

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 1965

Preliminary report, not for publication^{1/}

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Nebraska Agricultural Experiment Station
Lincoln, Nebraska

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By

V. A. Johnson^{1/}

CONTENTS

	<u>Page</u>
Cooperating agencies, stations, and personnel -----	1
Accession numbers assigned -----	3
New varieties -----	3
Wheat yields and production in the region -----	3
Uniform quality series -----	4
Southern regional performance nursery -----	5
Data obtained -----	5
Summary of nursery yields -----	24
Summary of agronomic data -----	24
Northern regional performance nursery -----	31
Data obtained -----	31
Summary of nursery yields -----	44
Summary of agronomic data -----	44
Regional streak mosaic nursery -----	50
Uniform bunt nursery -----	50
Quality data -----	54

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

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Hard Red Winter Wheat Region	V. A. Johnson*
Rust Investigations	W. Q. Loegering*
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College Station	Texas A. & M. University	I. M. Atkins* (State Leader)
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Plant Sciences		R. A. Kilpatrick*
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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	D. B. Ferguson
		C. H. Hsi

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Stillwater	Oklahoma State University	A. M. Schlehber (State Leader)
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Cherokee	Wheat Land Conservation Station	E. G. Greer, Jr.
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		A. B. Ward
Hays	Ft. Hays Branch Station	R. W. Livers
Garden City	Garden City Agr. Exp. Sta.	W. D. Stegmeier
Colby	Colby Branch Station	J. R. Lawless

COLORADO AGRICULTURAL EXPERIMENT STATION:

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Agronomy		
Akron	U. S. Central Gr. Plains Sta.	G. O. Hinze
Hesperus	San Juan Basin Branch Sta.	K. Schliebe
Springfield	Southeastern Colo. Branch Sta.	H. O. Mann

IOWA AGRICULTURAL EXPERIMENT STATION:

Ames	Iowa State University	R. E. Atkins
Agronomy		

NEBRASKA AGRICULTURAL EXPERIMENT STATION:

Lincoln	University of Nebraska	V. A. Johnson*
Agronomy		J. W. Schmidt
		M. R. Morris
		P. J. Mattern
North Platte	North Platte Experiment Sta.	M. G. Rumery
		K. P. Pruess
Alliance	Box Butte Experiment Station	P. L. Ehlers
		C. R. Fenster
Concord	Northeast Nebr. Exp. Station	U. U. Alexander

WYOMING AGRICULTURAL EXPERIMENT STATION:

Laramie	University of Wyoming	B. J. Kolp
Div. of Plant Science (Crops)		G. H. Bridgmon
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Cheyenne	Archer Substation	L. R. Landers
Gillette	Gillette Substation	L. R. Richardson
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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. G. Frohberg
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MONTANA AGRICULTURAL EXPERIMENT STATION:

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Plant and Soil Science		C. R. Haun
		C. A. Watson
Moccasin	Central Mont. Branch Sta.	H. R. Guenther
Huntley	Huntley Branch Station	D. E. Baldrige
Havre	North Montana Branch Station	

IDAHO AGRICULTURAL EXPERIMENT STATION:

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

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	C. F. Hayward
	Field Crops	

CANADA DEPARTMENT OF AGRICULTURE:

Lethbridge	Alberta Agr. Exp. Station	M. N. Grant
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ACCESSION NUMBERS ASSIGNED

Hard red winter wheat varieties assigned C. I. numbers in 1965 are as follows:

<u>C. I. No.</u>	<u>Pedigree</u>	<u>State No.</u>	<u>Source</u>
13869	(Blackhull-Rex x Rio-Rex) x Utah 175a-53	A5598-35-10	Idaho
13870	do.	A5598-36-3	do.
13871	do.	A5598-36-6	do.
13872	Bulk Winterhardiness 1904-7	---	Mont.
13873	(Alicel x Rex, P-80) x Comanche ³ , Sel. 34	9130	Idaho
14051	(Hussar x Turkey)-Ridit x Orfed-Elgin	Sel.217-19-5	Utah
14052	do.	Sel.217-61-7-14	do.

NEW VARIETIES

Texas produced 140 bushels of seed of Sv1-Wi-Hope-Cnn-Wi² x SS27 (C. I. 13684) in 1965 but only 400 pounds of Norin 10 x C. I. 12500 (C. I. 13855). Both will be further increased in 1966 for possible release in Texas. They have been described in previous reports.

Small initial increases of Cnn² x Ky-Mta (C. I. 13856) and Nbr x Cnn-Ky-Mta (C. I. 13857) were made in Nebraska. Both have been in the southern regional performance nursery since 1964. Interest in these strains stems from their earliness and stem rust resistance.

The variety Hume (C. I. 13526) was distributed to growers in South Dakota in the fall of 1965. Its excellent winterhardiness combined with field resistance to stem rust, short straw, moderately early maturity, and good quality should make it a valuable addition to winter wheats in South Dakota.

WHEAT YIELDS AND PRODUCTION IN THE REGION

Abandonment of winter wheat acres in 1965 was very high in several plains states--particularly in Colorado where one of the severest droughts of record occurred. Drought conditions prevailed in much of the high plains during the

season. Heavy winter loss of wheat occurred in eastern parts of Kansas and Nebraska. Production and yields of winter wheat were down sharply in Nebraska, Colorado, and Wyoming. Oklahoma, on the other hand, produced the largest crop of record. Stem rust caused heavy losses to winter wheat in Nebraska, north-eastern Colorado, Wyoming, South Dakota, and eastern Montana.

State	Acres		Abandon- ment %	1965	1965	1959-63
	Seeded ^{1/}	Harvested ^{1/}		pro- duction ^{1/}	av. acre yield ^{2/}	av. acre yield ^{2/}
				Bu.	Bu.	Bu.
Kansas	11,386	10,151	10.8	243,624	24.0	24.1
Oklahoma	5,321	4,747	10.8	132,916	28.0	22.0
Texas	4,162	3,228	22.4	72,630	22.5	19.3
Nebraska	3,364	2,805	16.6	56,100	20.0	23.2
Colorado	2,954	1,287	56.4	19,948	15.5	20.8
Montana	2,699	2,329	13.7	67,541	29.0	23.1
Illinois	1,718	1,603	6.7	56,906	35.5	32.7
Missouri	1,556	1,186	23.8	32,615	27.5	28.8
Idaho	884	779	11.9	32,718	42.0	30.2
South Dakota	571	400	29.9	6,800	17.0	18.1
New Mexico	296	201	32.1	4,924	24.5	20.6
Wyoming	261	180	31.0	2,160	12.0	21.8
Iowa	84	41	51.2	779	19.0	25.0
North Dakota	50	26	48.0	520	20.0	...
Minnesota	12	9	25.0	216	24.0	24.0

^{1/} In thousands.

^{2/} Based on harvested acres. Data taken from the 1965 Annual Summary, Crop Production, Crop Reporting Board, Statistical Reporting Service, U. S. Dept. of Agriculture.

UNIFORM QUALITY SERIES

Newly released varieties and advanced experimental varieties that are under consideration for release to farmers are grown each year with appropriate check varieties at most cooperating stations in the region. Each location provides seed of each variety in the amount of 10 pounds to the Hard Winter Wheat Quality Laboratory for evaluation. In 1965, the varieties grown in each district were as follows:

Southern District

Pawnee* 11669
Comanche* 11673
Caddo 13536
Svl-Wi-Hope-Cnn-Wi² x SS 13684
Norin 10 x C. I. 12500 13855

Central District

Pawnee* 11669
Comanche* 11673
Scout 13546
Cnn x Mi-Hope-Pn-Oro-Il#1-Cnn 13548
Quivira Cross

Northern District

Yogo* 8033 Hume 13526
Warrior* 13190 Winalta 13670
Lancer 13547

* Check variety.

SOUTHERN REGIONAL PERFORMANCE NURSERY

The southern regional performance nursery was grown at 21 stations in 8 states. Performance data were reported from 15 stations. Dryland nurseries at Bushland, Clovis, and Springfield were abandoned due to winter and spring drought. Hail destroyed the irrigated nursery at Bushland and a dryland nursery at Akron. An irrigated nursery at Clovis was heavily damaged by hail and yields were not reported. Severe bird damage prior to harvest necessitated the abandonment of the nursery at Colby. Pedigrees and C. I. numbers of entries in the 1965 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	Cnn ² x Ky-Mta	13856	Nebr.
8*	do.	13888	do.
9	Nbr x Cnn-Ky-Mta	13857	do.
10	Svl-Wi-Hope-Cnn-Wi ² x SS	13684	Texas
11	Norin 10 x C. I. 12500	13855	do.
12*	Quanah x Cimarron (57D37)	13889	do.
13*	Svl-Wi-Hope-Cnn-Wi x SS (57D16082)	13890	do.
14	Wichita ⁵ x Cns. + Au	13853	Kans.
15	Bsn ⁵ x C. I. 9058	13854	do.
16*	Cfk-Mt-Tm x Cnn (611303)	13997	N. Mex.
17	Triumph	12132	Okla.
18	Triumph 64	13679	do.
19	Triumph x C. I. 12406	13847	do.
20	do.	13848	do.
21	do.	13850	do.
22	do.	13851	do.
23*	Scout Reselection	13996	Nebr.
24**	Hume	13526	S.Dak.

* New entry in 1965.

** Entered for one year from the Northern Regional Performance Nursery.

Data Obtained

Performance data from reporting stations appear in table 1. Growing conditions and other factors affecting nursery performance are briefly summarized.

Denton--Soil moisture was adequate and mild temperatures prevailed during the period November to March. Some drought damage occurred in the latter part of March. The temperature dropped to 15° F. on March 20 causing some leaf burn in the most actively growing varieties. The weather was cool and wet during the latter part of May.

Chillicothe--The nursery was not seeded until late November. Stands were thin, the straw very short, and varieties were green and immature when observed on May 21.

Clovis--Excellent fall moisture conditions permitted establishment of full stands of wheat. A light infestation of brown wheat mite occurred in the fall and light infections of wheat streak mosaic and leaf rust were observed. Stem rust became heavy prior to harvest in the spring. The moisture deficiency during the spring was severe and much dryland wheat in the area was abandoned. Drought relieving rains in June were accompanied by heavy hail that so damaged the nursery that reliable yield data were not possible.

Stillwater--Yield affecting factors at Stillwater in the order of their importance were: (1) Nematodes or a nematode-Olpidium combination that caused more yield depression than other factors combined, (2) severe Helminthosporium (worst in 20 years) and leaf rust, (3) abnormally high temperatures following seeding which caused excessive growth, (4) abnormally low temperatures in March and (5) a short period of moisture stress in April.

Woodward--Yields as high as 63.3 bushels per acre indicate an absence of most yield-depressing factors. A slope and natural fertility gradient from the first to fourth replications resulted in a 15.8-bushel difference between these replications. The difference in yield between the first and second replications was 9.4 bushels providing evidence that the major factor affecting yield was fertility and/or water-storing capacity of the soil. Other factors that probably affected performance included some moisture stress during the spring and low temperatures in March and again near heading time in April.

Cherokee--The following factors affected performance of the nursery at Cherokee: (1) Excessive growth in the fall promoted by above-normal temperatures, (2) moisture stress from April 1 to May 18, and (3) abnormally low temperatures in March which retarded growth and an April freeze just prior to heading that caused some spikelet sterility.

Manhattan--Dry seedbed conditions during the fall prevailed at Manhattan but emergence of the nursery was good. Excessive precipitation occurred from November thru January but February to May was dry again. The spring drought produced generally short straw. The wheat was benefited by late spring rains. Leaf and stem rust became heavy but caused little if any measurable damage. Rains after the wheat was ripe delayed harvest and reduced test weight.

Hays--Soil moisture and growing conditions in the fall were excellent. The winter was moderate with no winter killing. A hard freeze (25° F.) on April 28 caused some spike damage in the earliest varieties. Leaf rust became moderately heavy but probably did not affect yields. Stem rust was more severe and definitely depressed test weights and yields. Heavy precipitation in June delayed harvest and caused post-harvest loss of test weight.

Garden City--Fall temperatures following seeding were mild to cool. There was little moisture in the soil below a depth of 2 feet. Fall growth was slow and plants covered less than 50 percent of the soil surface at the onset of winter. Winter precipitation was light. By the end of winter this had been reduced to 20 percent by blowing soil. Severe dust storms occurred during the spring which further damaged the wheat. The drought continued through April with severe stress to the nursery. Heading of varieties occurred on straw of 8-12 inches in height. Variations in soil and stored moisture were magnified

by the drought and considerable variation in height, maturity, and yield occurred within and between replications. Precipitation beginning May 4 was of major benefit to all varieties later than Triumph. Hail on May 7 produced 10-15 percent damage to entries of Triumph maturity which were emerging from the boot and heavily broken by the hail. Late tillers of all entries developed following the hail with the greatest number in varieties later than Triumph. Continuing precipitation delayed harvest until all tillers were ripe. Leaf rust was prevalent and stem rust did not become heavy until late in the season. Little damage could be attributed to the rusts.

Ft. Collins--A very dry summer made it necessary to irrigate prior to nursery seeding on September 22 to assure germination and emergence. Fall growth was very limited but precipitation during the winter was adequate to keep the wheat in a healthy condition. Low night temperatures during the spring and cloudy cool weather in late May, June, and early July depressed early spring growth and delayed maturity by about one week. Leaf and stem rust contributed to lower than expected yields. Leaf rust appeared the first week in June and stem rust about 10 days later. By mid-July the stem rust had progressed into an epidemic but was a little too late for much damage except in the latest varieties. Thrips and greenbugs were observed in the nursery in June but caused little damage. Wet weather during ripening made accurate maturity notes difficult.

Lincoln--Full stands of wheat were established despite deficient soil moisture at seeding time. Severe cold in November stopped fall growth and destroyed much of the top growth. Heavy snow occurred in January. Subzero temperatures in March following a warm spell in which the wheat began to "green up" resulted in perhaps the most severe winterkilling of record at Lincoln and in southeastern Nebraska. Hardy varieties like Omaha and Lancer survived well while the less hardy Pawnee, Ottawa, Gage, and Scout varieties sustained major damage. Its loss of stand in southeast Nebraska was the first of record for Pawnee since its release in 1943. Both leaf and stem rust became heavy and sharply reduced test weight and yield of susceptible varieties.

North Platte--Sub-soil moisture reserves were low at North Platte but there was sufficient surface moisture for the establishment of full stands in the fall. The winter was less severe than at Lincoln and winter injury to the wheat was light. Stem rust became heavy but was too late to cause serious reduction in test weight except in susceptible late-maturing varieties. Spring moisture was timely and high yields were recorded for stem-rust-resistant strains.

Alliance--The summer and fall were abnormally dry in western Nebraska. At the Alliance station there was insufficient soil moisture for nursery establishment. It was necessary to move the winter wheat nurseries to an area 15 miles northwest of the station where a local shower had occurred. The wheat emerged to fair stands but made little fall growth due to the continued lack of moisture and the early onset of winter. The serious lack of moisture continued through the winter and early spring with barely enough to keep the wheat growing. Lack of fall growth, generally thin stands, and poor early spring conditions delayed the development and maturity of the nursery. The severest stem rust epidemic of record hit the area and stem rust susceptible varieties produced less than 10 bushels per acre and in most cases insufficient seed for test weight purposes. Leaf rust also was moderately heavy.

Columbia--The nursery was planted under unfavorable soil moisture conditions. Both September and October were abnormally dry. Good precipitation and favorable temperatures in November permitted the wheat to go into the winter with adequate top growth. Precipitation was excellent throughout the winter. The minimum recorded temperature was -6° F. in February. Warm weather in late February in which the wheat started to grow was followed by excessive sleet and snow in early March. Severe loss of stands occurred. The very irregular pattern of stand loss together with the fact that the temperature in March did not drop below 11° F. pointed to ice cover as the cause of the killing. Leaf rust became heavy and both mildew and stem rust were present in the nursery.

Urbana--Emergence of the wheat was slow at Urbana due to dry soil. Some thinning of stands occurred during the winter but favorable spring weather permitted maximum recovery and development. Moisture was deficient in May to the point of producing wilting of leaves during the afternoons. There was some mildew early. Yields and test weights were very high.

Table 1.--Yield and other data for varieties grown in the southern regional performance nursery at 15 stations in the hard red winter wheat region in 1965.

Denton, Texas
Four Replications

C. I. No.	Date headed	Plant height	Mildew %	Leaf rust %	Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
	: April:	In.:	%:	%:	Lbs.:	Bu.:	Bu.:	:	:
13853	22	38	30	T	60	38.4	36.7	2	231.5
13996	24	39	5	30	58	30.7	--	1	190.7
13890	17	28	15	10R	59	30.5	--	1	189.4
13679	18	36	5	40	60	30.2	32.0	3	155.9
13684	18	31	15	10R	59	29.1	30.6	3	132.8
13997	23	38	20	40	62	28.8	--	1	178.9
13851	19	36	25	50	60	28.2	30.8	2	194.0
13886	24	40	T	25	57	28.1	--	1	174.5
8856	21	41	20	30	61	27.7	28.6	29	129.8
13888	18	35	T	40	58	27.4	--	1	170.2
13887	24	39	5	25	57	26.7	--	1	165.8
13847	19	37	20	40	60	26.3	29.9	2	188.6
13856	17	34	5	40	57	26.2	28.4	2	179.2
13546	23	39	15	30	59	25.4	27.4	5	129.6
13850	20	37	20	60	58	25.1	29.6	2	186.4
13855	16	27	15	15MR	57	24.8	25.6	2	161.5
13848	19	35	20	60	59	23.6	27.0	2	170.7
13854	27	40	40	30	59	22.6	24.8	2	156.8
12132	20	36	T	60	60	22.4	25.9	5	118.8
13526	25	37	3	60	57	20.6	--	1	128.0
11673	29	39	25	20	57	20.2	23.4	25	128.5
13889	29	36	40	T	57	19.9	--	1	123.6
13857	17	31	10	60	58	17.2	25.8	2	163.1
1442	5/1	38	30	60	55	16.1	15.8	29	100.0

LSD_{.05} = 4.2 bushels; C.V. = 11.6%.

Chillicothe, Texas

Four replications

C. I. No.	Date		Plant height: In.	Weight: per bushel: Lbs.	Av. acre yield:		No. years: grown:	Percent of Kharkof
	Headed: May	Ripe: June			1965: Bu.	1964-1965: Bu.		
13996	8	8	20	56.0	22.1	--	1	329.8
13679	5	6	21	59.0	21.9	21.4	3	155.3
13546	9	9	22	56.0	21.4	20.6	5	140.1
13888	6	7	18	58.0	21.2	--	1	316.4
13847	6	6	21	57.0	20.7	20.0	2	183.5
13856	6	7	17	57.0	20.3	20.3	2	186.2
13887	9	9	20	56.0	20.3	--	1	303.0
13886	8	9	21	56.0	20.2	--	1	301.5
13857	4	5	18	58.0	20.0	19.6	2	180.3
13890	4	5	15	57.5	19.5	--	1	291.0
13684	7	7	18	56.5	19.4	19.0	3	145.9
13850	7	7	20	57.0	19.1	18.9	2	173.4
12132	6	6	20	57.0	18.9	20.0	5	137.3
13848	7	8	21	58.0	18.3	17.8	2	163.8
13997	11	10	22	59.0	17.6	--	1	262.7
13855	3	3	15	58.0	17.5	19.5	2	178.9
13851	8	8	22	58.5	17.2	18.8	2	172.0
8856	11	11	23	58.0	17.0	18.0	27	108.4
13889	13	13	23	55.0	15.7	--	1	234.3
13526	15	14	24	56.0	15.4	--	1	229.8
13853	12	13	24	55.2	14.8	15.6	2	143.6
11673	12	13	26	58.0	14.7	16.2	27	117.2
13854	12	13	23	55.0	13.0	16.5	2	151.4
1442	19	18	22	--	6.7	10.9	27	100.0

L.S.D. .05 = 2.4 bushels; C.V. = 9.8%.

Clovis, New Mexico
Four replications, irrigated

C. I. No.	Date		Plant height In.	Lodging ^{1/}	Weight per bushel Lbs.
	Headed	Ripe			
	May	June			
13856	16	26	42	2	64
13888	17	26	43	2	64
13997	13	24	42	3	64
1442	22	7/1	44	2	63
8856	11	25	42	3	63
11673	16	25	45	2	63
13546	15	25	42	3	63
13886	14	25	42	2	63
13887	15	25	42	3	63
13857	17	26	41	3	63
13684	17	26	37	1	63
13855	17	26	35	2	63
13889	18	25	44	2	63
13854	16	25	48	2	63
12132	13	24	42	2	62
13679	12	24	44	2	62
13848	12	24	44	2	62
13850	14	24	44	2	62
13851	14	24	45	2	62
13526	17	26	43	4	62
13890	16	7/1	38	1	61
13853	12	24	42	5	61
13847	15	25	45	3	61
13996	15	25	42	4	61

^{1/} Lodging on 0-5 scale; 3 = 45% leaning of whole plot.

Stillwater, Oklahoma
Four replications

C. I. No.	Date	Plant headed	Plant height	Leaf rust		Weight per bushel	Av. acre yield		No. of years grown	Percent of Kharkof
				Type	Sev-erity		1965	1964-1965		
	April	In.		1/	%	Lbs.	Bu.	Bu.		
13886	30	36	4	25	62.0	54.4	--	1	140.2	
13996	5/1	34	4	25	61.3	51.2	--	1	132.0	
13888	27	34	4	30	61.9	50.7	--	1	130.7	
13546	5/2	34	4	25	61.3	50.1	47.5	5	148.1	
12132	28	35	4	40	63.2	50.0	46.0	4	137.1	
13997	5/1	36	4	35	63.5	49.8	--	1	128.4	
11673	5/4	34	4	10	61.2	49.5	45.8	25	120.8	
13853	5/1	37	5	15	62.6	48.0	48.6	2	138.3	
13887	5/2	35	4	15	61.0	46.9	--	1	120.9	
13850	28	36	4	30	62.9	46.3	44.1	2	125.5	
8856	28	37	4	20	63.5	46.2	43.9	31	116.9	
13857	28	33	4	40	61.9	45.0	44.0	2	125.0	
13679	27	33	4	25	62.8	44.3	45.0	3	137.2	
13856	27	32	4	40	61.2	44.0	44.0	2	125.2	
13526	5/3	34	4	18	61.7	42.2	--	1	108.8	
13851	28	35	7	35	61.9	42.1	41.2	2	117.2	
13848	27	34	4	25	62.5	41.9	40.6	2	115.6	
13890	27	27	5	1	62.1	41.3	--	1	106.4	
13684	28	27	1	1	62.5	40.4	39.9	3	121.2	
1442	5/7	37	4	35	60.7	38.8	35.2	31	100.0	
13847	28	36	4	20	61.7	38.5	39.2	2	111.7	
13854	5/4	33	4	20	61.2	37.4	37.6	2	107.1	
13855	26	25	4	6	60.8	36.2	39.2	2	111.5	
13889	5/5	31	1	1	59.0	35.3	--	1	91.0	

1/ 1 = resistant; 4 = susceptible; 5 = resistant segregating (25% or less susceptible); 7 = susceptible segregating (25% or less resistant).

L.S.D. .05 = 8.9 bushels; C.V. = 14.1%.

Woodward, Oklahoma
Four replications

C. I. No.	Date	Plant height	Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
	May	In.	Lbs.	1965 Bu.	1964-1965 Bu.		
13886	4	35	61.8	63.3	--	1	147.2
13996	4	35	61.4	59.7	--	1	138.8
13546	4	34	61.5	59.7	52.8	5	152.4
13887	5	35	61.2	59.1	--	1	137.4
13888	3	33	61.2	55.6	--	1	129.3
13855	4/30	27	58.7	53.9	46.4	2	129.1
13679	1	34	61.8	53.7	48.0	3	134.2
13853	2	35	60.8	52.4	46.0	2	128.0
12132	2	34	61.3	51.5	43.2	5	131.5
13997	3	35	62.6	50.8	--	1	118.1
13856	2	32	59.3	50.8	46.8	2	130.5
8856	2	36	62.2	49.1	43.8	34	110.0
13850	2	35	61.0	48.8	42.1	2	117.3
13847	2	35	61.2	48.4	41.7	2	116.2
11673	6	33	59.7	48.3	45.1	29	118.1
13848	1	34	61.4	48.2	41.2	2	114.9
13684	1	30	59.8	48.1	38.4	3	107.6
13889	7	33	58.9	47.9	--	1	111.4
13854	6	34	60.4	47.7	42.6	2	118.8
13857	2	33	59.7	47.1	43.4	2	121.0
13890	1	30	58.7	45.8	--	1	106.5
13851	2	34	61.6	45.3	39.1	2	108.9
1442	8	35	58.7	43.0	35.9	34	100.0
13526	5	33	58.8	40.0	--	1	93.0

L.S.D. .05 = 5.9 bushels; C.V. = 8.2%.

Cherokee, Oklahoma
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield:		No. years grown	Percent of Kharkof
				1965	1964- 1965		
	May	In.	Lbs.	Bu.	Bu.		
13996	3	37	61.7	60.1	--	1	149.1
13886	3	36	61.6	58.9	--	1	146.2
13546	3	36	61.6	57.8	51.2	5	168.3
13888	3	35	61.6	55.4	--	1	137.5
13887	3	36	61.6	54.6	--	1	135.5
11673	5	36	62.0	54.3	46.3	18	129.2
13856	3	35	60.6	50.6	45.2	2	143.4
13854	5	37	63.0	49.5	44.5	2	141.0
13857	2	35	61.1	48.9	45.2	2	143.1
13855	2	27	60.6	47.9	40.5	2	128.2
12132	1	36	61.5	46.4	42.0	5	149.1
8856	2	39	63.0	46.3	44.4	18	137.3
13679	1	37	61.6	46.2	44.2	3	140.3
13997	3	37	63.8	45.6	--	1	113.2
13889	6	35	62.6	45.4	--	1	112.6
13848	1	35	61.9	44.8	42.2	2	133.8
13853	3	36	61.3	44.7	38.7	2	122.7
13526	5	33	62.1	44.6	--	1	110.7
13890	2	28	61.6	44.3	--	1	109.9
13851	2	37	62.3	43.2	39.4	2	125.0
13684	2	28	61.3	43.2	38.7	3	122.4
13850	1	36	61.4	42.7	39.3	2	124.6
13847	2	36	62.6	42.2	38.0	2	120.4
1442	8	36	62.5	40.3	31.6	18	100.0

L.S.D. .05 = 3.4 bushels; C.V. = 5.0%.

Manhattan, Kansas
Four replications

C. I. No.	Date headed	Weight per bushel	Av. acre yield:			No. years grown	Percent of Kharkof
			1965	1964-	1965		
	May	Lbs.	Bu.	Bu.			
13856	12	60.9	46.5	33.1	2	129.5	
13996	13	59.3	44.8	--	1	119.5	
13997	15	62.5	44.1	--	1	117.6	
12132	12	61.0	43.7	32.0	5	117.1	
13888	12	60.8	43.5	--	1	116.0	
13886	14	59.0	42.9	--	1	114.4	
13848	11	61.8	42.6	30.9	2	120.9	
13679	11	60.8	42.1	32.2	3	123.4	
13546	14	59.3	41.7	30.6	5	124.4	
13847	12	61.2	41.6	32.2	2	126.0	
13850	12	60.9	41.5	30.9	2	120.9	
13887	12	58.9	41.1	--	1	109.6	
13853	14	59.7	40.8	29.6	2	115.6	
13851	12	61.5	40.5	30.8	2	120.5	
11673	16	60.0	40.0	30.0	29	119.7	
13857	12	59.9	39.2	29.8	2	116.6	
13854	17	60.6	39.2	28.0	2	109.4	
8856	12	61.7	39.1	30.4	34	112.3	
13526	17	61.1	39.1	--	1	104.3	
1442	22	60.7	37.5	25.6	34	100.0	
13889	17	60.1	35.6	--	1	94.9	
13890	12	59.5	35.5	--	1	94.7	
13855	12	59.0	29.3	21.2	2	83.2	
13684	13	58.2	27.8	22.2	3	93.6	

L.S.D. .05 = 5.4 bushels; C.V. = 9.6%.

Hays, Kansas
Four replications

C. I.	Date headed	Plant height	Shatter- ing	Weight per bushel	Av. acre yield 1965	No. years grown	Percent of Kharkof
	: May	: In.	: %	: Lbs.	: Bu.	:	:
13996	16	26	0	58.1	41.4	1	163.0
13886	16	26	0	58.2	41.0	1	161.4
13887	17	26	Tr.	57.8	40.6	1	159.8
13546	16	28	0	58.1	40.2	4	153.4
13855	15	22	0	58.5	38.5	1	151.6
13888	16	25	2	58.3	37.1	1	146.1
11673	18	27	2	57.8	36.0	24	123.3
13857	17	25	6	58.0	33.4	1	131.5
13889	20	26	0	58.2	33.3	1	131.1
13526	20	28	0	58.5	33.3	1	131.1
13684	15	22	0	57.9	33.3	2	131.6
13997	17	27	4	59.8	32.7	1	128.7
13854	18	28	0	57.5	32.2	1	126.8
8856	14	27	Tr.	59.0	31.9	28	116.1
13848	14	27	5	59.0	30.3	1	119.3
13679	12	26	7	59.1	30.2	2	129.8
13847	15	28	11	58.4	30.1	1	118.5
13890	13	20	0	57.7	30.0	1	118.1
13856	15	23	8	58.7	28.4	1	111.8
13850	14	27	8	58.2	28.4	1	111.8
13853	16	27	23	58.0	26.4	1	103.9
13851	15	27	15	58.8	25.5	1	100.4
1442	22	32	2	55.3	25.4	28	100.0
12132	13	25	8	58.1	25.2	4	121.6

LSD_{.05} = 4.72 bushels; C.V. = 10.25

Garden City, Kansas
Four replications

C. I. No.	Date		Plant height In.	Stem rust %	Weight per bushel Lbs.	Av. acre yield		No. years grown	Percent of Kharkof
	Headed May	Ripe June				1965 Bu.	1964- 1965 Bu.		
13886	17	24	27	0	60.0	43.4	--	1	107.1
13996	15	22	27	0	60.7	41.5	--	1	102.5
1442	21	30	30	40	59.3	40.5	33.3	12	100.0
13887	15	24	27	0	59.9	40.4	--	1	99.8
13546	17	24	28	0	60.1	39.4	34.7	5	116.3
13889	20	28	27	10	59.1	38.1	--	1	94.1
13526	20	28	27	0	61.1	37.1	--	1	91.6
11673	19	26	28	30	59.7	36.4	32.0	12	103.5
13854	20	26	27	30	59.5	35.4	31.9	2	95.8
13997	16	21	26	30	62.0	33.9	--	1	83.7
13888	15	25	26	0	59.4	33.7	--	1	83.2
13856	14	24	24	0	59.5	29.6	28.8	2	86.3
13857	15	24	24	0	59.0	27.1	27.8	2	83.6
13684	14	29	22	30	57.5	26.7	24.8	3	72.2
8856	13	22	25	5	59.7	26.6	24.1	12	96.3
13853	16	22	27	30	58.9	26.6	24.8	2	74.5
13679	14	21	22	25	59.1	26.3	26.8	3	85.6
13890	15	23	22	25	57.9	26.2	--	1	64.7
13850	13	20	26	35	59.0	25.2	23.8	2	71.3
13855	15	22	19	20	59.0	23.9	23.0	2	69.2
13851	14	21	27	25	59.0	23.7	23.0	2	69.2
12132	13	21	23	35	57.2	22.6	23.5	5	93.3
13848	13	20	24	40	59.0	22.4	22.7	2	68.2
13847	13	21	26	40	58.5	22.1	23.6	2	71.0

L.S.D. .05 = 6.7 bushels; C.V. = 15.2%.

Ft. Collins, Colorado

Five replications

C. I. No.	Date		Plant height In.	Lodg- ing 1/	Stem rust %	Weight: Av. acre yield:			No. : Percent years: of grown: Kharkof	
	Headed June	Ripe July				per bushel:	1965 Lbs.	1964- 1965 Bu.		1965 Bu.
13888	5	27	42	0	10M	61.5	70.1	--	1	148.5
13886	4	27	39	0	5M	61.1	69.7	--	1	147.7
13887	5	27	40	L	5M	60.7	68.6	--	1	145.3
13546	4	27	37	0	10M	61.2	67.5	59.6	5	139.8
13996	3	27	39	0	5M	61.0	66.5	--	1	140.9
13856	5	27	41	0	TR	61.1	64.1	56.0	2	120.0
13857	6	27	40	L	5M	61.0	56.4	50.1	2	107.4
13890	2	27	29	0	65S	58.3	53.7	--	1	113.8
13889	7	29	40	0	65S	60.9	53.2	--	1	112.7
12132	1	26	40	0	75S	58.7	52.2	42.2	5	111.6
13679	5/31	26	39	0	70S	58.7	51.2	40.4	3	89.5
13526	9	26	40	L	5R	60.8	51.1	--	1	108.3
13854	7	27	42	L	85S	61.2	49.0	44.2	2	94.7
13684	4	26	31	0	45S	58.6	48.8	42.8	3	89.8
11673	7	27	43	M	60S	62.0	48.7	45.0	25	108.7
13997	6	27	39	L	70S	62.4	48.6	--	1	103.0
13855	5	27	28	0	30S	59.0	47.5	39.1	2	83.8
13851	1	27	40	0	75S	60.1	47.4	39.7	2	85.1
1442	12	28	45	L	60S	60.5	47.2	46.6	29	100.0
8856	1	26	40	M	65S	61.4	46.7	44.2	29	101.6
13848	2	27	40	0	65S	60.0	46.4	40.0	2	85.8
13850	1	27	41	0	70S	58.5	46.1	35.5	2	76.1
13853	4	26	39	L	75S	58.3	44.8	43.4	2	92.9
13847	2	27	42	L	60S	59.7	44.2	39.0	2	83.6

1/ 0 = no lodging; M = moderate, and L = light lodging.

LSD_{.05} = 7.28 bushels; C.V. = 10.7%.

Lincoln, Nebraska
Four replications

C. I. No.	Date	Plant	Winter	Rust		Weight	Av. acre yield		No.	Percent
	headed	height	survival	Leaf	Stem	per bushel	1965	1964-1965	years	of Kharkof
	May	In.	%	%	%	Lbs.	Bu.	Bu.		
13526	30	30	86	60S	5R	59.5	37.6	--	1	154.1
13887	26	27	74	70S	5R	55.5	36.4	--	1	149.2
13996	26	26	74	70S	5R	57.5	35.5	--	1	145.5
13886	26	27	73	70S	5R	55.0	32.6	--	1	133.6
13546	26	26	68	70S	5R	57.0	30.5	34.2	5	176.4
1442	6/1	32	84	60S	75S	52.5	24.4	21.1	33	100.0
13853	26	26	66	OR	80S	55.0	24.3	24.2	2	114.7
11673	28	29	70	70S	50S	53.0	24.2	27.4	28	119.9
13888	24	23	68	80S	TR	56.0	22.7	--	1	93.0
13997	26	27	50	80S	65S	57.0	19.3	--	1	79.1
13857	23	21	65	80S	TR	57.0	18.5	28.4	2	134.6
13847	24	24	58	70S	40S	57.5	18.5	26.3	2	124.6
13856	24	21	55	80S	TR	53.5	18.1	28.7	2	136.0
13889	6/1	27	36	OR	40MS	51.5	17.1	--	1	70.1
13854	31	28	34	70S	65S	47.0	15.5	23.4	2	110.7
13850	24	22	59	70S	40S	56.5	15.2	25.4	2	120.4
13848	24	21	56	70S	40S	57.5	15.1	25.2	2	119.7
13851	24	23	51	70S	40S	57.0	13.8	25.8	2	122.0
8856	27	26	29	70S	35S	54.5	10.6	18.8	33	120.3
12132	24	21	46	70S	40S	55.0	10.2	23.0	5	123.9
13679	24	20	58	70S	40S	57.0	9.8	24.1	3	94.4
13855	25	16	25	60S	5MR	51.0	8.7	25.4	2	120.4
13890	25	18	23	5R	25S	51.0	7.6	--	1	31.1
13684	25	18	8	5R	40S	--	3.4	20.4	3	81.5

L.S.D. .05 = 5.2 bushels; C.V. = 18.7%.

North Platte, Nebraska
Four replications

C. I. No.	Plant height In.	Stem rust %	Weight per bushel Lbs.	Av. acre yield		No. years grown	Percent of Kharkof
				1965 Bu.	1964-1965 Bu.		
13886	31	TR	61.7	58.3	--	1	142.5
13887	32	TR	61.1	57.1	--	1	139.6
13996	32	2R	60.5	56.8	--	1	138.9
13889	35	40S	60.2	54.3	--	1	132.8
13546	33	TR	60.7	52.6	48.2	5	195.7
13888	32	5R	60.9	52.5	--	1	128.4
13857	30	TR	60.0	50.2	44.2	2	138.3
13856	32	TR	59.2	48.7	43.4	2	135.8
11673	34	30S	59.6	47.1	40.8	25	116.3
13526	35	5R	59.8	46.7	--	1	114.2
13853	33	70S	59.0	43.3	39.2	2	122.8
13997	35	50S	62.1	43.1	--	1	105.4
13851	32	50S	60.4	42.4	39.8	2	124.6
13855	23	2R	59.6	42.1	37.6	2	117.8
1442	41	60S	55.9	40.9	32.0	28	100.0
13850	29	50S	59.3	38.6	34.5	2	108.0
13847	32	50S	60.0	37.9	36.0	2	112.7
13848	31	40S	60.8	37.8	36.5	2	114.2
13679	27	50S	60.0	37.7	36.4	3	125.4
8856	34	40S	59.6	36.9	37.2	28	103.3
13684	24	50S	58.3	36.7	37.6	3	120.8
12132	27	50S	59.1	35.3	34.6	3	142.4
13854	36	50S	56.3	34.9	31.3	2	98.0
13890	23	50S	58.3	32.8	--	1	80.2

L.S.D. .05 = 5.9 bushels; C.V. = 9.4%.

Alliance, Nebraska

Four replications

C. I. No.	Date headed June	Plant height In.	Spring stand %	Rust		Weight per bushel Lbs.	Av. acre yield:			No. years grown	Percent of Kharkof
				Leaf	Stem		1965	1964	1965		
13888	22	29	100	S	TR	59.5	16.8	--	1	1400.0	
13526	20	31	100	S	2R	60.0	16.6	--	1	1383.3	
13996	20	30	86	S	5R	56.5	13.5	--	1	1125.0	
13546	23	31	84	S	5R	57.5	12.7	31.6	4	143.6	
13857	23	29	91	S	TR	56.5	12.5	24.9	2	153.7	
13856	23	26	89	S	TR	58.0	12.5	26.2	2	161.7	
13887	24	28	83	S	5R	54.5	12.2	--	1	1016.7	
13886	24	28	85	S	5R	56.5	11.7	--	1	975.0	
13889	21	32	99	R	40S	51.5	8.2	--	1	683.3	
13848	19	32	89	S	70S	--	5.7	19.8	2	122.2	
13679	20	30	83	S	70S	--	5.2	19.6	3	88.9	
11673	23	34	93	S	80S	40.0	5.1	21.9	24	100.6	
8856	23	34	73	S	70S	--	4.9	18.9	27	93.3	
13997	21	35	95	S	90S	--	4.8	--	1	400.0	
13890	21	24	95	R	70S	--	4.7	--	1	391.7	
13851	20	31	95	S	70S	--	4.2	21.4	2	132.1	
13684	23	22	78	R	60S	--	3.9	17.8	3	87.9	
13847	20	32	89	S	70S	--	3.9	17.6	2	109.0	
13855	23	21	50	R	5R	--	3.6	14.5	2	89.5	
13850	22	31	78	S	80S	--	3.6	16.9	2	104.3	
13854	22	36	95	S	90S	--	3.5	20.1	2	124.1	
12132	20	30	58	S	70S	--	3.3	18.2	4	97.2	
13853	21	35	85	R	90S	--	3.2	18.9	2	116.7	
1442	26	37	100	S	90S	--	1.2	16.2	27	100.0	

L.S.D. .05 = 3.8 bushels; C.V. = 36.5%.

Columbia, Missouri
Four replications

C. I. No.	Date : head- : ed	Plant height	Leaf rust	Lodg- ing	Winter sur- vival	Weight per bushel	Av. acre yield			No.	Percent
	: May	: In.	: %	: %	: %	: Lbs.	: 1965	: 1964- 1965	: Bu.	: years:	: of Kharkof
13679	17	38	55	45	91	60.5	66.6	56.2	2	141.7	
11673	21	42	55	19	78	59.5	60.8	48.4	2	122.0	
13886	18	42	70	48	88	60.0	59.8	--	1	112.4	
13888	17	39	78	32	88	60.0	59.4	--	1	111.6	
13526	19	40	55	29	90	60.5	55.6	--	1	104.5	
13996	17	42	53	53	89	60.0	55.3	--	1	103.9	
13854	20	44	63	55	94	59.0	54.6	47.1	2	118.6	
13857	17	38	85	78	89	59.5	54.4	46.0	2	115.9	
1442	25	44	70	50	83	55.0	53.2	39.7	2	100.0	
13889	23	39	2	52	73	57.0	52.3	--	1	98.3	
13887	19	42	70	78	88	58.5	50.3	--	1	94.5	
13997	19	45	70	80	80	61.5	47.6	--	1	89.5	
13847	17	41	68	68	65	61.0	46.4	42.8	2	107.9	
13856	17	37	75	50	73	59.0	46.1	43.5	2	109.6	
13890	17	30	20	9	75	59.0	43.7	--	1	82.1	
13848	17	39	78	33	71	61.5	42.9	40.8	2	102.8	
13546	20	39	73	37	61	60.0	42.0	43.4	2	109.4	
13850	17	38	70	52	63	61.0	40.7	41.8	2	105.2	
13851	17	38	60	25	64	61.5	34.7	38.2	2	96.1	
13855	17	27	43	11	73	55.0	34.5	32.2	2	81.1	
8856	18	40	68	67	56	61.0	33.4	41.1	2	103.5	
12132	17	39	73	78	56	60.0	33.0	38.1	2	96.0	
13853	21	40	40	70	50	59.5	28.7	34.2	2	86.3	
13684	20	28	18	11	38	60.0	20.0	27.4	2	69.1	

L.S.D. .05 = 5.3 bushels; C.V. = 4.1%.

Urbana, Illinois
Three replications

C. I. No.	Date		Plant height In.	Weight per bushel Lbs.	Av. acre yield		No. of years grown	Percent of Kharkof
	Headed May	Ripe June			1965 Bu.	1964-1965 Bu.		
13996	20	24	38	63.2	68.1	--	1	112.9
13887	20	24	37	62.8	67.4	--	1	111.8
13888	19	24	37	62.4	66.4	--	1	110.1
13857	18	24	36	63.2	65.4	60.1	2	104.2
13856	19	24	38	63.2	65.0	61.8	2	107.1
13847	17	24	37	63.2	64.0	56.4	2	97.8
13886	19	24	36	62.6	63.5	--	1	105.3
13546	20	24	37	62.4	63.4	63.2	5	110.8
8856	18	24	40	64.0	62.5	58.1	5	97.3
13853	20	24	38	63.8	62.4	56.6	2	98.1
11673	21	24	39	62.4	60.6	59.8	5	112.2
1442	24	30	40	61.7	60.3	57.6	5	100.0
13851	17	24	36	63.5	59.8	55.2	2	95.8
12132	16	23	35	63.7	59.5	56.1	2	102.2
13848	17	23	35	62.5	59.4	51.7	2	89.7
13679	15	24	35	63.5	58.8	57.5	3	103.1
13850	17	25	35	63.1	58.6	57.6	2	99.8
13854	22	24	40	62.8	58.3	55.4	2	96.2
13889	23	30	39	62.5	57.9	--	1	96.0
13526	22	24	38	62.8	57.3	--	1	95.0
13855	18	24	25	62.4	56.4	55.7	2	96.5
13890	18	23	28	62.1	55.8	--	1	92.5
13997	20	24	36	64.3	55.1	--	1	91.4
13684	18	23	27	61.4	52.3	54.3	3	97.8

L.S.D. .05 = 6.0 bushels; C.V. = 6.1%.

Summary of Nursery Yields

Grain yields of varieties in the southern regional performance nursery at individual locations and their state and regional average yields and ranks appear in table 2. The three selections of Scout were the most productive on the average. C. I. 13886 and C. I. 13996 were 3 bushels higher yielding than Scout itself. Although C. I. 13886 was slightly more productive than C. I. 13996 on a regional basis the performance of the latter was the more consistent, ranking first in three states and second in two. C. I. 13888 also was slightly higher yielding than Scout on a regional basis.

The 2-year average yield of Scout was at least 3 bushels higher than all other varieties tested 2 years or longer (table 3). C. I. 13856 and C. I. 13857 in that order were the second and third most productive varieties.

Summary of Agronomic Data

Southern regional performance nursery data other than yield are summarized in table 4. Triumph, Triumph 64, and Triumph x C. I. 12406 selection (C. I. 13848) headed the earliest. C. I. 13855 had the shortest straw. Kharkof was both the latest and tallest. The best leaf rust resistance was shown by C. I. 13889. C. I. 13684 and C. I. 13890 had low average infections. The Kenya-Mentana derivatives, Scout, the Scout Selections, and Hume showed excellent field resistance to stem rust. C. I. 13855 was moderately resistant. Eleven varieties produced grain that averaged 60 pounds or more per bushel. C. I. 13997 and Early Blackhull were highest in test weight.

Miscellaneous information on winter survival and disease reaction for southern regional nursery entries is assembled in table 5.

Table 2.--Summary of average yields in bushels per acre made by 24 varieties grown in the southern regional performance nursery at 14 stations in 1965 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	Ft. Collins	Rank
Scout Selection	13886	28.1	20.2	24.2	7	54.4	63.3	58.9	58.9	1	69.7	2
do.	13996	30.7	22.1	26.4	2	51.2	59.7	60.1	57.0	2	66.5	5
do.	13887	26.7	20.3	23.5	8-9	46.9	59.1	54.6	53.5	5	68.6	3
Cnn ² x Ky-Mta	13888	27.4	21.2	24.3	5-6	50.7	55.6	55.4	53.9	4	70.1	1
Scout	13546	25.4	21.4	23.4	10	50.1	59.7	57.8	55.9	3	67.5	4
Cnn ² x Ky-Mta	13856	26.2	20.3	23.3	11	44.0	50.8	50.6	48.5	9	64.1	6
Comanche	11673	20.2	14.7	17.5	23	49.5	48.3	54.3	50.7	6	48.7	15
S. Dakota Sel.	13526	20.6	15.4	18.0	20	42.2	40.0	44.6	42.3	23	51.1	12
Nebred x Cnn-Ky-Mta	13857	17.2	20.0	18.6	19	45.0	47.1	48.9	47.0	13	56.4	7
Triumph 64	13679	30.2	21.9	26.1	3	44.3	53.7	46.2	48.1	11	51.2	11
Cfk-Mt-Tm x Cnn	13997	28.8	17.6	23.2	12	49.8	50.8	45.6	48.7	8	48.6	16
Quanah x Cimarron	13889	19.9	15.7	17.8	21-22	35.3	47.9	45.4	42.9	22	53.2	9
Wichita ⁵ x Cns + Au	13853	38.4	14.8	26.6	1	48.0	52.4	44.7	48.4	10	44.8	23
Bison x C. I. 9058	13854	22.6	13.0	17.8	21-22	37.4	47.7	49.5	44.9	17	49.0	13
Triumph x C. I. 12406	13847	26.3	20.7	23.5	8-9	38.5	48.4	42.2	43.0	21	44.2	24
do.	13850	25.1	19.1	22.1	15	46.3	48.8	42.7	45.9	15	46.1	22
do.	13848	23.6	18.3	21.0	17	41.9	48.2	44.8	45.0	16	46.4	21
Early Blackhull	8856	27.7	17.0	22.4	14	46.2	49.1	46.3	47.2	12	46.7	20
Kharkof	1442	16.1	6.7	11.4	24	38.8	43.0	40.3	40.7	24	47.2	19
Triumph	12132	22.4	18.9	20.7	18	50.0	51.5	46.4	49.3	7	52.2	10
Svl-Wi-Hope-Cnn-Wi ² x SS	13890	30.5	19.5	25.0	4	41.3	45.8	44.3	43.8	19	53.7	8
Triumph x C. I. 12406	13851	28.2	17.2	22.7	13	42.1	45.3	43.2	43.5	20	47.4	18
Norin 10 x C. I. 12500	13855	24.8	17.5	21.2	16	36.2	53.9	47.9	46.0	14	47.5	17
Svl-Wi-Hope-Cnn-Wi ² x SS	13684	29.1	19.4	24.3	5-6	40.4	48.1	43.9	43.9	18	48.8	14

Table 2.--(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	Col- umbia	Rank	Ur- bana	Rank	station average
13886	42.9	41.0	43.4	42.4	2	32.6	58.3	11.7	34.2	3	59.8	3	63.5	7	46.3
13996	44.8	41.4	41.5	42.6	1	35.5	56.8	13.5	35.3	1	55.3	6	68.1	1	46.2
13887	41.1	40.6	40.4	40.5	3	36.4	57.1	12.2	35.2	2	50.3	11	67.4	2	44.4
13888	43.5	37.1	33.7	38.1	5	22.7	52.5	16.8	30.7	6	59.4	4	66.4	3	43.8
13546	41.7	40.2	39.4	40.4	4	30.5	52.6	12.7	31.9	5	42.0	17	63.4	8	43.2
13856	46.5	28.4	29.6	34.8	11	18.1	48.7	12.5	26.4	9	46.1	14	65.0	5	39.4
11673	40.0	36.0	36.4	37.5	6	24.2	47.1	5.1	25.5	10	60.8	2	60.6	11	39.0
13526	39.1	33.3	37.1	36.5	8	37.6	46.7	16.6	33.6	4	55.6	5	57.3	20	38.4
13857	39.2	33.4	27.1	33.2	13	18.5	50.2	12.5	27.1	7	54.4	8	65.4	4	38.2
13679	42.1	30.2	26.3	32.9	14	9.8	37.7	5.2	17.6	20	66.6	1	58.8	16	37.4
13997	44.1	32.7	33.9	36.9	7	19.3	43.1	4.8	22.4	12	47.6	12	55.1	23	37.3
13889	35.6	33.3	38.1	35.7	9	17.1	54.3	8.2	26.5	8	52.3	10	57.9	19	36.7
13853	40.8	26.4	26.6	31.3	18-19	24.3	43.3	3.2	23.6	11	28.7	23	62.4	10	35.6
13854	39.2	32.2	35.4	35.6	10	15.5	34.9	3.5	18.0	19	54.6	7	58.3	18	35.2
13847	41.6	30.1	22.1	31.3	18-19	18.5	37.9	3.9	20.1	14-15	46.4	13	64.0	6	34.6
13850	41.5	28.4	25.2	31.7	17	15.2	38.6	3.6	19.1	17	40.7	18	58.6	17	34.3
13848	42.6	30.3	22.4	31.8	16	15.1	37.8	5.7	19.5	16	42.9	16	59.4	15	34.2
8856	39.1	31.9	26.6	32.5	15	10.6	36.9	4.9	17.5	21	33.4	21	62.5	9	34.2
1442	37.5	25.4	40.5	34.5	12	24.4	40.9	1.2	22.2	13	53.2	9	60.3	12	34.0
12132	43.7	25.2	22.6	30.5	22	10.2	35.3	3.3	16.3	22	33.0	22	59.5	14	33.9
13890	35.5	30.0	26.2	30.6	20-21	7.6	32.8	4.7	15.0	23	43.7	15	55.8	22	33.7
13851	40.5	25.5	23.7	29.9	23	13.8	42.4	4.2	20.1	14-15	34.7	19	59.8	13	33.4
13855	29.3	38.5	23.9	30.6	20-21	8.7	42.1	3.6	18.1	18	34.5	20	56.4	21	33.2
13684	27.8	33.3	26.7	29.3	24	3.4	36.7	3.9	14.7	24	20.0	24	52.3	24	30.9

Table 3.--Summary of 2-year average yields for 16 varieties grown in the southern regional performance nursery at 13 stations in 1964 and 1965 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	Ft. Collins	Rank
Scout	13546	27.4	20.6	24.0	8	47.5	52.8	51.2	50.5	1	59.6	1
Cheyenne ² x Ky-Mta	13856	28.4	20.3	24.4	6	44.0	46.8	45.2	45.3	4	56.0	2
Nebred x Cnn-Ky-Mta	13857	25.8	19.6	22.7	11	44.0	43.4	45.2	44.2	6	50.1	3
Triumph 64	13679	32.0	21.4	26.7	1	45.0	48.0	44.2	45.7	2-3	40.4	11
Comanche	11673	23.4	16.2	19.8	15	45.8	45.1	46.3	45.7	2-3	45.0	5
Wichita ⁵ x Cns + Au	13853	36.7	15.6	26.2	2	48.6	46.0	38.7	44.4	5	43.4	8
Early Blackhull	8856	28.6	18.0	23.3	9	43.9	43.8	44.4	44.0	7	44.2	6-7
Bison ⁵ x C. I. 9058	13854	24.8	16.5	20.7	14	37.6	42.6	44.5	41.6	11	44.2	6-7
Triumph	12132	25.9	20.0	23.0	10	46.0	43.2	42.0	43.7	8	42.2	10
Triumph x C. I. 12406	13847	29.9	20.0	25.0	3	39.2	41.7	38.0	39.6	14	39.0	15
do.	13851	30.8	18.8	24.8	4-5	41.2	39.1	39.4	39.9	13	39.7	13
do.	13850	29.6	18.9	24.3	7	44.1	42.1	39.3	41.8	10	35.5	16
do.	13848	27.0	17.8	22.4	13	40.6	41.2	42.2	41.3	12	40.0	12
Norin 10 x C. I. 12500	13855	25.6	19.5	22.6	12	39.2	46.4	40.5	42.0	9	39.1	14
Svl-Wi-Hope-Cnn-Wi ² x SS	13684	30.6	19.0	24.8	4-5	39.9	38.4	38.7	39.0	15	42.8	9
Kharkof	1442	15.8	10.9	13.4	16	35.2	35.9	31.6	34.2	16	46.6	4

Table 3.--(Concluded).

C. I. No.	Kansas				Nebraska				Missouri	Illinois	13-			
	Man- hattan	Garden City	Average	Rank	Lin- coln	North Platte	Alli- ance	Average	Rank	Col- umbia	Rank	Ur- bana	Rank	station average
13546	30.6	34.7	32.7	1	34.2	48.2	31.6	38.0	1	43.4	6	63.2	1	41.9
13856	33.1	28.8	31.0	2-3	28.7	43.4	26.2	32.8	2	43.5	5	61.8	2	38.9
13857	29.8	27.8	28.8	7	28.4	44.2	24.9	32.5	3	46.0	4	60.1	3	37.6
13679	32.2	26.8	29.5	5-6	24.1	36.4	19.6	26.7	8	56.2	1	57.5	8	37.2
11673	30.0	32.0	31.0	2-3	27.4	40.8	21.9	30.0	4	48.4	2	59.8	4	37.1
13853	29.6	24.8	27.2	12	24.2	39.2	18.9	27.4	6	34.2	14	56.6	9	35.1
8856	30.4	24.1	27.3	11	18.8	37.2	18.9	25.0	14	41.1	10	58.1	5	34.6
13854	28.0	31.9	30.0	4	23.4	31.3	20.1	24.9	15	47.1	3	55.4	13	34.4
12132	32.0	23.5	27.8	9	23.0	34.6	18.2	25.3	12-13	38.1	13	56.1	11	34.2
13847	32.2	23.6	27.9	8	26.3	36.0	17.6	26.6	9	42.8	7	56.4	10	34.1
13851	30.8	23.0	26.9	13	25.8	39.8	21.4	29.0	5	38.2	12	55.2	14	34.1
13850	30.9	23.8	27.4	10	25.4	34.5	16.9	25.6	11	41.8	9	57.6	6-7	33.9
13848	30.9	22.7	26.8	14	25.2	36.5	19.8	27.2	7	40.8	8	51.7	16	33.6
13855	21.2	23.0	22.1	16	25.4	37.6	14.5	25.8	10	32.2	15	55.7	12	32.3
13684	22.2	24.8	23.5	15	20.4	37.6	17.8	25.3	12-13	27.4	16	54.3	15	31.8
1442	25.6	33.3	29.5	5-6	21.1	32.0	16.2	23.1	16	39.7	11	57.6	6-7	30.9

Table 4.--Summary of agronomic data other than yield for varieties grown in the southern regional performance nursery in 1965.

Pedigree	C. I. No.	Date		Plant height In.	Rust		Weight per bushel Lbs.
		Headed May	Ripe June		Leaf %	Stem %	
Number of stations		14	5	14	4	5	14
Cfk-Mt-Tm x Cmn	13997	16	27	34	56	61	61.9
Early Blackhull	8856	14	28	35	47	43	60.8
Triumph x C. I. 12406	13851	14	27	33	54	52	60.6
do.	13848	13	26	32	58	51	60.5
Triumph 64	13679	13	26	32	48	51	60.4
Cheyenne ² x Ky-Mta	13888	15	28	32	57	3	60.3
Triumph x C. I. 12406	13847	14	27	34	50	52	60.2
Scout	13546	16	28	33	50	4	60.1
Hume	13526	17	30	34	48	3	60.1
Nebred x Cnn-Ky-Mta	13857	14	27	31	66	1	60.0
Scout Selection	13996	16	27	33	45	3	60.0
do.	13886	16	28	33	48	3	59.9
Triumph x C. I. 12406	13850	14	27	33	58	55	59.9
Triumph	12132	13	26	32	61	54	59.8
Comanche	11673	18	29	35	39	50	59.6
Scout Selection	13887	16	28	33	46	3	59.6
Cheyenne ² x Ky-Mta	13856	14	28	31	59	T	59.6
Svl-Wi-Hope-Cnn-Wi ² x SS ²	13684	15	28	26	9	45	59.5 ^{1/}
Wichita ⁵ x Cns + Au	13853	16	28	34	14	69	59.5
Bison ⁵ x C. I. 9058	13854	18	29	35	46	64	59.0
Quanah x Cimarron	13889	20	7/1	33	1	39	58.9
Svl-Wi-Hope-Cnn-Wi ² x SS ²	13890	14	28	26	9	47	58.8
Norin 10 x C. I. 12500	13855	14	26	24	31	12	58.7
Kharkof	1442	22	7/3	37	56	65	58.5 ^{1/}

^{1/} Average based on one less station than indicated.

Table 5.--Miscellaneous information for varieties in the Southern Regional Performance Nursery in 1965.

C. I. No.	Winter:	Mosaic		Stem rust ^{4/}				Hessian fly ^{5/}
	sur- vival ^{1/}	Streak ^{2/}	Soil- borne ^{3/}	Seedling	Adult	Seedling	Adult	fly ^{5/}
	%		Mottling%					%
1442	26	4	50	S	S	MS	S	80S ^{8/}
8856	5	4	100	S	S	MR	S	100S
11673	17	4	15	S, ^{6/}	S	MS	S	100S
13546	11	4	100	S	SMS,MSMRS	MS	MSMRS ^{7/}	100S
13886	21	3	100	S	SMS	MS	MSMRS	S
13887	17	3	100	S	MSSMR	S	MSMRS	S
13856	4	5	60	MSMR	S	S	S	S
13888	2	5	50	S	O,S	S	S	S
13857	11	4	5	MR,MS,S	RMR,RS,MS	MS	S	S
13684	2	5	100	MR	MRRS	S	S	S
13855	0	5	70	R	R,RS	MS	MSS	S
13889	3	4	60	MSR	MS	S	S	S
13890	0	5	100	MR	MRMS	MS	MSS	100S
13853	9	4	100	S	S	MS	SMS	100S
13854	1	5	20*	S	S	MS	MS	100S
13997	3	4	100	S,R	SMS	MS	S	100S
12132	15	4	100	S	S	R	MSMR	100S
13679	5	4	90	S	S	MS	MSS	63H
13847	3	4	100	S	SMS	MS	MSS	41H
13848	14	3	100	S,MSR	S	MS	SMS	50H
13850	13	3	100	S	S	R	MSS	40H
13851	7	3	95	S	S	MR	MS	100S
13996	7	2	95	S	MSS	MS	MSMRS	100S
13526	--	2	90	S	S	MS	MRSMS	100S

1/ Data from uniform winterhardiness nursery; average of 3 locations.

2/ Data from W. H. Sill, Manhattan, Kansas.

3/ Data from R. O. Weibel, Urbana, Illinois.

4/ Data from the Cooperative Rust Laboratory, St. Paul, Minnesota.

5/ Greenhouse data from H. W. Somsen, Manhattan, Kansas.

6/ Comma = some plants susceptible, other plants free of rust.

7/ No comma = range of reactions on each plant with MS the most prevalent and S the least prevalent.

8/ S = susceptible; H = heterozygous.

* Variety 15 percent rosetted.

NORTHERN REGIONAL PERFORMANCE NURSERY

The nursery was comprised of 24 entries in 1965. It was grown at 13 stations in 7 states and at Lethbridge, Alberta, in Canada. Data were received from 11 stations. The nursery was abandoned at Archer, Wyoming, for lack of stand establishment in the fall due to drought. At Dickinson, North Dakota, fall stands were obtained but none of the varieties in the nursery survived the winter. Complete winterkilling also occurred at Waseca, Minnesota, where ice covered the ground from late December through March.

Entry No. :	Pedigree	C. I. No. :	State submitting
1	Kharkof	1442	--
2	Minter	12138	--
3	Yogo	8033	--
4	Warrior	13190	--
5	Cheyenne	8885	--
6	Winalta	13670	Leth.
7	Lancer	13547	Nebr.
8	Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	do.
9*	do. (61975)	13881	do.
10*	Cnn-Pnc x Tk-Cnn (61528)	13882	do.
11*	Selkirk x Cheyenne ² (61930)	13883	do.
12*	Cheyenne ² x Selkirk (61361)	13884	do.
13*	Ottawa x Cheyenne ² (62378)	13885	do.
14*	Cheyenne x Yogo BC Bulk	13993	Mont.
15	H44-Minturki ² x Minter	13858	Minn.
16*	Mtr-M2825 x H255-Bkk (NSII-53-62)	13994	do.
17	Yogo x Rushmore 57-135	13859	Mont.
18	do. 57-27	13860	do.
19	Yogo x Cheyenne 1-1-2-1	13861	do.
20	do. 11-5-3	13862	do.
21	Bulk Winterhardiness 1376-8	13863	do.
22*	II-36-3 x III-51-31 (NSII-53-72)	13995	Minn.
23**	Quivira Cross	13285	Kans.
24**	Cmn x Mi-Hope-Oro-11#1-Cmn	13548	Nebr.

* New in 1965.

** Entered for one year from the southern regional performance nursery.

Data Obtained

Performance data from reporting stations are given in table 6. Growing conditions reported by the stations are summarized.

Lincoln--Growing conditions are discussed in connection with the southern regional performance nursery. Winterkilling among nursery entries ranged from none to 60 percent. Both leaf and stem rust became severe. The test weight of susceptible varieties was sharply reduced by the stem rust.

North Platte--The season is described for the southern regional nursery. Heavy stem rust severely decreased test weight and yield of the susceptible varieties.

Alliance--See the southern regional nursery for a description of growing conditions. Stem rust was the most severe of record. Susceptible varieties were killed prematurely and yielded as little as 0.5 bushel per acre. In contrast, stem-rust-resistant Lancer yielded 19.1 bushels.

Sheridan--Good fall stands were obtained. The nursery survived the winter well. A part of the nursery was damaged by washing in early spring. Yields and test weights were good. Diseases were not a problem.

Highmore--Stands of the most tender varieties were reduced by nearly 50 percent during the winter. Both leaf and stem rust were extremely heavy. Bushel weights of some stem rust susceptible varieties were reduced to less than 50 pounds per bushel. Lancer, the most productive variety yielded over 39 bushels. Yields of the susceptible varieties were less than 20 bushels.

Presho--Little winter injury occurred at Presho. However, leaf and stem rust were as severe if not more severe than at Highmore. Seven stem rust susceptible varieties produced grain weighing less than 50 pounds per bushel; the lowest being 47 pounds for C. I. 13993. Grain yields ranged downward from a high of 35.9 bushels made by C. I. 13864.

St. Paul--Good moisture and a relatively long fall permitted the nursery to make an excellent start. The winter was cold with several ice storms that covered the nursery area until late March. Heavy winterkilling probably resulted from smothering rather than cold temperatures. The spring was late but with adequate moisture. Leaf rust arrived early but cool weather delayed its buildup. Stem rust developed rapidly late in the season and caused heavy loss of test weight and yield in susceptible varieties.

Havre--The nursery was subjected to a moderately severe winter which was followed by early spring drought. From May until harvest, growing conditions were favorable with adequate rainfall. During the ripening period, the nursery escaped the hot, dry winds that frequently are encountered. Stem rust infected the nursery at heading time but the subsequent buildup was light. There was a trace of hessian fly in the nursery. Stands were unequally affected by spring runoff in one replication.

Tetonia--Soil moisture was excellent at seeding time and good stands of all varieties were obtained. Excess early spring moisture with alternate freezing and thawing reduced stands of varieties in low spots in the nursery. Spring and summer moisture was excellent. There were no diseases of consequence. Yields and test weights were high.

Lethbridge--Fall stands were good and there was no measurable loss of stands during the winter. Moisture conditions were good throughout the season. Diseases were not a problem. Yields were very high with Cheyenne making 62.5 bushels per acre.

Clovis--Hail severely damaged an irrigated nursery at Clovis and grain yields were not recorded.

Table 6.--Yield and other data for varieties grown in the northern regional performance nursery at 11 stations in the hard red winter wheat region in 1965.

Lincoln, Nebraska

One replication

C. I. No.	Date headed	Plant height	Winter survival	Rust		Weight per bushel
	May	In.	%	Leaf %	Stem %	Lbs.
13547	27	31	100	60S	2R	61.0
13548	27	29	80	70S	5R	61.0
13864	30	31	75	40S	TR	60.0
13883	28	31	90	5MR-50S	5R	60.0
13884	31	30	70	5MR-50S	TR	60.0
13885	28	28	85	50S	5R	60.0
13881	31	32	80	40S	TR	59.5
13858	6/1	35	95	50S	5S	59.5
13994	31	33	100	50S	5R	59.5
13995	31	36	95	40S	TR	59.5
13670	30	33	95	30S	5R	58.5
13882	26	27	90	5R	65S	58.5
12138	6/2	37	75	20S	15MR	57.0
13859	30	33	90	50S	65S	55.0
13860	6/1	36	60	50S	30S	54.5
13861	6/1	31	75	50S	65S	54.5
1442	6/1	34	80	35S	65S	53.5
8885	31	32	90	75S	65S	53.5
13863	6/2	36	90	50S	80S	52.5
8033	6/3	38	100	50S	65S	52.0
13993	6/1	33	95	70S	80S	51.5
13190	29	28	80	60S	65S	51.0
13862	6/1	33	80	50S	80S	--
13285	25	23	80	5R	65S	--

W.D. H. ...
 ...
 ...

North Platte, Nebraska

Four replications

C. I. No.	Plant height : In.	Stem rust %	Weight per bushel		Av. acre yield		No. of years grown	Percent of Kharkof
			1964 : Lbs.	1965 : Bu.	1964 : Bu.	1965 : Bu.		
13548	34	2R	61.0	57.8	--	1	185.8	
13547	35	2R	61.8	56.7	50.6	5	183.7	
13882	32	50S	60.3	53.1	--	1	170.7	
13883	36	2R	61.0	52.0	--	1	167.2	
13885	35	2R	60.6	49.8	--	1	160.1	
13670	38	2R-20S	60.9	45.5	41.2	4	143.8	
13864	39	TR	60.1	45.3	43.0	2	141.5	
13881	39	TR	58.5	44.7	--	1	143.7	
12138	42	2R	59.5	44.7	37.6	7	127.8	
13884	37	TR	56.9	44.4	--	1	142.8	
13190	34	50S	57.0	44.2	43.0	2	141.5	
13994	38	5R	59.7	44.1	--	1	141.8	
13995	40	5R	58.9	43.6	--	1	140.2	
13858	41	TR	59.7	39.4	37.8	2	124.4	
13861	40	60S	58.6	38.3	36.8	2	121.1	
8885	38	50S	54.5	36.6	35.7	7	120.3	
13859	37	20S	56.0	34.7	34.2	2	112.7	
1442	39	50S	53.0	31.1	30.4	7	100.0	
13285	27	60S	57.9	29.2	--	1	93.9	
13862	39	60S	51.1	28.6	30.0	2	98.8	
13860	42	10S	52.2	28.0	31.7	2	104.4	
13993	39	60S	52.8	27.6	--	1	88.7	
8033	44	50S	50.9	27.3	26.6	7	96.0	
13863	40	70S	50.9	24.3	26.4	2	86.8	

L.S.D. .05 = 5.9 bushels; C.V. = 10.4%.

Alliance, Nebraska
Four replications

C. I. No.	Date : head- : ed :	Plant : height :	Spring : stand :	Rust		Weight : per : bushel :	Av. acre yield		No. : years :	Percent : of : Kharkof :
	: June :	In. :	% :	Leaf : % :	Stem : % :	Lbs.	Bu. :	Bu. :	:	:
13547	22	33	100	S	5R	60.5	19.1	27.4	4	131.4
13883	24	35	98	MS	TR	55.0	17.1	--	1	1005.9
13884	24	33	98	MR	TR	58.5	16.7	--	1	982.4
13881	24	34	85	MS	OR	53.0	14.9	--	1	876.5
13548	22	33	90	S	10MR	59.5	14.0	--	1	823.5
13864	24	33	90	MS	OR	55.5	13.5	25.2	2	133.1
13885	22	32	100	S	15MS	56.5	13.4	--	1	788.2
13994	24	37	93	S	TR	57.0	12.9	--	1	758.8
13995	26	37	88	S	OR	58.0	11.7	--	1	688.2
12138	25	38	93	S	10MR	54.0	11.3	21.9	13	96.3
13670	24	36	100	S	2R-20S	56.0	10.7	23.7	3	120.3
13858	27	38	98	MR-S	15MR	52.0	10.1	22.7	2	120.1
13860	24	40	95	S	10MR-70S	53.0	10.0	22.4	2	118.5
13882	23	33	100	MR	90S	45.5	7.6	--	1	447.0
13859	23	37	100	S	90S	43.5	6.5	20.3	2	107.4
13190	22	34	100	S	90S	--	4.3	22.5	2	119.3
13285	21	32	90	S	90S	--	3.4	--	1	200.0
13861	24	40	100	S	90S	--	3.2	25.5	2	108.5
8033	26	38	100	S	90S	--	2.8	20.0	13	92.7
13863	25	38	98	S	90S	--	1.7	17.4	2	92.1
8885	24	34	98	S	90S	--	1.7	21.9	7	113.3
1442	25	36	98	S	90S	--	1.7	18.9	13	100.0
13862	24	39	100	S	90S	--	1.0	19.2	2	101.3
13993	27	35	96	S	90S	--	0.5	--	1	29.4

L.S.D. .05 = 3.8 bushels; C.V. = 30.3%.

Sheridan, Wyoming
Four replications

C. T. No.	Date	Plant headed	Weight per bushel	Av. acre yield:		No. years grown	Percent of Kharkof
	: May	: In.	: Lbs.	: Bu.	: Bu.		
13547	14	37	61.2	44.8	47.9	5	106.0
8885	17	38	60.4	42.4	48.0	9	114.2
13882	18	36	59.6	40.3	--	1	130.8
13883	17	37	60.8	39.4	--	1	127.9
13884	19	37	60.5	38.6	--	1	125.3
13190	14	36	60.9	38.6	43.3	2	107.8
13863	21	40	60.7	37.6	40.8	2	101.6
13885	14	37	60.0	36.7	--	1	119.1
8033	20	40	60.3	36.3	44.6	14	105.8
13993	18	41	60.7	36.2	--	1	117.5
13995	21	38	59.0	36.1	--	1	117.2
13670	16	38	61.2	36.0	37.0	4	99.1
13861	19	35	61.1	34.9	35.6	2	88.8
13864	17	35	60.7	34.9	30.4	2	75.6
13994	18	38	59.6	34.8	--	1	113.0
13859	16	37	60.9	34.1	38.9	2	96.9
13860	18	40	60.2	33.9	36.2	2	90.3
13858	19	40	59.7	33.9	35.8	2	89.0
12138	19	40	60.4	33.9	38.9	14	95.2
13548	13	38	61.2	33.7	--	1	109.4
13862	18	40	60.3	33.7	40.3	2	100.4
13881	17	37	60.1	33.1	--	1	107.5
13285	12	35	61.8	33.0	--	1	107.1
1442	19	38	60.4	30.8	40.2	14	100.0

L.S.D. .05 = 8.9 bushels; C.V. = 17.4%.

Highmore, South Dakota
Four replications

C. I.	Date ripe	Winter survival	Rust		Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
			Leaf	Stem		1965	1964-		
	July	%	%	%	Lbs.	Bu.	Bu.		
13547	19	95	100S	OR	59.2	39.2	37.0	3	146.1
13884	19	55	40I	1S	59.0	36.8	--	1	276.7
13548	19	63	100S	1S	59.3	35.0	--	1	263.2
13885	19	95	100S	OR	57.3	34.8	--	1	261.6
13883	19	70	100S	OR	59.6	32.0	--	1	240.6
13881	19	68	25I	OR	57.1	31.8	--	1	239.1
13882	19	92	100S	65S	53.4	31.6	--	1	237.6
13864	19	65	100S	GR	58.6	29.3	29.6	2	117.0
12138	20	95	100S	1S	57.0	29.2	26.0	3	102.0
13858	19	85	100S	10S	56.5	27.0	26.6	2	105.3
13994	19	93	100S	1S	57.7	26.9	--	1	202.2
13670	20	70	100S	15S	56.3	25.9	27.0	3	107.0
13860	20	55	100S	40S	53.1	22.4	24.0	2	64.5
13995	19	95	100S	OR	56.5	21.4	--	1	160.9
13285	19	60	1I	80S	53.2	20.7	--	1	155.6
8885	19	83	100S	30S	52.8	18.6	29.0	3	108.2
13190	19	83	100S	40S	51.0	17.9	24.8	2	98.2
13861	19	93	100S	65S	53.3	16.4	20.9	2	82.6
13859	20	85	100S	60S	50.5	14.7	17.7	2	70.0
13862	19	85	100S	65S	49.7	14.5	22.8	2	90.1
1442	19	78	100S	20S	50.1	13.3	25.3	3	100.0
13863	21	78	100S	65S	48.1	12.4	20.4	2	80.6
8033	20	95	100S	45S	48.4	12.0	18.4	3	72.3
13993	19	93	100S	65S	47.2	11.2	--	1	84.2

L.S.D. .05 = 5.5 bushels; C.V. = 16.4%.

Presho, South Dakota
Four replications

C. I. No.	Leaf necrosis ^{1/}	Rust		Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
		Leaf %	Stem %		1965 Bu.	1964- 1965 Bu.		
13864	4	100S	OR	61.7	35.9	22.1	2	193.8
13547	2	100S	TS	61.4	33.5	25.2	3	162.6
13883	1	100S	OR	60.8	32.3	--	1	288.4
13548	2	100S	OR	62.1	32.2	--	1	287.5
13885	4	100I	TS	60.5	31.3	--	1	279.5
13881	2	100S	OR	60.6	28.6	--	1	255.4
13994	1	100S	1S	59.6	28.0	--	1	250.0
12138	3	100S	OR	59.9	27.1	20.6	3	137.3
13858	1	100S	10S	58.9	26.8	19.8	2	173.2
13884	1	100I	OR	61.1	26.3	--	1	234.8
13995	1	100S	OR	61.8	25.6	--	1	228.6
13882	1	25I	65S	53.6	24.6	--	1	219.6
13670	3	100S	65S	58.3	24.1	19.3	3	135.7
13860	2	100S	1S	54.9	16.9	12.8	2	111.8
13861	1	100S	65S	55.2	16.0	15.9	2	139.5
13190	1	100S	40S	49.7	14.4	13.6	2	119.3
13285	2	5R	100S	51.4	14.3	--	1	127.7
13859	1	100S	65S	50.2	13.5	11.0	2	96.5
8033	1	100S	65S	47.6	12.0	11.6	3	97.3
8885	1	100S	65S	48.0	11.9	10.0	3	96.9
1442	3	100S	65S	49.1	11.2	11.4	3	100.0
13862	1	100S	65S	49.0	9.1	11.2	2	98.2
13863	1	100S	40S	45.0	8.9	11.3	2	99.1
13993	2	100S	100S	47.0	8.1	--	1	72.3

^{1/} 1 = most resistant; 4 = most susceptible.

L.S.D. .05 = 5.8 bushels; C.V. = 17.3%.

St. Paul, Minnesota
Three replications

C. I. No.	Date:	Plant	Winter:	Lodg- ing ^{1/}	Rust		Weight:	Av. acre yield:		No.:	Percent
	:head- ed	:ht.	:sur- vival	: %	Leaf	Stem	: per bushel:	1965	1964- 1965	: years: grown:	: of Kharkof
	:June	:In.	: %	: %	: %	: %	: Lbs.	: Bu.	: Bu.	: %	: %
13994	22	44	80	4.7	50S	TS	58.5	34.8	--	1	351.5
13858	22	44	53	4.7	70S	5-30S	56.2	22.3	27.0	2	121.7
13547	20	40	30	2.3	60S	T-30S	57.0	20.9	26.4	4	114.8
13995	22	45	83	7.0	80S	TS	55.0	20.4	--	1	206.1
12138	23	46	47	3.3	60S	T-20S	57.0	19.1	26.4	5	144.6
13881	21	43	40	2.7	50S	TS	59.8	17.7	--	1	178.8
13864	22	43	13	3.0	40S	TS	59.0	13.4	22.7	2	102.5
8885	21	42	23	3.3	60S	50S	51.7	11.3	23.7	5	106.9
13863	23	42	40	4.7	80S	80S	45.5	10.9	22.9	2	103.4
8033	23	43	40	4.0	60S	60S	48.0	10.2	22.2	5	131.9
13190	20	39	43	6.0	70S	60S	47.7	10.0	23.6	2	106.5
1442	22	42	44	5.0	60S	60S	48.0	9.9	22.2	5	100.0
13862	22	42	47	4.3	80S	70S	48.5	9.7	23.8	2	107.2
13860	22	42	17	4.5	--	60S	53.5	8.9	20.1	2	90.7
13882	20	39	22	4.5	10-50S	80S	50.5	8.8	--	1	88.9
13670	21	43	22	4.0	70S	T-50S	53.2	8.5	21.0	3	110.1
13883	20	42	11	4.0	T-70S	10-40S	57.0	5.7	--	1	57.6
13993	23	42	57	6.3	80S	60S	44.5	5.4	--	1	54.5
13548	20	41	13	5.0	--	30S	59.0	4.9	--	1	49.5
13861	22	42	12	4.0	40S	80S	51.0	4.8	24.8	2	111.7
13859	22	41	24	5.5	80S	60S	48.0	4.4	18.6	2	84.0
13884	22	41	5	--	20-70S	10-40S	--	0	--	1	0.0
13885	22	--	2	--	TS	10S	--	0	--	1	0.0
13285	20	--	3	--	--	80S	--	0	--	1	0.0

1/ 1-9 scale; 1 = best, 9 = poorest.

L.S.D. .05 = 10.9 bushels; C.V. = 61.0%.

Havre, Montana
Three replications

C. I. No.	Plant height	Winter survival	Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
	In.	%	Lbs.	Bu. 1965	Bu. 1964-1965		
13858	28	70	62.1	37.2	24.7	2	136.8
13994	24	65	62.1	34.4	--	1	139.3
12138	31	60	62.0	34.1	24.0	12	93.9
13885	22	50	62.9	33.9	--	1	137.2
8885	22	60	62.5	33.1	22.0	7	105.2
13861	26	80	62.5	32.9	21.7	2	120.2
13881	23	45	61.7	32.8	--	1	132.8
13882	21	45	61.0	32.6	--	1	132.0
13883	23	40	60.4	31.9	--	1	129.1
13670	23	70	62.6	31.6	22.4	4	116.8
8033	25	50	62.0	31.0	22.3	12	100.6
13547	20	50	62.6	30.9	19.2	5	113.3
13884	26	50	61.7	28.5	--	1	115.4
13864	21	50	62.9	28.5	18.8	2	104.4
13860	28	40	61.5	28.1	20.7	2	114.7
13995	29	90	59.6	27.6	--	1	111.7
13190	23	75	63.1	25.1	15.2	2	84.5
1442	24	70	62.8	24.7	18.0	12	100.0
13859	21	80	62.0	24.5	18.0	2	99.4
13993	28	50	59.9	23.7	--	1	96.0
13863	28	70	62.9	22.4	16.0	2	88.9
13862	28	80	61.7	22.0	17.1	2	94.7
13548	22	80	62.4	19.6	--	1	79.4
13285	19	50	62.7	17.7	--	1	71.6

L.S.D. .05 = 8.5 bushels; C.V. = 18.0%.

Tetonia, Idaho
Four replications

C. I. No.	Date headed	Stand %	Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
				1965	1964- 1965		
	July		Lbs.	Bu.	Bu.		
13993	8	83	61.9	51.2	--	1	109.9
8033	9	100	60.3	51.2	46.0	3	103.3
13861	8	93	61.6	50.3	43.2	2	100.9
8885	9	96	61.3	49.7	47.8	3	113.8
13548	6	100	61.6	49.0	--	1	105.2
13547	6	99	60.8	48.6	46.3	3	108.3
13882	6	89	60.6	48.5	--	1	104.1
13885	6	91	60.2	48.4	--	1	103.9
13670	9	74	62.4	48.1	46.6	3	108.7
12138	13	99	60.6	47.1	42.8	3	100.2
13285	1	85	62.6	46.9	--	1	100.6
1442	9	96	60.8	46.6	42.8	3	100.0
13881	6	99	60.3	45.2	--	1	97.0
13190	6	91	61.1	45.2	47.2	2	110.3
13864	7	100	61.3	44.2	40.7	2	95.1
13884	7	93	61.8	44.2	--	1	94.8
13883	6	100	61.5	44.0	--	1	94.4
13995	13	98	60.5	43.4	--	1	93.1
13858	9	79	60.8	43.0	40.8	2	95.2
13862	9	98	61.0	41.2	39.2	2	91.7
13994	8	99	61.0	41.1	--	1	88.2
13863	13	91	60.8	40.3	41.0	2	95.8
13859	6	79	61.6	39.6	40.8	2	95.2
13860	7	99	61.3	39.2	40.8	2	95.3

L.S.D. .05 = 5.6 bushels; C.V. = 8.7%

Lethbridge, Alberta

Four replications

C. I. No.	Date headed	Lodging ^{1/}	Weight per bushel ^{2/}	Av. acre yield 1965	No. years grown	Percent of Kharkof
	June		Lbs.	Bu.		
8885	24	3.7	65.5	62.5	7	113.5
8033	28	4.0	65.0	58.7	10	109.4
13993	25	4.5	64.0	55.1	1	108.2
13862	27	3.7	64.5	53.5	1	105.1
13861	26	3.7	66.0	52.9	1	103.9
13190	22	3.5	65.0	52.7	1	103.5
13863	28	4.7	65.0	51.3	1	100.8
1442	25	5.5	65.5	50.9	10	100.0
13883	23	3.5	64.5	50.0	1	98.2
13995	26	4.0	64.5	49.5	1	97.2
13860	27	3.5	64.0	49.4	1	97.0
13858	25	3.7	65.0	48.8	1	95.9
13881	24	3.0	65.0	48.0	1	94.3
13547	22	3.2	65.5	47.9	3	94.6
13670	25	3.7	66.0	47.7	2	96.2
12138	26	4.2	66.0	47.4	10	100.4
13882	23	3.5	63.0	46.8	1	91.9
13994	25	3.0	64.0	45.6	1	89.6
13859	25	3.2	64.0	45.5	1	89.4
13884	23	4.0	65.5	44.3	1	87.0
13864	24	3.0	65.0	44.2	1	86.8
13885	22	3.2	65.5	40.8	1	80.2
13548	21	2.7	65.5	35.9	1	70.5
13285	23	3.0	66.0	35.2	1	69.2

^{1/} 1-9 scale; 1 = erect, 9 = flat.

^{2/} Imperial bushels.

L.S.D._{.05} = 7.1 bushels; C.V. = 10.4%.

Clovis, New Mexico
Four replications, irrigated

C. I. No.	Date		Plant height In.	Weight per bushel Lbs.
	Headed	Ripe		
	May	June		
13547	19	28	45	63
13285	12	25	43	63
1442	24	7/1	46	62
12138	26	28	46	62
8033	26	7/3	45	62
13190	22	28	42	62
8885	25	29	44	62
13670	23	7/3	44	62
13864	22	7/3	45	62
13881	21	28	45	62
13883	19	27	44	62
13884	23	28	44	62
13885	22	7/1	44	62
13993	26	7/2	44	62
13858	25	29	46	62
13862	26	7/3	44	62
13548	19	26	46	62
13994	23	28	44	61
13859	24	7/1	42	61
13860	25	7/1	46	61
13863	26	7/3	46	61
13995	28	7/3	45	61
13882	20	27	42	60
13861	23	7/1	46	60

Summary of Nursery Yields

Yields made by varieties in the northern regional performance nursery in 1965 are summarized in table 7. Two-year average yields appear in table 8. Lancer which ranked first in Nebraska, South Dakota, and Wyoming and third in Minnesota was also the highest yielding on a regional basis. Its 38-bushel average yield was 4.2 bushels higher than second ranked C. I. 13883 and 13.5 bushels higher than Kharkof. All of the more productive varieties with the exception of C. I. 13882 were stem rust resistant, indicating the importance of stem rust as a performance factor in 1965. Lancer also ranked first on a two-year basis with a 5.2-bushel advantage over Winalta, Minter, and Cheyenne which are tied for second place.

Summary of Agronomic Data

Lancer and C. I. 13548, each with 61.3 pounds-per-bushel average test weight, were highest in the nursery (table 9). C. I. 13995 and C. I. 13994, both from Minnesota, had the highest average winter survival. C. I. 13285 was the earliest maturing, had the shortest straw, was the only variety with resistance to leaf rust, but was among the varieties with poorest winter survival. Eleven varieties possessed field resistance to stem rust with C. I. 13864, 13881, and C. I. 13995 the most resistant. Lancer lodged the least at 3 stations where lodging occurred. Winter survival data from the uniform winter-hardiness nursery and miscellaneous insect and disease data for entries in the northern regional nursery are assembled in table 10.

Table 7.--Summary of average yields in bushels per acre made by 24 varieties grown in the northern regional performance nursery at 9 stations in 1965 with state averages and rank.

Variety	C. I. No.	Nebraska				South Dakota			
		North Platte	Alliance	Average	Rank	Presho	Highmore	Average	Rank
Lancer	13547	56.7	19.1	37.9	1	33.5	39.2	36.4	1
MM-Ech-Rm ³ x Cnn ²	13883	52.0	17.1	34.6	3	32.3	32.0	32.2	5
Mtr-M2825 x H255-Bkk	13994	44.1	12.9	28.5	9	28.0	26.9	27.5	10
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13881	44.7	14.9	29.8	7	28.6	31.8	30.2	7
Minter	12138	44.7	11.3	28.0	11	27.1	29.2	28.2	8
Cnn-Pnc x Tk-Gnn	13882	53.1	7.6	30.4	6	24.6	31.6	28.1	9
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	45.3	13.5	29.4	8	35.9	29.3	32.6	4
Ottawa x Cheyenne ²	13885	49.8	13.4	31.6	4	31.3	34.8	33.1	3
(H44 x Minturki ²) x Minter	13858	39.4	10.1	24.8	13	26.8	27.0	26.9	11
Cnn x Mi-Hope-Pn-Oro-II#1-Cnn	13548	57.8	14.0	35.9	2	32.2	35.0	33.6	2
Cheyenne ² x Selkirk	13884	44.4	16.7	30.6	5	26.3	36.8	31.6	6
II-36-3 x III-51-31	13995	43.6	11.7	27.7	12	25.6	21.4	23.5	13
Winalta	13670	45.5	10.7	28.1	10	24.1	25.9	25.0	12
Cheyenne	8885	36.6	1.7	19.2	17	11.9	18.6	15.3	18
Warrior	13190	44.2	4.3	24.3	14	14.4	17.9	16.2	16-17
Yogo x Cheyenne 1-1-2-1	13861	38.3	3.2	20.8	15	16.0	16.4	16.2	16-17
Yogo	8033	27.3	2.8	15.1	21	12.0	12.0	12.0	21
Yogo x Rushmore 57-27	13860	28.0	10.0	19.0	18	16.9	22.4	19.7	14
Kharkof	1442	31.1	1.7	16.4	19	11.2	13.3	12.3	20
Cheyenne x Yogo BC Bulk	13993	27.6	0.5	14.1	23	8.1	11.2	9.7	24
Yogo x Rushmore 57-135	13859	34.7	6.5	20.6	16	13.5	14.7	14.1	19
Yogo x Cheyenne 11-5-3	13862	28.6	1.0	14.8	22	9.1	14.5	11.8	22
Bulk Winterhardiness 1376-8	13863	24.3	1.7	13.0	24	8.2	12.4	10.3	23
Quivira Cross	13285	29.2	3.4	16.3	20	14.3	20.7	17.5	15

Table 7.--(Concluded).

C. I. No.	Wyoming		Idaho		Montana		Minnesota		Alberta		9- station average
	Sheridan	Rank	Tetonia	Rank	Havre	Rank	St. Paul	Rank	Leth- bridge	Rank	
13547	44.8	1	48.6	6	30.9	12	20.9	3	47.9	14	38.0
13883	39.4	4	44.0	17	31.9	9	5.7	17	50.0	9	33.8
13994	34.8	15	41.1	21	34.4	2	34.8	1	45.6	18	33.6
13881	33.1	22	45.2	13-14	32.8	7	17.7	6	48.0	13	33.0
12138	33.9	19	47.1	10	34.1	3	19.1	5	47.4	16	32.7
13882	40.3	3	48.5	7	32.6	8	8.8	15	46.8	17	32.7
13864	34.9	14	44.2	15-16	28.5	13-14	13.4	7	44.2	21	32.1
13885	36.7	8	48.4	8	33.9	4	0	22-24	40.8	22	32.1
13858	33.9	18	43.0	19	37.2	1	22.3	2	48.8	12	32.1
13548	33.7	20	49.0	5	19.6	23	4.9	19	35.9	23	31.3
13884	38.6	5-6	44.2	15-16	28.5	13-14	0	22-24	44.3	20	31.1
13995	36.1	11	43.4	18	27.6	16	20.4	4	49.5	10	31.0
13670	36.0	12	48.1	9	31.6	10	8.5	16	47.7	15	30.9
8885	42.4	2	49.7	4	33.1	5	11.3	8	62.5	1	29.8
13190	38.6	5-6	45.2	13-14	25.1	17	10.0	11	52.7	6	28.0
13861	34.9	13	50.3	3	32.9	6	4.8	20	52.9	5	27.7
8033	36.3	9	51.2	1-2	31.0	11	10.2	10	58.7	2	26.8
13860	33.9	17	39.2	24	28.1	15	8.9	14	49.4	11	26.3
1442	30.8	24	46.6	12	24.7	18	9.9	12	50.9	8	24.5
13993	36.2	10	51.2	1-2	23.7	20	5.4	18	55.1	3	24.3
13859	34.1	16	39.6	23	24.5	19	4.4	21	45.5	19	24.2
13862	33.7	21	41.2	20	22.0	22	9.7	13	53.5	4	23.7
13863	37.6	7	40.3	22	22.4	21	10.9	9	51.3	7	23.2
13285	33.0	23	46.9	11	17.7	24	0	22-24	35.2	24	22.3

Table 8.--Summary of 2-year average yields for 14 varieties grown in the northern regional performance nursery at 8 stations in 1964 and 1965, with state averages and rank.

Variety	C. I. No.	Nebraska				Wyoming	
		North Platte	Alliance	Average age	Rank	Sheridan	Rank
Lancer	13547	50.6	27.4	39.0	1	47.9	2
Winalta	13670	41.2	23.7	32.5	4	37.0	10
Minter	12138	37.6	21.9	29.8	7	38.9	8-9
Cheyenne	8885	35.7	21.9	28.8	8	48.0	1
(H44 x Minturki ²) x Minter	13858	37.8	22.7	30.3	6	35.8	12
Warrior	13190	43.0	22.5	32.8	3	43.3	4
Ky58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	43.0	25.2	34.1	2	30.4	14
Yogo x Cheyenne 1-1-2-1	13861	36.8	25.5	31.2	5	35.6	13
Yogo	8033	26.6	20.0	23.3	13	44.6	3
Kharkof	1442	30.4	18.9	24.7	11	40.2	7
Yogo x Rushmore 57-27	13860	31.7	22.4	27.1	10	36.2	11
Yogo x Cheyenne 11-5-3	13862	30.0	19.2	24.6	12	40.3	6
Yogo x Rushmore 57-135	13859	34.2	20.3	27.3	9	38.9	8-9
Bulk Winterhardiness 1376-8	13863	26.4	17.4	21.9	14	40.8	5

C. I. No.	South Dakota				Minnesota	Montana		Idaho		8-station average	
	Presho	Highmore	Average age	Rank	St. Paul	Rank	Havre	Rank	Tetonia		Rank
13547	25.2	37.0	31.1	1	26.4	2-3	19.2	8	46.3	4	35.0
13670	19.3	27.0	23.2	4-5	21.0	12	22.4	3	46.6	3	29.8
12138	20.6	26.0	23.3	3	26.4	2-3	24.0	2	42.8	7-8	29.8
8885	10.0	29.0	19.5	6	23.7	6	22.0	5	47.8	1	29.8
13858	19.8	26.6	23.2	4-5	27.0	1	24.7	1	40.8	10-12	29.4
13190	13.6	24.8	19.2	7	23.6	7	15.2	14	47.2	2	29.2
13864	22.1	29.6	25.9	2	22.7	9	18.8	9	40.7	13	29.1
13861	15.9	20.9	18.4	8-10	24.8	4	21.7	6	43.2	6	28.1
8033	11.6	18.4	15.0	13	22.2	10-11	22.3	4	46.0	5	26.5
1442	11.4	25.3	18.4	8-10	22.2	10-11	18.0	10-11	42.8	7-8	26.2
13860	12.8	24.0	18.4	8-10	20.1	13	20.7	7	40.8	10-12	26.1
13862	11.2	22.8	17.0	11	23.8	5	17.1	12	39.2	14	25.5
13859	11.0	17.7	14.4	14	18.6	14	18.0	10-11	40.8	10-12	24.9
13863	11.3	20.4	15.9	12	22.9	8	16.0	13	41.0	9	24.5

Table 9.--Summary of agronomic data other than yield for varieties grown in the northern regional performance nursery in 1965.

Variety	C. I. No.	Date		Plant ht. In.	Winter	Rust		Lodging*	Weight per bushel Lbs.
		Headed	Ripe		sur- vival	Leaf	Stem		
		: June	: July	: %	: %	: %			
Number of stations		7	2	7	4	4	6	3	11
Lancer	13547	10	9	34	69	80	4	2.8	61.3
Cnn x Mi-Hope-Pn-Oro-II#1-Cnn	13548	9	8	35	59	90 ^{1/}	8	3.6	61.3
Cheyenne ² x Selkirk	13884	12	9	35	45	53	4	3.5 ^{1/}	60.7 ^{1/}
Ky 58-Nth x (Cnn-Tm-Mi-Hope) ²	13864	12	11	35	51	70	T	3.0	60.6
Ottawa x Cheyenne ²	13885	10	10	33 ^{1/}	58	63	5	5.1 ^{1/}	60.6 ^{1/}
MM-Ech-Rm ³ x Cnn ²	13883	11	8	35	53	66	5	4.2	60.2
Mtr-M2825 x H255-Bkk	13994	13	9	37	85	75	2	3.6	60.0
Winalta	13670	12	12	36	64	75	22	3.6	59.8
Ky 58-Nth x (Cnn-Tm-Mi-Hope) ²	13881	12	9	36	58	54	T	3.6	59.8
Quivira Cross	13285	7	7	30 ^{1/}	48	4 ^{1/}	79	5.0 ^{1/}	59.8 ^{3/}
Minter	12138	15	9	40	69	70	6	3.5	59.6
II-36-3 x III-51-31	13995	15	11	39	91	80	1	5.3	59.5
(H44 x Minturki ²) x Minter	13858	14	9	39	76	80	10	3.1	59.3
Yogo x Cheyenne 1-1-2-1	13861	13	10	37	65	73	71	2.9	58.4 ^{1/}
Cheyenne	8885	13	9	36	64	84	58	3.3	57.2 ^{1/}
Yogo x Rushmore 57-27	13860	13	11	39	43	63 ^{1/}	28	3.0	57.1
Warrior	13190	10	9	34	70	83	58	4.8	56.9 ^{1/}
Cnn-Pnc x Tk-Cnn	13882	10	8	33	62	40	69	5.0	56.9
Kharkof	1442	13	10	37	68	74	58	4.5	56.5 ^{1/}
Yogo x Cheyenne 11-5-3	13862	14	11	38	73	83	72	3.0	56.4 ^{2/}
Yogo	8033	15	12	39	71	78	63	3.7	55.7 ^{1/}
Yogo x Rushmore 57-135	13859	12	11	35	70	83	60	4.6	55.7
Cheyenne x Yogo BC Bulk	13993	14	11	37	74	88	76	5.3	55.2 ^{1/}
Bulk Winterhardiness 1376-8	13863	15	12	39	70	83	71	3.5	55.2 ^{1/}

* Lodging based on 1-10 scale; 1 = no lodging, 10 = completely lodged.

^{1/} Average based on one less station than indicated.

^{2/} Average based on two less stations than indicated.

^{3/} Average based on three less stations than indicated.

Table 10.--Miscellaneous data for varieties grown in the Northern Regional Performance Nursery in 1965.

C. I. No.	Winter: sur- vival ^{1/}	Hessian: fly ^{2/}	Stem rust ^{3/}				Streak mosaic ^{4/}
	%	%	Seedling	Adult	Seedling	Adult	8/
			Race 56	Race 32			
1442	26	100S ^{5/}	S	S	MS	S	4
12138	70	100S	S	S	MS	SMSMR	5
8033	60	100S	S	S	MS	MSS	4
13190	26	50H	S	S	MS	MSS	4
8885	27	100S	S	SMS ^{7/}	S	S	4
13670	35	100S	S	MRS, S	MS	MSMRS, S	3
13547	19	100S	MS, MR ^{6/}	MSSMR, R	S	MRMSS	3
13864	16	100S	R, S	R	R, MS	MRMSS	3
13881	21	100S	RMSR	O, MS	MS	MSMRS	4
13882	37	OR	MS	S	MR	MSMR	3
13883	24	76S	MR, R, MS	S, O	S	S	4
13884	10	100S	R	S, O	S	S	5
13885	19	OR	R	RMRMS	S	MRMSS	4
13993	37	100S	S	S	MS	S	3
13858	62	100S	S	MSS	MS	MSMRS	3
13994	67	100S	MS	MSS, O	MR	O, SMS	3
13859	33	100S	S	S	MS	MS, MRMSS	3
13860	6	100S	S	SMR	S, MR	SMR	3
13861	34	100S	S	S	O, S	S	4
13862	22	70S	S	S	S	S	4
13863	37	100S	MS	S	S	S	4
13995	53	100S	O	O, S	O	O	5
13285	5	OR	S	S	MS	MS	5
13548	4	OR	MR	MS	MS	MSS	3

1/ Data from Uniform Winterhardiness Nursery; average from 3 locations.

2/ Data from H. W. Somsen, Manhattan, Kansas.

3/ Data from the Cooperative Rust Laboratory, St. Paul, Minnesota.

4/ Data from W. H. Sill, Manhattan, Kansas.

5/ S = susceptible, H = heterozygous, and R = resistant.

6/ Comma = some plants moderately susceptible; other plants moderately resistant.

7/ No comma = range of reactions on each plant with S the most prevalent and MS the least prevalent.

8/ 0-5 scale; 0 = no stunting; 5 = completely stunted.

REGIONAL STREAK MOSAIC NURSERY

Twenty-five varieties were evaluated at 7 stations in 1965. Data were reported from 6. These are assembled in table 11. Four selections of Concho x Ts-Pn², N. 61917, and Scout had average ratings of 2.2 to 2.4 making them the most resistant in the nursery. There was considerably less range in the ratings between resistant and susceptible varieties this year than in former years due primarily to the relatively high ratings at the Kansas stations. The resistance of two of the Concho x Ts-Pn² selections (59R2350 and 59R2349) at Stillwater, Oklahoma, was impressive.

UNIFORM BUNT NURSERY

The nursery was grown at 8 locations in the region in 1965. It contained 44 entries. Infection data were received from only 3 locations. The nursery failed to survive the winter at Manhattan, Lincoln, North Platte, and Brookings. The infection was too light for readings at Bozeman. The Smut Laboratory at Pullman, Washington, also tested each entry against 4 bunt tester races. Available data are summarized in table 12.

Several Montana selections from P. I. 178383 crossed with Westmont and Itana exhibited the best resistance in both the field and to the bunt tester races. Kansas Selection K. 58307 also showed broad resistance. The continued presence of L-8 in the inoculum at Ft. Collins is suggested by the relative susceptibility of Oro and Turkey derivatives. The check variety Redit is misidentified according to its reaction to tester races. New seed has been acquired. The susceptibility of Hussar and Relief at Bushland clearly indicates the presence of L-7 in the inoculum at that station.

Table 11.--Reaction to streak mosaic of 25 varieties and selections of hard red winter wheat in the regional streak mosaic nursery.

Variety or selection	C. I. or Sel. No.	Mosaic rating (stunting) ^{1/}						
		Still- water	Man- hattan	Hays	Colby	Garden City	Alliance	6-station average
Concho x Ts-Pn ²	0.59R2350	0.5	2.5	2.0	3.0	4.0	1.0	2.2
Cns ² -Ae-Pn x Kiowa	N61917	2.0	3.0	2.5	2.0	2.5	2.0	2.3
Concho x Ts-Pn ²	0.59R2417	1.5	2.5	2.0	3.0	3.5	1.0	2.3
do.	0.59R2420	1.0	3.0	2.0	3.0	4.0	1.0	2.3
Scout	13546	1.5	3.0	2.0	3.0	3.0	2.0	2.4
Concho x Ts-Pn ²	0.59R2419	1.0	3.0	2.0	3.0	3.5	2.0	2.4
BlueJacket	12502	2.0	3.3	2.0	3.0	2.7	1.7	2.5
Bsn x Mql-Oro-Tnf-Pn	N.631454	2.0	3.0	2.0	2.0	3.0	3.0	2.5
Concho x Ts-Pn ²	0.59R2349	0.5	3.0	3.0	3.0	3.5	2.0	2.5
Bsn x Mql-Oro-Tnf-Pn	N.631472	2.0	3.0	2.0	2.0	3.0	4.0	2.7
Triumph	12132	3.0	3.0	2.0	3.0	3.0	2.5	2.8
Bsn x Ctr-Mi-Hope-Pn	N.64439	1.5	3.5	3.0	3.0	3.0	3.0	2.8
Cheyenne x T-A	N.64457	1.0	3.5	3.0	3.0	3.0	3.0	2.8
Bison	12518	3.0	3.0	3.0	3.0	2.5	3.0	2.9
Cnn-Pnc x Tk-Cnn	13882	3.0	3.0	3.0	4.0	3.0	2.0	3.0
Bison ⁵ x C. I. 9058	13854	3.0	3.0	2.5	4.0	3.0	3.0	3.1
Cheyenne x T-A	N:64446	1.0	3.5	4.0	3.0	4.0	3.0	3.1
Cimarron x Concho	T.54A2-58-A1	2.5	3.0	3.5	4.0	3.0	3.0	3.2
Cnn x Mi-Hope-Pn-Oro-Il#1-Cnn	13548	2.5	3.5	3.5	3.0	3.5	3.0	3.2
Pawnee	11669	4.0	3.5	3.0	3.0	3.8	2.5	3.3
Cns ² -Ae-Pn x Tmp-Kv-Mql-Kv-Tm	K61360	4.0	3.0	3.0	4.0	3.5	3.0	3.4
Cimarron x Concho	T.54A2-58-A2	3.0	4.0	3.5	4.0	3.0	3.0	3.4
Wheat-Ae x Pn	K.61408	4.0	3.0	4.0	4.0	3.5	3.0	3.6
Caddo	13536	3.5	3.5	4.0	4.0	3.5	4.0	3.8
Mql-Oro x Pn	12851	5.0	4.3	3.7	4.0	4.3	3.0	4.1

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

Table 12.--Percent of common bunt in varieties and selections of hard red winter wheat grown in the Uniform Bunt Nursery in 1965, and reaction 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	: Ft. : Collins:	: 1965	: 1964- : 1965	: T-1	: T-13	: T-15	: T-16
Westmont ² x P. I. 178383	M8-10-8	0	0	0	0	--	0	3	0	0
do.	M12-7-1	0	T	0	T	--	0	0	0	0
Itana ³ x P. I. 178383	M27-5-8	0.5	T	0	0.2	--	0	0	0	0
Westmont ² x P. I. 178383	M7-13-9	0	T	2.5	0.8	--	0	0	0	0
do.	M10-7-1	2.5	0	0	0.8	--	0	0	2	0
Rex-Rio ³ x Mql-Oro-Oro-Tk-Fn	K58307	0.5	T	2.5	1.0	1.0	1	5	0	0
C. I. 12711-Hope-Cnn ² x Pnc	N63361	0	T	5.0	1.7	7.0	5	0	0	25
Wasatch	11925	5.0	T	0	1.7	1.2	0	5	0	0
Itana ³ x P. I. 178383	M28-2-10	4.0	T	5.0	3.0	--	0	0	5	0
C. I. 12711-Hope-Cnn ² x Pnc	N63366	1.0	T	10.0	3.7	8.2	0	1	0	60
Westmont ² x P. I. 178383	M13-5-1	6.0	0	5.0	3.7	--	0	0	0	0
Cnn-Pnc x Tk-Cnn	13882	0.5	2.5	12.5	5.2	10.3	40	0	15	85
Westmont ³ x P. I. 178383	M1-1-16	5.0	T	12.5	5.8	--	0	0	0	0
Ridit	6703	3.5	5.0	10.0	6.2	11.7	20	5	15	40
Cnn x Mi-Hope-Pn-Oro-Il#1-Cnn	13548	2.0	0	20.0	7.3	14.0	0	0	0	70
Westmont ² x P. I. 178383	M12-7-3	10.5	12.5	2.5	8.5	--	0	0	20	0
Mql-Oro-Oro-Tm x KK	K62217	1.0	T	30.0	10.3	15.7	0	0	5	75
Oro	8220	6.5	15.0	10.0	10.5	16.6	10	20	5	30
Relief	10082	31.0	2.5	T	11.2	3.6	0	0	5	0
Westmont ² x P. I. 178383	M13-1-2	12.0	T	22.5	11.5	--	0	0	5	0
do.	M7-14-5	4.0	12.5	22.5	13.0	--	0	0	20	0
do.	M8-3-1	3.0	T	37.5	13.5	--	5	0	55	7
do.	M7-3-6	18.5	10.0	12.5	13.7	--	1	0	35	0
do.	M6-7-14	23.5	7.5	12.5	14.5	--	0	0	60	0
Nbr x Cnn-Ky-Mta	N61661	14.0	7.5	27.5	16.3	--	35	30	70	90
Westmont ² x P. I. 178383	M6-6-5	19.5	12.5	22.5	18.2	--	60	0	15	25
Nbr x Cnn-Ky-Mta	13857	14.0	22.5	20.0	18.8	--	75	50	50	80
Hussar	4843	54.5	T	5.0	19.8	16.7	0	10	10	0
Bison ⁵ x C. I. 9058	13854	1.0	0	42.5	21.8	21.9	0	5	5	85
Westmont ² x P. I. 178383	M6-2-1	45.5	12.5	17.5	25.2	--	5	0	10	10
do.	M5-2-1	58.0	17.5	12.5	29.3	--	0	0	40	0

Table 12.--(Concluded).

Variety or selection	C. I. or Sel. No.	: Av. percent infection:				: Av. infection:				
		Bush-	Still-	Ft.	1965	1964-	T-1	T-13	T-15	T-16
		land	water	Collins:	1965	1965				
Ottawa Selection	K60770	44.5	30.0	20.0	31.5	--	10	25	35	5
Westmont ² x P. I. 178383	M5-2-6	59.5	17.5	17.5	31.5	--	0	35	25	0
Itana ³ x P. I. 178383	M14-2-2	35.5	25.0	35.0	31.8	--	0	0	18	0
do.	M14-2-1	29.5	30.0	45.0	34.8	--	0	0	20	0
Westmont ² x P. I. 178383	M6-5-2	57.5	30.0	45.0	44.2	--	5	5	55	1
do.	M8-1-2	84.5	12.5	40.0	45.7	--	0	10	85	0
do.	M7-7-3	64.0	40.0	35.0	46.3	--	0	1	25	0
Westmont ³ x P. I. 178383	M1-1-14	73.0	50.0	27.5	50.2	--	0	0	65	0
Westmont ² x P. I. 178383	M4-2-5	84.5	40.0	42.5	55.7	--	0	0	85	0
Concho x Triumph ²	K644	86.5	55.0	47.5	63.0	--	50	70	80	85
Westmont ³ x P. I. 178383	M1-3-2	80.0	70.0	42.5	64.2	--	0	0	10	0
do.	M1-3-1	74.0	85.0	52.5	70.8	--	0	0	60	0
RedChief	12109	97.5	82.5	42.5	74.2	76.1	85	75	90	95

1/ Data from the Regional Cereal Disease Research Laboratory, Pullman, Washington.

QUALITY DATA

Grain samples from regional nurseries are submitted each year to the Hard Red Winter Wheat Quality Laboratory. Where the amount of harvested seed permits, amounts as follows are submitted from each location.

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. Evaluation of composite samples from each district also is made. Northern and southern performance nursery samples are composited from all locations before evaluation. Results are reported to the cooperators by Karl Finney.

[The following table area is extremely faint and illegible due to low contrast and scan quality. It appears to contain a large grid of data points.]