

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 1966

Preliminary report, not for publication^{1/}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.

Nebraska Agricultural Experiment Station
Lincoln, Nebraska

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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

D. B. Ferguson, station superintendent and small grains breeder at the Plains Substation, Clovis, New Mexico, accepted a sorghum breeding position with Northrup-King at Lubbock, Texas. He is replaced at Clovis by R. E. Finkner, formerly with the Great Western Sugar Company.

A. M. Schlehuber, for many years State Small Grains Improvement Leader at Stillwater, Oklahoma, resigned to accept a position with the IRI Research Institute. He is located at the Instituto de Pesquisas IRI, Pelotas, Brazil. Dick also served as chairman of the Hard Red Winter Improvement Committee since 1955 and as chairman of the National Wheat Improvement Committee since it was organized. E. L. Smith replaces Dr. Schlehuber as small grains breeder in Oklahoma.

W. H. Sill, of the Department of Botany and Plant Pathology, Kansas State University, is on a temporary research assignment with AID in India.

W. J. Hoover is the new head of the Department of Grain Sciences and Industry at Kansas State University. He also serves as Director of the newly formed Food and Feed Grain Institute at K.S.U.

J. M. Poehlman has returned to the University of Missouri from a 2-year assignment in India. C. F. Hayward, in charge of small grains work at Columbia in Dr. Poehlman's absence, is now associated with Rudy-Patrick Seed Company at Hutchinson, Kansas.

Paul Nordquist, who for the last two years has been with the ARS-University of Nebraska Sorghum Project at Lincoln, has returned to his former position as Agronomist at the North Platte Experiment Station.

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	W. Q. Loegering*
Quality Investigations	K. F. Finney*

TEXAS AGRICULTURAL EXPERIMENT STATION:

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

Agronomy

E. L. Smith
E. E. Sebesta*

C. L. Moore

B. B. Tucker

R. M. Oswalt

H. C. Young

R. C. Bellingham*

H. L. Chada*

E. A. Woods, Jr.*

D. C. Abbott

Botany and Plant Pathology

Entomology

Biochemistry

Cherokee Wheat Land Conservation Station

Woodward Southern Great Plains Field Station

Goodwell Panhandle Agr. Experiment Station

E. G. Greer, Jr.

R. A. Hunter

R. A. Peck

KANSAS AGRICULTURAL EXPERIMENT STATION:

Manhattan Kansas State University

Agronomy

E. G. Heyne

J. R. Lofgren

E. D. Hansing

L. E. Browder*

J. R. Burleigh*

R. H. Painter

H. W. Somsen*

Plant Pathology

Entomology

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

B. C. Curtis

Akron

U. S. Central Gr. Plains Sta.

G. O. Hinze

Hesperus

San Juan Basin Branch Station

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

P. T. Nordquist

P. L. Ehlers

U. U. Alexander

North Platte

North Platte Experiment Sta.

Alliance

Box Butte Experiment Station

Concord

Northeast Nebr. Exp. Station

WYOMING AGRICULTURAL EXPERIMENT STATION:

Laramie	University of Wyoming	B. J. Kolp
Div. of Plant Science (Crops)	(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	D. G. Wells
Agronomy		G. W. Buchenau
Plant Pathology		Frank Holmes
Highmore	Central Substation	Harry Geise
Presho	South Central Research Farm	

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION:

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

MONTANA AGRICULTURAL EXPERIMENT STATION:

Bozeman	Montana State University	J. R. Welsh
Plant and Soil Science		C. R. Haun
		C. A. Watson
Moccasin	Central Mont. Branch Station	H. R. Guenther
Havre	North Montana Branch Station	H. A. R. Houlton

IDAHO AGRICULTURAL EXPERIMENT STATION:

Aberdeen	Aberdeen Branch Station	D. W. Sunderman*
Tetonia	Tetonia Branch Station	

MINNESOTA AGRICULTURAL EXPERIMENT STATION:

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

ILLINOIS AGRICULTURAL EXPERIMENT STATION:

Urbana	University of Illinois	R. O. Weibel
Agronomy		W. M. Bever
Plant Pathology		

MISSOURI AGRICULTURAL EXPERIMENT STATION:

Columbia	University of Missouri	J. M. Poehlman
Field Crops		

CANADA DEPARTMENT OF AGRICULTURE:

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

Foundation seed of the short-statured variety 'Sturdy' (Svl-Wl-Hope-Cnn-Wl² x 5527), G. I. 13684, was distributed to growers by the Texas Agricultural Experiment Station in 1966. It is recommended only for irrigation and for humid areas in Texas where lodging is a problem. Sturdy has good straw strength, leaf rust resistance, shatter resistance, and excellent milling and baking characteristics. It lacks stem rust resistance, test weight, drought resistance, and winterhardiness.

Parker (C. I. 13285), developed by the Kansas Experiment Station, received approval for release to Kansas certified growers in the fall of 1966. The variety is early maturing (between Triumph and Wichita) and has potential as a replacement for Triumph in Kansas. It has short stiff straw, resistance to leaf rust and hessian fly, and a long mixing requirement. It is susceptible to stem rust, bunt, loose smut, soil-borne mosaic, and wheat streak mosaic.

One-acre increases of four Nebraska experimental varieties were produced under contract at Ft. Collins, Colorado, in 1966. They are Cnn² x Ky-Mta (C. I. 13856), Nbr x Cnn-Ky-Mta (C. I. 13857), Wrr x Sk-Cnn² (NB64322), and Wrr x Sk-Cnn² (NB64323). C. I. 13856 and C. I. 13857 are early maturing and resist stem rust in the adult stage. They show promise for production in southern Nebraska. NB64322 and NB64323 are similar to Warrior in maturity and other characteristics but provide protection against currently prevalent races of stem rust.

Scout Reselection (C. I. 13996) underwent initial increase at Lincoln. It is more uniform and appears to be somewhat more winterhardy than Scout. Its quality and yield are equal to Scout.

THE 1966 CROP YEAR

Drought, spring freezes, and the near absence of the rusts highlighted the 1966 crop year in the hard red winter wheat region. Conditions in the fall were generally favorable for wheat seeding throughout the region. In some states soil moisture was at record or near record levels at wheat seeding time.

Winter wheat came through the winter in unusually good condition in the entire region. Favorable moisture and temperatures provided conditions for a heavy fall build-up and overwintering of leaf rust as far north as Kansas. Lush fall and winter growth placed heavy demands on available soil moisture.

Prolonged drought during the spring growing season sharply reduced the fall and winter potential of the above-average condition of wheat over much of the southern and central Plains. The widespread drought, however, curtailed both leaf and stem rust development. Severe freezes in April and one in May caused major damage to wheat in Kansas and resulted in locally severe damage along the southern border of Nebraska where the wheat was most advanced and as far south as Oklahoma, Texas, and New Mexico. Cool temperatures in May and June permitted the drought and freeze damaged wheat to fill well and make unusual recovery. The low incidence of the rusts and other diseases also contributed to above-anticipated yields particularly in the central plains states. A record-breaking 35 bushels per acre average yield was harvested in Nebraska.

UNIFORM QUALITY SERIES

This series is composed of newly released varieties and advanced experimental varieties that are under consideration for release to farmers. These are grown together 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 1966 were as follows:

<u>Southern District</u>		<u>Central District</u>	
Comanche*	11673	Comanche*	11673
Sturdy	13684	Scout	13546
Norin 10 x C. I. 12500	13855	Quivira Cross	13285
<u>Northern District</u>			
Warrior*	13190		
Lancer	13547		
Hume	13526		
Winalta	13670		
Yogo x Cheyenne	13862		

* Check variety

SOUTHERN REGIONAL PERFORMANCE NURSERY

The nursery was grown in 23 tests at 21 locations in the region. Both irrigated and dryland nurseries were grown at Bushland, Texas, and Clovis, New Mexico. Data were reported from all locations and tests except the dryland nursery at Clovis which was abandoned due to drought and the nursery at Akron, Colorado, lost from hail (table 1). Pedigrees and selection or C. I. numbers of entries in the 1966 nursery are as follows:

Entry : No. :	Pedigree	C. I. : No. :	State : submitting
1	Kharkof	1442	--
2	Early Blackhull	8856	--
3	Comanche	11673	--
4	Scout	13546	Nebr.
5	Scout Reselection	13886	Colo.
6	do.	13887	do.
7	do.	13996	Nebr.
8	Cheyenne ² x Ky-Mta	13856	do.
9	do.	13888	do.
10	Nebred x Cnn-Ky-Mta	13857	do.
11*	Ottawa Selection	KS60770	Kans.
12*	Concho x Triumph ²	KS644	do.
13	Triumph	12132	Okla.
14	Triumph x C. I. 12406	13848	do.
15	do.	13850	do.
16*	Danne Selection	OKC-129-16	do.
17*	Triumph x C. I. 12406	OK627514	do.
18	Cfk-Mt-Tm x Cnn	13997	N. Mex.
19	Sturdy	13684	Texas
20	Svl-Wi-Hope-Cnn-Wi ² x SS	13890	do.
21	Norin 10 x C. I. 12500	13855	do.

* New entry in 1966.

Data Obtained

Denton--Rainfall in September which was substantially above normal and accompanied by below normal temperatures provided favorable conditions for wheat seeding at Denton. Precipitation from October through January was somewhat less than the long-time average in each month. Rainfall was excessive (12.3 inches) in April but below average by nearly 4 inches in May. Mildew became sufficiently heavy for readings and leaf rust was heavy on susceptible varieties.

Chillicothe--Conditions were similar to those at Denton. Although the winter was cold, winter wheat was protected by snow cover during the periods of excessively low temperatures. April was the month of heavy precipitation but May and June were very dry at Chillicothe. There were no diseases of consequence. Low yields and test weights at Chillicothe reflect the late seeding date and relatively late maturity of the nursery, coupled with the late spring drought.

Bushland--Both dryland and irrigated nurseries were grown. The dryland nursery was seeded on September 25 at a rate of 40 pounds per acre. Good stands were obtained and the condition of the nursery remained good until the onset of drought in late March and April. There was no spring precipitation of consequence until June 1. Lower than normal temperatures in May and stored moisture helped the nursery to make average yields despite the spring drought. Some frost damage occurred during a late April freeze. There were no disease or insect problems of consequence.

The irrigated nursery was seeded on October 5 at a 90-pound rate. With the exception of a light sprinkler irrigation in the fall to assure stands, supplemental water was not necessary until March 28. Approximately 15 inches of water was applied in 4 irrigations during the spring. The crop appeared normal until late April following several nights of below freezing temperatures. The wheat exhibited much height variability in that heads occurred at two distinct height levels. Wheat streak mosaic symptoms were exhibited by many plants in the nursery but mosaic could not account for the height variability and lack of vigor. The late freeze undoubtedly contributed most to the variability in height and head sterility observed throughout the nursery.

Clovis--Good fall stands were obtained in both dryland and irrigated nurseries. However, a very dry winter and spring forced the abandonment of the dryland nursery. The irrigated nursery grew and matured under near-ideal conditions with resulting high yields and test weights. Some head sterility was present in the nursery--probably resulting from the freezing temperatures in April.

Oklahoma Stations--Soil moisture was excellent for seeding and fall and winter plant development. Fall temperatures were unseasonably high through December, resulting in excessive vegetative growth and a severe leaf rust infection. Lack of precipitation in March and most of April produced severe drought stress during the critical stages of spring development. Sub-freezing temperatures on April 20 and 21 caused considerable damage to wheat in the late boot and heading stages. Freeze damage was the most severe in nursery areas where drought stress was most pronounced. Rains in late April and May resulted in the fair recovery and respectable yields of some varieties. Diseases and insects were of minor importance because of the dry spring.

Manhattan--Adequate conditions for seeding and fall stand establishment prevailed. A good rain was received on December 31 and January 1 but there was little precipitation thereafter. A March freeze hurt all varieties while a freeze in April caused heaviest damage to the early lines. Drought damage was evident throughout the nursery. An early June tornado flattened the nursery. Most of the down wheat recovered and was standing again by harvest time.

Hays--Excellent soil moisture permitted good fall growth of the wheat. The winter and spring were very dry until late May. Severe freezes in late April and early May reduced yields by an estimated 50 percent with the heaviest damage to the early varieties. Hail two weeks before harvest again reduced yields by another estimated 50 percent with little difference noted in the amount of damage between varieties. Spring nitrogen tie-up associated with the drought appears to have been a yield factor. No insect or disease problems were noted.

Garden City--As at the other Kansas Stations soil moisture in the fall was good. Subsoil moisture extended below the 6 foot level. All varieties survived the winter in good condition and the wheat made good growth in the early spring. Drought symptoms began to appear by mid-April. Freezes on April 19 and 20 killed an estimated 30 percent of the tillers on varieties of the Triumph maturity and 10 percent on varieties of the Kaw-Scout maturity. There was no apparent damage to the later maturing varieties. Further damage to varieties of the Triumph-Scout maturities occurred from another freeze on May 13 with portions of plots showing 100 percent sterility. An association of drought stress and freeze damage was apparent since plot areas that were favored by snow drifts during the winter or had more subsoil moisture showed less head sterility than the more droughty plot areas. Continued drought resulted in premature or forced ripening of the wheat during the June 6-14 period. Traces of leaf and stem rust were noted. Brown wheat mites were present but were adequately controlled by ladybird beetles. Wheat head army worms caused as much as 5 percent damage in some portions of the nursery.

Colby--Seeding was delayed by wet fields in late September. Stand establishment and fall growth were excellent. The winter was dry with mostly moderate temperatures. The spring continued dry and cool. There was little regrowth of the wheat until early April. The freeze in late April produced no apparent damage but a later freeze on May 13 caused much sterility in early varieties and some sterility in all varieties. Insects and diseases were no problem. The continued drought fortunately was accompanied by relatively cool temperatures in May and June. There occurred some mild hail damage to all varieties one week prior to harvest.

Ft. Collins--Fall rains delayed seeding until October 7. A long and warm fall permitted good growth of the wheat. The winter was mild with some fall-sown spring-type wheats surviving. The nursery was not irrigated. Fall rains and winter snow provided ample moisture until late May when moisture stress symptoms began to appear. Significant precipitation did not come until June 7. Cool temperatures lessened the effect of the drought. Following the 1-inch rain on June 7 there was little effective moisture prior to harvest and varieties produced slightly shrivelled and somewhat lower-than-normal test weight grain. The May 12 freeze caused considerable leaf burn but did not produce sterility. A few pustules of leaf rust appeared late. Thrips scarred the leaves of most plants at about heading time.

Julesburg--The southern regional nursery was grown for the first time at Julesburg in northeastern Colorado. Excessive fall moisture delayed seeding until early October, about 2 weeks later than normal for the area. The fall and winter were favorable but the spring months were very dry. Reserve soil moisture carried the crop well until mid-May when drought symptoms appeared. Little growth occurred between May 15 and June 7 when good rains broke the drought. Although plants were very short, all varieties in the nursery exceeded 40 bushels in yield.

Springfield--The May 12 freeze overshadowed all other production factors at Springfield in 1966. At the onset of spring the condition of the nursery was such that it held promise of being the best at the station in many years. The freeze damaged all varieties but was particularly severe in the early maturing ones.

Yellow Jacket--This also is a new testing site in Colorado. It replaces the nursery formerly grown at Hesperus and better represents the wheat production area of western Colorado than did Hesperus. The nursery was not seeded until October 29 due to wet weather. Stands were only fair and little fall growth occurred. There was no winterkilling. The spring and early summer were cool and moisture adequate until fruiting when the first drought stress symptoms were noted. Secondary tillers of some varieties failed to develop.

Nebraska Stations--Stored soil moisture at seeding time was the best of record in many parts of Nebraska. Nurseries were seeded at near normal time at all locations. Stands were good; fall growth was adequate; and nurseries at all three locations survived the winter without loss of stand. There was little precipitation during the spring, but cool temperatures and moisture reserves carried the wheat until precipitation was received in June. The severe freezes in April and May caused little damage except along the southern border of Nebraska. The nurseries at Lincoln, North Platte, and Alliance were relatively unaffected. There were no diseases nor insects of consequence to the wheat crop.

Columbia--Fall growth was extremely heavy resulting in some top-killing during the winter. April and May were cloudy, cool, and with near-normal rainfall. June was cool and dry. Yields and test weights were very high for most varieties in the nursery.

Ames--Conditions were favorable for prompt emergence and adequate fall stands. Some light to moderate winterkilling was recorded. A cool and moist April, May, and early June encouraged lush spring growth, delayed heading, and produced severe lodging. Only the Texas semi-dwarf entries remained standing at harvest time. Some leaf rust developed.

Urbana--Conditions were not reported. Mildew was sufficiently heavy for note-taking and lodging was recorded for all entries except C. I. 13684 and C. I. 13890. Yields ranged from 34 to 59 bushels per acre.

Table 1.--Yield and other data for varieties grown in the southern regional performance nursery at 21 stations in the hard red winter wheat region in 1966.

Denton, Texas
Four replications

C. I. or Sel. No.	Date: head- ed	Plant height In.	Mildew %	Leaf rust %	Lodg- ing %	Weight per bushel Lbs.	Av. acre yield 1966 Bu.	1965- 1966 Bu.	No. years grown	Percent of Kharkof
	: May :									
13684	15	33	20	T	0	60	34.6	31.9	4	144.1
13890	15	32	40	T	0	60	33.7	32.1	2	182.4
13855	9	29	30	30	5	59	31.8	28.3	3	163.4
OK627514	13	36	10	70	0	60	29.9	--	1	156.5
13856	11	35	10	60	0	60	28.6	27.4	3	168.1
8856	15	40	30	70	2	61	28.0	27.9	30	130.3
OKC-129-16	17	37	15	90	0	59	27.2	--	1	142.4
13888	11	35	15	90	0	61	26.5	27.0	2	153.1
KS 644	15	40	10	60	20	62	26.2	--	1	137.2
12132	17	35	15	90	5	61	25.7	24.1	6	121.0
13848	14	37	5	80	5	61	25.0	24.3	3	155.7
13886	19	34	5	50	40	56	23.9	26.0	2	147.7
13546	24	37	5	70	15	57	23.8	24.6	6	128.9
13857	15	38	T	80	2	60	23.1	20.2	3	147.2
13997	18	36	15	80	10	62	22.4	25.6	2	145.5
13850	16	40	5	80	20	60	22.2	23.7	3	160.0
11673	21	37	20	60	5	56	22.1	21.2	26	128.1
13996	19	40	T	70	15	56	21.6	26.2	2	103.0
13887	19	39	T	70	30	57	21.1	23.9	2	135.8
1442	25	38	20	90	2	59	19.1	17.6	30	100.0
KS 60770	25	44	20	60	5	55	18.0	--	1	94.2

L.S.D._{.05} = 5.4 bushels; C.V. = 15.6%.

Chillicothe, Texas
Four replications

C. I. or Sel. No.	Date Headed	Plant Ripe	Weight height	Av. acre yield per : 1966	No. : 1965- years : 1966	Percent of grown:Kharkof
	: May	: June	: In.	: Lbs. :	Bu. : Bu. :	:
KS644	1	2	29	58.0	16.3	-- 1 229.6
OK627514	4/30	5/29	29	58.0	15.9	-- 1 223.9
13546	9	10	27	54.0	15.2	18.3 6 145.9
12132	2	1	28	58.0	14.9	16.9 6 142.9
13848	1	1	28	57.5	14.7	16.5 3 174.4
13850	2	2	28	58.5	14.5	16.8 3 181.0
13888	4	3	26	57.5	14.5	17.9 2 258.7
13890	1	5/31	20	57.0	14.4	17.0 2 245.7
OKC-129-16	2	2	26	58.0	14.3	-- 1 201.4
13856	1	5/31	26	57.0	14.3	17.3 3 190.0
13997	12	14	26	58.0	14.2	15.9 2 230.4
13855	1	1	20	55.0	14.0	15.8 3 183.4
8856	7	6	30	58.0	13.9	15.5 28 109.5
13684	3	2	21	56.0	13.7	16.6 4 152.6
13857	4/30	5/29	25	58.0	13.6	16.8 3 183.0
13886	9	9	25	54.5	13.6	16.9 2 244.9
13996	8	9	25	55.0	13.6	17.9 2 258.7
13887	10	10	24	52.0	13.3	16.8 2 243.5
11673	13	13	25	54.0	12.5	13.6 28 117.9
KS60770	11	12	27	53.0	11.4	-- 1 160.6
1442	19	21	22	--	7.1	6.9 28 100.0

L.S.D. .05 = 2.9 bushels; C.V. = 7.5%.

Bushland, Texas
Five replications, dryland

C. I. or Sel. No.	Date headed	Plant height	Winter- hardiness ^{1/}	Weight per bushel	Av. acre yield	No. years grown	Percent of Kharkof
	: May :	: In. :	: % :	: Lbs. :	: Bu. :	:	:
13856	2	17	77	59.8	16.7	1	157.5
13997	4	18	78	60.3	15.4	1	145.3
8856	4/29	19	81	60.6	15.1	23	104.2
OK627514	4/29	18	77	58.8	14.5	1	136.8
13886	3	19	74	59.4	14.2	1	134.0
13546	3	17	77	59.4	14.0	3	116.4
13848	4/30	19	76	59.1	14.0	1	132.1
KS644	4/30	21	77	59.9	13.8	1	130.2
13888	5	18	77	60.8	13.7	1	129.2
13996	2	17	76	59.2	13.6	1	128.3
13890	4	16	76	57.4	13.2	1	124.5
13887	2	17	76	59.6	12.8	1	120.8
13857	5	16	81	57.4	12.4	1	117.0
13855	4/29	16	71	56.6	11.9	1	112.3
13850	1	19	77	57.4	11.4	1	107.5
13684	2	17	77	55.6	11.3	1	106.6
KS60770	7	16	84	58.1	10.8	1	101.9
1442	11	19	80	59.5	10.6	23	100.0
11673	8	18	77	60.8	10.6	23	106.4
12132	4/30	20	77	58.5	10.1	3	107.5
OKC129-16	2	16	74	57.8	9.4	1	88.7

^{1/} Top growth damage; 100 = no damage.

L.S.D. .05 = N.S.; C.V. = 30.3%.

Bushland, Texas
Three replications, irrigated

C. I. or Sel. No.	Date headed	Plant height	Shatter- ing	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	May	In.	%	Lbs.	Bu.		
13855	3	32	1	59.8	66.0	2	123.9
13890	5	33	1	59.4	58.8	1	153.1
OK627514	4	37	10	60.6	58.0	1	151.0
13546	5	39	15	60.5	57.7	3	130.2
13996	5	38	10	60.6	56.0	1	145.8
13888	7	38	5	60.3	55.2	1	143.8
13857	8	36	5	60.8	55.0	2	120.1
KS60770	8	40	5	59.9	55.0	1	143.2
13856	8	39	10	58.5	51.7	2	113.2
OKC-129-16	8	38	10	60.3	51.7	1	134.6
13886	6	38	5	60.9	51.6	1	134.4
11673	9	40	0	59.6	50.3	14	111.9
13887	5	37	10	60.9	48.7	1	126.8
13997	6	39	5	62.0	48.0	1	125.0
13684	6	33	1	58.7	47.9	2	112.2
12132	6	40	15	60.6	46.8	3	108.0
13848	4	37	20	59.6	43.4	2	101.6
KS644	4	39	20	60.3	41.5	1	108.1
1442	12	38	0	57.8	38.4	14	100.0
8856	4	39	0	59.2	37.8	14	92.6
13850	6	39	15	59.8	37.3	2	97.9

L.S.D. .05 = 6.8 bushels; C.V. = 9.6%.

Clovis, New Mexico
Four replications, irrigated

C. I. or Sel. No.	Date		Plant Headed	Ripe	height	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	May	June	In.			Lbs.	Bu.		
13546	14	27	38			62	90.4	4	120.5
OKC-129-16	12	27	38			62	88.6	1	108.2
13887	14	27	40			62	86.4	1	105.5
13886	14	28	38			62	82.4	1	100.6
13888	15	27	39			63	82.4	1	100.6
13857	16	27	37			62	82.0	2	101.3
1442	19	29	41			62	81.9	4	100.0
13996	13	27	39			62	79.4	1	96.9
13856	14	27	38			62	77.5	2	102.6
11673	15	27	41			62	76.4	4	96.7
OK 627514	12	27	38			62	72.8	1	88.9
8856	12	27	41			62	72.9	4	92.7
13997	13	27	38			63	72.0	1	87.9
KS 60770	15	27	42			63	68.1	1	83.2
13890	13	30	32			62	67.2	1	82.1
13684	14	27	33			62	66.8	3	88.4
13848	12	27	39			62	65.1	2	84.8
12132	12	27	38			62	64.5	4	91.2
13855	12	27	30			62	63.4	2	86.5
KS 644	12	27	38			62	63.2	1	77.2
13850	12	27	38			62	61.6	2	82.2

L.S.D. .05 = 6.9 bushels; C.V. = 11.6%.

Stillwater, Oklahoma

Four replications

C. I.	Date	Plant	Leaf rust	Weight	Av. acre yield	No.	Percent
or Sel. No.	headed	height	Type	Sev. per bushel	1966	1965-1966	years of grown: Kharkof
	April	In.	%	Lbs.	Bu.	Bu.	
13996	29	36	4	5	60.4	43.0	2 167.3
13546	30	36	4	5	60.7	41.0	6 157.0
13886	29	35	4	10	60.4	39.5	2 166.8
KS 644	26	34	4	10	61.0	34.7	-- 1 198.3
13887	5/2	33	4	5	59.7	34.4	40.7 2 144.4
13888	27	33	3-4	10	60.4	31.5	41.1 2 146.0
11673	5/4	34	4	5	58.4	31.4	40.5 26 116.2
13997	5/2	32	4	10	62.3	29.4	39.6 2 140.7
13857	28	31	4	10	58.6	29.2	37.1 3 133.4
13856	26	30	4	15	58.4	28.4	36.2 3 132.6
13850	28	33	4	20	59.1	28.2	37.3 3 132.6
OK627514	26	32	4	5	58.9	28.0	-- 1 160.0
8856	28	34	4	10	59.7	27.1	36.7 32 117.8
OKC-129-16	28	29	4	15	59.3	25.9	-- 1 148.0
12132	28	32	4	15	59.1	25.6	37.8 5 138.2
13848	26	31	4	20	59.9	24.1	33.0 3 120.0
13684	29	27	0	--	57.8	23.3	31.9 4 122.9
KS60770	5/3	33	4	5	59.2	22.5	-- 1 128.6
13890	29	25	2	Tr	56.5	20.9	31.1 2 110.5
13855	24	23	0-4	0-Tr	57.4	19.5	27.9 3 111.5
1442	5/9	33	4	10	57.0	17.5	28.2 32 100.0

L.S.D. .05 = 7.9 bushels; C.V. = 19.4%.

Woodward, Oklahoma
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1966	1965- 1966	No. years grown	Percent of Kharkof
	: April:	In.	Lbs.	Bu.	Bu.		
OK627514	27	41	61.2	56.0	--	1	156.4
OKC-129-16	28	40	62.6	54.6	--	1	152.5
13857	29	40	62.5	49.8	48.5	3	127.0
13996	5/1	41	60.8	48.1	53.9	2	136.8
13887	5/1	40	60.3	47.0	53.1	2	134.6
13856	27	39	61.4	46.4	48.6	3	130.2
13546	5/1	41	60.9	46.2	53.0	6	148.0
KS644	27	42	62.3	45.1	--	1	126.0
13886	5/1	40	60.6	45.0	54.2	2	137.4
KS60770	5/2	42	60.9	44.9	--	1	125.4
13888	28	38	62.1	44.4	50.0	2	126.9
8856	27	43	61.7	44.2	46.7	35	109.5
12132	27	41	60.9	42.5	47.0	6	129.1
13848	26	40	61.9	42.2	45.2	3	115.9
13890	28	35	60.1	42.0	43.9	2	111.4
13850	28	41	61.2	41.0	44.9	3	116.4
11673	5/3	38	60.0	39.8	44.1	30	117.8
13997	30	40	62.8	39.8	45.3	2	115.0
13855	25	34	60.6	39.7	46.8	3	123.0
13684	28	34	59.4	39.0	43.6	4	108.0
1442	5/10	40	61.4	35.8	39.4	35	100.0

L.S.D. = 8.1 bushels; C.V. = 12.9%.
.05

Cherokee, Oklahoma
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1966	1965- 1966	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.	Bu.		
13857	4	38	61.7	41.3	45.1	3	154.3
11673	7	38	61.2	41.2	47.8	19	134.1
13996	4	38	61.5	41.0	50.6	2	161.8
13546	6	38	61.6	40.9	49.4	6	170.5
KS 60770	6	36	61.3	40.4	--	1	182.0
OK 627514	1	39	61.2	40.2	--	1	181.1
13888	3	37	61.8	40.1	47.8	2	152.8
13856	1	38	61.0	39.8	45.2	3	152.8
OKC-129-16	1	36	61.8	37.7	--	1	169.8
13886	5	37	60.7	36.2	47.6	2	152.2
13887	4	37	60.7	35.6	45.1	2	144.3
12132	4/30	39	61.2	35.2	40.8	6	150.4
13848	4/29	38	62.1	34.7	39.8	3	139.6
8856	1	39	61.2	34.4	40.4	19	138.2
13997	5	38	63.5	33.5	39.6	2	126.6
13850	2	40	61.0	31.6	37.2	3	129.2
KS 644	1	40	61.7	30.6	--	1	137.8
13890	4	30	57.6	28.6	36.5	2	116.6
13855	4/29	30	58.9	27.3	37.6	3	126.8
13684	4	31	56.7	25.1	34.2	4	120.7
1442	14	36	61.9	22.2	31.3	19	100.0

L.S.D. .05 = 8.2 bushels; C.V. = 16.4%.

Manhattan, Kansas
Four replications

C. I. or Sel. No.	Date headed	Plant height	Seedling leaf rust pr 9:pr 15	Weight per bushel	Av. acre yield 1966	1965- 1966	No. years grown	Percent of Kharkof
	May	In.		Lbs.	Bu.	Bu.		
1442	24	41	4	4	60.6	39.8	38.7	35
KS 60770	19	36	0	4	61.1	38.7	--	1
OKC-129-16	17	31	4	4	60.4	36.8	--	1
11673	19	38	4	4	60.5	36.2	38.1	30
13888	19	33	4	4	60.7	35.9	39.7	2
13856	17	32	4	4	59.6	33.9	40.2	3
13997	20	34	4	4	63.1	32.9	38.5	2
13996	17	34	3	4	60.6	32.7	38.8	2
13886	17	34	3	4	59.5	31.8	37.4	2
13887	18	34	3	4	59.8	31.6	36.4	2
8856	17	34	4	4	61.7	31.3	35.2	35
13546	18	33	3	4	59.7	30.8	36.3	6
13857	18	31	3	4	60.2	30.0	34.6	3
13855	16	26	0	seg.	59.7	28.9	29.1	3
13850	16	31	4	4	60.4	22.3	31.9	3
OK627514	16	31	4	4	60.1	26.0	--	1
12132	16	32	4	4	60.2	25.9	34.8	6
KS 644	16	31	seg.	seg.	61.1	25.4	--	1
13684	17	27	4	4	60.2	23.3	25.6	4
13890	17	26	4	4	59.9	22.2	28.9	2
13848	17	30	4	4	60.4	19.6	31.1	3

L.S.D. .05 = 7.0 bushels; C.V. = 16.3%.

Hays, Kansas
Four replications

C. I. or Sel. No.	Plant height In.	Weight per bushel lbs.	Av. acre yield 1966 Bu.	1965- 1966 Bu.	No. years grown	Percent of Kharkof
13997	21	58.1	8.4	20.6	2	126.9
OK627514	19	56.2	8.2	----	1	117.1
13996	24	56.3	7.9	24.7	2	152.2
13886	22	56.3	7.7	24.4	2	150.3
13888	22	55.3	7.6	22.4	2	138.0
13546	23	55.8	7.4	23.8	5	163.0
13684	16	55.9	7.1	20.2	3	127.1
1442	26	56.6	7.0	16.2	29	100.0
13887	21	56.2	6.3	23.5	2	144.8
13890	16	54.4	6.2	18.1	2	111.7
13856	20	55.6	6.2	17.3	2	106.8
13857	21	57.2	6.1	19.8	2	121.9
11673	22	56.7	6.1	21.1	25	122.9
KS60770	21	55.0	6.0	----	1	85.7
8856	22	56.6	5.6	18.8	29	115.7
KS644	21	56.0	5.0	----	1	71.4
13848	20	57.1	4.6	17.5	2	107.7
13850	21	54.1	4.4	16.4	2	101.2
OKC-129-16	21	55.8	4.4	----	1	62.9
12132	21	55.1	4.1	14.7	5	127.2
13855	17	54.8	2.2	20.4	2	125.6

L.S.D. .05 = 1.3 bushels; C.V. = 7.6%.

Garden City, Kansas
Four replications

C. I. or Sel. No.	Date	Plant	Weight	Av. acre yield	No.	Percent
	Headed	Ripe	height	per : 1966 : 1965- : years: of		
			bushel:	: 1966 : 1966 : grown:Kharkof		
	: May	: June:	In. :	Lbs.: Bu. :	Bu. :	:
11673	9	19	20	56.0	9.9	23.2 13 105.0
13546	8	16	20	56.5	8.2	23.8 6 117.7
13856	9	15	20	55.5	8.2	18.9 3 91.6
13888	9	19	20	56.5	8.0	20.9 2 91.4
13886	8	18	18	56.5	7.6	25.5 2 111.8
13996	9	17	20	57.0	7.6	24.6 2 107.7
KS 60770	11	20	18	54.5	6.9	-- 1 135.3
13887	10	18	18	56.0	5.8	23.1 2 101.3
13857	10	19	22	55.5	5.2	16.2 3 84.9
1442	10	22	20	-- 1/	5.1	22.8 13 100.0
13684	8	16	18	--	4.2	15.5 4 72.8
13890	8	17	18	--	3.8	15.0 2 65.8
13997	10	19	22	--	3.6	18.8 2 82.2
8856	7	13	22	--	3.2	14.9 13 95.8
OK 627514	7	13	22	--	3.0	-- 1 58.8
13848	7	14	20	--	2.7	12.5 3 67.1
13855	9	17	18	--	2.6	13.3 3 67.9
KS 644	7	13	23	--	2.6	-- 1 51.0
12132	7	14	22	--	2.4	12.5 6 91.8
OKC-129-16	6	14	20	--	2.4	-- 1 47.1
13850	7	14	20	--	1.9	13.6 3 68.9

1/ Amount of grain harvested insufficient for test weights.

L.S.D. .05 = 2.8 bushels; C.V. = 39.3%.

Colby, Kansas
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.		
13888	23	28	61.5	32.4	1	130.1
13856	22	29	61.5	32.3	2	120.7
KS60770	22	29	61.0	28.1	1	112.9
13887	20	29	61.5	27.3	1	109.6
13546	20	29	61.0	26.7	4	117.5
13996	20	29	62.0	26.3	1	105.6
13857	23	27	61.5	25.5	2	108.6
OK627514	18	29	61.5	25.5	1	102.4
13890	20	23	60.0	25.0	1	100.4
1442	26	27	60.5	24.9	14	100.0
13886	20	29	61.5	24.9	1	100.0
OKC-129-16	18	28	62.0	24.7	1	99.2
13684	21	24	60.5	23.7	3	98.6
13997	21	29	63.5	23.7	1	95.2
12132	18	29	61.5	23.3	4	98.5
13855	20	22	60.5	23.3	2	78.9
11673	22	29	61.0	23.0	13	101.2
13848	19	29	62.0	22.5	2	85.0
13850	19	30	61.5	21.0	2	74.8
KS644	18	30	62.0	18.1	1	72.7
8856	19	29	61.5	17.4	14	94.5

L.S.D. .05 = 4.0 bushels; C.V. = 11.4%.

Fort Collins, Colorado
Five replications

C. I. or Sel. No.	Date		Plant height In.	Weight	Av. acre	No.	Percent of Kharkof
	Headed	Ripe		per bushel	yield		
	June	July		Lbs.	Bu.		
13886	5	18	30	62.3	50.4	2	135.2
13546	5	18	29	61.9	49.3	6	136.7
13857	7	18	30	62.5	48.0	3	109.9
13887	5	18	30	62.1	47.2	2	130.4
13888	7	18	30	62.8	46.2	2	130.9
13996	5	18	28	62.0	45.8	2	126.5
13856	6	18	29	62.0	45.5	3	116.8
OKC-129-16	2	16	26	62.3	44.6	1	107.2
OK627514	2	17	29	62.5	44.4	1	106.7
13997	6	20	31	63.9	43.3	2	103.5
KS60770	6	17	31	62.4	41.7	1	100.2
1442	13	23	35	62.2	41.6	30	100.0
KS644	3	16	29	62.6	41.6	1	100.0
11673	7	18	31	62.5	39.1	26	108.2
13848	2	17	29	62.7	37.6	3	87.2
12132	2	15	28	61.2	36.1	6	108.1
8856	4	16	30	61.8	35.5	30	101.2
13850	3	16	29	61.3	34.2	3	78.0
13855	6	18	19	60.5	31.3	3	81.2
13890	6	17	22	60.8	29.2	2	93.4
13684	6	20	21	60.2	25.5	4	84.3

L.S.D._{.05} = 4.6 bushels; C.V. = 9.0%.

Julesburg, Colorado
Five replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.		
OKC-129-16	26	31	62.4	50.1	1	111.3
13996	27	31	62.3	48.7	1	108.2
13888	29	30	61.9	48.0	1	106.7
KS60770	28	30	61.6	47.3	1	105.1
13886	27	31	61.9	47.0	1	104.4
OK627514	26	31	62.1	46.9	1	104.2
13887	27	31	61.8	46.4	1	103.1
1442	6/2	31	61.1	45.0	1	100.0
13546	26	29	62.0	44.9	1	99.8
13856	29	28	62.2	44.7	1	99.3
13855	27	25	61.5	44.1	1	98.0
11673	29	31	61.8	43.9	1	97.6
12132	25	31	61.4	43.9	1	97.6
8856	25	32	62.9	43.7	1	97.1
KS644	25	32	63.0	43.5	1	96.7
13848	26	30	62.4	43.0	1	95.6
13997	27	30	63.5	42.8	1	95.1
13890	26	26	59.7	42.7	1	94.9
13684	26	24	60.0	41.2	1	91.6
13850	26	31	61.5	40.4	1	89.8
13857	28	28	61.7	40.2	1	89.3

L.S.D. .05 = 3.8 bushels; C.V. = 6.7%.

Springfield, Colorado
Five replications

C. I. or Sel. No.	Date Headed	Ripe :	Plant height	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	May	June	In.	Lbs.	Bu.	:	:
1442	22	28	25	60.7	18.7	7	100.0
13388	15	21	22	61.7	17.1	1	91.4
KS60770	12	20	22	60.3	16.3	1	87.2
11673	13	20	25	61.0	15.2	7	107.3
13856	13	20	21	60.6	14.5	1	77.5
13890	12	20	18	61.0	13.4	1	71.7
13546	10	18	22	60.1	13.1	4	107.0
13684	15	22	19	60.3	12.0	2	77.2
13886	9	18	21	60.2	11.9	1	63.6
13857	15	22	21	60.0	11.6	1	62.0
13887	11	18	21	60.3	11.4	1	61.0
13855	14	22	17	59.8	11.4	1	61.0
13996	10	18	21	60.4	10.4	1	55.6
OKC-129-16	10	18	20	58.0	10.3	1	55.1
13997	12	20	23	60.1	10.3	1	55.1
13848	9	16	23	58.1	10.0	1	53.5
OK627514	9	18	23	58.4	9.6	1	51.3
KS644	8	17	23	58.8	9.3	1	49.7
12132	9	16	22	--	9.1	4	48.7
8856	6	15	23	58.5	8.9	7	99.6
13850	10	19	23	57.8	8.9	1	47.6

L.S.D. .05 = 4.9 bushels; C.V. = 32.3%.

Yellow Jacket, Colorado
Five replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.		
13886	7	29	61.5	29.7	1	109.2
13996	8	29	62.0	29.2	1	107.4
13887	8	30	61.2	29.0	1	106.6
13546	8	29	62.0	28.4	1	104.4
OK627514	7	29	62.5	28.4	1	104.4
OKC-129-16	7	27	62.8	28.2	1	103.7
8856	7	31	61.8	27.6	1	101.5
13857	10	28	62.2	27.3	1	100.4
1442	14	32	61.8	27.2	1	100.0
12132	9	29	62.2	27.0	1	99.3
13888	10	28	62.3	26.5	1	97.4
13997	7	30	63.5	26.5	1	97.4
13856	9	27	61.4	26.1	1	96.0
13850	7	30	62.0	26.0	1	95.6
KS644	8	28	62.6	25.7	1	94.5
KS60770	9	31	61.9	25.5	1	93.8
11673	10	31	61.8	23.7	1	87.1
13848	9	30	62.2	22.0	1	80.9
13855	8	24	62.0	20.4	1	75.0
13684	9	24	60.6	19.3	1	71.0
13890	10	24	60.1	18.7	1	68.8

L.S.D. .05 = 3.4 bushels; C.V. = 10.6%.

Lincoln, Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Bunt ^{1/} %	Weight per bushel	Av. acre yield 1966	1965 1966	No. years grown	Percent of Kharkof
	May	In.		Lbs.	Bu.	Bu.		
13857	26	29	30	62.9	50.9	34.7	3	122.9
13887	26	30	22	62.5	48.6	42.5	2	121.8
13996	26	29	18	62.9	48.5	40.8	2	116.8
13856	26	28	28	62.6	48.4	33.3	3	120.8
13886	26	29	28	63.0	47.6	40.1	2	114.9
11673	28	30	7	61.9	47.1	35.7	29	119.0
13546	26	29	20	63.2	46.1	38.3	6	155.6
13888	27	29	69	62.1	45.4	--	1	100.0
1442	6/3	32	26	56.8	45.4	34.9	34	100.0
KS60770	28	30	13	61.6	44.7	--	1	98.5
13997	28	30	3	64.1	43.3	31.3	2	89.7
12132	25	28	48	63.0	41.1	25.7	6	114.6
OKC129-16	26	27	34	63.6	38.7	--	1	85.2
KS644	25	29	55	63.7	38.6	--	1	85.0
OK627514	26	28	72	63.2	38.4	--	1	84.6
13848	25	28	12	63.6	37.3	26.2	3	100.2
13850	25	29	36	62.9	36.4	25.8	3	99.5
8856	26	28	17	62.7	28.5	19.6	34	117.6
13855	27	20	17	61.8	27.2	18.0	3	89.0
13684	27	21	42	60.8	25.8	14.6	4	72.4
13890	26	20	37	61.0	23.3	15.5	2	44.3

^{1/} Data from artificially infected nursery.

L.S.D._{.05} = 8.7 bushels; C.V. = 15.2%.

North Platte, Nebraska
Four replications

C. I. or Sel. No.	Weight: per bushel:	Av. acre yield: 1966	No. : 1965- 1966	Percent years: grown:	of Kharkof
	Lbs.	Bu.	Bu.		
13888	61.5	52.1	52.3	2	122.9
13546	61.3	50.3	51.5	6	174.3
13996	61.8	50.0	53.4	2	125.5
13856	62.1	50.0	49.4	3	126.5
13887	60.8	48.7	52.9	2	124.3
13886	60.7	47.7	53.0	2	124.6
OKC-129-16	60.6	47.3	--	1	107.0
OK627514	61.9	46.9	--	1	106.1
13857	63.0	45.9	48.1	3	124.2
8856	63.9	44.7	40.8	29	103.2
1442	61.2	44.2	42.6	29	100.0
KS60770	62.1	44.2	--	1	100.0
13997	63.9	44.1	43.6	2	102.5
11673	61.4	43.7	45.4	26	115.2
12132	62.8	42.3	38.8	6	130.2
13684	62.9	40.7	38.7	4	110.9
13855	61.6	39.4	40.8	3	106.1
13890	62.8	38.9	35.9	2	84.3
KS644	62.6	38.7	--	1	87.6
13848	63.2	38.3	38.1	3	103.0
13850	62.5	35.7	37.2	3	96.9

L.S.D. .05 = 7.2 bushels; C.V. = 11.5%.

Alliance, Nebraska
Three replications

C. I. or Sel. No.	Date	Plant headed	height	Weight per bushel	Av. acre yield		No.	Percent
	: June :	: In. :	: Lbs. :	: Bu. :	1966	1965- 1966	years	of Kharkof
13888	3	30	62.5	44.8	30.8	2	180.6	
13546	1	32	61.4	40.8	26.8	5	138.2	
13996	1	30	61.3	37.6	25.6	2	149.9	
13886	1	31	61.0	36.7	24.2	2	141.9	
13684	2	24	61.2	36.5	20.2	4	96.2	
13856	3	28	62.1	36.1	24.3	3	135.5	
KS60770	3	29	62.5	36.0	--	1	109.4	
13887	1	29	61.3	35.1	23.7	2	138.7	
13890	2	24	60.3	34.9	19.8	2	116.1	
11673	1	34	61.8	34.6	19.9	25	100.8	
OKC-129-16	1	30	61.4	34.3	--	1	104.3	
13857	3	27	61.8	33.9	23.2	3	128.2	
13855	3	22	61.9	33.1	18.4	3	95.1	
1442	6	34	61.5	32.9	17.6	28	100.0	
8856	1	34	61.0	30.7	17.8	28	93.3	
OK627514	2	28	60.6	29.7	--	1	90.3	
13997	2	29	62.1	28.9	16.9	2	98.8	
13848	1	31	60.5	28.0	16.9	3	103.5	
12132	1	32	59.5	23.6	13.5	5	90.3	
13850	1	31	58.5	23.6	13.6	3	87.9	
KS644	2	30	60.0	22.5	--	1	68.4	

L.S.D. .05 = N.S.; C.V. = 20.6%.

Columbia, Missouri
Four replications

C. I. or Sel. No.	Date headed	Plant height	Winter survival	Lodging	Weight per bushel	Av. acre yield 1966	1965- 1966	No. years grown	Percent of Kharkof
	May	In.	%	%	Lbs.	Bu.	Bu.		
KS 644	22	39	92	12	62.0	52.4	--	1	267.3
13848	23	40	92	10	61.5	50.9	45.8	3	133.8
13997	24	40	91	16	62.5	48.9	48.3	2	132.6
12132	22	39	90	13	62.0	47.6	40.3	3	125.1
13886	24	40	94	14	57.5	46.5	53.2	2	146.0
KS60770	25	42	91	9	59.5	46.1	--	1	235.2
13888	24	39	88	14	59.5	45.5	52.5	2	144.1
OK627514	22	39	92	11	59.0	45.4	--	1	231.6
13996	24	39	92	14	58.0	43.3	49.3	2	135.4
13856	23	40	89	13	58.0	43.2	44.7	3	131.5
13546	24	40	91	13	59.0	42.5	42.3	3	130.7
8856	23	40	90	23	61.5	40.7	37.1	3	124.1
11673	25	40	91	30	59.5	40.3	50.6	3	138.6
13890	23	33	91	3	59.5	40.1	41.9	2	115.1
13684	23	35	89	5	56.5	39.8	29.9	3	95.7
OKC-129-16	23	37	92	12	59.0	39.4	--	1	201.0
13857	24	36	90	41	60.5	38.4	46.4	3	131.7
13887	25	42	90	16	57.5	36.0	43.2	2	118.5
13850	24	39	90	14	60.0	34.8	37.8	3	119.5
1442	30	41	93	38	57.0	19.6	36.4	3	100.0
13855	23	29	87	10	59.0	16.4	25.5	3	81.6

L.S.D. .05 = 7.36 bushels; C.V. = 12.7%.

Urbana, Illinois
Three replications

C. I. or Sel. No.	Date : May	Plant headed : In.	Mildew 1/ : Rating	Lodg- ing : %	Weight per bushel : Lbs.	Av. acre yield 1966 : Bu.	1965- 1966 : Bu.	No. years grown :	Percent of Kharkof :
13546	28	42.6	2.7	59	62.2	59.2	61.3	6	112.8
13888	28	42.5	1.7	43	62.1	59.2	62.8	2	116.0
13886	28	38.6	2.0	39	61.3	56.8	60.2	2	111.1
13855	27	33.8	3.7	32	60.6	56.2	56.3	3	102.6
13848	26	41.5	4.0	15	62.8	56.1	57.8	3	97.7
13996	28	39.1	1.7	59	61.7	55.6	61.9	2	114.2
13857	28	38.4	2.3	70	62.3	55.1	60.3	3	107.3
KS60770	29	42.7	4.0	6	62.8	54.8	--	1	114.2
13997	30	43.3	4.0	63	63.9	53.8	54.5	2	100.6
13856	29	40.9	3.0	38	60.5	52.9	59.0	3	108.0
13890	27	32.7	4.0	0	60.5	52.7	54.3	2	100.2
OK627514	26	44.0	2.7	25	62.1	51.6	--	1	107.5
11673	30	43.6	4.0	53	61.8	51.4	56.0	6	104.8
1442	6/4	42.6	3.7	19	60.2	48.0	54.2	6	100.0
KS644	24	43.7	4.0	18	63.9	47.9	--	1	99.8
13684	28	33.1	4.0	1	59.3	46.5	49.4	4	97.6
8856	28	41.2	4.0	47	61.8	44.0	53.3	6	96.4
13887	29	41.7	2.3	51	60.7	42.8	55.1	2	101.8
13850	27	41.9	3.7	12	62.2	41.9	50.3	3	96.1
OKC-129-16	26	38.2	4.0	27	61.7	36.6	--	1	76.3
12132	25	40.2	3.7	13	62.3	34.4	47.0	6	97.4

1/ Ratings on 0-4 scale; 0 = none, 1 = Trace to 5%, 2 = 6-25%, 3 = 26-50%, and 4 = 51-100%.

L.S.D. .05 = 9.0 bushels; C.V. = 6.2%.

Ames, Iowa
Three replications

C. I. or Sel. No.	Date Head- ed	Ripe	Plant ht.	Lodg- ing	Winter sur- vival	Leaf rust 6/30	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	June	July	In.	%	%	%	Lbs.	Bu.		
13890	2	10	35	1	93	Tr	59.9	78.6	1	213.6
OK627514	2	9	40	38	88	15	61.1	78.5	1	213.3
13684	4	11	34	2	88	Tr	58.7	77.6	2	273.7
KS60770	4	10	43	87	99	20	58.5	74.2	1	201.6
13848	1	9	42	38	99	40	61.5	73.8	2	260.3
KS644	1	9	41	58	92	40	62.1	72.0	1	195.7
12132	1	9	42	70	89	40	61.0	70.6	4	231.9
13855	4	11	31	6	82	3	58.3	69.1	2	266.2
13850	1	9	41	47	98	30	60.6	68.6	2	249.4
OKC-129-16	2	9	40	85	96	25	57.4	67.2	1	182.6
13996	4	10	41	81	93	30	56.9	65.8	1	178.8
13887	4	9	42	90	88	30	56.9	65.7	1	178.5
13546	5	10	41	87	92	35	55.5	63.7	4	289.5
13997	5	11	42	90	77	30	61.4	62.7	1	170.4
13856	5	10	42	86	90	35	56.8	58.2	2	238.7
8856	3	11	44	96	76	50	60.1	57.2	22	122.1
13888	6	13	41	73	98	40	56.1	56.6	1	153.8
13886	4	10	42	94	99	35	55.0	52.4	1	142.4
11673	6	10	43	97	99	55	54.6	50.5	22	114.6
13857	5	9	43	89	81	35	56.8	46.6	2	211.4
1442	13	12	42	80	88	50	50.0	36.8	22	100.0

L.S.D. .05 = 8.5 bushels; C.V. = 8.1%.

Summary of Nursery Yields

Individual station yields made by varieties in the southern regional performance nursery in 1966 along with their average state yields and ranks, and regional averages are shown in table 2. Varieties are arranged according to their regional average yields. The broad adaptation of Scout was again evident. Its average yield of 38.2 bushels per acre was high for the nursery. C. I. 13888 and C. I. 13996 yielded almost as much as Scout with averages of 37.9 and 37.5 bushels. Next were C. I. 13886, C. I. 13856, and OK627514 all with yields higher than 36 bushels per acre. The poorest regional performance was recorded for C. I. 13850. Its average yield of 29.5 bushels was nearly one bushel below that of Kharkof, the latest maturing variety among those tested. The Scout Selections C. I. 13996 and C. I. 13886 have the best 2-year average yields; both above 40 bushels per acre (table 3). The poorest 2-year average yield among varieties tested in both 1965 and 1966 was recorded for the semi-dwarf variety Sturdy.

Summary of Agronomic Data

The highest average bushel weight among varieties grown in the southern regional performance nursery was 62.3 pounds made by C. I. 13997 (table 4). Only 7 varieties had average bushel weights of less than the 60-pound standard. Lowest of these was Sturdy with 59.2 pounds. The Triumph derivatives were the earliest to head and ripen. Kharkof was several days later than other varieties in the nursery. C. I. 13855 had the shortest straw. C. I. 13996 had the best mildew rating at two reporting stations. Early Blackhull and C. I. 13890 were rated the most susceptible to mildew. Sturdy and its sister selection C. I. 13890 were the most resistant to leaf rust and lodged the least. Average winter survivals based on two reporting stations are of questionable value. C. I. 13886 was rated the highest in survival and KS644 the lowest.

Table 2.--Summary of average yields in bushels per acre made by 21 varieties grown in the southern regional performance nursery in 22 trials in 1966 with state averages and rank.

Variety	: C. I. : : or : Sel. No.	Texas						Oklahoma				
		: Den- : : ton	: Chilli- : : cothe	: Bush- : : land	: Bush- : : land	: Aver- : : age	: Rank	: Still- : : water	: Chero- : : kee	: Wood- : : ward	: Aver- : : age	: Rank
		Dryl. Irr.										
Scout	13546	23.8	15.2	14.0	57.7	27.7	5	41.0	40.9	46.2	42.7	2
Cnn ² x Ky-Mta	13888	26.5	14.5	13.7	55.2	27.5	6	31.5	40.1	44.4	38.7	8
Scout Sel.	13996	21.6	13.6	13.6	56.0	26.2	8	43.0	41.0	48.1	44.0	1
do.	13886	23.9	13.6	14.2	51.6	25.8	10	39.5	36.2	45.0	40.2	4
Cnn ² x Ky-Mta	13856	28.6	14.3	16.7	51.7	27.8	4	28.4	39.8	46.4	38.2	9
Triumph x C. I. 12406	OK627514	29.9	15.9	14.5	58.0	29.6	3	28.0	40.2	56.0	41.4	3
Scout Sel.	13887	21.1	13.3	12.8	48.7	24.0	16	34.4	35.6	47.0	39.0	7
Ottawa Sel.	KS60770	18.0	11.4	10.8	55.0	23.8	18	22.5	40.4	44.9	35.9	12
Danne Sel.	OKC-129-16	27.2	14.3	9.4	51.7	25.7	11	25.9	37.7	54.6	39.4	6
Nbr x Cnn-Ky-Mta	13857	23.1	13.6	12.4	55.0	26.0	9	29.2	41.3	49.8	40.1	5
Comanche	11673	22.1	12.5	10.6	50.3	23.9	17	31.4	41.2	39.8	37.5	10
Cfk-Mt-Tm x Cnn	13997	22.4	14.2	15.4	48.0	25.0	12	29.4	33.5	39.8	34.2	15
Concho x Triumph ²	KS644	26.2	16.3	13.8	41.5	24.5	13	34.7	30.6	45.1	36.8	11
Triumph x C. I. 12406	13848	25.0	14.7	14.0	43.4	24.3	15	24.1	34.7	42.2	33.7	16
Svl-Wi-Hope-Cnn-Wi ² x SS	13890	33.7	14.4	13.2	58.8	30.0	2	20.9	28.6	42.0	30.5	18
Triumph	12132	25.7	14.9	10.1	46.8	24.4	14	25.6	35.2	42.5	34.4	14
Early Blackhull	8856	28.0	13.9	15.1	37.8	23.7	19	27.1	34.4	44.2	35.2	13
Sturdy	13684	34.6	13.7	11.3	47.9	26.9	7	23.3	25.1	39.0	29.1	19
Norin 10 x C. I. 12500	13855	31.8	14.0	11.9	66.0	31.0	1	19.5	27.3	39.7	28.8	20
Kharkof	1442	19.1	7.1	10.6	38.4	18.8	21	17.5	22.2	35.8	25.2	21
Triumph x C. I. 12406	13850	22.2	14.5	11.4	37.3	21.4	20	28.2	31.6	41.0	33.6	17

Table 2 .--(Continued).

C. I. :	Kansas						New Mexico :		Colorado					
	Man- hattan :	Hays :	Garden: City :	Colby :	Aver- age :	Rank :	Clovis :	Rank :	Fort Collins :	Jules- burg :	Yellow: Jacket :	Spring- field :	Aver- age :	Rank :
Sel. No. :							Irrig.							
13546	30.8	7.4	8.2	26.7	18.3	7	90.4	1	49.3	44.9	28.4	13.1	33.9	3
13888	35.9	7.6	8.0	32.4	21.0	1	82.4	5	46.2	48.0	26.5	17.1	34.5	2
13996	32.7	7.9	7.6	26.3	18.6	6	79.4	8	45.8	48.7	29.2	10.4	33.5	4-5
13886	31.8	7.7	7.6	24.9	18.0	8	82.4	4	50.4	47.0	29.7	11.9	34.8	1
13856	33.9	6.2	8.2	32.3	20.2	2	77.5	9	45.5	44.7	26.1	14.5	32.7	8-9
OK627514	26.0	8.2	3.0	25.5	15.7	13	72.8	11	44.4	46.9	28.4	9.6	32.3	10
13887	31.6	6.3	5.8	27.3	17.8	9	86.4	3	47.2	46.4	29.0	11.4	33.5	4-5
KS60770	38.7	6.0	6.9	28.1	19.9	3	68.1	14	41.7	47.3	25.5	16.3	32.7	8-9
OKC-129-16	36.8	4.4	2.4	24.7	17.1	11	88.6	2	44.6	50.1	28.2	10.3	33.3	6
13857	30.0	6.1	5.2	25.5	16.7	12	82.0	6	48.0	40.2	27.3	11.6	31.8	11
11673	36.2	6.1	9.9	23.0	18.8	5	76.4	10	39.1	43.9	23.7	15.2	30.5	13
13997	32.9	8.4	3.6	23.7	17.2	10	72.0	13	43.3	42.8	26.5	10.3	30.7	12
KS644	25.4	5.0	2.6	18.1	12.8	19	63.2	20	41.6	43.5	25.7	9.3	30.0	14
13848	19.6	4.6	2.7	22.5	12.4	20-21	65.1	17	37.6	43.0	22.0	10.0	28.2	17
13890	22.2	6.2	3.8	25.0	14.3	16-17	67.2	15	29.2	42.7	18.7	13.4	26.0	20
12132	25.9	4.1	2.4	23.3	13.9	18	64.5	18	36.1	43.9	27.0	9.1	29.0	15
8856	31.3	5.6	3.2	17.4	14.4	15	72.9	12	35.5	43.7	27.6	8.9	28.9	16
13684	23.3	7.1	4.2	23.7	14.6	14	66.8	16	25.5	41.2	19.3	12.0	24.5	21
13855	28.9	2.2	2.6	23.3	14.3	16-17	63.4	19	31.3	44.1	20.4	11.4	26.8	19
1442	39.8	7.0	5.1	24.9	19.2	4	81.9	7	41.6	45.0	27.2	18.7	33.1	7
13850	22.3	4.4	1.9	21.0	12.4	20-21	61.6	21	34.2	40.4	26.0	8.9	27.4	18

Table 2.--(Concluded).

C. I.	Nebraska					Missouri		Illinois		Iowa		22-
or	Lin-	North	Alli-	Aver-	Rank	Columbia	Rank	Urbana	Rank	Ames	Rank	trial
Sel. No.	coln	Platte	ance	age								average
13546	46.1	50.3	40.8	45.7	2	42.5	11	59.2	1-2	63.7	13	38.2
13888	45.4	52.1	44.8	47.4	1	45.5	7	59.2	1-2	56.6	17	37.9
13996	48.5	50.0	37.6	45.3	3	43.3	9	55.6	6	65.8	11	37.5
13886	47.6	47.7	36.7	44.0	6	46.5	5	56.8	3	52.4	13	36.6
13856	48.4	50.0	36.1	44.8	4	43.2	10	52.9	10	58.2	15	36.5
OK627514	38.4	46.9	29.7	38.3	13	45.4	8	51.6	12	78.5	2	36.3
13887	48.6	48.7	35.1	44.1	5	36.0	18	42.8	18	65.7	12	35.5
KS60770	44.7	44.2	36.0	41.6	9	46.1	6	54.8	8	74.2	4	35.5
OKC-129-16	38.7	47.3	34.3	40.1	11	39.4	16	36.6	20	67.2	10	35.2
13857	50.9	45.9	33.9	43.6	7	38.4	17	55.1	7	46.6	20	35.1
11673	47.1	43.7	34.6	41.8	8	40.3	13	51.4	13	50.5	19	34.0
13997	43.3	44.1	28.9	38.8	12	48.9	3	53.8	9	62.7	14	34.0
KS644	38.6	38.7	22.5	33.3	18	52.4	1	47.9	15	72.0	6	32.5
13848	37.3	38.3	28.0	34.5	16	50.9	2	56.1	5	73.8	5	32.3
13890	23.3	38.9	34.9	32.4	20	40.1	14	52.7	11	78.6	1	32.2
12132	41.1	42.3	23.6	35.7	14	47.6	4	34.4	21	70.6	7	31.7
8856	28.5	44.7	30.7	34.6	15	40.7	12	44.0	17	57.2	16	31.5
13684	25.8	40.7	36.5	34.3	17	39.8	15	46.5	16	77.6	3	31.1
13855	27.2	39.4	33.1	33.2	19	16.4	21	56.2	4	69.1	8	30.9
1442	45.4	44.2	32.9	40.8	10	19.6	20	48.0	14	36.8	21	30.4
13850	36.4	35.7	23.6	31.9	21	34.8	19	41.9	19	68.6	9	29.5

Table 3.--Summary of 2-year average yields for 17 varieties grown in the southern regional performance nursery in 14 trials in 1965 and 1966 with state averages and rank.

Variety	C. I. No.	Texas				Oklahoma				Colorado		
		Den- ton	Chilli- cothe	Aver- age	Rank	Still- water	Wood- ward	Chero- kee	Aver- age	Rank	Fort Collins	Rank
Scout Sel.	13996	26.2	17.9	22.1	5-6	47.1	53.9	50.6	50.5	1	56.2	5
do.	13886	26.0	16.9	21.5	8-9	47.0	54.2	47.6	49.6	2	60.1	1
Cnn ² x Ky-Mta	13888	27.0	17.9	22.5	3	41.1	50.0	47.8	46.3	4-5	58.2	3
Scout	13546	24.6	18.3	21.5	8-9	45.6	53.0	49.4	49.3	3	58.4	2
Scout Sel.	13887	23.9	16.8	20.4	12-13	40.7	53.1	45.1	46.3	4-5	57.9	4
Cnn ² x Ky-Mta	13856	27.4	17.3	22.4	4	36.2	48.6	45.2	43.3	8	54.8	6
Nbr x Cnn-Ky-Mta	13857	20.2	16.8	18.5	15	37.1	48.5	45.1	43.6	7	52.2	7
Comanche	11673	21.2	13.6	17.4	16	40.5	44.1	47.8	44.1	6	43.9	11
Cfk-Mt-Tm x Cnn	13997	25.6	15.9	20.8	10	39.6	45.3	39.6	41.5	10	46.0	8
Triumph x C. I. 12406	13848	24.3	16.5	20.4	12-13	33.0	45.2	39.8	39.3	13	42.0	12
Early Blackhull	8856	27.9	15.5	21.7	7	36.7	46.7	40.4	41.3	11	41.1	14
Triumph	12132	24.1	16.9	20.5	11	37.8	47.0	40.8	41.9	9	44.2	10
Kharkof	1442	17.6	6.9	12.3	17	28.2	39.4	31.3	33.0	17	44.4	9
Svl-Wl-Hope-Cnn-Wl ² x SS	13890	32.1	17.0	24.6	1	31.1	43.9	36.5	37.2	15	41.5	13
Triumph x C. I. 12406	13850	23.7	16.8	20.3	14	37.3	44.9	37.2	39.8	12	40.2	15
Norin 10 x C. I. 12500	13855	28.3	15.8	22.1	5-6	27.9	46.8	37.6	37.4	14	39.4	16
Sturdy	13684	31.9	16.6	24.3	2	31.9	43.6	34.2	36.6	16	37.2	17

Table 3 .--(Concluded).

C. I. No.	Kansas					Nebraska					Missouri	Illinois	14-		
	Man- hattan	Hays	Garden City	Aver- age	Rank	Lin- coln	North Platte	Alli- ance	Aver- age	Rank	Columbia	Rank	Urbana	Rank	trial average
13996	38.8	24.7	24.6	29.4	1	40.8	53.4	25.6	39.9	1	49.3	4	61.9	2	40.8
13886	37.4	24.4	25.5	29.1	2	40.1	53.0	24.2	39.1	3-4	53.2	1	60.2	5	40.7
13888	39.7	22.4	20.9	27.7	4-5	34.1	52.3	30.8	39.1	3-4	52.5	2	62.8	1	39.8
13546	36.3	23.8	23.8	28.0	3	38.3	51.5	26.8	38.9	5	42.3	10	61.3	3	39.5
13887	36.4	23.5	23.1	27.7	4-5	42.5	52.9	23.7	39.7	2	43.2	9	55.1	10	38.4
13856	40.2	17.3	18.9	25.5	9	33.3	49.4	24.3	35.7	6	44.7	8	59.0	6	36.9
13857	34.6	19.8	16.2	23.5	10	34.7	48.1	23.2	35.3	7	46.4	6	60.3	4	35.9
11673	38.1	21.1	23.2	27.5	6	35.7	45.4	19.9	33.7	8	50.6	3	56.0	9	35.8
13997	38.5	20.6	18.8	26.0	7	31.3	43.6	16.9	30.6	10	48.3	5	54.5	11	34.6
13848	31.1	17.5	12.5	20.4	16-17	26.2	38.1	16.9	27.1	11	45.8	7	57.8	7	31.9
8856	35.2	18.8	14.9	23.0	11	19.6	40.8	17.8	26.1	12	37.1	14	53.3	14	31.8
12132	34.8	14.7	12.5	20.7	13-14	25.7	38.8	13.5	26.0	13	40.3	12	47.0	17	31.3
1442	38.7	16.2	22.8	25.9	8	34.9	42.6	17.6	31.7	9	36.4	15	54.2	13	30.8
13890	28.9	18.1	15.0	20.7	13-14	15.5	35.9	19.8	23.7	17	41.9	11	54.3	12	30.8
13850	31.9	16.4	13.6	20.6	15	25.8	37.2	13.6	25.5	15	37.8	13	50.3	15	30.5
13855	29.1	20.4	13.3	20.9	12	18.0	40.8	18.4	25.7	14	25.5	17	56.3	8	29.8
13684	25.6	20.2	15.5	20.4	16-17	14.6	38.7	20.2	24.5	16	29.9	16	49.4	16	29.3

Table 4.--Summary of agronomic data other than yield for varieties grown in the southern regional performance nursery in 1966.

Pedigree	: C. I. :	: Date :		: Plant :	: Diseases :		: Lodg- :	: Winter: Wt.	
	: or :	: Head- :	: Ripe :	: ht. :	: Mil- :	: Leaf:	: sur- :	: per	
	: Sel. No. :	: ed :	: In. :	: dew/ :	: rust:	: ing :	: vival :	: bu.	
	:	: May :	: June:	:	: % :	: % :	: % :	: Lbs.	
Number of stations		20	6	21	2	3	4	2	21
Cfk-Mt-Tm x Cmn	13997	17	29	32	3.0	40	45	84	62.3
Concho x Triumph ²	KS644	14	24	33	3.0	37	27	82	61.3
Triumph x C. I. 12406	13848	14	24	32	2.5	47	17	96	61.0
Early Blackhull	8856	15	25	33	3.5	43	42	83	60.9
Cheyenne ² x Ky-Mta	13888	17	27	31	1.9	47	42	93	60.8
Triumph	12132	14	24	32	2.9	48	25	90	60.7 ^{1/}
Nebred x Cnn-Ky-Mta	13857	17	25	31	1.7	42	50	86	60.6
Triumph x C. I. 12406	OK627514	14	24	32	2.4	30	18	90	60.6
Danne Sel.	OKC-129-16	15	24	30	3.0	43	31	84	60.4
Triumph x C. I. 12406	13850	15	25	32	2.4	43	23	94	60.2
Scout Selection	13996	16	25	32	1.4	35	42	87	60.2
Scout	13546	17	25	32	1.9	37	43	92	60.1
Cheyenne ² x Ky-Mta	13856	16	23	31	2.5	37	34	90	60.1
Ottawa Sel.	KS60770	19	28	33	3.0	28	27	95	60.0
Comanche	11673	19	28	33	3.0	40	46	95	59.9
Scout Selection	13886	16	27	32	1.5	32	47	97	59.8
Scout Selection	13887	17	27	32	1.7	35	47	89	59.8
Norin 10 x C. I. 12500	13855	15	26	26	3.4	11	13	85	59.6
Svl-Wi-Hope-Cnn-Wi ² x SS	13890	16	26	26	3.5	T	1	92	59.5
Kharkof	1442	24	7/3	29	2.9	50	35	91	59.4 ^{1/}
Svl-Wi-Hope-Cnn-Wi ² x SS	13684	16	26	26	3.0	T	2	89	59.2

^{1/} Average bushel weight based on one less station than the number indicated.

^{2/} Ratings on 0-4 scale; 0 = none, 1 = trace to 5%, 2 = 6-25%, 3 = 26-50%, and 4 = 51-100%.

NORTHERN REGIONAL PERFORMANCE NURSERY

Twenty-five varieties were grown in the nursery in 1966. Of 16 nursery locations in 8 states and Alberta, Canada, data were reported from 15 (table 5). The nursery had to be abandoned at Brookings due to highway construction on a portion of the nursery site. Entries in the 1966 nursery are listed.

Entry No.	Pedigree	C. I. No.	State submitting
1	Kharkof	1442	--
2	Warrior	13190	--
3	Cheyenne	8885	--
4	Winalta	13670	Leth.
5	Lancer	13547	Nebr.
6	Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	do.
7	do.	13881	do.
8	Cnn-Pnc x Tk-Cnn	13882	do.
9	Selkirk x Cnn ²	13883	do.
10	Cheyenne ² x Selkirk	13884	do.
11	Ottawa x Cheyenne ²	13885	do.
12*	Wrr x Sk-Cnn	NB64322	do.
13*	do.	NB64323	do.
14	Hume	13526	S. Dak.
15*	Hume Sel. 55	--	do.
16*	Minn. III-54-12 x Cheyenne	NB61355	do.
17*	S. Dak. Selection	SD56-497	do.
18*	do.	SD56-758	do.
19*	Selkirk x Cheyenne ²	NB64365	Nebr.
20	H44-Minturki ² x Minter	13858	Minn.
21	Mtr-M2825 x H255-Bkk	13994	do.
22	II-36-3 x III-51-31	13995	do.
23*	Qv-Tm-Mql-Oro x Mi-Hope-Pn ³	KS60252	S. Dak.
24	Yogo x Cheyenne	13862	Mont.
25	Cheyenne x Yogo BC Bulk	13993	do.

* New in 1966.

Data Obtained

Nebraska Stations--Replicated nurseries were grown at North Platte and Alliance. Single row plots for observation and disease readings only were grown at Lincoln. Growing conditions at the Nebraska locations are discussed in connection with the southern regional performance nursery. Extremely high yields were recorded at North Platte where only one entry yielded less than 50 bushels per acre and 9 entries exceeded 60 bushels. At Alliance where the spring drought was more severe, nursery yields were in the 20 to 40 bushel range.

Archer--Good fall stands were obtained at Archer and all varieties survived the winter well. Droughty conditions prevailed throughout the spring, resulting in very short straw and low yields. Only one variety in the nursery exceeded 20 bushels per acre and one produced less than 10 bushels.

Sheridan--Growing conditions were better at Sheridan than at Archer although dry weather in the spring reduced the height and yields. There was no lodging and diseases were not a factor in the yields reported. Yield differences were not statistically significant.

Presho--Soil moisture in the fall was adequate for good stand establishment. There was no measurable winterkilling. The spring was dry and there were no diseases of consequence. Bushel weights were below 60 pounds for all varieties in the nursery.

Highmore--Growing conditions at Highmore were similar to those at Presho. Stand establishment in the fall was only fair. The variable stands reduced the value of the nursery and prevented demonstration of statistically significant differences in the yield of varieties. Only one variety produced grain that weighed as much as 60 pounds per bushel.

St. Paul--Seeding was delayed at St. Paul because of the wet September. There was little growth before the onset of winter. Although the winter was cold, good snow cover permitted the wheat to survive with good stands. All varieties survived with at least 80 percent stands. Spring moisture was adequate until a period of high temperatures just prior to harvest. There was some lodging.

Waseca--Fall, winter, and spring conditions at Waseca were very similar to those at St. Paul. Stand losses during the winter were somewhat greater than at St. Paul but not severe. The straw was taller and grain yields were 10-20 bushels higher at Waseca.

Dickinson--Varieties in the northern regional performance nursery escaped the winter with a minimum of stand loss. Differences in spring stands probably reflect variable fall stands as well as stand losses during the winter. Generally favorable conditions prevailed during the spring. Both stem and leaf rust developed at Dickinson but too late to cause measurable damage. Timely moisture late in the season probably favored the later maturing varieties in the nursery. Kharkof was the most productive followed by C. I. 13993, Cheyenne, and C. I. 13995 in that order.

Williston--This was the first year the nursery was grown at Williston. Fall stands were variable and winterkilling, although spotty throughout the nursery, appeared to be a factor in varietal performance. Plot size will be enlarged for 1967 to accommodate the use of a large drill in the nursery seeding operation. Varieties with the highest winter survival tended to be the most productive. C. I. 13993, Winalta, Cheyenne, and Kharkof yielded more than 30 bushels per acre. Bushel weight was less than 60 pounds for all varieties, the lowest being 55.6 pounds for Kharkof. No leaf or stem rust was observed.

Moccasin--The northern regional nursery was transferred from Havre to Moccasin in 1966. It will be grown at the latter station henceforth. Unusually good conditions for winter wheat prevailed throughout the fall and winter at Moccasin. There was little effective moisture during the spring and early summer but moderate temperatures and reserve moisture permitted varieties to fill and mature well and very high nursery yields resulted. Seven varieties exceeded 40 bushels per acre in yield and the lowest yield in the nursery was 30 bushels. The lowest bushel weight was 62 pounds with the high being 64.6 pounds made by 2 varieties.

Tetonia--The nursery survived the winter in excellent condition at Tetonia. Prospects for very high yields were all but eliminated by several freezes in late spring that produced as much as 80 percent head sterility among the earlier maturing varieties. NB64323, although 30 percent sterile, was slightly the highest yielding with 17.7 bushels per acre. KS60252, which was 80 percent sterile, yielded only 5.4 bushels per acre.

Clovis--The nursery at Clovis was grown under irrigation. Unusually high yields and bushel weights were reported. Highest yield was 102.3 bushels per acre made by Lancer. The 64-pound bushel weight of Winalta was high for the nursery.

Lethbridge--The nursery was seeded more than 2 weeks later than normal. There was ample fall moisture. Considerable killing occurred during the last week in December when very low temperatures occurred with no snow cover to protect the nursery. Winterkilling was severe in the more tender varieties. Survival ranged from 9 percent for C. I. 13881 to 74 percent for Hume. Near optimum growing conditions throughout the spring and summer permitted amazing recovery of varieties with very high yields reported for all entries in the nursery. Recovery was such that there appeared to be little association between loss of stand during the winter and final yields of grain. Highest yield was made by Kharkof with 68.5 bushels per acre while C. I. 13862 was lowest with a 48.5-bushel yield.

Table 5.--Yield and other data for varieties grown
in the northern regional performance nursery at
15 stations in 1966.

Lincoln, Nebraska
Single plot

C. I. or Sel. No.	Date headed	Plant height	Bunt ^{1/} %	Weight per bushel Lbs.
	May	In.	%	
13884	30	29	39	62.0
13526	29	28	18	62.0
13883	30	28	55	61.5
13885	29	29	29	61.5
SD55	29	29	16	61.5
13547	29	30	15	61.0
NB64322	30	30	22	61.0
NB61355	30	29	9	61.0
SD56-497	6/1	31	0	61.0
KS60252	29	29	27	61.0
13190	30	32	9	60.5
13882	29	29	0	60.0
NB64365	30	33	41	60.0
13995	6/3	32	14	60.0
13864	31	32	27	59.5
NB64323	30	30	18	59.5
13881	30	32	14	59.0
13994	6/3	33	9	59.0
8885	6/2	33	34	58.5
13858	6/4	32	0	58.0
13993	6/4	33	1	57.5
13862	6/4	32	19	56.5
1442	6/3	35	36	56.0
13670	6/2	33	34	56.0
SD56-758	6/4	35	0	56.0

^{1/} Data from inoculated bunt nursery.

North Platte, Nebraska
Four replications

C. I. or Sel. No.	Weight per bushel	Av. acre yield 1966	No. years 1965-1966	Percent of grown:Kharkof
	Lbs.	Bu.	Bu.	
13190	62.3	68.4	56.3	3 135.7
NB64365	63.2	64.8	--	1 122.3
NB64323	62.5	64.4	--	1 121.5
13881	62.2	63.3	54.0	2 128.4
13547	62.8	62.4	59.6	6 164.0
13885	63.1	60.8	55.3	2 131.5
NB64322	61.7	60.1	--	1 113.4
8885	62.5	60.0	48.3	8 118.8
13882	62.5	60.0	56.6	2 134.5
13864	64.1	59.7	52.5	3 128.1
13884	63.4	59.6	52.0	2 123.7
SD56-758	63.0	59.0	--	1 111.3
13883	62.9	56.7	54.4	2 129.3
13526	63.4	56.6	--	1 106.8
SD56-497	62.5	56.1	--	1 105.8
13993	62.9	55.3	41.5	2 98.6
13670	63.3	54.7	50.1	5 131.3
NB61355	62.6	53.9	--	1 101.7
13995	62.2	53.3	48.5	2 115.2
1442	61.2	53.0	42.1	8 100.0
13862	62.5	52.8	40.7	3 99.2
13858	63.0	52.6	46.0	3 112.7
KS60252	61.7	50.7	--	1 95.7
SD55	62.8	50.2	--	1 94.7
13994	62.1	39.3	41.7	2 99.2

L.S.D. .05 = 9.1 bushels; C.V. = 5.7%.

Alliance, Nebraska
Four replications

C. I. or Sel. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1966	1965- 1966	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.	Bu.		
13190	4	27	61.7	39.8	22.1	3	129.4
13862	7	27	60.9	37.9	19.5	3	116.2
NB61355	4	28	61.5	37.3	--	1	134.2
13547	3	26	62.5	36.3	27.7	5	122.8
13864	5	25	62.1	34.9	24.2	3	130.0
NB64365	4	28	61.3	34.9	--	1	125.5
13526	4	28	61.4	33.2	--	1	119.4
13881	5	25	60.6	32.6	23.8	2	161.0
SD56-758	5	31	60.0	31.8	--	1	114.4
13858	6	31	60.6	31.5	20.8	3	117.2
8885	5	25	61.6	31.2	16.5	8	113.2
13670	4	28	62.0	30.5	20.6	4	117.1
NB64322	5	24	61.6	30.1	--	1	108.3
SD56-497	4	27	60.0	29.9	--	1	107.6
13883	5	25	61.8	29.7	23.4	2	158.6
NB64323	5	20	61.5	29.6	--	1	106.5
13885	4	25	61.7	29.5	21.5	2	145.4
SD55	4	28	61.0	28.9	--	1	104.0
13884	5	24	61.5	28.8	22.8	2	154.2
13882	5	20	61.0	28.4	18.0	2	122.0
1442	6	29	60.6	27.8	14.8	14	100.0
13993	7	25	60.7	27.3	13.9	2	94.2
KS60252	4	26	60.2	26.6	--	1	95.7
13994	5	29	60.0	22.2	17.6	2	119.0
13995	7	28	60.5	20.7	16.2	2	109.8

L.S.D. .05 = 6.3 bushels; C.V. = 14.5%.

Archer, Wyoming
Four replications

C. I. or Sel. No.	Plant height In.	Weight per bushel Lbs.	Av. acre yield 1966 Bu.	No. years grown	Percent of Kharkof
13881	21	59.5	22.1	1	125.6
13993	19	60.5	19.0	1	108.0
8885	16	61.0	18.0	8	101.3
1442	18	60.5	17.6	10	100.0
13884	17	61.0	17.4	1	98.9
NB64322	13	60.5	17.3	1	98.3
NB64365	15	60.5	17.2	1	97.7
SD56-758	19	59.0	17.0	1	96.6
13864	17	60.5	16.9	2	91.1
13883	18	60.0	16.6	1	94.3
13858	22	60.0	16.5	2	91.1
13885	15	60.5	16.2	1	92.0
13670	17	61.5	15.9	4	101.5
NB64323	14	61.0	15.7	1	89.2
13994	20	60.0	15.1	1	85.8
13547	16	61.5	14.9	4	98.2
13995	21	60.0	14.4	1	81.8
NB61355	15	61.0	14.3	1	81.3
SD55	15	59.5	13.3	1	75.6
13190	15	60.0	13.1	2	81.1
13526	14	60.0	13.1	1	74.4
13882	15	59.0	12.6	1	71.6
13862	17	58.0	12.1	2	75.1
KS60252	15	57.0	11.7	1	66.5
SD56-497	15	58.0	9.7	1	55.1

L.S.D. .05 = 4.5 bushels; C.V. = 20.8%.

Sheridan, Wyoming

Four replications

C. I. or Sel. No.	Date : June	Plant : In.	Weight : Lbs.	Av. acre yield : 1966	1965- : 1966	No. : years: of	Percent : Kharkof
				Bu.	Bu.		
NB64323	13	37	61.6	37.0	--	1	137.0
13885	9	32	61.7	36.2	36.5	2	126.1
NB64322	13	31	61.3	34.6	--	1	128.1
8885	11	26	61.9	33.1	37.8	10	114.9
NB64365	10	33	61.8	32.9	--	1	121.9
13526	10	29	61.2	31.9	--	1	118.1
SD55	9	29	60.6	31.8	--	1	117.8
SD56-758	14	39	60.1	31.7	--	1	117.4
13864	10	30	61.3	31.5	33.2	3	85.9
13882	8	28	61.2	31.5	35.9	2	124.2
13993	15	30	60.9	31.5	33.9	2	117.1
13994	13	37	60.4	31.3	33.1	2	114.4
13190	10	28	61.3	30.3	34.5	3	108.1
13881	9	29	59.1	29.9	31.5	2	109.0
13547	10	28	61.8	29.9	33.9	6	106.6
13883	9	27	61.7	29.0	34.2	2	118.3
13670	12	30	61.9	28.9	32.5	5	100.3
13858	16	36	61.0	28.1	31.0	3	92.8
13884	9	26	61.4	27.4	33.0	2	114.2
1442	14	26	60.5	27.0	28.9	15	100.0
SD56-497	11	30	61.1	26.9	--	1	99.6
NB61355	10	24	61.0	26.4	--	1	97.8
KS60252	7	30	59.8	26.4	--	1	97.8
13995	16	31	59.5	24.8	30.5	2	105.4
13862	14	33	--	--	--	2	--

L.S.D. .05 = N.S.; C.V. = 18.9%.

Presho, South Dakota
Four replications

C. I. or Sel. No.	Date headed	Weight per bushel	Av. acre yield 1966	1965- 1966	No. years grown	Percent of Kharkof
	June	Lbs.	Bu.	Bu.		
13882	15	57	29.0	26.8	2	158.6
NB61355	17	59	27.7	--	1	122.6
13884	17	59	27.1	26.7	2	158.0
13547	16	59	26.6	30.1	4	148.3
13885	17	57	26.5	28.9	2	171.0
13883	17	59	26.4	29.4	2	173.7
NB64323	21	58	26.4	--	1	116.8
NB64322	19	58	26.3	--	1	116.4
13670	19	59	25.9	25.0	4	129.0
NB64365	17	59	25.9	--	1	114.6
8885	20	58	25.4	18.7	4	101.8
13864	18	58	25.3	30.6	3	153.0
KS60252	15	58	24.7	--	1	109.3
13862	19	58	23.9	16.5	3	102.0
13881	19	57	23.6	26.1	2	154.4
13994	21	53	22.8	25.4	2	150.3
1442	21	57	22.6	16.9	4	100.0
13190	17	58	22.4	18.4	3	109.3
13858	22	53	22.3	24.6	3	136.2
SD55	19	56	22.2	--	1	98.2
SD56-497	19	56	22.2	--	1	98.2
SD56-758	20	56	20.3	--	1	89.8
13526	18	55	20.2	--	1	89.4
13993	22	55	19.9	14.0	2	82.8
13995	23	54	18.4	22.0	2	130.2

L.S.D. .05 = 4.9 bushels; C.V. = 14.8%

Highmore, South Dakota
Four replications.

C. I.	Date	Weight	Av. acre yield	No.	Percent
or	headed	per	1966	1965	years
Sel. No.		bushel		1966	grown: Kharkof
	June	Lbs.	Bu.	Bu.	
NB64365	15	60.0	27.9	--	1 130.4
13883	15	59.0	26.9	29.5	2 169.7
13670	18	58.0	25.6	27.4	4 113.3
13882	15	58.0	25.6	28.6	2 164.8
13994	18	55.0	24.8	25.9	2 149.0
NB61355	18	58.0	24.5	--	1 114.5
SD56-758	18	56.0	24.5	--	1 114.5
13993	20	57.0	24.5	17.9	2 102.9
13881	15	57.0	23.7	27.8	2 159.9
13884	16	59.0	23.5	30.2	2 173.8
8885	17	59.0	23.4	21.0	4 108.5
13547	18	59.0	23.4	31.3	4 137.9
13190	16	58.0	23.2	20.6	3 101.3
13885	16	58.0	23.2	29.0	2 167.1
SD55	17	59.0	22.9	--	1 107.0
13862	18	58.0	22.5	18.5	3 94.4
13526	17	57.0	22.0	--	1 102.8
KS60252	15	58.0	22.0	--	1 102.8
13858	20	55.0	21.6	24.3	3 104.0
1442	17	57.0	21.4	17.4	4 100.0
13995	20	54.0	21.0	21.2	2 122.2
SD56-497	17	59.0	20.4	--	1 95.3
NB64323	17	58.0	20.4	--	1 95.3
13864	19	57.0	18.9	23.6	3 108.5
NB64322	18	57.0	16.3	--	1 76.2

L.S.D. .05 = N.S.; C.V. = 17.1%.

St. Paul, Minnesota
Three replications

C. I. or Sel. No.	Date headed	Plant height	Winter survival	Lodging: 1/	Weight: per bushel	Av. acre yield: 1966	1965- 1966	No. years: grown	Percent of Kharkof
	: June	: In.	: %	: Class	: Lbs.	: Bu.	: Bu.	:	:
NB64323	20	31	93	2.3	60.2	28.7	--	1	125.3
NB64365	19	30	90	1.3	61.0	28.1	--	1	122.7
SD56-758	21	31	95	4.0	58.7	28.1	--	1	122.7
8885	20	32	92	2.3	60.3	27.9	19.6	6	109.4
13882	19	28	90	2.7	60.2	27.7	18.3	2	111.3
13993	20	31	95	2.3	61.7	27.5	16.5	2	100.3
13994	20	32	95	3.0	58.2	27.2	23.0	2	189.0
SD55	19	31	90	2.3	60.3	27.2	--	1	118.8
SD56-497	20	32	93	1.3	61.0	26.9	--	1	117.5
13670	20	31	82	2.7	59.7	26.8	17.7	4	112.2
NB61355	19	29	83	3.0	60.5	26.4	--	1	115.3
13862	21	31	90	1.3	61.0	25.8	17.8	3	109.1
KS60252	20	28	80	2.3	58.8	25.8	--	1	112.7
13190	20	30	80	2.7	59.0	25.7	17.9	3	108.5
13526	18	31	97	2.7	59.5	25.1	--	1	109.6
13547	18	30	90	2.0	60.0	24.5	22.7	5	113.2
13883	18	32	97	2.0	61.2	24.4	15.1	2	91.8
13858	21	33	93	2.0	60.5	23.7	23.0	3	115.5
13881	19	31	93	2.0	58.8	23.3	20.5	2	125.0
13995	21	31	98	1.3	59.8	23.1	21.8	2	132.6
13884	19	31	90	2.3	60.8	23.0	--	1	100.4
1442	20	34	83	2.3	59.5	22.9	16.4	6	100.0
13885	19	30	90	4.7	58.2	21.9	--	1	95.6
NB64322	21	29	80	2.3	60.2	21.5	--	1	93.9
13864	19	32	90	3.0	60.0	20.8	17.1	3	98.5

1/ 1-9 scale; 1 = erect, 9 = flat.

L.S.D. .05 = N.S.; C.V. = 14.9%.

Waseca, Minnesota
Three replications

C. I. or Sel. No.	Date headed	Plant height	Winter survival	Lodg- ing	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
	: June :	: In. :	: % :	: Class :	: Lbs. :	: Bu. :	:	:
NB64323	15	43	87	2.3	61.2	48.7	1	122.7
KS60252	15	41	80	1.0	60.8	44.7	1	112.6
NB64365	16	42	87	1.3	61.7	44.1	1	111.1
NB61355	17	40	87	2.0	62.3	42.3	1	106.5
NB64322	16	43	85	2.0	61.2	41.9	1	105.5
13881	16	43	82	1.7	59.5	40.9	1	103.0
8885	18	45	80	2.7	59.3	40.7	5	87.0
13190	14	42	82	2.3	58.8	40.7	2	102.1
13547	14	41	80	2.0	61.3	40.5	5	125.4
13882	14	39	88	2.3	61.3	40.1	1	101.0
13993	18	46	88	3.7	61.5	40.1	1	101.0
13883	16	43	78	2.0	61.5	39.9	1	100.5
1442	19	46	82	2.7	59.8	39.7	5	100.0
13884	18	43	82	2.0	61.8	39.2	1	98.7
13994	17	45	83	2.3	60.7	38.3	1	96.5
SD56-497	17	43	85	1.0	61.7	38.2	1	96.2
SD56-758	19	45	85	3.0	60.2	37.6	1	94.7
13670	17	43	80	3.7	60.8	36.4	4	118.7
13526	16	43	83	2.7	61.3	35.5	1	89.4
SD55	17	40	78	1.7	61.2	35.3	1	88.9
13858	20	46	87	2.7	60.7	35.1	2	106.2
13885	17	40	82	3.7	59.8	35.1	1	88.4
13995	20	45	90	3.3	60.7	34.7	1	87.4
13864	17	43	83	3.0	60.2	33.8	2	110.2
13862	19	46	78	2.7	60.0	30.3	2	84.6

1/ 1-9 scale; 1 = erect, 9 = flat.

L.S.D. .05 = N.S.; C.V. = 20.4%.

Dickinson, North Dakota

Three replications

C. I. or Sel. No.	Date headed June	Plant height In.	Rust Stem Leaf		Spring stand %	Weight per bushel	Av. acre yield 1966	No. years grown	Percent of Kharkof
						Lbs.	Bu.		
1442	26	33	S	S	95	60.5	38.4	3	100.0
13993	25	39	S	S	95	61.0	37.2	1	96.9
8885	21	31	S	S	95	61.0	33.8	2	91.8
13995	25	37	R	S	90	61.5	33.8	1	88.0
13670	21	29	MR	MS	95	63.5	33.1	1	86.2
13883	17	30	MR	MR	95	63.0	32.4	1	84.4
SD56-758	23	34	R	MR	95	63.0	31.6	1	82.3
13858	25	38	MR-R	MS	95	63.5	30.8	1	80.2
13862	25	38	S	S	95	59.0	29.2	1	76.0
13190	21	29	S	S	95	58.5	29.0	1	75.5
NB61355	22	29	MR-R	MR-R	95	62.0	28.9	1	75.3
13882	19	27	MR	MR	95	62.0	28.6	1	74.5
NB64322	25	31	R	MS	90	60.5	28.4	1	74.0
SD56-497	22	32	MR-R	MR-R	90	61.5	28.4	1	74.0
13547	20	29	MR-R	S	90	61.5	28.0	1	72.9
13884	17	31	MR	MS	95	62.0	27.7	1	72.1
13994	22	34	R	S	95	62.0	27.5	1	71.6
13864	19	28	R	MS	95	62.5	27.2	1	70.8
NB64323	22	32	R	MS-S	95	63.5	25.8	1	67.2
13881	19	30	MR-R	S	90	62.0	25.0	1	65.1
NB64365	21	36	MR	S	80	63.0	24.6	1	64.1
KS60252	18	34	MS	S	90	62.0	24.5	1	63.8
SD55	21	29	R	MS-S	90	62.5	20.4	1	53.1
13885	20	30	MR-R	MR	90	62.5	20.3	1	52.9
13526	20	29	MR-R	MR-R	90	63.5	16.6	1	43.2

L.S.D. .05 = 9.7 bushels; C.V. = 12.0%.

Williston, North Dakota
Three replications

C. I. or Sel. No.	Date		Plant	Winter	Weight	Av. acre	Percent
	Headed	Ripe	height	survival	per bushel	yield	of
	June	July	In.	%	Lbs.	Bu.	Kharkof
13993	21	25	29	97	59.6	30.9	103.0
13670	20	23	28	87	59.6	30.8	102.7
8885	19	24	26	82	59.0	30.5	101.7
1442	22	25	28	62	55.6	30.0	100.0
SD56-758	19	22	28	87	59.0	28.1	93.7
13995	20	23	27	98	58.7	27.3	91.0
SD56-497	19	22	27	95	59.0	27.1	90.3
13858	21	23	31	90	59.8	26.9	89.7
NB64365	20	24	28	73	58.0	26.6	88.7
13862	22	24	30	65	56.8	25.8	86.0
13994	19	22	27	97	58.8	25.6	85.3
NB64323	18	24	28	85	58.0	25.4	84.7
KS60252	18	25	25	75	58.2	24.7	82.3
NB64322	19	24	27	50	58.0	24.3	81.0
13882	17	24	26	43	57.8	24.3	81.0
13190	18	23	25	63	59.0	23.4	78.0
13883	18	25	27	58	57.0	23.0	76.7
13526	17	23	27	88	58.2	21.8	72.7
13547	17	24	26	42	59.6	21.8	72.7
SD55	17	22	26	88	58.8	21.2	70.7
13885	19	24	27	28	57.3	20.2	67.3
NB61355	18	23	25	88	57.0	17.6	58.7
13864	20	25	27	25	57.3	17.0	56.7
13884	17	24	28	68	58.3	17.0	56.7
13881	19	24	28	32	57.0	15.2	50.7

L.S.D. .05 = 6.2 bushels; C.V. = 15.5%.

Moccasin, Montana
Three replications

C. I. or Sel. No.	Date headed June	Plant height In.	Weight per bushel Lbs.	Av. acre yield 1966 Bu.	Percent of Kharkof
8885	22	32	64.3	46.3	125.5
13547	19	31	64.5	42.8	116.0
NB64323	21	33	63.5	42.7	115.7
NB64322	21	32	63.6	42.5	115.2
13883	20	34	64.5	42.1	114.1
13993	23	33	64.6	41.7	113.0
NB64365	20	34	63.8	40.7	110.3
13858	24	36	63.5	39.1	106.0
13885	20	30	63.9	38.4	104.1
13190	19	32	63.2	38.3	103.8
SD56-758	23	37	63.2	38.2	103.5
NB61355	20	33	64.0	37.6	101.9
1442	22	32	63.9	36.9	100.0
13882	20	30	63.3	36.8	99.7
13862	23	33	63.9	36.1	97.8
13995	25	32	63.5	36.1	97.8
13884	21	34	64.6	35.8	97.0
SD55	20	33	63.0	34.7	94.0
13864	21	31	63.9	34.4	93.2
13526	19	34	63.1	34.1	92.4
13670	20	32	64.2	33.6	91.1
13881	20	33	63.1	32.9	89.2
SD56-497	20	32	62.6	31.9	86.4
KS60252	19	32	62.0	30.3	82.1
13994	24	34	62.0	30.0	81.3

L.S.D. .05 = 6.3 bushels; C.V. = 10.3%.

Tetonia, Idaho
Four replications

C. I. or Sel. No.	Date headed	Frost damage	1/ Weight per bushel	Av. acre yield: 1966	1965- 1966	No. years grown	Percent of Kharkof
	: July :	% :	Lbs. :	Bu. :	Bu. :	:	:
NB64323	5	30.0	60.5	17.7	--	1	107.3
13858	5	7.5	61.3	16.6	29.8	3	96.1
1442	5	12.5	64.3	16.5	31.6	4	100.0
13995	5	5.0	60.3	16.5	30.0	2	94.9
8885	5	22.5	65.0	16.3	33.0	4	112.0
13993	5	22.5	61.3	15.5	33.4	2	105.7
NB64322	5	22.5	59.8	15.3	--	1	92.7
NB64365	5	30.0	60.8	14.3	--	1	86.7
13884	5	30.0	61.8	14.0	29.1	2	92.2
SD56-758	5	37.5	60.3	13.7	--	1	83.0
13670	5	22.5	62.5	13.2	30.7	4	105.3
13883	5	20.0	61.0	12.6	28.3	2	89.7
13885	5	75.0	60.3	12.2	30.3	2	96.0
13994	5	30.0	59.5	11.2	26.2	2	82.9
13864	5	40.0	61.8	10.5	27.4	3	90.0
13881	5	47.5	60.5	10.4	27.8	2	88.1
SD55	5	65.0	61.0	10.2	--	1	61.8
13526	5	75.0	59.8	9.5	--	1	57.6
13862 ^{2/}	5	20.0	60.3	9.4	25.3	3	86.1
13190	6/29	75.0	63.8	9.3	27.3	3	101.6
SD56-497	5	45.0	59.5	9.3	--	1	56.4
13547	6/28	70.0	61.0	8.7	28.7	4	101.7
NB61355	5	65.0	61.0	8.3	--	1	50.3
13882	5	67.5	59.3	5.6	17.1	2	85.7
KS60252	5	80.0	60.8	5.4	--	1	32.7

^{1/} Estimated sterility due to late spring freezes.

^{2/} Heavily infected with bunt (estimated 25%).

L.S.D. .05 = 3.5 bushels; C.V. = 20.4%.

Clovis, New Mexico
Four replications, irrigated

C. I.	Date	Plant	Weight	Av. acre	No.	Percent
or	Headed	Ripe	height	per	yield	years
Sel. No.			bushel	1966	grown	Kharkof
	May	June	In.	Lbs.	Bu.	
13547	18	27	39	63	102.3	5
NB64322	19	27	39	62	99.8	1
13190	18	28	39	62	97.2	2
NB64323	19	27	38	62	94.8	1
8885	20	30	39	63	93.4	7
13670	19	7/1	39	64	93.3	4
SD56-758	20	27	39	62	91.4	1
13883	18	27	39	63	90.8	1
1442	19	30	40	62	90.6	7
13885	17	27	39	62	90.4	1
13881	17	27	39	62	89.6	1
13882	17	27	37	62	88.4	1
SD56-497	18	27	39	62	85.5	1
NB64365	17	27	40	63	84.6	1
13993	20	30	40	62	84.3	1
13864	18	7/1	40	63	84.0	2
13995	19	27	39	62	82.2	1
13526	16	27	39	62	81.2	1
13884	18	27	39	63	80.7	1
NB61355	18	27	38	62	80.0	1
13862	21	7/1	40	63	79.0	2
13858	22	28	43	62	76.4	2
SD55	17	27	38	62	75.4	1
KS60252	15	27	35	60	68.8	1
13994	18	27	40	62	65.6	1

L.S.D. .05 = 14.8 bushels; C.V. = 12.2%.

Lethbridge, Alberta
Four replications

C. I. or Sel. No.	Date Headed	Plant Ripe	Winter height	Weight survival	Av. acre yield per 1/ 1966	1965- 1966	No. years	Percent of Kharkof
	June	Aug.	In.	%	Lbs.	Bu.	Bu.	
1442	26	13	38	43	65.5	68.5	59.7	11 100.0
13993	26	10	39	65	64.0	66.7	60.9	2 102.0
NB64323	26	9	37	61	65.5	65.7	--	1 95.9
NB64322	26	9	37	53	65.0	65.5	--	1 95.6
SD56-758	25	9	39	63	66.0	65.3	--	1 95.3
13190	25	12	36	36	65.0	64.7	58.7	2 98.3
NB61355	25	9	36	61	66.0	64.3	--	1 93.9
13858	26	9	42	68	66.0	64.1	56.5	2 94.6
13995	27	10	39	68	66.0	63.9	56.7	2 95.0
13883	26	13	35	29	62.5	62.9	56.5	2 94.6
13994	23	6	39	68	66.0	60.4	53.0	2 88.8
13547	24	10	37	24	63.0	60.2	54.1	4 91.6
13882	23	7	34	49	63.5	60.2	53.5	2 89.6
13670	24	5	38	54	66.0	59.7	53.7	3 91.6
NB64365	25	10	37	70	65.5	59.4	--	1 86.7
8885	27	10	39	28	63.0	56.6	61.0	8 107.1
KS60252	20	10	35	44	65.0	53.8	--	1 78.5
13881	26	13	39	9	62.0	53.3	50.7	2 84.8
13884	26	12	37	25	63.0	53.2	48.8	2 81.7
SD56-497	24	3	39	64	66.0	52.6	--	1 76.8
SD55	24	9	35	70	66.0	52.1	--	1 76.1
13864	25	12	39	24	63.5	51.9	48.1	2 80.5
13885	25	12	38	29	64.0	51.3	46.1	2 77.1
13526	22	6	37	74	66.0	50.5	--	1 73.7
13862	27	11	40	59	64.0	48.5	51.0	2 85.4

1/ Imperial bushels.

L.S.D. .05 = 10.1 bushels; C.V. = 6.1%.

Summary of Nursery Yields

Yields of varieties in the northern regional performance nursery in 1966 are summarized in table 6. State averages and ranks together with individual station yields and regional averages are shown. Warrior x Selkirk-Cheyenne² (NB64323) ranked first on a regional basis with a 38.8-bushel average yield. Cheyenne, Selkirk x Cheyenne² (NB64365), Warrior, Warrior x Selkirk-Cheyenne² (NB64322), and Lancer in that order were next highest in yield. No variety was consistently high in yield in all states. NB64323 ranked first in Wyoming, Minnesota, and Idaho; third in Montana and at Lethbridge; fourth at Clovis, sixth in Nebraska; but only twelfth in South Dakota and fifteenth in North Dakota. Perhaps the most consistent performer was Cheyenne, ranking no poorer than ninth in any state except at Lethbridge where its rank was sixteenth. Less than 10 bushels per acre separated the highest and lowest yielding entries in the nursery. Yields made by varieties in 1966 are of particular interest since at no station were the rusts a factor in performance and winterkilling was recorded at only 4 out of 14 stations. This year's yields probably reflect the range of adaptation or elasticity of varieties to a much greater degree than in most years when the rusts depress yields differentially according to the resistance and maturity of varieties. In 1966 stem rust resistance or early maturity provided no particular advantage to varieties.

Among those varieties grown in both 1965 and 1966 in the northern nursery, Lancer has the best record with a 36.5-bushel average yield (table 7). This is 2.6 bushels higher than C. I. 13883, the second ranked variety. Despite their excellent performance in 1966 when stem rust was not a factor, the susceptible varieties Cheyenne and Warrior have only fair 2-year average yields due to their relatively poor performance in 1965 when stem rust was a factor at most stations. In contrast, Lancer, with resistance to stem rust, ranked first in yield in 1965 and sixth in 1966.

Summary of Agronomic Data

Agronomic data for varieties are summarized in table 8. Highest average bushel weight (61.5 pounds) was recorded for Winalta, C. I. 13884, and NB64365. Only 2 varieties, C. I. 13994 and KS60252, had average bushel weights of less than 60 pounds. Lancer, C. I. 13882, and KS60252 headed the earliest but SD56-497 had the earliest average ripe date. Lancer, SD55, and Warrior were among the shortest strawed varieties while C. I. 13858 had the tallest straw. C. I. 13995 survived the best at 4 stations where differential winterkilling was recorded. C. I. 13864 had the lowest average survival. SD56-497 lodged the least at 2 reporting stations while C. I. 13885 lodged most.

Table 6.--Summary of average yields in bushels per acre made by 25 varieties grown in the northern regional performance nursery in 14 trials in 1966 with state averages and rank.

Variety	C. I. or Sel. No.	Nebraska				Wyoming				South Dakota			
		North	Alli-	Aver-	Rank	Archer	Sheri-	Aver-	Rank	High-	Presho	Aver-	Rank
		Platte	ance	age		dan	dan	age		more	age	age	
Wrr x Sk-Cnn ²	NB64323	64.4	29.6	47.0	6	15.7	37.0	26.4	1	20.4	26.4	23.4	12-13
Cheyenne	8885	60.0	31.2	45.6	7-8	18.0	33.1	25.6	5	23.4	25.4	24.4	9
Sk x Cnn ²	NB64365	64.8	34.9	49.9	2	17.2	32.9	25.1	7	27.9	25.9	26.9	2
Warrior	13190	68.4	39.8	54.1	1	13.1	30.3	21.7	21	23.2	22.4	22.8	15
Wrr x Sk-Cnn ²	NB64322	60.1	30.1	45.1	12	17.3	34.6	26.0	3-4	16.3	26.3	21.3	22-23
Lancer	13547	62.4	36.3	49.4	3	14.9	29.9	22.4	15-16	23.4	26.6	25.0	7
Cnn x Yogo BC Bulk	13993	55.3	27.3	41.3	20	19.0	31.5	25.3	6	24.5	19.9	22.2	18
S. Dak. Sel.	SD56-758	59.0	31.8	45.4	9-10	17.0	31.7	24.4	9	24.5	20.3	22.4	17
MM-Ech-Rm ³ x Cnn ²	13883	56.7	29.7	43.2	16	16.6	29.0	22.8	12	26.9	26.4	26.7	3
Kharkof	1442	53.0	27.8	40.4	21	17.6	27.0	22.3	18-19	21.4	22.6	22.0	20-21
Winalta	13670	54.7	30.5	42.6	18	15.9	28.9	22.4	15-16	25.6	25.9	25.8	5
Minn III-54-12 x Cnn	NB61355	53.9	37.3	45.6	7-8	14.3	26.4	20.4	22	24.5	27.7	26.1	4
H44-Minturki ² x Minter	13858	52.6	31.5	42.1	19	16.5	28.1	22.3	18-19	21.6	22.3	22.0	20-21
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13881	63.3	32.6	48.0	4	22.1	29.9	26.0	3-4	23.7	23.6	23.7	11
Ottawa x Cheyenne ²	13885	60.8	29.5	45.2	11	16.2	36.2	26.2	2	23.2	26.5	24.9	8
II-36-3 x III-51-31	13995	53.3	20.7	37.0	24	14.4	24.8	24.6	8	21.0	18.4	19.7	25
Cheyenne ² x Selkirk	13884	59.6	28.8	44.2	14-15	17.4	27.4	22.4	15-16	23.5	27.1	25.3	6
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	59.7	34.9	47.3	5	16.9	31.5	24.2	10	18.9	25.3	22.1	19
S. Dak. Sel.	SD56-497	56.1	29.9	43.0	17	9.7	26.9	18.3	24	20.4	22.2	21.3	22-23
Hume	13526	56.6	33.2	44.9	13	13.1	31.9	22.5	14	22.0	20.2	21.1	24
Hume Sel.	SD55	50.2	28.9	39.6	22	13.3	31.8	22.6	13	22.9	22.2	22.6	16
Mtr-M2825 x H255-Bkk	13994	39.3	22.2	30.8	25	15.1	31.3	23.2	11	24.8	22.8	23.8	10
Qv-Tm-Mql-Oro x Mi-Hope-Pn ³	KS60252	50.7	26.6	38.7	23	11.7	26.4	19.1	23	22.0	24.7	23.4	12-13
Yogo x Cheyenne	13862	52.8	37.9	45.4	9-10	12.1	--	6.1	25	22.5	23.9	23.2	14
Cnn-Pnc x Tk-Cnn	13882	60.0	28.4	44.2	14-15	12.6	31.5	22.1	20	25.6	29.0	27.3	1

Table 6.--(Concluded).

C. I. :		Minnesota :				North Dakota :				Montana :		Idaho :		New Mexico :		Alberta :		14-
or	St.	Waseca	Aver-	Rank	Dick-	Willis-	Aver-	Rank	Moc-	Rank	Te-	Rank	Glovis	Rank	Leth-	Rank	trial	
Sel. No.	Paul	age	age		inson	ton	age		Casin		tonia		(irr.)		bridge		average	
NB64323	28.7	48.7	38.7	1	25.8	25.4	25.6	15-16	42.7	3	17.7	1	94.8	4	65.7	3	38.8	
8885	27.9	40.7	34.3	5	33.8	30.5	32.2	3	46.3	1	16.8	5	93.4	5	56.6	16	38.3	
NB64365	28.1	44.1	36.1	2	24.6	26.6	25.6	15-16	40.7	7	14.3	8	84.6	14	59.4	15	37.6	
I3190	25.7	40.7	33.2	8	29.0	23.4	26.2	14	38.3	10	9.3	20-21	97.2	3	64.7	6	37.5	
NB64322	21.5	41.9	31.7	15	28.4	24.3	26.4	13	42.5	4	15.3	7	99.8	2	65.5	4	37.4	
I3547	24.5	40.5	32.5	12	28.0	21.8	24.9	17	42.8	2	8.7	22	102.3	1	60.2	12	37.3	
I3993	27.5	40.1	33.8	7	37.2	30.9	34.1	2	41.7	6	15.5	6	84.3	15	66.7	2	37.2	
SD56-758	28.1	37.6	32.9	9	31.6	28.1	29.9	6	38.2	11	13.7	10	91.4	7	65.3	5	37.0	
I3883	24.4	39.9	32.2	13	32.4	23.0	27.7	9	42.1	5	12.6	12	90.8	8	62.9	10	36.7	
I442	22.9	39.7	31.3	17-18	38.4	30.0	34.2	1	36.9	13	16.5	3-4	90.6	9	68.5	1	36.6	
I3670	26.8	36.4	31.6	16	33.1	30.8	32.0	4	33.6	21	13.2	11	93.3	6	59.7	14	36.3	
NB61355	26.4	42.3	34.4	4	28.9	17.6	23.3	19	37.6	12	8.3	23	80.0	20	64.3	7	35.0	
I3858	23.7	35.1	29.4	21	30.8	26.9	28.9	7	39.1	8	16.6	2	76.4	22	64.1	8	34.7	
I3881	23.3	40.9	32.1	14	25.0	15.2	20.1	24	32.9	22	10.4	16	89.6	11	53.3	18	34.7	
I3885	21.9	35.1	28.5	23	20.3	20.2	20.3	23	38.4	9	12.2	13	90.4	10	51.3	23	34.4	
I3995	23.1	34.7	28.9	22	33.8	27.3	30.6	5	36.1	16	16.5	3-4	82.2	17	63.9	9	34.3	
I3884	25.0	39.2	31.1	19	27.7	17.0	22.4	20	35.8	17	14.0	9	80.7	19	53.2	19	33.9	
I3864	20.8	33.8	27.3	25	27.2	17.0	22.1	21	34.4	19	10.5	15	84.0	16	51.9	22	33.3	
SD56-497	26.9	38.2	32.6	11	28.4	27.1	27.8	8	31.9	23	9.3	20-21	85.5	13	52.6	20	33.2	
I3526	25.1	35.5	30.3	20	16.6	21.8	19.2	25	34.1	20	9.5	18	81.2	18	50.5	24	32.2	
SD55	27.2	35.3	31.3	17-18	20.4	21.2	20.8	22	34.7	18	10.2	17	75.4	23	52.1	21	31.8	
I3994	27.2	38.3	32.8	10	27.5	25.6	26.6	11	30.0	25	11.2	14	65.6	25	60.4	11	31.5	
KS60252	25.8	44.7	35.3	3	24.5	24.7	24.6	18	30.3	24	5.4	25	68.8	24	53.8	17	31.4	
I3862	25.8	30.3	28.1	24	29.2	25.8	27.5	10	36.1	15	9.4	19	79.0	21	48.5	25	31.0	
I3882	27.7	40.1	33.9	6	28.6	24.3	26.5	12	36.8	14	5.6	24	88.4	12	60.2	13	29.2	

Table 7.--Summary of 2-year average yields for 16 varieties grown in the northern regional performance nursery in 8 trials in 1965 and 1966 with state averages and rank.

Variety	C. I. No.	Nebraska				South Dakota			
		North Platte	Alli- ance	Aver- age	Rank	High- more	Presho	Aver- age	Rank
Lancer	13547	59.6	27.7	43.7	1	31.3	30.1	30.7	1
MM-Ech-Rm ³ x Cnn ²	13883	54.4	23.4	38.9	3-4	29.5	29.4	29.5	2
Ky58-Nth x(Cnn-Tm-Mi-Hope) ²	13881	54.0	23.8	38.9	3-4	27.8	26.1	27.0	7
Ottawa x Cheyenne ²	13885	55.3	21.5	38.4	5-6	29.0	28.9	29.0	3
Winalta	13670	50.1	20.6	35.4	9	27.4	25.0	26.2	8
Ky58-Nth x(Cnn-Tm-Mi-Hope) ²	13864	52.5	24.2	38.4	5-6	23.6	30.6	27.1	6
Cheyenne	8885	48.3	16.5	32.4	11-12	21.0	18.7	19.9	12
Warrior	13190	56.3	22.1	39.2	2	20.6	18.4	19.5	13
H44-Minturki ² x Minter	13858	46.0	20.8	33.4	10	24.3	24.6	24.5	10
Cnn-Pnc x Tk-Cnn	13882	56.6	18.0	37.3	8	28.6	26.8	27.7	5
Cheyenne ² x Selkirk	13884	52.0	22.8	37.4	7	30.2	26.7	28.5	4
II-36-3 x III-51-31	13995	48.5	16.2	32.4	11-12	21.2	22.0	21.6	11
Mtr-M2825 x H255-Bkk	13994	41.7	17.6	29.7	14	25.9	25.4	25.7	9
Cnn x Yogo BC Bulk	13993	41.5	13.9	27.7	16	17.9	14.0	15.5	16
Kharkof	1442	42.1	14.8	28.5	15	17.4	16.9	17.2	15
Yogo x Cheyenne	13862	40.7	19.5	30.1	13	18.5	16.5	17.5	14

C. I. No.	Wyoming		Minnesota		Idaho		Alberta		8- trial average
	Sheri- dan	Rank	St. Paul	Rank	Tetonia	Rank	Leth- bridge	Rank	
13547	37.4	2	22.7	3	28.7	9	54.1	8	36.5
13883	34.2	6	15.1	14	28.3	10	56.5	6-7	33.9
13881	31.5	12	20.5	5	27.8	11	50.7	13	32.8
13885	36.5	3	11.0	16	30.3	5	46.1	16	32.3
13670	32.5	11	17.7	10	30.7	4	53.7	9	32.2
13864	33.2	8	17.1	11	27.4	12	48.1	15	32.1
8885	37.8	1	19.6	6	33.0	2	61.0	1	32.0
13190	34.5	5	17.9	8	27.3	13	58.7	4	32.0
13858	31.0	13	23.0	1-2	29.8	7	56.5	6-7	32.0
13882	35.9	4	18.3	7	17.1	16	53.5	10	31.9
13884	33.0	10	11.5	15	29.1	8	48.8	14	31.8
13995	30.5	14	21.8	4	30.0	6	56.7	5	30.9
13994	33.1	9	23.0	1-2	26.2	14	53.0	11	30.7
13993	33.9	7	16.5	12	33.4	1	60.9	2	29.0
1442	28.9	15	16.4	13	31.6	3	59.7	3	28.5
13862	16.9	16	17.8	9	25.3	15	51.0	12	25.8

Table 8.--Summary of agronomic data other than yield for varieties grown in the northern regional performance nursery in 1966.

Pedigree	: C. I. : : or : : Sel. No. :	: Date :		: Plant : : height :	: Winter : : sur- : : vival :	: Lodg- : : ing- : : 1/ :	: Weight : : per : : bushel :
		: Head- : : ed :	: Ripe : : June :	: July :	: In. : : % :	: % :	: Lbs. :
Number of stations		13	3	11	4	2	15
Winalta	13670	15	20	32	76	3.2	61.5
Cheyenne ² x Selkirk	13884	14	21	31	66	2.2	61.5
Sk x Cnn ²	NB64365	14	21	32	80	1.3	61.5
Lancer	13547	13	21	30	59	2.0	61.4
MM-Ech-Rm ³ x Cnn ²	13883	14	22	31	66	2.0	61.3
Minn III-54-12 x Cnn	NB61355	15	20	30	80	2.5	61.3
Cheyenne	8885	16	22	31	71	2.5	61.2
Wrr x Sk-Cnn ²	NB64323	15	20	31	82	2.3	61.1
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	15	23	31	56	3.0	61.0
Hume Sel.	SD55	14	20	30	82	2.0	61.0
Hume	13526	14	19	31	86	2.7	60.9
Ottawa x Cheyenne ²	13885	14	21	30	58	4.2	60.8
Wrr x Sk-Cnn ²	NB64322	16	20	31	67	2.2	60.8
Warrior	13190	14	21	30	65	2.5	60.7
Cnn x Yogo BC Bulk	13993	17	22	33	86	3.0	60.7
S. Dak. Sel.	SD56-497	15	18	32	84	1.2	60.7
H44-Minturki ² x Minter	13858	18	20	35	85	2.4	60.5
Cnn-Pnc x Tk-Cnn	13882	13	20	28	68	2.5	60.5
Kharkof	1442	17	23	33	68	2.5	60.3
II-36-3 x III-51-31	13995	18	20	33	89	2.3	60.2
S. Dak. Sel.	SD56-758	17	20	34	83	3.5	60.2
Yogo x Cheyenne	13862	17	22	33	73	2.0	60.1
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13881	14	22	32	54	1.9	60.0
Mtr-M2825 x H255-Bkk	13994	16	19	34	86	2.7	59.9
Qv-Tm-Mql-Oro x Mi-Hope-Pn ³	KS60252	13	21	30	68	1.7	56.2

1/ 1-9 scale; 1 = erect, 9 = flat.

UNIFORM BUNT NURSERY

Five of 8 stations growing the uniform bunt nursery in 1966 reported infection data. These are summarized in table 9 together with data from the Cereal Disease Laboratory at Pullman, Washington. Only the check variety Wasatch was resistant at all reporting stations. Hussar and C. I. 13882 were rated resistant at all stations except Stillwater. The presence of L-8 in the inoculum at Ft. Collins and Stillwater is indicated by the susceptibility of Oro and Turkey derivatives at those stations--an exception being C. I. 13882 at Ft. Collins. The susceptibility of both Hussar and Relief at Stillwater suggests the presence of L-7 in the inoculum at Stillwater.

The uniform bunt nursery has been discontinued as a field nursery in the hard red winter wheat region. Henceforth, varieties with resistance to bunt in state nurseries will be submitted to the Cereal Disease Laboratory at Pullman for reaction to specific bunt tester races.

REGIONAL STREAK MOSAIC NURSERY

NB61917 and NB631454 were rated slightly the most resistant to streak mosaic in the regional streak mosaic nursery (table 10). Infection data were reported from three stations. C. I. 12851 continues as the most susceptible variety in the nursery.

The streak mosaic nursery also will be discontinued in the region until new experimental lines with suspected resistance or tolerance are available for testing on a regional basis.

QUALITY DATA

The Hard Winter Wheat Quality Laboratory evaluates grain from 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. Northern and southern performance nursery samples are composited from all locations for evaluation. Results are reported to the cooperators by the Quality Laboratory.

Table 9.--Percent of common bunt in varieties and selections of hard red winter wheat grown in the Uniform Bunt Nursery in 1966, and reactions to selected tester races of common bunt.

Variety or selection	C. I. : or : Sel. No.	Av. percent infection					Av. infection		Av. percent infection ^{1/}			
		Bush- land	Still- water	Man- hattan	Lincoln	Fort Collins	1966	1965- 1966	T-1	T-13	T-15	T-16
Wasatch	11925	2	T	0	0	0	0.4	1.1	0	50	3	0
Cnn-Pnc x Tk-Cnn	13882	3	40	T	2	0	9.0	7.1	7	4	39	33
Hussar	4843	6	45	0	3	0	10.8	15.3	0	48	43	0.5
Relief	10082	44	25	T	0	0	13.8	12.5	0	8	13	0
Oro	8220	45	35	5	2	2	17.8	14.2	6	18	18	65
Nbr x Cnn-Ky-Mta	13857	47	35	1	18	11	22.4	20.6	40	68	58	63
Kaw x C. I. 13185	65Stw2405	52	45	1	15	5	23.6	--	30	70	40	90
Ottawa Sel.	KS60770	27	58	5	35	19	28.8	30.2	0.5	68	73	60
Kaw x Sk-Cnn ²	NB64319	63	65	1	30	19	35.6	--	65	65	73	83
C-129-16	65Stw2409	45	55	5	48	50	40.6	--	85	90	95	80
Concho x Triumph	KS644	55	78	10	40	31	42.8	52.9	78	88	96	83
Triumph x C. I. 12406	65Stw2408	53	85	5	52	52	49.4	--	90	90	98	95
Kaw x C. I. 13185	65Stw2407	80	80	10	62	20	50.4	--	90	85	95	80
Triumph x C. I. 12406	65Stw2402	44	90	5	58	53	51.2	--	95	90	95	85
C-146-2	65Stw2412	95	80	10	40	45	54.0	--	95	95	95	90
C-150-6	65Stw2415	68	90	10	55	56	55.8	--	90	90	85	90
Kaw x Sk-Cnn ²	NB64318	75	93	20	55	39	56.4	--	95	90	97	93
RedChief	12109	99	93	10	75	27	60.8	67.5	94	92	99	95

^{1/} Data from the Cereal Disease Laboratory, Pullman, Washington. Recorded values are averages of data from Pullman, Wash., and Pendleton, Ore., except for selections from Oklahoma which were tested only at Pendleton.

Table 10.--Reactions of 19 varieties and selections of winter wheat to streak mosaic in the regional streak mosaic nursery in 1966.

Variety or selection	C. I. or Sel. No.	Mosaic rating (stunting) ^{1/}			
		Still-	Man-	Hays	3-station average
Cns ² x Ae-Pn x Kiowa	NB61917	2.0	1.5	1.0	1.5
Bsn x Mql-Oro-Tnf-Pn	NB631454	1.0	2.5	1.0	1.5
Blue Jacket	12502	1.8	2.3	1.0	1.7
Bsn x Mql-Oro-Tnf-Pn	NB631472	1.0	2.0	2.0	1.7
Bsn x Ctr-Mi-Hope-Pn	NB64439	1.0	3.0	1.0	1.7
Concho x Ts-Pn ²	OK59R2349	1.0	2.5	1.5	1.7
Scout Resel.	13886	2.0	1.5	2.5	2.0
Concho x Ts-Pn ²	OK59R2420	2.0	2.5	1.5	2.0
do.	OK59R2419	1.5	2.0	2.5	2.0
do.	OK59R2417-6	2.0	2.0	--	2.0
do.	OK59R2417	2.0	3.0	1.5	2.2
Scout	13546	2.0	2.5	2.5	2.3
Hume	13526	3.0	2.0	2.0	2.3
Concho x Ts-Pn ²	OK59R2350	2.0	2.0	3.0	2.3
Scout Resel.	13996	2.0	2.0	3.5	2.5
do.	13887	2.5	2.0	4.0	2.8
Bison	12518	2.5	3.0	3.5	3.0
Pawnee	11669	4.0	3.0	2.3	3.2
Mql-Oro x Pn	12851	4.0	3.0	3.5	3.5

^{1/} Ratings based on 0-5 scale; 0 = no stunting, 5 = completely stunted.

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