.3	2	63.1	4	43.5
13887	41.8	61.9	46.6	50.1	4	53.2	5	56.4	9	42.8
13999	40.9	55.3	48.8	48.3	7	45.9	16	37.6	16	42.8
13886	43.9	62.5	46.2	50.9	3	46.1	15	64.9	2	42.6
13998	42.4	53.1	51.4	49.0	6	48.2	13	36.4	17	42.4
14157	46.3	57.8	53.3	52.5	1	50.4	10	47.2	14	41.0
13856	41.5	54.8	47.7	48.0	8	54.0	3	59.5	6	39.9
13876	44.0	55.0	39.4	46.1	9	42.9	17	58.4	8	39.5
13857	38.8	50.5	34.0	41.1	13	49.9	11	65.9	1	37.7
13877	38.9	49.8	33.1	40.6	14	51.5	8	59.4	7	37.6
11673	43.0	47.0	41.9	44.0	10	49.5	12	41.0	15	37.2
13874	36.5	48.5	33.5	39.5	16	51.8	7	55.1	10	36.3
1442	38.4	44.7	41.0	41.4	11	35.9	18	33.4	18	36.2
13875	36.2	46.2	36.8	39.7	15	47.0	14	62.1	5	36.1
12132	34.8	57.5	31.4	41.2	12	52.0	6	54.1	11	35.4
8856	36.1	47.4	32.8	38.8	17	53.9	4	48.7	13	34.5
KS644	35.4	46.8	31.2	37.8	18	50.8	9	52.9	12	34.0

Table 3.--Summary of 2-year average yields for 14 varieties grown in the southern regional performance nursery in 16 trials in 1966 and 1967 with state averages and rank.

Variety	C. I. or Sel. No.	Texas					Oklahoma			
		Den-	Chilli-	Bush-	Aver-	Rank	Chero-	Wood-	Aver-	Rank
		ton	cothe	land	age		kee	ward	age	
Irrig.										
Scout 66	13996	29.1	21.0	59.2	36.4	3	41.2	45.9	43.6	1
Scout	13546	31.6	22.2	56.6	36.8	2	36.7	46.3	41.5	4
Scout Reselection	13886	31.2	16.5	55.6	34.4	7	34.4	47.3	40.9	5-6
Scout Reselection	13887	28.1	20.7	53.0	33.9	9	36.6	45.1	40.9	5-6
Guide	13856	32.9	19.2	52.8	35.0	6	36.7	40.1	38.4	8
Shawnee (KS60770)	14157	20.9	16.7	62.8	33.5	10	33.2	40.8	37.0	10
Danne Sel. (OKC-129-16)	13876	29.7	20.3	56.4	35.5	4	38.3	47.2	42.8	2
Nbr x Can-Ky-Mta	13857	30.1	18.7	57.2	35.3	5	35.6	44.5	40.1	7
Triumph x C.I. 12406(OK627514)	13874	35.1	20.9	57.2	37.7	1	35.5	47.6	41.6	3
Comanche	11673	26.7	16.9	53.2	32.3	12	37.5	38.2	37.9	9
Triumph	12132	30.4	21.7	50.0	34.0	8	35.3	37.6	36.5	11
Kharkof	1442	22.4	14.8	39.6	25.6	14	23.9	34.6	29.3	14
Early Blackhull	8856	30.8	17.5	43.4	30.6	13	33.6	38.3	36.0	12
Concho x Triumph ²	KS644	31.1	19.3	46.9	32.4	11	31.1	40.5	35.8	13

Table 3.--(Continued).

C. I.	Kansas					Colorado				New Mexico	
or	Man-	Hays	Colby	Aver-	Rank	Jules-	Yellow-	Aver-	Rank	Clovis	Rank
Sel. No.	hattan:			age		burg	Jacket:	age			
Irrig.											
13996	32.8	16.9	25.4	25.0	5	38.9	32.1	35.5	1	80.2	6
13546	31.9	18.1	25.9	25.3	2-3	35.5	33.2	34.4	3-4	81.7	4
13886	31.6	16.0	23.7	23.8	6	36.9	31.8	34.4	3-4	81.4	5
13887	31.5	17.0	26.7	25.1	4	36.5	32.5	34.5	2	82.3	3
13856	26.9	10.3	30.8	22.7	8	36.1	28.6	32.4	7-8	73.3	8
14157	32.9	16.0	28.1	25.7	1	36.2	28.6	32.4	7-8	75.6	7
13876	30.9	8.4	24.2	21.2	9	38.2	28.5	33.4	5	85.0	1
13857	25.7	8.8	26.0	20.2	10	32.2	28.1	30.2	11	70.4	10
13874	22.1	7.9	24.1	18.0	12	32.2	29.3	30.8	9	72.8	9
11673	32.8	15.0	21.6	23.1	7	32.7	28.0	30.4	10	69.9	11
12132	23.8	5.5	20.6	16.6	13	31.6	28.2	29.9	12	61.4	13
1442	34.3	16.1	25.4	25.3	2-3	36.1	29.7	32.9	6	82.4	2
8856	28.4	10.1	20.6	19.7	11	31.0	27.2	29.1	13	63.5	12
KS644	21.9	6.1	18.5	15.5	14	31.4	25.8	28.6	14	59.8	14

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Table 4.--Summary of agronomic data other than yield for varieties grown in the southern regional performance nursery in 1967.

Pedigree	C. I. or Sel.No.	Date		Plant ht. In.	Rust		Lodg- ing %	Weight per bushel Lbs.
		Head- ed	Ripe		Leaf	Stem		
		May	May		%	%		
Number of stations -----		17	2	15	5	3	3	17
Danne Selection (OKC-150-6)	13877	8	28	32	36	15	25	60.4
Scout 66	13996	11	31	34	33	2	17	60.4
Concho x Triumph ²	KS644	8	29	34	28	15	22	60.4
Triumph x C. I. 12406 (OK627530)	13875	9	29	33	26	15	19	60.3
Scout Reselection	13886	11	31	34	34	1	19	60.2
Scout	13546	11	31	34	35	2	21	59.9
Nbr x Cnn-Ky-Mta	13857	9	29	32	44	4	29	59.9
Early Blackhull	8856	9	29	36	36	15	28	59.8
Triumph	12132	9	29	33	31	12	21	59.8
Scout Reselection	13887	12	31	35	34	2	25	59.8
Guide	13856	9	29	32	40	3	18	59.7
Triumph x C. I. 12406 (OK627514)	13874	8	28	33	25	13	22	59.7
Danne Selection (OKC-129-16)	13876	9	30	32	33	13	27	59.6
Shawnee (KS60770)	14157	13	6/5	36	34	13	20	59.2
Trapper (NB64323)	13999	18	6/10	36	40	1	24	59.2
Trader (NB64322)	13998	18	6/10	36	38	1	25	58.7
Comanche	11673	15	6/4	36	26	22	35	58.6
Kharkof	1442	20	6/12	38	37	37	35	58.1

NORTHERN REGIONAL PERFORMANCE NURSERY

Only 16 varieties were evaluated in the NRPN in 1967. There were 16 nursery sites in 8 states and Alberta, Canada. Data were reported from all sites although there were no yields recorded at Mead, Nebraska, where single plots only were grown, and at Brookings where there were poor stands and low winter survival. Entries in the 1967 nursery are shown below.

<u>Entry</u>	<u>Pedigree</u>	<u>C. I. or Sel. No.</u>	<u>Source</u>
1	Kharkof	1442	Check
2	Warrior	13190	Check
3	Winalta	13670	Leth.
4	Trader	(NB64322) 13998	Nebr.
5	Trapper	(NB64323) 13999	"
6	Minn III-54-12 x Cnn	NB61355	S. Dak.
7	S. Dak. Sel.	SD56-497	"
8	"	SD56-758	"
9*	Winalta Reselection (S. Dak.)	14000	"
10	Selkirk x Cheyenne ²	NB64365	Nebr.
11*	"	NB64334	"
12*	Selkirk x Cheyenne ³	NB64312	"
13*	BWH 1904-7	MT639	Mont.
14	H44-Minturki ² x Minter	13858	Minn.
15	Mtr-M2825 x H255-Bkk	13994	"
16	II-36-3 x III-51-31	13995	"

* New entry in 1967

Data Obtained

Nebraska Stations--Single rod-row plots were grown at Mead and replicated nurseries at North Platte and Alliance. Growing conditions at these sites are discussed in connection with the SRPN.

Archer--The generally favorable conditions that prevailed in western Nebraska extended westward into Wyoming. The nursery at Archer in 1967 was the best ever observed by the writer at that location. The wheat was tall and the yields ranged from 65 to 44 bushels per acre. Leaf and stem rust became heavy late in the season.

Sheridan--Conditions were favorable throughout the season. Yields were similar to those at Archer. There were no diseases of consequence.

Brookings--Winter survival was poor. The nursery was not harvested.

Highmore--There was no winterkilling in the nursery. The spring was very dry. There were heavy rains in June followed by a dry July. Spring and summer temperatures were below normal. The rusts came in late with leaf rust becoming very heavy by ripening time and stem rust moderately heavy. Growth was heavy and some lodging occurred. Yields were high, ranging from 43 to 50 bushels per acre.

Presho--The spring and summer were relatively cool with early spring very dry. The rusts appeared late in the season and did not appear to affect performance. Yields were a little higher than at Highmore.

Minnesota Stations--The NRPN was grown at St. Paul and Waseca. Growing conditions were not reported. Light winterkilling occurred at St. Paul. Grain yields were only fair. Leaf and stem rust were too light to be recorded.

Dickinson--The nursery was seeded on summer-fallowed ground. Germination and fall growth were uniformly good for all entries. Winter moisture was plentiful in the form of heavy wet snowfall and the spring continued very favorable for winter wheat. No winterkilling was recorded. Bushel weights were high with all varieties exceeding 62 pounds. Yields ranged from 29 to 41 bushels per acre.

Williston--Fall stands were generally good with a few thin areas due to extremely dry conditions. There was good winter and early spring moisture but precipitation in May, June and July was well below normal. All varieties survived the winter without loss of stands. No leaf or stem rust was observed. Helminthosporium was noted on all entries. Yields ranged from 23 to 30 bushels per acre in the nursery.

Moccasin--The season was favorable for winter wheat. No winterkilling occurred and moisture was adequate for relatively high yields (32 to 45 bushels per acre).

Tetonia--Precipitation during the spring was above average. There was no winterkilling nor diseases of consequence. Bushel weights and yields were high.

Clovis--An irrigated nursery was grown. Conditions during the season are described for the SRPN.

Lethbridge--Emergence was good in the fall. There was no winterkilling in the nursery. The spring was very wet but there was no rain after mid-June. The dry hot weather after June 15 affected all varieties similarly and yields were not greatly different, ranging from 37 to 27 bushels per acre.

Table 5. Yield and other data for varieties grown in the Northern Regional Performance Nursery at 16 stations in 1967.

Lincoln (Mead), Nebraska
Single plot

C. I. or Sel. No.	Plant height	Rust		Bunt ^{1/}	Brown necrosis	Weight per bushel
		Leaf	Stem			
	In.	%	%	%		Lbs.
NB64365	37	70S	5MR	80	none	59.5
NB64334	38	70S	5MR	80	none	60.5
(NB64323) 13999	38	70S	5MR	64	mod.	59.5
NB64312	38	70S	5MR	71	none	59.5
SD56-758	41	60S	5MR	11	sev.	58.0
1442	40	60S	60S	53	none	58.5
13858	41	TrR-50S	5MR	15	heavy	59.5
NB61355	37	10MS	2R	68	mild	59.0
Winalta Resel.	40	60S	5MR	63	sev.	59.0
MT639	44	60S	2R	89	mod.	58.0
(NB64322) 13998	36	70S	5MR	44	heavy	60.0
13994	40	60S	5MR	27	mod.	58.5
13670	38	60S	5MR-60S	35	sev.	60.0
13995	38	70S	5MR	60	mild	58.5
13190	33	90S	60S	40	none	57.0
SD56-497	41	60S	2R	2	sev.	55.5

^{1/} Data from inoculated bunt nursery at Lincoln, Nebraska.

North Platte, Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.	Bu.		
13999	8	37	60.6	51.6	58.0	2	123.4
NB64365	7	38	60.9	50.9	57.9	2	123.1
NB64334	8	38	61.7	50.9	--	1	124.1
SD56-497	8	39	61.5	50.7	53.4	2	113.6
NB64312	9	37	60.5	48.7	--	1	118.8
NB61355	8	35	61.6	48.0	51.0	2	108.4
SD56-758	10	38	60.3	47.2	53.1	2	113.0
13998	8	37	60.4	46.1	53.1	2	113.0
13994	10	37	59.8	45.7	42.5	3	103.2
MT639	11	38	59.4	44.2	--	1	107.8
13858	11	40	58.8	44.0	48.3	4	111.2
1442	10	39	58.0	41.0	47.0	9	100.0
Winalta Resel.	7	36	61.5	40.2	--	1	98.0
13190	7	36	57.7	39.9	54.2	4	125.5
13995	11	40	57.9	38.5	45.9	3	108.2
13670	10	37	60.9	37.1	45.9	6	123.5

L.S.D. .05 = 4.2 bushels; C.V. = 6.5%.

Alliance, Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per Bushel	Av. acre yield: 1967	No. : 1966- : years: of 1967 : grown: Kharkof	Percent
	: June :	: In. :	: Lbs. :	: Bu. :	: Bu. :	:
NB64334	15	48	61.6	58.1	--	1 113.3
13999	15	49	60.1	57.7	43.7	2 110.4
13190	13	48	58.9	57.4	48.6	4 121.7
13998	15	49	60.2	56.3	43.2	2 109.2
SD56-497	12	49	60.6	56.1	43.0	2 108.7
NB61355	17	47	60.9	55.3	46.3	2 117.1
SD56-758	17	51	60.7	55.2	43.5	2 110.0
NB64365	15	48	60.4	55.0	45.0	2 113.7
NB64312	16	46	59.1	54.5	--	1 106.2
13994	16	51	60.9	51.8	37.0	3 107.5
MT639	18	51	60.1	51.7	--	1 100.8
Winalta Resel.	15	46	60.2	51.5	--	1 100.4
1442	17	51	58.3	51.3	39.6	15 100.0
13858	17	50	59.2	49.4	40.5	4 108.0
13670	15	47	61.0	49.4	40.0	5 109.6
13995	17	53	59.7	48.3	34.5	3 99.9

L.S.D. .05 = 5.5 bushels; C.V. = 7.3%.

Archer, Wyoming
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1967	1966- 1967	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.	Bu.		
13999	19	43	61.9	65.0	40.4	2	124.7
13998	19	45	60.5	60.6	39.0	2	120.4
NB64312	20	42	61.0	60.2	--	1	127.8
NB61355	19	41	61.8	59.5	36.9	2	114.1
SD56-497	19	46	61.3	57.3	33.5	2	103.6
13190	18	42	59.4	55.9	34.5	3	102.7
13670	20	45	61.1	55.1	35.5	5	106.7
NB64365	21	44	60.3	53.1	35.2	2	108.7
NB64334	20	44	61.6	52.8	--	1	112.1
13995	24	45	60.5	52.4	33.4	2	103.2
Winalta Resel.	21	43	58.5	51.3	--	1	108.9
13994	20	47	58.7	49.2	32.2	2	99.4
SD56-758	21	44	60.4	48.7	32.9	2	101.5
1442	20	46	59.0	47.1	32.4	11	100.0
MT639	23	48	57.6	47.0	--	1	99.8
13858	23	48	57.0	43.9	30.2	3	92.3

L.S.D. .05 = 11.5 bushels; C.V. = 15.1%.

Sheridan, Wyoming
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield: 1967	1966- 1967	No. : years: grown:	Percent of Kharkof
	: June :	In. :	Lbs. :	Bu. :	Bu. :	:	:
13190	14	47	62.4	64.6	47.5	4	110.1
NB64312	14	47	62.7	64.4	--	1	112.0
NB64334	15	46	63.0	58.0	--	1	100.9
1442	18	52	62.1	57.5	42.3	16	100.0
Winalta Resel.	16	50	63.4	56.2	--	1	97.7
NB64365	16	45	62.2	55.1	44.0	2	104.1
NB61355	16	47	62.2	53.7	40.1	2	94.8
SD56-758	18	50	61.5	53.4	42.6	2	100.7
13670	18	48	62.4	52.8	40.9	6	98.2
13999	18	46	60.8	52.7	44.9	2	106.2
13998	15	49	61.5	52.1	43.4	2	102.6
SD56-497	18	47	62.1	51.7	39.3	2	93.0
13994	16	49	61.5	50.7	41.0	3	101.3
MT639	20	51	61.8	48.8	--	1	84.9
13995	16	49	60.6	47.9	36.4	3	94.4
13858	21	50	61.3	46.2	37.2	4	88.5

L.S.D. .05 = 8.8 bushels; C.V. = 11.5%.

Brookings, South Dakota

C. I. :	Lodging :	Stem rust (8/7)	
or :	(8/7)	Severity:	Reaction
Sel. No. :	% :	% :	
1442	20	65	S
13190	10	65	S
13670	5	1-60	R-S
NB64322	10	1	S
NB64323	5	1	S
NB61355	0	1	S
SD56-497	0	5	S
SD56-758	10	1	R
Winalta Resel.	10	1	R
NB64365	10	5	S
NB64334	5	25 ¹ / ₂	S
NB64312	5	10	S
MT639	20	65	S
13858	5	15	S
13994	5	10	S
13995	20	1	R

Note: Nursery abandoned because of poor stands and low winter survival.

1/ 65% severity on late tillers.

Presho, South Dakota

Four replications

C. I. or Sel. No.	Date headed	Leaf: rust:	False black chaff	Weight: per bushel	Av. acre yield: 1967	No. 1966- 1967	Percent years: grown	Percent of Kharkof
	June	%	%	Lbs.	Bu.	Bu.		
1442	9	100	0	61.3	52.7	37.7	5	100.0
NB64312	8	100	0	62.4	52.7	--	1	100.0
NB64334	9	100	0	62.7	50.3	--	1	95.4
NB64365	8	100	0	62.6	50.2	38.1	2	101.1
Winalta Resel.	11	80	0	62.9	47.5	--	1	90.1
13190	7	100	0	61.6	46.7	34.6	4	98.2
13998	9	100	20	61.8	46.5	36.4	2	96.7
13994	10	100	0	60.5	46.2	34.5	3	112.1
MT639	11	100	0	62.2	45.5	--	1	86.3
SD56-758	11	100	5	60.4	44.1	32.2	2	85.5
NB61355	7	100	5	61.7	44.0	35.9	2	95.2
13858	11	100	0	61.4	43.9	33.1	4	107.7
SD56-497	8	100	0	61.1	43.6	32.9	2	87.4
13670	10	100	0	62.3	43.1	34.5	5	108.8
13999	9	100	20	61.8	40.9	33.7	2	89.4
13995	10	100	0	59.6	39.3	28.9	3	96.3

L.S.D. .05 = 5.1 bushels; C.V. = 7.9%.

Highmore, South Dakota
Four replications

C. I. or Sel. No.	:False: black: chaff:	Lodg- ing :	Rust 7/12	:Weight: per :	Av. acre yield: 1967	:1966- 1967	No. : years:	Percent of grown:Kharkof
:	: % :	: % :	: % :	Lbs. :	Bu. :	Bu. :	:	:
NB64365	0	9	100	0	62.8	50.7	39.3	2 114.7
13670	1	2	100	60	63.6	50.2	39.6	5 111.1
NB64312	0	17	100	0	62.9	49.9	--	1 105.9
13190	0	0	100	40	62.6	49.5	36.4	4 102.8
NB64334	0	17	100	0	62.8	49.0	--	1 104.0
SD56-758	5	9	100	0	60.6	48.7	36.6	2 106.9
NB61355	0	35	60	0	62.8	48.4	36.5	2 106.4
13995	0	31	100	0	60.6	48.3	34.7	3 110.9
13858	1	15	70	0	61.9	48.0	34.8	4 113.2
Winalta Resel.	1	3	100	0	63.7	47.7	--	1 101.3
1442	0	48	100	25	61.3	47.1	34.3	5 100.0
SD56-497	0	0	100	0	62.4	46.8	33.6	2 98.1
MT639	0	22	100	25	61.7	46.0	--	1 97.7
13998	5	0	100	0	61.9	45.8	31.1	2 90.7
13999	5	0	100	0	62.0	45.5	33.0	2 96.2
13994	0	7	100	0	61.5	43.8	34.3	3 116.7

L.S.D. .05 = non-significant; C.V. = 9.0%.

St. Paul, Minnesota
Three replications

C. I. or Sel. No.	Winter survival %	Weight per bushel Lbs.	Av. acre yield 1967 Bu.	1966- 1967 Bu.	No. years grown	Percent of Kharkof
NB64312	90	58.0	46.8	--	1	138.5
SD56-497	95	59.0	42.5	34.7	2	122.4
NB64365	80	59.5	42.2	35.2	2	124.0
13999	90	58.0	39.5	34.1	2	120.3
NB64334	90	58.0	38.4	--	1	113.6
13858	95	58.0	35.9	29.8	4	112.4
13998	70	59.0	35.4	28.5	2	100.4
13995	95	57.0	35.3	29.2	3	118.3
NB61355	90	61.0	34.7	30.6	2	107.8
1442	70	56.0	33.8	28.4	7	100.0
13190	80	56.0	33.2	29.5	4	105.0
13670	90	59.0	31.9	29.4	5	106.7
13994	95	57.0	31.6	29.4	3	140.5
SD56-758	95	57.0	30.8	29.5	2	103.9
Winalta Resel.	95	59.0	29.3	--	1	86.7
MT639	80	56.5	28.1	--	1	83.1

L.S.D. .05 = 8.3 bushels; C.V. = 14.2%.

Waseca, Minnesota
Three replications

C. I. or Sel. No.	Weight: per bushel:	Av. acre yield:		No. years grown	Percent of Kharkof
		1967	1966- 1967		
	: Lbs. :	Bu. :	Bu. :		
NB61355	59.0	45.7	44.0	2	143.3
13858	59.5	41.3	38.2	3	124.5
MT639	57.0	38.0	--	1	175.1
13994	57.5	37.9	38.1	2	124.1
NB64365	57.5	36.0	41.1	2	130.5
NB64312	56.5	35.0	--	1	161.3
SD56-758	57.0	34.5	36.1	2	117.4
NB64334	57.5	33.9	--	1	156.2
Winalta Resel.	58.0	32.8	--	1	151.2
SD56-497	58.0	32.6	35.4	2	115.3
13670	58.0	31.6	34.0	5	122.9
13995	57.0	28.6	31.7	2	103.1
13999	55.0	28.3	38.5	2	125.4
13998	55.0	25.9	33.9	2	110.4
1442	52.0	21.7	30.7	6	100.0
13190	50.0	16.3	28.5	3	96.2

L.S.D. .05 = 7.9 bushels; C.V. = 14.9%.

Dickinson, North Dakota
Three replications

C. I. or Sel. No.	Date		Plant height In.	Weight per bushel Lbs.	Av. acre yield		No. years grown	Percent of Kharkof
	Headed	Ripe			1967	1966- 1967		
	June	July			Bu.	Bu.		
13999	29	30	39	63.5	41.0	33.4	2	94.8
Winalta Resel.	29	30	38	64.5	37.3	--	1	116.2
SD56-758	7/2	8/1	39	64.0	36.5	34.1	2	96.6
NB64365	29	31	37	63.5	35.5	30.1	2	85.2
13995	29	31	39	60.5	33.1	33.5	2	94.9
NB64312	7/3	8/3	38	63.5	33.0	--	1	102.8
NB64334	7/3	8/2	38	64.0	32.9	--	1	102.5
13858	7/3	8/4	39	63.5	32.5	31.7	2	89.8
13190	29	31	32	64.5	32.4	30.7	2	87.1
NB61355	29	30	35	62.5	32.3	30.6	2	86.8
1442	29	31	36	63.0	32.1	35.3	4	100.0
13670	29	30	39	64.5	31.8	32.5	2	92.1
SD56-497	29	31	37	62.5	31.3	29.9	2	84.7
MT639	7/3	8/3	39	62.0	31.0	--	1	96.6
13994	7/3	8/4	38	62.0	29.5	28.5	2	80.9
13998	29	30	37	63.0	29.5	29.0	2	82.1

L.S.D. .05 = 6.2 bushels; C.V. = 11.4%

Williston, North Dakota
Three replications

C. I. or Sel. No.	Date		Plant	Weight	Av. acre yield		No.	Percent
	Headed	Ripe	height	per	1967	1966-1967	years	of
	June	July	In.	Lbs.	Bu.	Bu.		Kharkof
13998	17	23	25	61.0	30.5	27.4	2	95.1
SD56-758	18	23	27	60.2	30.4	29.3	2	101.6
NB64312	15	23	25	60.7	30.0	--	1	108.7
13190	13	24	26	60.2	29.4	26.4	2	91.7
13999	16	24	27	60.7	28.8	27.1	2	94.1
1442	19	24	30	60.4	27.6	28.8	2	100.0
SD56-497	17	23	26	61.0	27.0	27.1	2	93.9
13858	18	24	29	59.5	26.4	26.7	2	92.5
13994	16	22	28	57.3	26.4	26.0	2	90.3
NB61355	16	24	24	61.0	25.3	21.5	2	74.5
13670	17	22	26	61.5	25.2	28.0	2	97.2
NB64334	13	23	25	61.4	24.9	--	1	90.2
NB64365	16	22	25	61.6	24.3	25.5	2	88.4
MT639	18	23	26	58.7	24.2	--	1	87.7
13995	19	22	25	58.5	23.7	25.5	2	88.5
Winalta Resel.	17	23	23	61.3	23.1	--	1	83.7

L.S.D. .05 = 6.6 bushels; C.V. = 15.2%.

Moccasin, Montana
Three replications

C. I.	Date	Plant	Weight	Av. acre yield	No.	Percent
or	headed	height	per	1967	1966-	years
Sel. No.	:	:	bushel:	: 1967	: grown:	of
	July	In.	Lbs.	Bu.	Bu.	Kharkof
Winalta Resel.	2	42	65.1	45.8	--	1 111.7
NB64312	2	40	64.0	45.2	--	1 110.2
NB64334	6/30	41	64.4	44.0	--	1 107.3
1442	4	43	63.5	41.0	39.0	2 100.0
13999	2	39	63.3	40.7	41.7	2 107.1
MT639	2	40	63.0	40.6	--	1 99.0
13190	6/30	37	63.2	39.0	38.7	2 99.2
SD56-758	4	41	62.3	38.4	38.3	2 98.3
SD56-497	3	39	64.1	37.9	34.9	2 89.6
13994	3	42	63.3	35.0	32.5	2 83.4
NB64365	1	42	62.5	34.9	37.8	2 97.0
NB61355	4	39	64.3	34.8	36.2	2 92.9
13670	4	38	64.1	32.9	33.3	2 85.4
13998	4	40	63.4	32.5	37.5	2 96.3
13995	6	41	62.8	32.4	34.3	2 87.9
13858	5	44	63.2	31.9	35.5	2 91.1

L.S.D. .05 = 8.7 bushels; C.V. = 14.4%.

Tetonia, Idaho
Four replications

C. I. or Sel. No.	Plant height : In.	Weight per bushel : Lbs.	Av. acre yield : 1967 : Bu.	1966 : 1967 : Bu.	No. years grown	Percent of Kharkof
13998	42	63.3	56.6	36.0	2	107.8
13999	44	62.6	53.1	35.4	2	106.1
NB64312	44	63.0	53.1	--	1	105.8
NB64334	45	64.0	53.0	--	1	105.6
NB64365	41	63.3	52.9	33.6	2	100.7
SD56-758	44	62.3	52.6	33.2	2	99.4
13670	42	63.5	51.9	32.6	5	104.8
NB61355	41	63.6	51.1	29.7	2	89.1
13190	42	62.4	50.6	30.0	4	101.3
1442	44	63.0	50.2	33.4	5	100.0
Winalta Resel.	43	64.0	50.0	--	1	99.6
13995	41	62.9	49.1	32.8	3	96.2
MT639	48	62.4	48.7	--	1	97.0
SD56-497	42	63.3	47.1	28.2	2	84.6
13994	43	62.5	46.8	29.0	3	87.5
13858	47	63.2	45.9	31.3	4	94.6

L.S.D. .05 = 6.1 bushels; C.V. = 8.4%.

Clovis, New Mexico
Four replications, irrigated

C. I. or Sel. No.	Date		Plant height	Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
	Headed	Ripe			1967	1966- 1967		
	May	June	In.	Bu.	Bu.	Bu.		
13998	10	25	46	62	79.2	89.5	2	108.5
13190	8	23	40	62	76.1	86.7	3	106.0
13999	10	24	44	62	75.3	85.1	2	103.1
1442	12	26	50	62	74.4	82.5	8	100.0
NB64312	10	24	46	62	73.8	--	1	99.2
SD56-758	13	26	48	61	73.5	82.5	2	99.9
NB64334	9	23	45	62	70.5	--	1	94.8
13858	14	27	48	62	69.2	72.8	3	88.5
13670	11	25	47	63	67.7	80.5	5	104.9
NB64365	8	24	46	62	64.4	74.5	2	90.3
Winalta Resel.	12	25	46	64	64.1	--	1	86.2
MT639	13	25	46	61	62.8	--	1	84.4
NB61355	8	24	44	61	62.4	71.2	2	86.3
SD56-497	8	23	45	59	62.1	73.8	2	89.5
13995	13	27	45	60	58.7	70.5	2	85.4
13994	12	25	46	61	56.6	61.1	2	74.1

L.S.D. .05 = 13.7 bushels; C.V. = 13.6%.

Lethbridge, Alberta
Four replications

C. I. or Sel. No.	Date	1000 : Weight:	Av. acre yield:	No. :	Percent
	Headed: Ripe	kernel: per	1967 : 1966-	years:	of
		weight: bushell/	1967 : 1967	grown:	Kharkof
	June : Aug.:	Lbs.:	Bu. :	Bu. :	:
MT639	29 7/31	27.6	67.5	37.1	-- 1 133.4
13858	29 1	28.8	67.0	34.8	49.5 3 100.3
NB64334	28 2	31.6	67.0	34.2	-- 1 123.0
SD56-758	28 7/31	30.4	66.0	32.7	49.0 2 101.8
Winalta Resel.	28 7/31	32.8	67.0	32.7	-- 1 117.6
NB64365	28 1	29.6	66.0	31.6	45.5 2 94.5
NB61355	28 7/31	29.2	67.0	31.1	47.7 2 99.1
13995	29 1	26.4	66.0	31.0	47.5 3 98.1
13994	29 7/30	31.2	66.0	30.9	45.7 3 93.0
NB64312	28 1	33.6	67.0	30.9	-- 1 111.2
13670	29 7/31	32.0	67.5	30.3	45.0 4 94.6
13999	28 2	30.4	66.5	29.4	47.6 2 98.8
13998	28 1	30.0	66.5	29.3	47.4 2 98.4
13190	26 1	32.0	66.0	28.5	46.6 3 99.1
1442	30 3	33.6	66.0	27.8	48.2 12 100.0
SD56-497	28 7/31	30.0	67.0	27.7	40.2 2 83.4

1/ Imperial bushels.

L.S.D. .05 = 4.1 bushels; C.V. = 9.3%.

Summary of Nursery Yields

Yields of varieties evaluated in the NRPN in 1967 are summarized in table 6. Average yields made by varieties in 14 tests were very high, ranging from 40 up to 48 bushels per acre. The Selkirk x Cheyenne strains and Trapper (C. I. 13999) were the most productive, all averaging 45 bushels per acre or more.

A summary of 2-year average yields made by varieties in the NRPN appears in table 7. Trapper (C. I. 13999), NB64365, and Trader (C. I. 13998) in that order, have been the most productive, all making 41 bushels per acre or more.

Summary of Agronomic Data

This appears in table 8. Warrior headed the earliest and produced the shortest straw on the average. NB61355 carried the least leaf rust at two reporting stations. Trader (C. I. 13998) and Trapper (C. I. 13999) showed the most false black chaff at two stations. Winalta Reselection (C. I. 14000) had slightly the highest bushel weight.

Table 6.--Summary of average yields in bushels per acre made by 16 varieties grown in the northern regional performance nursery in 14 trials in 1967 with state averages and rank.

Variety	C. I. : : or : : Sel. No.:	Nebraska				South Dakota				Minnesota			
		: North	: Alli-	: Aver-	: Rank	: Presho	: High-	: Aver-	: Rank	: St. :	: Waseca	: Aver-	: Rank
		: Sel. No.:	: Platte:	: ance :	: age :	: Presho	: more :	: age :	: Rank	: Paul :	: Waseca	: age :	: Rank
Selkirk x Cheyenne ³	NB64312	48.7	54.5	51.6	6	52.7	49.9	51.3	1	46.8	35.0	40.9	1
Selkirk x Cheyenne ²	NB64334	50.9	58.1	54.5	2	50.3	49.0	49.7	4	38.4	33.9	36.2	6
Wrr x Sk-Cnn ² (NB64323)	13999	51.6	57.7	54.7	1	40.9	45.5	43.2	16	39.5	28.3	33.9	8
Selkirk x Cheyenne ²	NB64365	50.9	55.0	53.0	4	50.2	50.7	50.5	2	42.2	36.0	39.1	3
S. Dak. Sel.	SD56-758	47.2	55.2	51.2	7-8	44.1	48.7	46.4	8	30.8	34.5	32.7	10
Minn. III-54-12 x Cnn	NB61355	48.0	55.3	51.7	5	44.0	48.4	46.2	9-10	34.7	45.7	40.2	2
Wrr x Sk-Cnn ² (NB64322)	13998	46.1	56.3	51.2	7-8	46.5	45.8	46.2	9-10	35.4	25.9	30.7	14
Warrior	13190	39.9	57.4	48.7	10	46.7	49.5	48.1	5	33.2	16.3	24.8	16
S. Dak. Sel.	SD56-497	50.7	56.1	53.4	3	43.6	46.8	45.2	13	42.5	32.6	37.6	5
Winalta Resel. (S.Dak.)	14000	40.2	51.5	45.9	14	47.5	47.7	47.6	6	29.3	32.8	31.1	13
Kharkof	1442	41.0	51.3	46.2	13	52.7	47.1	49.9	3	33.8	21.7	27.8	15
H44-Minturki ² x Minter	13858	44.0	49.4	46.7	12	43.9	48.0	46.0	11	35.9	41.3	38.6	4
BWH 1904-7	MT639	44.2	51.7	48.0	11	45.5	46.0	45.8	12	28.1	38.0	33.1	9
Winalta	13670	37.1	49.4	43.3	16	43.1	50.2	46.7	7	31.9	31.6	31.8	12
Mtr-M2825 x H255-Bkk	13994	45.7	51.8	48.8	9	46.2	43.8	45.0	14	31.6	37.9	34.8	7
II-36-3 x III-51-31	13995	38.5	48.3	43.4	15	39.3	48.3	43.8	15	35.3	28.6	32.0	11

Table 6.--(Concluded).

C. Id.	North Dakota				Wyoming				Montana		Idaho		New Mexico		Alberta		14-
or	Willis	Dick	Aver	Rank	Archer	Sheri	Aver	Rank	Moc	Rank	Te	Rank	Clovis	Rank	Leth	Rank	trial
Sel. No.	ton	in	son	age		dan	age		casin		tonia		(irr.)		bridge		average
NB64312	30.0	33.0	31.5	3	60.2	64.4	62.3	1	45.2	2	53.1	2-3	73.8	5	30.9	9-10	48.4
NB64334	24.9	32.9	28.9	11	52.8	58.0	55.4	6	44.0	3	53.0	4	70.5	7	34.2	3	46.5
13999	28.8	41.0	34.9	1	65.0	52.7	58.9	3	40.7	5	53.1	2-3	75.3	3	29.4	12	46.4
NB64365	24.3	35.5	29.9	7-8	53.1	55.1	54.1	8	34.9	11	52.9	5	64.4	10	31.6	6	45.5
SD56-758	30.4	38.5	33.5	2	48.7	53.4	51.1	12	38.4	8	52.6	6	73.5	6	32.7	4-5	44.8
NB61355	25.3	32.3	28.8	12	59.5	53.7	56.6	4	34.8	12	51.1	8	62.4	13	31.1	7	44.7
13998	30.5	29.5	30.0	6	60.6	52.1	56.4	5	32.5	14	56.6	1	79.2	1	29.3	13	44.7
13190	29.4	32.4	30.9	4	55.9	64.6	60.3	2	39.0	7	50.6	9	76.1	2	28.5	14	44.3
SD56-497	27.0	31.3	29.2	10	57.3	51.7	54.5	7	37.9	9	47.1	14	62.1	14	27.7	16	43.9
Wn Resel.	23.1	37.3	30.2	5	51.3	56.2	53.8	10	45.8	1	50.0	11	64.1	11	32.7	4-5	43.5
1442	27.6	32.1	29.9	7-8	47.1	57.5	52.3	11	41.0	4	50.2	10	74.4	4	27.8	15	43.2
13858	26.4	32.5	29.5	9	43.9	46.2	45.1	16	31.9	16	45.9	16	69.2	8	34.8	2	42.4
MT639	24.2	31.0	27.6	16	47.0	48.8	47.9	15	40.6	6	48.7	13	62.8	12	37.1	1	42.4
13670	25.2	31.8	28.5	13	55.1	52.8	54.0	9	32.9	13	51.9	7	67.7	9	30.3	11	42.2
13994	26.4	29.5	28.0	15	49.2	50.7	50.0	14	35.0	10	46.8	15	56.6	16	30.9	9-10	41.6
13995	23.7	33.1	28.4	14	52.4	47.9	50.2	13	32.4	15	49.1	12	58.7	15	31.0	8	40.5

Table 7.--Summary of 2-year average yields for 12 varieties grown in the northern regional performance nursery in 14 trials in 1966 and 1967 with state averages and rank.

Variety	: C. I. : Nebraska :					: South Dakota :					: Minnesota :		
	: or :North :Alli-:Aver-: Rank :					: Presho :High-:Aver-: Rank :					: St. :Waseca:Aver-: Rank :		
	:Sel. No.:	Platte:	ance :	age :	Rank :	:Presho:	more :	age :	Rank :	:Paul :	:Waseca:	:Aver-:	Rank :
Wrr x Sk-Cnn ² (NB64323)	13999	58.0	43.7	50.9	3	33.7	33.0	33.4	10	34.1	38.5	36.3	3
Selkirk x Cheyenne ²	NB64365	57.9	45.0	51.5	1	38.1	39.3	38.7	1	35.2	41.1	38.2	1
Wrr x Sk-Cnn ² (NB64322)	13998	53.1	43.2	48.2	6-7	36.4	31.1	33.8	9	28.5	33.9	31.2	9
Warrior	13190	54.2	48.6	51.4	2	34.6	36.4	35.5	5	29.5	28.5	29.0	12
S. Dak. Sel.	SD56-758	53.1	43.5	48.3	5	32.2	36.6	34.4	6-7	29.5	36.1	32.8	7
Kharkef	1442	47.0	39.6	43.3	9	37.7	34.3	36.0	4	28.4	30.7	29.6	11
MinnIII-54-12 x Cnn	NB61355	51.0	46.3	48.7	4	35.9	36.5	36.2	3	30.6	44.0	37.3	2
Winalta	13670	45.9	40.0	43.0	10	34.5	39.6	37.1	2	29.4	34.0	31.7	8
S. Dak. Sel.	SD56-497	53.4	43.0	48.2	6-7	32.9	33.6	33.3	11	34.7	35.4	35.1	4
H44-Minturki ² x Minter	13858	48.3	40.5	44.4	8	33.1	34.8	34.0	8	29.8	38.2	34.0	5
II-36-3 x III-51-31	13995	45.9	34.5	40.2	11	28.9	34.7	31.8	12	29.2	31.7	30.5	10
Mtr-M2825 x H255-Bkk	13994	42.5	37.0	39.8	12	34.5	34.3	34.4	6-7	29.4	38.1	33.8	6

C. I. :	North Dakota :				Wyoming :				Montana :		Idaho :		New Mexico :		Alberta :		14-
or :	Dick-	Willis-	Aver-	Rank	Archer	Sheri-	Aver-	Rank	Moc-	Rank	Te-	Rank	Clovis:	Rank	Leth-	Rank	trial
Sel. No.:	inson:	ton :	age :		dan :	age :			casin:		tonka:		(irr.):		bridge:		average
13999	33.4	27.1	30.3	3-4	40.4	44.9	42.7	1	41.7	1	35.4	2	85.1	3	47.6	5	42.6
NB64365	30.1	25.5	27.8	10	35.2	44.0	39.6	4	37.8	5	33.6	3	74.5	7	43.5	10	41.6
13998	29.0	27.4	28.2	9	39.0	43.4	41.2	2	37.5	6	36.0	1	89.5	1	47.4	7	41.1
13190	30.7	26.4	28.6	7	34.5	47.5	41.0	3	38.7	3	30.0	9	86.7	2	46.6	8	40.9
SD56-758	34.1	29.3	31.7	2	32.9	42.6	37.8	7	38.3	4	33.2	5	82.5	4-5	49.0	2	40.9
1442	35.3	28.8	32.1	1	32.4	42.3	37.4	8	39.0	2	33.4	4	82.5	4-5	48.2	3	40.0
NB61355	30.6	21.5	26.1	12	36.9	40.1	38.5	5	36.2	7	29.7	10	71.2	10	47.7	4	39.9
13670	32.5	28.0	30.3	3-4	35.5	40.9	38.2	6	33.3	11	32.6	7	80.5	6	45.0	11	39.4
SD56-497	29.9	27.1	28.5	8	33.5	39.3	36.4	10	34.9	9	28.2	12	73.8	8	40.2	12	38.6
13858	31.7	26.7	29.2	6	30.2	37.2	33.7	12	35.5	8	31.3	8	72.8	9	49.5	1	38.5
13995	33.5	25.5	29.5	5	33.4	36.4	34.9	11	34.3	10	32.8	6	70.5	11	47.5	6	37.1
13994	28.5	26.0	27.3	11	32.2	41.0	36.6	9	32.5	12	29.0	11	61.1	12	45.7	9	36.6

Table 8. Summary of agronomic data other than yield for varieties grown in the northern regional performance nursery in 1967.

Pedigree	: C. I. : : or : : Sel. No. :	: Date : : Head- : : ed : : June:July:		: Plant : : height : : In. :	: Leaf : : rust : : % :	: False:Weight : black: per : chaff:bushel : % : Lbs.	
Number of stations -----		10	4	9	2	2	14
Winalta Reselection (S.Dak.)	14000	16	20	40.8	90	1	62.4
Winalta	13670	16	20	41.0	100	1	62.3
Selkirk x Cheyenne ²	NB64334	15	21	41.1	100	0	62.3
Minn. III-54-12 x Cnn	NB61355	15	20	39.2	31	3	62.2
Selkirk x Cheyenne ²	NB64365	15	20	40.7	100	0	61.8
Selkirk x Cheyenne ³	NB64312	15	21	40.6	100	0	61.7
S. Dak. Sel.	SD56-497	15	20	41.1	100	0	61.6
Wrr x Sk-Cnn ² (NB64322)	13998	15	20	41.1	100	13	61.4
Wrr x Sk-Cnn ² (NB64323)	13999	15	20	40.9	100	13	61.3
H44-Minturki ² x Minter	13858	18	22	43.9	85	1	61.1
S. Dak. Sel.	SD56-758	17	21	42.4	100	5	61.0
BWH1904-7	MT639	18	21	43.0	100	0	60.8
Mtr-M2825 x H255-Bkk	13994	16	21	42.3	100	0	60.7
Warrior	13190	13	20	38.9	100	0	60.5
Kharkof	1442	17	21	43.4	100	0	60.4
II-36-3 x III-51-31	13995	17	21	42.0	100	0	60.3

QUALITY DATA

The Hard Winter Wheat Quality Laboratory does quality evaluation each year on grain from the regional nurseries. The amount of seed submitted from each location is as follows:

Uniform Quality Series-----	10 pounds
Southern Regional Performance Nursery-----	1 pound
Northern Regional Performance Nursery-----	1 pound

Quality Series samples are evaluated individually from each location and as composite samples from each district. NRPN and SRPN samples are composited from all locations. Results are reported to the cooperators by K. F. Finney.

UNIFORM WINTERHARDINESS NURSERY

This nursery is divided into 2 sections according to the origin of the materials. A southern materials section is comprised of wheats from the more southern states in the region, Texas, New Mexico, Oklahoma, Kansas, Colorado, and Nebraska. The northern materials section includes experimental lines from South Dakota, Wyoming, Minnesota, and Montana. In 1967 the southern section was grown in single rows and two replications at Alliance, Nebraska; Laramie, Wyoming; Brookings and Watertown, South Dakota; St. Paul, Minnesota; Fargo, North Dakota; and Havre, Montana. It was comprised of 245 entries. Differential winterkilling occurred at Laramie, Brookings, Watertown, and St. Paul.

The northern materials section is evaluated at Laramie, Brookings, Watertown, St. Paul, Fargo, Havre and Lethbridge, Alberta. It was comprised of 62 entries in 1967. Differential survivals were recorded at Laramie, Brookings, Watertown, and St. Paul. Survival data for the two sections were distributed to cooperators as a separate report.

HYBRID WINTERHARDINESS NURSERY

The purpose of the nursery, initiated in 1967, is to evaluate the winter-hardiness of winter wheat hybrids relative to the hardiness of their parents. There also was opportunity in 1967 to evaluate the adequacy of fertility restoration in hybrids involving restorer lines TX1055 and NB3547 and, at those locations where survival permitted, to compare yields of the restored hybrids with their parents.

The nursery was comprised of 16 hybrids, 8 of which were non-restored. The hybrids and parents were grown in single rows replicated 5 times. Restricted randomization was employed with the hybrid always in a 3-row block with its parents in each replication. Nursery sites were Bushland, Texas; Mead, Nebraska; Laramie, Wyoming; Brookings, South Dakota; Moccasin, Montana; and Lethbridge, Alberta. The following hybrid combinations were evaluated:

Non-restored

ms Bison x Scout
ms " x Tascosa
ms " x Ottawa
ms " x Comanche
ms " x Warrior
ms " x Cheyenne
ms " x Wichita
ms " x Red Chief

Restored

ms Bison x TX 1055
ms Wichita x TX 1055
ms Bison x NB3547
ms Gage x NB3547
ms Scout x NB3547
ms Parker x NB3547
ms Omaha x NB3547
ms Wichita x NB3547

Differential winterkilling occurred in the nursery at Laramie and Brookings. At each of these locations stand losses were highly erratic from one replication to the next and the survival data are of questionable value. Since Bison was a parent common to all the non-restored hybrids, these were treated as a group for purposes of calculating average survival values. Similarly TX1055 or NB3547, which were both selected from the original Nebraska restorer, were common to all restored hybrids. Average survival values were as follows:

Population	Mean survival (%)	
	Laramie	Brookings
Non-restored hybrids	35	9
Bison parent (ms)	41	10
Other parents	38	12
Restored hybrids	51	14
Restorer parents	43	14
Other parents (ms)	45	19

Heads were bagged on the restored hybrids prior to blooming at Laramie, Brookings, Moccasin, Bushland, and Lethbridge to permit determination of degree of restoration. The following data were obtained.

Hybrid	% seed set on bagged heads				
	Laramie	Bushland	Brookings	Lethbridge	Moccasin
Gage x 3547	100	77	74	74	54
Scout x 3547	95	75	68	64	57
Bison x 3547	72	90	67	53	38
Parker x 3547	79	74	70	38	44
Omaha x 3547	62	67	51	55	33
Wichita x 3547	82	83	69	55	54
Bison x 1055	64	28	2	2	6
Wichita x 1055	95	49	3	19	16

Restoration was clearly the most complete at Laramie where there was little difference in the degree of restoration provided by NB3547 and TX1055. Overall restoration provided by NB3547 was next best at Bushland followed by Brookings, Lethbridge, and Moccasin in that order. Restoration provided by TX1055 was only about one-half as effective as NB3547 at Bushland and even less so at the other locations.

Grain yields were taken at Mead, Moccasin, and Lethbridge. Hybrid performance in relation to parents is shown.

Hybrid	: Hybrid performance as % of parent mean (above : line) and best parent (below line).		
	: Mead	: Moccasin	: Lethbridge
Scout x 3547	$\frac{123}{122}$	$\frac{91}{85}$	$\frac{104}{90}$
Gage x 3547	$\frac{101}{96}$	$\frac{102}{85}$	$\frac{107}{92}$
Bison x 3547	$\frac{101}{98}$	$\frac{100}{88}$	$\frac{116}{111}$
Parker x 3547	$\frac{97}{87}$	$\frac{97}{88}$	$\frac{112}{111}$
Omaha x 3547	$\frac{90}{87}$	$\frac{84}{83}$	$\frac{111}{110}$
Wichita x 3547	$\frac{94}{85}$	$\frac{93}{83}$	$\frac{103}{92}$

Less than complete restoration at each of these locations undoubtedly had a depressing effect on the performance of the hybrids, although seed set from cross pollination probably lessened the effect.

SOIL-BORNE MOSAIC NURSERY

This nursery is grown at Urbana, Illinois and Powhattan, Kansas on soil known to be infested with the soil-borne mosaic virus. The nursery was comprised of 53 entries in 1967. Data were obtained from both locations and were distributed to cooperators in a separate report.

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