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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
CROPS RESEARCH DIVISION

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COMPARISON OF WINTER WHEAT VARIETIES GROWN IN COOPERATIVE NURSERY EXPERIMENTS IN THE HARD RED WINTER WHEAT REGION IN 1962

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Preliminary report, not for publication[1/]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/]

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1/ The writer expresses appreciation to Dorothy M. Wilson, Mrs. Alyce Ann Schmidt, and Robert Divoky for their assistance in preparing this report.

RANDOM NOTES FROM THE REGION

Several changes in regional nurseries were voted by the Hard Red Winter Wheat Workers Conference held at Lincoln, Nebraska in January, 1962. These and other actions pertaining to regional testing are enumerated for the benefit of the cooperators since they affect the nurseries for 1963.

Uniform Quality Series

Conferences generally favored a maximum of 2 check varieties in each district. Pawnee and Comanche were considered to be satisfactory in the Southern and Central Districts. Yogo and Nebred were favored as check varieties in the Northern District. The question of eventually substituting Warrior for Nebred in the Northern District was raised but no action was taken.

Southern Regional Performance Nursery

Kharkof, Early Blackhull, and Comanche were retained as check varieties for maturity and quality purposes.

Northern Regional Performance Nursery

Consensus: Kharkof, Minter, Yogo, Nebred, and Cheyenne will be retained as check varieties so long as the nursery has a relatively small number of entries. A request to grow the Northern Nursery was received from Aberdeen, Idaho. The desirability of including newly-released hard red winter wheat varieties from other areas in the Northern and Southern Nurseries for one or more years (provided they have not already appeared in these nurseries) was stressed.

Uniform Winter Hardiness Nursery

The suggestion was made to divide this nursery into southern and northern materials sections with increased frequency of check varieties. This was done in the 1963 nursery.

Uniform Bunt Nursery

The decision was made to retain RedChief as a susceptible check variety but to drop Cheyenne and Kharkof. Resistant check varieties remain as they have been in previous years. South Dakota requested the nursery for 1963.

Soil-borne Mosaic Nursery

The nursery will continue to be grown at Urbana, Illinois, and Powhattan, Kansas. Inclusion of Bison as a second susceptible check variety was suggested.

Wheat Streak Mosaic Nursery

The conference voted to continue the nursery in its present form.

PERSONNEL CHANGES

Dave Ferguson was named Superintendent of the Plains Substation, Clovis, New Mexico to succeed Ronald Livers. In addition to his duties as Superintendent, he will carry on the small grains breeding and evaluation program. Norman Malm will be responsible for sorghum research at the station.

Bryd Curtis, formerly associated with the small grains research group at Oklahoma State University, was named to a new wheat breeding position at Colorado State University. He assumed his new position on January 1, 1963. Ted Haus will direct barley research at Colorado State University.

Olin D. Smith also associated with the small grains group at Oklahoma State University, resigned to resume farming in Oklahoma.

Elmer T. Jones, long-time Federal Entomologist in hessian fly research at Kansas State University, retired on July 1. He was appointed as collaborator to continue assistance on hessian fly problems in the region.

Darrell G. Wells, formerly of Mississippi State College, replaced V. A. Dirks as wheat breeder at South Dakota State College. Mr. Dirks has resumed graduate study at the University of Minnesota.

COOPERATING AGENCIES, STATIONS, AND PERSONNEL
(The asterisk indicates 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*
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Plant Physiology and Pathology		M. C. Futrell*
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Chillicothe	Substation No. 12	K. A. Lahr
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		N. E. Daniels
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Colby	Colby Branch Station	J. R. Lawless

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Akron	U.S. Central Gr. Plains Sta.	Greg Hinze
Hesperus	San Juan Basin Branch Sta.	V. B. Cardwell
Springfield	Southeastern Colo. Br. Sta.	H. O. Mann

IOWA AGRICULTURAL EXPERIMENT STATION:

Ames	Iowa State University	
	Agronomy	R. E. Atkins

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Lincoln	University of Nebraska	
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		M. R. Morris
		P. J. Mattern
		J. D. Eastin
North Platte	North Platte Exp. Sta.	P. T. Nordquist
		K. P. Pruess
Alliance	Box Butte Exp. Station	P. L. Ehlers
		C. R. Fenster
Concord	Northeast Nebr. Exp. Sta.	A. D. Flowerday

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	Plant Pathology and Horticulture	G. H. Bridgmon
Cheyenne	Archer Substation	T. L. Birch
Gillette	Gillette Substation	L. R. Landers
Sheridan	Sheridan Substation	A. F. Gale

SOUTH DAKOTA AGRICULTURAL EXPERIMENT STATION:		
Brookings	South Dakota State College	
Agronomy		D. G. Wells
Plant Pathology		G. W. Buchanau
NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION:		
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Agronomy		G. S. Smith
Dickinson	Dickinson Substation	T. J. Conlon
MONTANA AGRICULTURAL EXPERIMENT STATION:		
Bozeman	Montana State College	
Agronomy and Soils		E. R. Hehn
		C. R. Haun*
		C. A. Watson
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Huntley	Huntley Branch Station	D. E. Baldridge
Havre	North Montana Branch Sta.	B. McCallum
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Agronomy and Plant Genetics		E. R. Ausemus*
Waseca	Southern Experiment Sta.	R. E. Hodgson
ILLINOIS AGRICULTURAL EXPERIMENT STATION:		
Urbana	University of Illinois	
Agronomy		R. O. Weibel
Plant Pathology		W. M. Bever
CANADA DEPARTMENT OF AGRICULTURE:		
Lethbridge	Alberta Agr. Exp. Sta.	M. N. Grant

ACCESSION NUMBERS ASSIGNED

Hard winter wheats assigned C. I. numbers at Lincoln in 1962 are listed below. When a number is assigned, seed of that variety is added to the permanent collection maintained at Beltsville, Maryland. C. I. numbers take precedence over state and local numbers in this report, and their use by wheat workers in published reports and correspondence is urged.

C.I. No.	Pedigree	State No.	Source
13679	Rust Resistant Triumph		Oklahoma
13683	Svl-Wi-Hope-Cnn-Wi^2 x Seu Seun	391-56-D1-1	Texas
13684	Svl-Wi-Hope-Cnn-Wi^2 x Seu Seun	391-56-D1-23	Texas
13691	Wasatch x Kharkof-17, Sel. 18-5		Montana
13692	Itana x Kharkof-17, Sel. 1-26-1		Montana
13693	Burt x Itana, Sel. 7		Washington
13694	Burt x Itana, Sel. 160		Washington
13695	(Alicel-Rex-P80) x $Comanche^3$		Idaho

NEW VARIETIES

Three new hard red winter wheat varieties were recommended for release and certification in Nebraska in 1963. They are Gage (C. I. 13532), Scout (C. I. 13546), and Lancer (C. I. 13547). All have been highly productive in state and regional trials and possess the Hope resistance to stem rust. Gage has excellent resistance to leaf rust and is moderately resistant to soil-borne mosaic and hessian fly. It is similar to Ponca in smut resistance and winterhardiness. It is recommended for production in southeastern Nebraska. Scout is resistant to loose smut and possesses good tolerance to wheat streak mosaic. It has a mixed reaction to hessian fly and contains a very low percentage of plants that are resistant to leaf rust. Scout is early maturing and has wide adaptation. It apparently does not have sufficient winterhardiness for safe production in northern Nebraska. It is recommended for south-central and southwestern Nebraska. Lancer is a moderately early maturing variety that resembles Cheyenne in appearance. It is recommended for all areas of Nebraska except the southeast and southcentral districts. Gage is a mellow gluten quality type. Scout and Lancer have medium strong gluten.

C. I. 13536 (Wichita x Mql-Oro) is under increase for possible release in Texas. It possesses excellent resistance to leaf rust, is early maturing, and is resistant to lodging. C. I. 13536 produces high test weight grain and has quality characteristics similar to those of Comanche.

C. I. 13526 is under purification in South Dakota and is a strong candidate for release in that state. It is a moderately early maturing variety with short straw, resistance to currently prevalent races of stem rust and excellent winterhardiness.

THE WINTER WHEAT CROP

The 1962 winter wheat crop of 816 million bushels was 24 percent less than production in 1961 and 7 percent less than the average.

Soil moisture was ample for good stand establishment of winter wheat throughout the plains area. The winter was the most severe of recent years and winterkilling was noted as far south as Oklahoma. A general lack of spring precipitation from late April through May in most parts of the southern and central plains hastened heading and maturity and produced generally short straw. The dry weather retarded leaf and stem rust buildup as far north as Kansas. Favored by ideal moisture conditions and heavy spore showers in late May, stem rust exploded in Nebraska and South Dakota causing the severest losses of record to susceptible winter wheat in these states. Less severe losses also were recorded in northern Kansas. Leaf rust also became heavy but was quickly overtaken by the stem rust. Stem rust races 56 and 29 predominated with some 11 and 15 B also present. Fall infestation of hessian fly was general and widespread in central and north-central Kansas and in south-central and central Nebraska. It was locally severe in several areas. Heavy loss of stands of Bison during the winter in south-central and central Nebraska is attributed to fly and the harsh winter.

Winter wheat production data for the 11 states that comprise the hard red winter wheat region appear in the tabulation that follows:

State	Acres		Abandonment	1962 production[1]	1962 av. acre yield[2]	1951-60 av. acre yield[2]
	Seeded[1]	Harvested[1]	%	Bu.	Bu.	Bu.
Texas	3,498	2,731	21.9	43,696	16.0	13.7
Oklahoma	4,349	3,787	12.9	71,953	19.0	16.4
New Mexico	268	210	21.6	4,200	20.0	11.0
Kansas	9,762	8,986	7.9	211,171	23.5	19.1
Nebraska	3,060	2,760	9.8	53,820	19.5	23.4
Colorado	2,394	1,881	21.4	35,739	19.0	18.1
Wyoming	232	187	19.4	3,927	21.0	19.5
Montana	2,345	1,688	28.0	37,136	22.0	23.4
South Dakota	735	448	39.0	4,928	11.0	20.0
Iowa	83	75	9.6	1,950	26.0	23.0
Minnesota	23	21	8.7	483	23.0	22.6

1/ In thousands

2/ Based on harvested acres. Data taken from the 1962 Annual Summary, Crop Production, U. S. Dept. of Agriculture, Statistical Reporting Service, Crop Reporting Board.

UNIFORM QUALITY SERIES

A limited number of advanced experimental strains and newly released varieties together with appropriate check varieties are grown each year to provide seed for quality evaluation at the Hard Winter Wheat Quality Laboratory at Kansas State University. Ten pounds of grain of each variety from each location is made available to the Laboratory. Varieties comprising the series in each district in 1962 were:

Southern District		Central District	
Pawnee*	C. I. 11669	Pawnee*	C. I. 11669
Comanche*	C. I. 11673	Comanche*	C. I. 11673
Triumph x T-Ae	C. I. 13523	Kaw	C. I. 12871
Wichita x Mql-Oro	C. I. 13536	Ottawa	C. I. 12804
Chiefkan x Tenmarq	K. 501097	Omaha	C. I. 13015
Chiefkan x Tenmarq	K. 501099	Pnc x Mc-Hope-Pn	C. I. 13532
Chiefkan x Comanche	K. 501212	Nbr-Hope-Tk x Cnn-Pnc	C. I. 13546
Qv-Tm x Mql-Oro	C. I. 12995	Chiefkan x Tenmarq	K. 501097
Pnc x Mi-Hope-Pn	C. I. 13532	Chiefkan x Tenmarq	K. 501099
		Chiefkan x Comanche	K. 501212
		Qv-Tm x Mql-Oro	C. I. 12995

Northern District			
Minter*	C. I. 12138	Yogo*	C. I. 8033
Nebred*	C. I. 10094	Warrior	C. I. 13190
Omaha	C. I. 13015	Shoshoni	C. I. 13193
Tk-Cnn x Hope-Cnn^2	C. I. 13547		

* Check variety

SOUTHERN REGIONAL PERFORMANCE NURSERY

Data were reported from 19 of 20 stations in 8 states. Severe winterkilling at Alliance, Nebraska caused the abandonment of the nursery at that station after survival notes were taken. Seventeen varieties comprised the nursery. Their pedigrees and C. I. numbers are listed below:

Entry No.	Variety or pedigree	C. I. No.	State submitting
1	Kharkof	1442	
2	Early Blackhull	8856	
3	Comanche	11673	
4	Concho	12517	
5	Triumph x T-Ae	13523	Okla.
6	Triumph	12132	Okla.
7	Improved Triumph	13667	Okla.
8	Newest Improved Triumph	13668	Okla.
9	Super Triumph	13669	Okla.
10	Pnc x Mi-Hope-Pn	13532	Nebr.
11	Cnn-Mi-Hope x Iowin	13534	Iowa
12	Wichita x Mql-Oro	13536	Texas
13	RCh-Tk-Oro-Fn x Mql-Oro	13537	Texas
14	Nbr-Hope-Tk x Cnn-Pnc	13546	Nebr.
15	Cmn x Mi-Hope-Pn-Oro-Il 1-Cmn	13548	Kansas
16*	Cmn-Honor-Forward-Cmn-Mi-Hope x LPr 25(Tx333-56-18)	13680	Texas
17*	Svl-Wi-Hope-Cnn-Wi^2 x Seu Seun (Tx. 391-56-D4)	13681	Texas

* New entry in 1962

DATA OBTAINED

Agronomic and yield data from the reporting stations together with period-of years yield averages appear in table 1.

The southern regional nursery was grown on both dryland and irrigated ground at Clovis. Soil moisture was adequate for good stand establishment. A harsh winter followed. A warm spell in February followed by a period of low temperatures injured the more tender strains but loss of stand among the southern regional nursery varieties was not noted. A hot dry spring was damaging to the early maturing southern varieties. Considerable blasting of heads in these varieties was observed. In the irrigated nursery where moisture was adequate, injury was less apparent. Some wheat streak mosaic was noted late in the season and small areas of the nursery were infested with the western wheat aphid. Height and productiveness of the wheat was reduced in the infested areas. Root rot was present throughout the nursery. Grain yields were generally good from the dryland nursery but less than anticipated from the irrigated trial. C. I. 13546 was the most productive variety in both tests.

Both dryland and irrigated nurseries also were grown at Bushland. The dryland test was seeded on fallow ground in which stored moisture was ample for emergence and plant growth until April. Only 1.58 inches of precipitation was received between April 1 and June 1, most of which was in the form

of light showers from which there was little benefit. Lack of spring moisture hastened the heading and maturity of the crop. Somewhat variable stands and probable variation of stored moisture supply within the test area resulted a high coefficient of yield variation in the dryland test. The nursery was harvested prior to the wind and hail storms which occurred in June. Yields were low with C. I. 13546 slightly the most productive variety. Nitrogen in the amount of 70 pounds per acre was applied on the irrigated nursery in the fall soon after emergence winter temperatures were abnormally low. However, damage was observed only in C. I. 13523. Diseases were not a factor in performance. Some leaf yellowing was noted after heading which was believed to be a physiological condition. Hail and wind in June caused heavy lodging and shattering. Aside from the wind and hail, high temperatures during and after heading probably was the major yield depressing factor in the irrigated nursery. Super and Improved Triumph were the highest yielding varieties. C. I. 13681 and C. I. 13532 lodged the least.

C. I. 13536 was substantially higher in yield and test weight than all other varieties in the southern regional nursery at Denton. It has the highest 2-year average yield as well.

Varieties in the southern regional performance nursery at Chillicothe performed poorly in 1962. A combination of factors including spotty fall emergence following late seeding and spring drought combined with hot dry winds in May substantially reduced yields and test weights. There was insufficient seed of several varieties for test weight determinations. C. I. 13523 and C. I. 13546 were slightly the highest yielding.

The nursery was seeded at Stillwater under excellent moisture conditions and emergence was good. Moisture was adequate throughout the winter and early spring months. Low temperatures(in late February) following unseasonably high temperatures caused considerable leaf tip burn especially on the less hardy, non-decumbent, early spring-growing types. The damage was reflected in somewhat delayed heading of the less hardy types. In late April, drought set in which continued until May 28. Premature ripening with associated shrivelled grain decreased both yields and test weights. Newest Improved, Super, and Improved Triumph were highest yielding. Five varieties exhibited good resistance to leaf rust.

The conditions described for Stillwater also were typical of Cherokee during the fall and early spring. May temperatures at Cherokee were above normal and resultant premature ripening sharply reduced bushel weights and yields. Newest Improved and Improved Triumph again were the most productive varieties.

Yields and bushel weights were less affected by the spring drought at Woodward than at Cherokee probably because of somewhat better moisture reserves. The yield of 5 varieties exceeded 40 bushels and only 2 produced less than 30 bushels per acre. Bushel weights ranged from 61.3 to 55.7 lbs.

The wheat made excellent fall growth at Manhattan where moisture conditions were excellent. The winter was severe and stand losses recorded do not reflect the injury that occurred. The month of March was cold and March and April were dry. A heavy infection of soil-borne mosaic was present in the nursery and probably contributed to the failure of winter damaged plants

to recover. The nursery data mainly reflect variety response to soil-borne mosaic and drought. The 3 varieties with resistance to soil-borne mosaic Comanche, C. I. 13532, and Concho were much more productive than the susceptible varieties.

Fall and winter moisture at Hays, Kansas was adequate for good stands and growth. Snow cover during periods of extreme cold prevented serious winterkilling. Early spring was dry and windy but the late fruiting period and harvest season were very wet. A light epidemic of leaf and stem rust developed late in the season causing only minor damage. Hessian fly infestation was severe in both fall and spring. It reduced stands of susceptible varieties and had major effect on yield. C. I. 13548 exhibited the highest resistance to hessian fly and also was the most productive variety.

Average monthly wind velocities for the period September to June ranged from 0.6 to 2.4 MPH below the long-time average at Garden City. Evaporation during the period also was below normal. Average temperatures were 5.6° below normal in September, near normal in October, and 3.2° below normal in November. Despite below-normal temperatures in December, January, and March, winterkilling did not occur. Soil moisture was satisfactory at seeding time and precipitation ranged from near-normal to above-average in every month to mid-April except December and February. A dry period from mid-April to May 21 injured the later maturing varieties in the Southern Nursery. Early maturing varieties headed more uniformly and grew taller than the late varieties. Frequent showers and above-average precipitation occurred in June but probably did not increase yields since the crop was 8-14 days earlier in maturity than normal. Test weights were below normal. Three hail storms caused an estimated 15-20 percent loss in yields. Leaf and stem rust was present in trace amounts on the later maturing varieties. The Triumph wheats with exception of Super Triumph were highest yielding. C. I. 13546 has slightly the highest 2-year average yield.

Rapid emergence and vigorous fall stands were obtained under good moisture conditions at Colby. The winter was cold and dry. A warm spell in February in which spring growth began, was followed by very cold weather. Considerable top-kill resulted and spring growth was retarded. The spring was exceedingly dry until May 15. Moisture was in good supply from May 15 to harvest. Temperatures reached the upper 90's in early May and varieties headed 1-2 weeks early. Straw was short. There were no serious disease or insect problems although some rust appeared in June. Hail damage was recorded on 2 dates with total damage ranging from 10 to 15 percent. C. I. 13546 and C. I. 13532 were the most productive varieties.

Fall stand establishment was excellent at Ft. Collins. Snow cover during cold spells during the winter protected varieties and killing did not occur. Early spring was very dry. However, rains during late May and June provided sufficient moisture for high yields. The nursery was not irrigated. A severe stem rust epidemic caused damage to later maturing varieties in the nursery. Five varieties produced yields in excess of 80 bushels per acre. With exception of C. I. 13680, the highest yielding varieties were resistant to stem rust. C. I. 13548 was the only variety that did not lodge. C. I. 13536, C. I. 13532 and C. I. 13680 also showed good resistance to lodging. C. I. 13546 has the highest 2-year average yield at Ft. Collins.

The highest yields of recent years were recorded at Akron, Colorado where better-than-normal fall and winter moisture conditions prevailed. The very dry spring was followed by good rains in the last half of May and in June. Considerable regrowth was noted in early maturing lines. C. I. 13537 and Concho made acre yields in excess of 40 bushels. Only Super Triumph yielded less than 20 bushels. Bushel weights ranged from 59.0 pounds for C. I. 13680 down to 51.5 pounds for Kharkof.

The nursery made little fall growth at Hesperus. Most varieties were in only the 2-leaf stage when winter set in. Moisture was near the soil capacity following heavy precipitation in October. The winter was colder than normal but winterkilling was slight. The spring and summer were exceptionally dry and one supplemental irrigation was applied to the nursery. Diseases and insects were not a problem. High yields were made by all varieties. C. I. 13537 and C. I. 13546 yielded more than 80 bushels. Lowest yield was 54.2 bushels made by Super Triumph. Bushel weights all were high-ranging from 64.7 to 61.7 pounds. Only Early Blackhull and Kharkof lodged to any extent. C. I. 13523 and C. I. 13546 have made 2-year average yields above 70 bushels per acre at Hesperus.

Soil moisture was present to a depth of 3-4 feet at seeding time at Springfield. Similar to the situation at other plains stations the spring was very dry until May 20. Brown wheat mites attacked the wheat in March but were controlled with a spray application of parathion. Rains in late May were too late for maximum benefits. C. I. 13534 shattered heavily and C. I. 13523 lost more than 50 percent of its stand during the winter. The earliest maturing varieties were the least productive.

Winterkilling and severe stem rust were the major environmental effects at Lincoln and North Platte, Nebraska. Maximum winter survival at Alliance was 16 percent and the nursery was abandoned. The 3 stem rust resistant varieties C. I. 13548, C. I. 13532, and C. I. 13546 were outstanding at Lincoln. C. I. 13548 and C. I. 13532 along with C. I. 13536, C. I. 13537, C. I. 13680, and C. I. 13523 also exhibited high resistance to leaf rust. C. I. 13523 and C. I. 13680 were severely damaged by winterkilling.

C. I. 13546, C. I. 13532, C. I. 13537, and C. I. 13548 were resistant to stem rust at North Platte and yielded several bushels more than other varieties in the nursery. As at Lincoln, C. I. 13523 and C. I. 13680 sustained heavy losses of stand from winterkilling.

C. I. 13537, Kharkof, and C. I. 13546 survived the winter best at Alliance. Most varieties in the nursery survived with stands of 2 percent or less.

The nursery at Ames, Iowa was seeded in good moisture, emergence was normal, but fall growth was limited. The winter was severe but heavy snow cover kept winterkilling to a minimum. Plant growth was slow during a cold March and April. May was warm but cool temperatures again prevailed in June. Contrary to the trend at other stations, heading of varieties at Ames was somewhat later than normal. Spring weather was ideal for diseases. Mildew, leaf rust and stem rust became heavy. Similar to their performance at Lincoln, C. I. 13548, C. I. 13532, and C. I. 13546 in that order were the most

productive varieties. C. I. 13546 was rated highly resistant to mildew as was C. I. 13534. C. I. 13523 and C. I. 13680 winterkilled heavily. C. I. 13681 and C. I. 13536 lodged the least. C. I. 13546 and C. I. 13548 have 2-year average yields at Ames more than 13 bushels per acre higher than the next most productive variety, C. I. 13532.

Varieties made good fall growth at Urbana, Illinois but soil heaving and ice damaged the varieties during the severe winter that followed. Spring and summer conditions were favorable. Septoria became severe on all varieties. C. I. 13523 was least damaged with a 50 percent infection. C. I. 13548, Newest Improved Triumph, C. I. 13546, and Improved Triumph all made yields higher than 50 bushels per acre. C. I. 13536, Super Triumph, and Improved Triumph produced grain that weighed nearly 66 pounds per bushel and Early Blackhull had the highest bushel weight of 66.6 pounds. C. I. 13532 and C. I. 13548 have made slightly the highest 2-year average yields at Urbana.

Table 1. Yield and other data for varieties grown in the southern regional performance nursery at 19 stations in the hard red winter wheat region in 1962.

Clovis, New Mexico
Three replications, dryland

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.	Bu.		
13546	5	29	60	29.4	29.2	2	148.6
13537	9	30	60	27.6	24.9	3	115.4
12132	4	29	60	27.1	21.7	2	110.4
8856	3	29	62	26.2	21.8	10	101.2
13536	5	30	62	26.2	23.6	3	120.4
13534	9	29	60	26.1	22.5	3	111.3
13668	6	28	59	25.7	22.3	2	113.5
12517	7	29	61	25.2	--	9	102.3
13680	7	29	59	24.5	--	1	104.7
11673	7	28	60	23.6	21.9	10	99.5
1442	12	27	59	23.4	19.7	10	100.0
13667	5	27	60	23.1	19.4	2	98.5
13548	10	27	60	23.0	23.3	2	118.3
13669	3	27	60	21.8	18.2	2	92.6
13532	7	28	58	21.8	21.2	3	110.8
13523	7	26	57	16.5	20.5	2	104.1
13681	8	23	58	16.0	--	1	68.4

Standard error of a difference = 1.16 bushels.

Clovis, New Mexico, irrigated
Three replications

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1962	Percent of Kharkof
	May	June	In.	Lbs.	Bu.	
13546	9	20	36	59	40.9	117.2
13548	11	25	39	58	39.2	112.3
12517	11	25	37	60	35.5	101.7
13523	12	25	37	58	35.4	101.4
13681	12	7/1	30	59	35.1	100.6
1442	18	7/3	38	58	34.9	100.0
13680	12	7/1	37	60	34.8	99.7
13537	11	7/1	36	59	34.0	97.4
13536	9	28	37	60	33.5	96.0
13532	10	7/1	35	57	32.7	93.7
11673	11	25	38	59	32.6	93.4
13668	6	18	36	59	29.6	84.8
13534	11	27	38	58	28.0	80.2
12132	6	16	37	59	27.8	79.7
8856	6	25	39	60	27.7	79.4
13667	6	18	35	59	25.7	73.6
13669	3	14	35	58	19.6	56.2

Standard error of a difference = 4.40 bushels.

Bushland, Texas
Four replications, dryland

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1962	Percent of Kharkof
	May	June	In.	Lbs.	Bu.	
13546	5	10	22	58.0	14.5	126.1
13667	4/29	5	21	57.1	14.1	122.6
12132	4/30	5	23	60.3	13.9	120.9
13536	1	7	22	60.2	13.8	120.0
12517	6	10	20	58.7	13.4	116.5
13534	8	11	19	58.8	13.1	113.9
8856	1	5	22	60.9	13.0	113.0
13668	4/29	3	21	57.5	12.7	110.4
13669	4/28	3	22	59.4	12.6	109.6
13532	7	11	21	56.4	12.6	109.6
13680	2	6	22	56.3	12.0	104.3
13537	7	11	21	59.1	11.6	100.9
1442	18	15	20	58.2	11.5	100.0
13681	8	12	19	56.3	11.5	100.0
11673	7	10	20	57.8	11.3	98.3
13548	8	12	22	58.7	10.9	94.8
13523	1	6	20	54.8	10.2	88.7

Standard error of a difference = 2.25 bushels.

Bushland, Texas
Three replications, irrigated

C. I. No.	Date Headed	Date Ripe	Plant height	Lodging	Shattering	Weight per bushel	Av. acre yield 1962	Percent of Kharkof
	May	June	In.	%	%	Lbs.	Bu.	
13669	2	19	37	65	10	60.1	50.8	142.7
13667	2	19	37	75	10	59.9	47.8	134.3
13546	6	24	37	40	12	59.2	45.6	128.1
12132	4	20	38	25	12	59.9	45.0	126.4
11673	9	25	39	40	27	58.5	43.9	123.3
13536	4	21	37	10	12	59.6	43.1	121.1
12517	8	24	39	35	25	60.5	37.7	105.9
8856	3	20	38	45	10	59.6	37.6	105.6
13537	7	25	38	12	10	59.4	36.9	103.7
1442	11	27	38	12	15	58.7	35.6	100.0
13680	6	24	39	82	17	58.4	35.2	98.9
13532	8	25	35	8	12	58.2	28.3	79.5
13548	10	26	39	10	20	58.0	26.6	74.7
13523 1/	5	21	36	38	20	56.4	26.2	73.6
13668	4/30	17	37	95	15	58.5	25.8	72.5
13534	8	25	37	45	25	58.2	25.8	72.5
13681	9	25	31	0	35	56.3	22.0	61.8

1/ Top growth of C. I. 13523 was damaged by low temperatures during winter and early spring. Loss of stand did not occur.

Standard error of a difference = 3.42 bushels.

Denton, Texas
Four replications

C. I. No.	Date Headed	Date Ripe	Plant height	Leaf rust	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	April	May	In.	%	Lbs.	Bu.	Bu.		
13536	20	28	42	Tr	63	46.7	40.7	3	139.2
13667	17	23	40	15	61	39.2	38.4	2	132.0
13532	25	30	43	0	59	38.0	40.1	3	137.8
13668	17	23	39	10	61	37.9	37.6	2	129.4
8856	19	24	43	5	62	37.5	34.7	26	128.7
13680	20	24	46	Tr	59	36.9	--	1	178.3
13523	25	30	43	0	57	36.9	38.7	2	133.2
13548	28	30	45	25	59	33.9	37.4	2	128.7
12132	19	22	40	15	61	31.9	31.6	2	108.8
13681	28	30	35	Tr	59	31.2	--	1	150.7
13537	29	30	45	10	59	31.0	33.6	3	120.4
13669	20	24	40	15	58	28.5	28.7	2	98.6
13546	25	30	43	30	58	26.9	34.8	2	119.8
11673	26	30	46	Tr	59	26.0	31.5	22	129.0
1442	29	30	44	60	58	20.7	29.1	26	100.0
12517	26	30	46	10	57	19.9	26.8	11	108.7
13534	26	30	40	40	56	17.8	27.2	3	102.0

Standard error of a difference = 2.41 bushels.

Chillicothe, Texas
Four replications

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	June	In.	Lbs.	Bu.	Bu.		
13523	8	6	27	50.0	12.6	27.3	2	130.6
13546	4	1	29	54.0	11.4	25.3	2	121.1
8856	4/29	5/27	31	56.5	11.3	23.2	24	105.9
13668	4/27	5/24	26	--	10.9	27.3	2	130.4
13536	2	5/29	30	56.0	10.8	24.6	3	114.5
12132	4/28	5/25	29	55.0	10.3	25.8	2	123.4
13667	4/27	5/24	24	53.0	10.1	25.4	2	121.3
13532	9	7	26	53.5	10.0	22.6	3	105.5
11673	7	3	25	51.0	9.1	23.0	24	116.7
13548	11	9	27	--	8.0	23.0	2	109.8
1442	14	13	25	--	7.6	20.9	24	100.0
13537	13	11	27	--	7.3	20.5	3	101.4
13669	4/28	5/25	26	--	6.7	24.4	2	116.5
13681	11	8	16	--	5.1	--	1	67.1
12517	8	4	25	--	4.4	22.3	13	105.0
13680	8	5	24	--	4.2	--	1	55.3
13534	9	6	24	--	3.0	20.2	3	84.7

Standard error of a difference = 2.06 bushels.

Stillwater, Oklahoma
Four replications

C. I. No.	Date headed	Plant height	Growth habit 1/	Leaf rust		Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
				Severity	Type		1962	1961-1962		
	April	In.		%		Lbs.	Bu.	Bu.		
13668	26	33	1	15	4	59.6	37.9	34.7	2	138.2
13669	25	35	1	25	4	58.0	37.5	33.2	2	132.1
13667	26	34	2	20	4	58.8	37.0	38.4	2	152.8
8856	26	36	2	20	4	61.6	34.3	34.3	28	114.8
13546	29	34	2	10	4	57.5	33.3	40.3	2	160.6
13548	5/3	34	2	1	2	58.7	33.2	37.1	2	147.6
13532	5/1	33	2	1	2	57.0	32.7	35.0	3	130.9
11673	5/2	34	1	8	4	57.0	32.3	--	22	117.5
12517	5/3	34	1	10	4	56.8	31.9	36.1	13	133.2
12132	26	33	2	28	4	59.4	31.6	--	1	132.8
13536	29	34	2	1	4	60.0	31.0	30.9	3	122.5
13534	5/3	33	1	18	4	55.9	30.3	31.3	3	122.9
13681	5/3	26	2	1	4	56.9	28.9	--	1	121.4
13537	5/3	34	2	3	2	56.8	28.7	33.5	3	132.2
13523	5/1	33	1	0	0	55.1	26.8	31.2	2	124.1
13680	30	34	1	1	1	57.5	26.2	--	1	110.1
1442	5/5	32	1	30	4	58.9	23.8	25.1	28	100.0

1/ 1 = decumbent, 2 = intermediate, 3 = upright.

Standard error of a difference = 2.09 bushels.

Cherokee, Oklahoma
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.	Bu.		
13668	4/28	34	53.6	34.7	43.7	2	201.4
13667	4/28	35	53.0	32.1	42.5	2	195.9
13536	2	37	56.9	30.6	40.9	3	156.5
13546	2	38	53.3	28.7	42.6	2	196.1
12132	4/29	36	52.7	27.8	40.6	2	186.9
13669	4/28	36	51.1	27.8	40.1	2	184.6
8856	4/29	39	55.6	27.7	41.7	15	137.9
13548	6	37	55.4	27.1	39.7	2	182.9
13681	4	28	51.8	26.5	--	1	164.6
13532	4	36	52.4	25.6	42.0	3	159.7
13537	5	37	53.7	25.4	37.9	3	155.7
11673	4	38	53.0	21.5	32.2	15	128.7
13523	5	36	50.2	21.5	40.2	2	185.3
12517	4	37	53.0	18.8	32.8	13	142.4
1442	7	35	55.3	16.1	21.7	15	100.0
13680	5	38	50.5	16.0	--	1	99.4
13534	4	36	50.5	14.5	30.0	3	128.6

Standard error of a difference = 2.49 bushels.

Woodward, Oklahoma
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.	Bu.		
13669	4/28	36	59.1	45.7	49.7	2	172.1
13681	7	29	57.2	44.8	--	1	164.7
13532	4	36	57.5	44.4	46.5	3	136.6
13668	4/30	34	60.3	42.6	46.3	2	160.3
13546	4	37	57.8	40.9	46.0	2	159.3
13667	4/29	34	59.9	39.7	47.5	2	164.6
13548	7	37	59.0	39.6	41.6	2	144.0
13536	4	36	60.2	39.1	44.9	3	134.1
12132	4/30	35	59.7	39.0	43.3	2	150.1
13537	7	38	58.0	37.1	41.2	3	129.3
8856	4/29	37	61.3	37.0	40.1	31	107.8
11673	6	36	57.6	37.0	42.3	26	116.7
12517	6	38	57.7	35.3	43.5	14	128.0
13523	7	35	55.7	33.8	40.0	2	138.6
13534	6	37	56.5	33.5	37.7	3	116.6
13680	5	35	57.9	29.1	--	1	107.0
1442	10	34	58.5	27.2	28.9	31	100.0

Standard error of a difference = 2.49 bushels.

Manhattan, Kansas
Four replications

C. I. No.	Date headed	Plant height	Winter survival	Diseases: Soil-borne Mosaic 1/	Diseases: Bunt 2/	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	May	In.	%		%	Lbs.	Bu.	Bu.		
11673	17	24	100	R	2	58.8	40.8	38.0	26	120.8
13532	18	23	100	I	40	59.0	37.3	43.9	3	146.2
12517	17	24	100	R	4	60.2	36.4	40.6	14	125.9
13548	20	21	100	S	0	60.3	29.9	40.7	2	148.4
13546	20	20	100	S	60	59.0	26.5	34.8	2	127.0
13537	21	20	100	S	70	60.6	24.3	33.4	3	127.9
13534	21	21	100	S	5	59.2	23.6	31.5	3	116.2
1442	22	22	100	S	50	57.9	22.7	27.4	31	100.0
12132	16	20	100	S	40	59.2	22.6	29.2	2	106.6
13668	15	20	100	S	40	58.9	21.5	28.8	2	105.1
13669	17	21	100	S	30	58.3	21.3	29.9	2	109.1
13536	19	21	100	S	50	61.3	21.2	30.6	3	108.1
13667	15	20	100	S	30	58.9	20.7	31.9	2	116.4
13523	22	19	80	S	30	59.0	17.5	31.6	2	115.1
8856	17	21	100	S	40	60.0	17.2	26.0	31	111.9
13681	21	16	100	S	20	56.0	16.5	--	1	72.7
13680	21	18	90	S	40	59.5	10.5	--	1	46.3

1/ R = resistant, I = intermediate, S = susceptible.
2/ Bunt data furnished by E. D. Hansing.

Standard error of a difference = 1.88 bushels.

Hays, Kansas
Four replications

C. I. No.	Date Headed	Date Ripe	Plant height	Hessian Fly effects: Spring stand	Hessian Fly effects: Lodged straw	Hessian Fly effects: Fly rating 1/	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	May	June	In.	%	%		Lbs.	Bu.	Bu.		
13548	16	19	28	100	0	1.0	58.9	28.6	36.7	2	174.9
13667	10	13	28	90	7	3.5	61.3	28.2	32.8	2	156.3
13532	14	18	26	97	4	2.5	59.0	27.3	37.0	3	145.9
13546	13	16	28	96	9	3.3	60.4	27.0	36.8	2	175.7
13669	8	10	28	97	7	3.5	60.8	26.4	29.0	2	138.2
13537	16	18	27	96	4	2.6	59.3	26.2	34.3	3	126.7
13536	12	15	28	100	0	1.1	60.0	25.5	31.4	3	128.2
13668	10	14	27	88	11	4.0	61.4	25.5	32.6	2	155.4
8856	12	15	30	88	7	3.0	60.9	24.5	30.2	26	114.9
13534	16	19	26	94	14	4.3	59.1	23.9	29.7	3	114.9
12132	11	14	28	93	11	4.1	61.7	23.7	29.8	2	142.2
12517	14	18	26	91	21	4.5	61.0	23.3	28.1	10	125.4
11673	15	19	27	94	13	3.5	59.6	20.7	27.9	22	121.9
13681	16	16	24	83	13	3.6	57.0	19.5	--	1	156.0
13680	16	18	26	98	7	4.3	60.0	18.7	--	1	149.6
13523	18	21	25	78	45	4.5	59.5	16.3	27.1	2	129.1
1442	21	25	30	55	35	5.0	56.8	12.5	21.0	26	100.0

1/ Rating based on 1-5 scale; 1 = resistand, 5 = susceptible.

Standard error of a difference = 1.42 bushels.

Garden City, Kansas
Four replications

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	June	In.	Lbs.	Bu.	Bu.		
13667	10	6	30	55.1	24.8	34.7	2	120.3
13668	10	6	30	55.0	24.0	34.5	2	119.8
12132	10	7	31	55.8	24.0	33.4	2	115.8
11673	15	12	28	54.4	21.3	31.6	9	106.6
13546	14	10	28	55.5	21.1	35.7	2	123.8
12517	14	12	27	54.1	20.7	31.2	9	108.9
13532	13	10	28	52.3	20.0	33.0	3	108.7
8856	10	7	32	56.6	19.8	30.8	9	103.8
13669	9	4	30	54.4	19.5	31.7	2	110.1
13534	18	13	26	54.3	19.3	31.4	3	105.8
13536	11	10	30	57.5	18.8	33.4	3	107.4
13548	14	12	28	55.0	18.7	33.4	2	116.0
1442	20	18	26	56.4	18.0	28.8	9	100.0
13523	17	12	26	53.6	17.5	32.6	2	113.0
13537	15	12	27	54.6	16.9	29.7	3	102.2
13680	16	11	27	56.5	16.8	--	1	93.3
13681	17	8	23	52.1	15.2	--	1	84.4

Standard error of a difference = 2.66 bushels.

Colby, Kansas
Four replications

C. I. No.	Date Headed	Date Ripe	Plant height	Winter survival	Weight per bushel	Average acre yield 1962	No. years grown	Percent of Kharkof
	May	June	In.	%	Lbs.	Bu.		
13546	13	27	25	100	56.0	30.5	1	123.5
13532	14	27	26	100	58.0	28.0	2	102.1
13537	16	28	27	100	59.0	27.5	2	112.0
13668	11	22	25	100	61.5	27.3	1	110.5
12517	15	28	26	100	59.0	26.9	9	115.3
13536	14	27	25	95	59.5	26.8	2	106.0
8856	12	22	27	100	62.5	26.8	11	93.1
13667	11	22	25	100	61.5	26.6	1	107.7
13548	16	29	27	100	58.5	25.9	1	104.9
12132	11	22	26	100	61.5	25.1	1	101.6
1442	19	7/4	32	100	56.5	24.7	11	100.0
11673	15	28	27	100	58.0	24.0	10	100.1
13669	10	22	26	100	60.0	22.6	1	91.5
13681	15	27	22	100	58.0	22.3	1	90.3
13680	15	27	26	90	60.0	21.7	1	87.9
13534	16	29	27	100	57.0	21.7	2	93.6
13523	17	7/4	30	70	56.5	19.5	1	78.9

Standard error of a difference = 1.46 bushels.

Ft. Collins, Colorado
Five replications, irrigated

C. I. No.	Date headed	Plant height	Lodging	Stem rust	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	May	In.	%	%	Lbs.	Bu.	Bu.		
13523	29	46	24	0	58.9	88.1	67.1	2	168.7
13532	27	44	10	0	59.8	86.7	67.3	3	147.0
13680	27	44	30	100	57.5	86.4	--	1	177.8
13546	26	43	44	20	60.4	85.5	71.3	2	179.4
13548	29	47	0	10	60.9	83.3	64.6	2	162.5
13537	31	46	12	0	61.9	79.5	63.9	3	140.8
13536	26	43	8	100	60.4	78.9	63.8	3	148.2
13534	29	44	24	40	59.2	73.4	53.7	3	133.0
13667	25	43	78	100	58.6	71.6	61.9	2	155.6
12132	26	43	48	100	60.0	70.6	62.4	2	157.0
13668	24	43	74	100	59.2	70.2	60.0	2	150.9
8856	23	45	92	100	58.3	68.3	53.9	26	103.3
12517	28	45	82	100	58.1	67.4	50.2	10	124.2
11673	28	46	68	100	58.7	65.8	50.7	22	111.1
13681	28	39	10	70	60.0	62.8	--	1	129.2
13669	23	41	78	100	59.2	61.8	55.1	2	138.6
1442	6/1	49	88	100	54.6	48.6	39.8	26	100.0

Standard error of a difference = 6.13 bushels.

Akron, Colorado
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.	Bu.		
13537	31	28	56.6	41.7	30.6	2	146.1
12517	6/1	32	58.6	40.0	28.0	6	122.4
11673	30	32	58.4	38.4	26.5	17	108.7
13532	30	26	58.6	37.1	27.0	2	128.6
13548	30	28	58.6	36.3	27.6	2	131.7
13668	23	22	57.8	33.9	29.5	2	140.6
13667	22	26	58.2	33.3	27.7	2	132.0
13534	31	28	54.0	32.8	23.4	2	111.5
13680	30	28	59.0	30.3	--	1	105.2
13536	26	26	58.5	29.4	24.9	2	118.9
1442	6/3	34	51.5	28.8	21.0	20	100.0
13546	30	22	58.7	28.2	26.0	2	124.1
13523	30	28	53.3	27.2	20.5	2	97.6
13681	31	22	52.6	24.6	--	1	85.4
8856	21	24	56.9	23.7	21.5	20	110.1
12132	26	22	55.5	21.6	21.4	2	102.1
13669	28	24	54.5	16.5	20.1	2	95.9

Standard error of a difference = 5.16 bushels.

Hesperus, Colorado
Five replications, irrigated

C. I. No.	Date headed	Plant height	Lodging	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	June	In.	%	Lbs.	Bu.	Bu.		
13537	20	37	0	64.7	80.6	68.0	3	115.2
13546	16	32	0	63.8	80.1	72.2	2	135.9
13523	20	33	1	64.4	79.2	74.0	2	139.3
13681	18	26	0	62.7	79.2	--	1	123.8
13548	20	33	7	63.2	76.5	63.3	2	119.2
13667	16	33	6	63.2	75.0	64.2	2	120.9
13534	19	33	1	62.0	73.7	66.1	3	112.5
12517	18	35	3	64.0	71.8	60.0	12	107.6
13532	19	31	0	62.3	69.2	60.1	3	105.3
11673	20	32	2	63.8	68.0	63.0	22	114.7
13536	18	32	0	63.6	67.4	60.0	3	106.7
13680	18	32	0	63.3	67.0	--	1	104.7
13668	15	31	2	62.4	65.4	54.3	2	102.3
1442	24	38	24	62.9	64.0	53.1	22	100.0
8856	17	35	21	63.6	62.3	58.1	22	100.7
12132	12	35	1	62.4	57.4	55.6	2	104.7
13669	10	32	2	61.7	54.2	54.3	2	102.3

Standard error of a difference = 7.61 bushels.

Springfield, Colorado
Five replications

C. I. No.	Date Headed	Date Ripe	Plant height	Winter survival	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	June	In.	%	Lbs.	Bu.	Bu.		
13534	12	20	21	100	61.0	34.3	30.9	3	118.8
12517	10	20	18	100	61.6	32.5	31.1	5	115.8
11673	11	21	18	100	61.7	32.1	29.1	5	109.3
13546	9	15	16	100	62.7	29.1	28.6	2	123.3
13548	13	22	17	100	61.9	28.4	27.8	2	119.8
13681	11	19	14	100	59.7	28.2	--	1	138.2
13537	14	22	16	100	61.8	25.1	26.3	3	106.2
13532	11	18	16	100	60.8	25.1	26.4	3	104.1
8856	6	10	16	100	61.5	24.9	25.0	5	105.9
13523	11	25	21	47	57.9	24.8	23.7	2	102.2
13536	9	19	16	100	62.3	23.4	25.5	3	103.6
13667	5	10	15	100	62.5	23.3	25.7	2	110.8
13680	11	19	17	98	61.5	21.9	--	1	107.4
1442	14	27	16	100	58.1	20.4	23.2	5	100.0
13668	6	8	15	100	62.3	19.4	22.2	2	95.5
12132	5	8	15	100	--	15.7	19.7	2	84.7
13669	3	6	13	100	--	12.5	18.1	2	78.0

Standard error of a difference = 4.82 bushels.

Lincoln, Nebraska
Four replications

C. I. No.	Date headed	Winter survival	Plant height	Rust		Weight per bushel	Av. acre yield		No. years grown	Percent of Kharkof
				Leaf	Stem		1962	1961-1962		
	May	%	In.	%	%	Lbs.	Bu.	Bu.		
13548	21	100	27	TrR	25MR	60.3	54.6	53.8	2	264.1
13532	20	100	26	2R	5R	59.8	52.8	50.5	3	196.0
13546	19	100	29	70S	15MR	58.3	48.5	46.6	2	229.0
13536	20	99	26	5MR	60S	60.6	41.6	43.6	3	171.8
13669	17	100	28	50S	60S	57.2	41.5	36.6	2	179.9
12132	17	100	26	70S	60S	58.5	39.6	34.9	2	171.5
13668	17	100	26	70S	60S	58.0	38.6	37.7	2	185.0
13537	22	100	26	5MR	40S	59.7	38.6	40.5	3	174.8
8856	17	100	27	60S	60S	60.0	38.2	35.0	30	123.8
13534	22	100	27	70S	40S	56.7	38.1	37.7	3	160.4
12517	20	99	27	50S	90S	55.7	37.4	33.5	13	129.9
11673	21	100	28	60S	80S	55.4	36.0	31.7	25	119.6
13667	17	99	25	70S	60S	58.0	35.1	33.5	2	164.4
13681	21	99	22	15MR	90S	53.2	28.1	--	1	130.7
13680	21	69	25	TrR	70S	58.0	21.5	--	1	100.0
1442	24	100	30	60S	90S	46.0	21.5	20.4	30	100.0
13523	24	48	25	0	70MS	56.0	14.7	28.1	2	138.1

Standard error of a difference = 3.47 bushels.

North Platte, Nebraska
Four replications

C. I. No.	Date headed	Plant height	Winter Survival	Winter Leaf damage 1/	Stem rust	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	In.	%		%	Lbs.	Bu.	Bu.		
13546	19	30	100	3.3	7	61.9	49.8	49.3	2	246.9
13532	20	31	100	5.3	11	61.5	48.3	49.0	3	184.5
13537	22	32	100	4.8	16	62.9	48.0	46.2	3	169.8
13548	20	32	100	3.3	17	62.2	46.4	53.4	2	267.7
13536	19	29	99	6.0	60	61.4	37.8	33.2	3	134.8
12517	20	30	99	5.5	48	59.9	36.8	28.5	14	117.5
13534	21	32	99	5.0	25	60.2	36.2	36.4	3	142.6
12132	17	25	100	4.5	45	59.5	35.8	35.2	2	176.2
11673	20	31	100	3.8	43	59.8	35.6	29.6	22	112.2
13669	16	24	100	4.3	55	59.7	32.9	31.3	2	156.9
13668	17	23	99	5.3	40	59.2	31.7	33.2	2	166.4
13667	17	23	100	5.3	38	59.1	31.2	32.0	2	160.2
1442	24	39	100	3.8	48	54.6	30.8	20.0	25	100.0
8856	17	26	99	4.8	30	60.6	29.0	27.5	25	100.2
13681	21	25	100	6.3	58	54.3	24.2	--	1	78.6
13680	25	33	65	8.8	45	54.5	18.8	--	1	61.0
13523	30	36	18	10.0	38	41.5	15.1	30.5	2	152.6

1/ Rating based on 0-10 scale; 0 = no leaf damage, 10 = severe leaf damage.

Standard error of a difference = 2.55 bushels.

Alliance, Nebraska
Four replications

C. I. No.	Winter survival
	%
1442	15
8856	0
11673	T
12517	1
13523	T
12132	2
13667	2
13668	1
13669	2
13532	2
13534	11
13536	1
13537	16
13546	10
13548	4
13680	0
13681	0

Ames, Iowa
Three replications

C. I. No.	Date Headed	Date Ripe	Winter survival	Plant height	Lodging	Diseases: Leaf rust	Diseases: Stem rust	Diseases: Mildew	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	May	June	%	In.	%	%	%		Lbs.	Bu.	Bu.		
13548	25	7/4	99	40	20	Tr	3	MR	59.3	64.4	63.6	2	309.5
13532	23	7/2	100	38	13	Tr	Tr	MS	58.2	58.1	49.9	3	191.5
13546	23	29	99	39	12	25	Tr	HR	56.6	53.4	64.4	2	313.1
13537	26	7/3	100	39	13	5	5	HS	58.9	51.7	47.3	3	183.1
13668	20	26	100	33	15	65	80	MS	56.8	51.1	45.7	2	222.1
13667	20	26	99	34	18	60	50	MS	56.1	47.9	44.3	2	215.3
12132	22	27	100	35	12	60	75	MS	57.0	47.5	45.3	2	220.2
13536	23	7/3	100	35	5	10	85	S	58.4	47.2	36.9	3	158.9
8856	22	7/1	99	38	26	60	70	S	59.2	46.2	34.6	20	116.3
13669	19	27	99	34	25	65	25	MR	54.7	43.7	44.4	2	215.8
12517	24	29	96	38	13	65	90	S	52.6	42.1	34.9	12	137.0
13534	25	28	100	38	14	50	20	HR	51.5	38.8	36.0	3	149.6
11673	25	29	100	39	12	60	50	S	52.6	34.1	27.8	20	111.5
13680	25	7/1	68	37	15	30	90	MS	55.7	32.8	--	1	142.0
13523	26	7/4	55	41	10	Tr	25	S	55.4	32.3	24.2	2	117.8
13681	26	27	100	31	0	30	80	HS	49.0	30.6	--	1	132.5
1442	28	7/1	100	40	28	65	80	S	48.2	23.1	20.6	20	100.0

Standard error of a difference = 7.43 bushels.

Urbana, Illinois
Three replications

C. I. No.	Date headed	Winter survival	Plant height	Lodging	Diseases: Loose smut 1/	Diseases: Septoria	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	May	%	In.	%		%	Lbs.	Bu.	Bu.		
13548	21	98	41	0	1.0	70	61.3	52.9	53.4	2	121.1
13668	15	97	39	3	0.0	70	65.7	52.4	52.7	2	119.6
13546	18	95	42	7	0.0	80	61.9	52.0	51.1	2	115.9
13667	15	97	38	3	3.0	70	65.7	50.8	52.4	2	118.8
13537	21	100	41	0	1.3	70	61.5	49.5	47.5	2	107.7
13532	20	93	37	0	1.3	70	63.9	48.5	53.5	2	121.3
13536	19	95	39	0	1.3	80	65.9	46.4	47.6	2	108.1
13680	21	68	39	0	2.0	60	63.0	44.3	--	1	103.3
1442	24	100	44	0	0.3	80	59.8	42.9	44.1	2	100.0
12517	19	93	39	3	0.0	60	62.0	42.8	45.2	2	102.5
12132	16	97	38	0	0.0	70	61.3	42.7	48.1	2	109.1
13669	16	97	38	13	0.0	90	65.9	42.0	43.9	2	99.7
13534	20	97	38	0	0.0	80	59.1	41.7	45.7	2	103.6
11673	20	92	38	0	0.7	90	61.1	40.6	44.5	2	100.9
13681	21	93	32	0	0.0	90	61.9	40.1	--	1	93.5
8856	16	97	39	2	0.0	80	66.6	38.0	42.5	2	96.4
13523	22	20	40	0	0.0	50	61.3	33.5	43.6	2	99.0

1/ Number of smutted heads per 16 feet of row.

Standard error of a difference = 4.22 bushels.

STANDARD ERRORS

Standard errors for yield of the southern regional performance nursery at 19 reporting stations are given in table 2. Average nursery yields ranged from 73.5 bushels per acre at Ft. Collins down to 8.4 bushels at Chillicothe, Texas. Variability coefficients ranged from a low 5.9 percent in the Clovis dryland nursery to 34.9 percent at Chillicothe.

SUMMARY OF NURSERY YIELDS

A summary of station, state, and regional yields of varieties in the southern regional nursery together with appropriate state and regional rank of varieties is compiled in table 3. Similarly compiled 2-year average yields for varieties appear in table 4.

The highest regional yields in 1962 were made by C. I. 13548 and C. I. 13532 each with 39.6 bushels per acre. Close behind in third place was C. I. 13546 with 39.2 bushels per acre. The data from Chillicothe were submitted too late to be included in the regional averages. At Clovis and Bushland where both dryland and irrigated tests were grown, only the dryland yields were used to calculate state and regional averages.

The same 3 varieties C. I. 13546, C. I. 13548, and C. I. 13532 in that order also have the highest 2-year average yields among 15 varieties grown for the period.

SUMMARY OF AGRONOMIC DATA

A summary of agronomic data for varieties in the southern regional performance nursery in 1962 is presented in table 5. Varieties are listed according to average test weight. Only C. I. 13536 and Early Blackhull had average bushel weights higher than 60 pounds per bushel. C. I. 13537 had slightly the highest winter survival at 8 stations reporting differential winterkilling. C. I. 13523 and C. I. 13680 in that order had the lowest average survivals and are clearly too winter tender for all but the most southern part of the region. The least lodging at 5 reporting stations was recorded for C. I. 13681, a semi-dwarf variety from Texas. Next in order of lodging resistance was C. I. 13536, C. I. 13532, C. I. 13537, and C. I. 13548. The highest combined resistance to leaf and stem rust was possessed by C. I. 13532. Next in order of combined resistance were C. I. 13548 and C. I. 13537. C. I. 13523 was the only variety completely resistant to leaf rust at 4 reporting stations. C. I. 13536, C. I. 13680, and C. I. 13681 also had low average leaf rust infections.

Table 2. Number of replications, mean yields, and standard errors for the southern regional performance nursery at 19 reporting stations in 1962.

State and Station	Number of replications	Number of varieties	Av. yield all varieties	Standard error of Diff. in means	Standard error of Mean	Coefficient of variability
			Bu.	Bu.	Bu.	%
TEXAS						
Chillicothe	4	17	8.4	2.06	1.46	34.9
Denton	4	17	31.8	2.41	1.71	10.7
Bushland (dryland)	4	17	12.5	2.25	1.59	22.0
Bushland (irrigated)	3	17	36.1	3.42	2.42	11.6
NEW MEXICO						
Clovis (dryland)	3	17	24.0	1.16	0.82	5.9
Clovis (irrigated)	3	17	32.2	4.40	3.11	16.8
OKLAHOMA						
Stillwater	4	17	31.6	2.09	1.48	9.4
Cherokee	4	17	24.9	2.49	1.76	14.2
Woodward	4	17	38.0	2.49	1.76	9.3
KANSAS						
Manhattan	4	17	24.2	1.88	1.33	11.0
Hays	4	17	23.4	1.42	1.00	8.6
Garden City	4	17	19.8	2.66	1.89	19.1
Colby	4	17	25.2	1.46	1.03	8.2
COLORADO						
Ft. Collins	5	17	73.5	6.13	4.33	14.2
Akron	4	17	30.8	5.16	3.65	23.7
Hesperus	5	17	70.1	7.61	5.38	17.2
Springfield	5	17	24.8	4.82	3.40	30.8
NEBRASKA						
Lincoln	4	17	36.9	3.47	2.46	13.3
No. Platte	4	17	34.6	2.55	1.81	10.4
IOWA						
Ames	3	17	43.3	7.43	5.25	21.0
ILLINOIS						
Urbana	3	17	44.8	4.22	2.98	11.5

Table 3. Summary of average yields in bushels per acre made by 17 varieties grown in the southern regional performance nursery at 18 stations in 1962, with state averages and rank.

Variety	C. I. No.	New Mexico		Texas				Oklahoma					Iowa		Illinois	
		Clovis	Rank	Bushland	Denton	Average	Rank	Stillwater	Chero-kee	Woodward	Average	Rank	Ames	Rank	Urbana	Rank
Pnc x Mi-Hope-Pn	13532	21.8	14-15	12.6	38.0	25.3	3-5	32.7	25.6	44.4	34.2	5	58.1	2	48.5	6
Cmn x Mi-Hope-Pn-Oro-Il 1-Cmn	13548	23.0	13	10.9	33.9	22.4	9	33.2	27.1	39.6	33.3	8	64.4	1	52.9	1
Nbr-Hope-Tk x Cnn-Pnc	13546	29.4	1	14.5	26.9	20.7	12	33.3	28.7	40.9	34.3	4	53.4	3	52.0	3
RCh-Tk-Oro-Fn x Mql-Oro	13537	27.6	2	11.6	31.0	21.3	11	28.7	25.4	37.1	30.4	11	51.7	4	49.5	5
Improved Triumph	13667	23.1	12	14.1	39.2	26.7	2	37.0	32.1	39.7	36.3	3	47.9	6	50.8	4
Newest Improved Triumph	13668	25.7	7	12.7	37.9	25.3	3-5	37.9	34.7	42.6	38.4	1	51.1	5	52.4	2
Wichita x Mql-Oro	13536	26.2	5	13.8	46.7	30.3	1	31.0	30.6	39.1	33.6	6	47.2	8	46.4	7
Concho	12517	25.2	8	13.4	19.9	16.7	15	31.9	18.8	35.3	28.7	13	42.1	11	42.8	10
Comanche	11673	23.6	10	11.3	26.0	18.7	14	32.3	21.5	37.0	30.3	12	34.1	13	40.6	14
Triumph	12132	27.1	3	13.9	31.9	22.9	8	31.6	27.8	39.0	32.8	10	47.5	7	42.7	11
Early Blackhull	8856	26.2	4	13.0	37.5	25.3	3-5	34.3	27.7	37.0	33.0	9	46.2	9	38.0	16
Cmn-Mi-Hope x Iowin	13534	26.1	6	13.1	17.8	15.5	17	30.3	14.5	33.5	26.1	15	38.8	12	41.7	13
Super Triumph	13669	21.8	14-15	12.6	28.5	20.6	13	37.5	27.8	45.7	37.0	2	43.7	10	42.0	12
Svl-Wi-Hope-Cnn-Wi^2 x SS	13681	16.0	17	11.5	31.2	21.4	10	28.9	26.5	44.8	33.4	7	30.6	16	40.1	15
Cmn-Hnr-Fw-Cmn-Mi-Hope x LPr.25	13680	24.5	9	12.0	36.9	24.5	6	26.2	16.0	29.1	23.8	16	32.8	14	44.3	8
Triumph x T-Ae	13523	16.5	16	10.2	36.9	23.6	7	26.8	21.5	33.8	27.4	14	32.3	15	33.5	17
Kharkof	1442	23.4	11	11.5	20.7	16.1	16	23.8	16.1	27.2	22.4	17	23.1	17	42.9	9

Table 3. Concluded

C. I. No.	Kansas						Colorado						Nebraska				18 station average
	Manhattan	Hays	Colby	Garden City	Average	Rank	Ft. Collins	Akron	Hesperus	Springfield	Average	Rank	Lincoln	No. Platte	Average	Rank	
13532	37.3	27.3	28.0	20.0	28.2	1	86.7	37.1	69.2	25.1	54.5	5	52.8	48.3	50.6	1	39.6
13548	29.9	28.6	25.9	18.7	25.8	5	83.3	36.3	76.5	28.4	56.1	2	54.6	46.4	50.5	2	39.6
13546	26.5	27.0	30.5	21.1	26.3	4	85.5	28.2	80.1	29.1	55.7	3	48.5	49.8	49.2	3	39.2
13537	24.3	26.2	27.5	16.9	23.7	9	79.5	41.7	80.6	25.1	56.7	1	38.6	48.0	43.3	4	37.3
13667	20.7	28.2	26.6	24.8	25.1	6	71.6	33.3	75.0	23.3	50.8	10	35.1	31.2	33.2	13	36.3
13668	21.5	25.5	27.3	24.0	24.6	7	70.2	33.9	65.4	19.4	47.2	13	38.6	31.7	35.2	11	36.3
13536	21.2	25.5	26.8	18.8	23.1	10	78.9	29.4	67.4	23.4	49.8	11	41.6	37.8	39.7	5	36.2
12517	36.4	23.3	26.9	20.7	26.8	2	67.4	40.0	71.8	32.5	52.9	7	37.4	36.8	37.1	9	34.6
11673	40.8	20.7	24.0	21.3	26.7	3	65.8	38.4	68.0	32.1	51.1	9	36.0	35.6	35.8	10	33.8
12132	22.6	23.7	25.1	24.0	23.9	8	70.6	21.6	57.4	15.7	41.3	15	39.6	35.8	37.7	6	33.2
8856	17.2	24.5	26.8	19.8	22.1	12-13	68.3	23.7	62.3	24.9	44.8	14	38.2	29.0	33.6	12	33.0
13534	23.6	23.9	21.7	19.3	22.1	12-13	73.4	32.8	73.7	34.3	53.6	6	38.1	36.2	37.2	7-8	32.9
13669	21.3	26.4	22.6	19.5	22.5	11	61.8	16.5	54.2	12.5	36.3	17	41.5	32.9	37.2	7-8	31.6
13681	16.5	19.5	22.3	15.2	18.4	15	62.8	24.6	79.2	28.2	48.7	12	28.1	24.2	26.2	14-15	30.6
13680	10.5	18.7	21.7	16.8	16.9	17	86.4	30.3	67.0	21.9	51.4	8	21.5	18.8	20.2	16	29.7
13523	17.5	16.3	19.5	17.5	17.7	16	88.1	27.2	79.2	24.8	54.8	4	14.7	15.1	14.9	17	29.5
1442	22.7	12.5	24.7	18.0	19.5	14	48.6	26.8	64.0	20.4	40.5	16	21.5	30.8	26.2	14-15	26.7

Table 4. Summary of two-year average yields in bushels per acre for 15 varieties grown in the southern regional performance nursery at 16 stations in 1961 and 1962, with state averages and rank.

Variety	C. I. No.	New Mexico		Texas		Oklahoma					Iowa		Illinois	
		Clovis	Rank	Denton	Rank	Stillwater	Cherokee	Woodward	Average	Rank	Ames	Rank	Urbana	Rank
Nbr-Hope-Tk x Cnn-Pnc	13546	29.2	1	34.8	7	40.3	42.6	46.0	43.0	1	64.4	1	51.1	5
Cmn x Mi-Hope-Pn-Oro-Il 1-Cmn	13548	23.3	4	37.4	6	37.1	39.7	41.6	39.5	7	63.6	2	53.4	2
Pnc x Mi-Hope-Pn	13532	21.2	11	40.1	2	35.0	42.0	46.5	41.2	5	49.9	3	53.5	1
RCh-Tk-Oro-Fn x Mql-Oro	13537	24.9	2	33.6	9	33.5	37.9	41.2	37.5	10-11	47.3	4	47.5	8
Improved Triumph	13667	19.4	8	38.4	4	38.4	42.5	47.5	42.8	2	44.3	8	52.4	4
Newest Improved Triumph	13668	22.3	6	37.6	5	34.7	43.7	46.3	41.6	4	45.7	5	52.7	3
Wichita x Mql-Oro	13536	23.6	3	40.7	1	30.9	40.9	44.9	38.9	8	36.9	9	47.6	7
Triumph	12132	21.7	10	31.6	10	--	40.6	43.3	42.0	3	45.3	6	48.1	6
Concho	12517	--	-	26.8	15	36.1	32.8	43.5	37.5	10-11	34.9	11	45.2	10
Triumph x T-Ae	13523	20.5	12	38.7	3	31.2	40.2	40.0	37.1	13	24.2	14	43.6	14
Cmn-Mi-Hope x Iowin	13534	22.5	5	27.2	14	31.3	30.0	37.7	33.0	14	36.0	10	45.7	9
Super Triumph	13669	18.2	14	28.7	13	33.2	40.1	49.7	41.0	6	44.4	7	43.9	13
Comanche	11673	21.9	7	31.5	11	--	32.2	42.3	37.2	12	27.8	13	44.5	11
Early Blackhull	8856	21.8	9	34.7	8	34.3	41.7	40.1	38.7	9	34.6	12	42.5	15
Kharkof	1442	19.7	13	29.1	12	25.1	21.7	28.9	25.2	15	20.6	15	44.1	12

Table 4. Concluded

C. I. No.	Kansas					Colorado						Nebraska				16 station average
	Manhattan	Hays	Garden City	Average	Rank	Ft. Collins	Akron	Hesperus	Springfield	Average	Rank	Lincoln	North Platte	Average	Rank	
13546	34.8	36.8	35.7	35.8	3	71.3	26.0	72.2	28.6	49.5	1	46.6	49.3	48.0	3	41.7
13548	40.7	36.7	33.4	36.9	2	64.6	27.6	63.3	27.8	45.8	4	53.8	53.4	53.6	1	41.0
13532	43.9	37.0	33.0	38.0	1	67.3	27.0	60.1	26.4	45.2	5	50.5	49.0	49.8	2	40.1
13537	33.4	34.3	29.7	32.5	6-7	63.9	30.6	68.0	26.3	47.2	2	40.5	46.2	43.3	4	37.6
13667	31.9	32.8	34.7	33.1	5	61.9	27.7	64.2	25.7	44.9	6	33.5	32.0	32.8	10	36.9
13668	28.8	32.6	34.5	32.0	8	60.0	29.5	54.3	22.2	41.5	11	37.7	33.2	35.5	7	36.2
13536	30.6	31.4	33.4	31.8	9	63.8	24.9	60.0	25.5	43.6	7	43.6	33.2	38.4	5	36.0
12132	29.2	29.8	33.4	30.8	11	62.4	21.4	55.6	19.7	39.8	12	34.9	35.2	35.1	8	34.5 1/
12517	40.6	28.1	31.2	33.3	4	50.2	28.0	60.0	31.1	42.3	9-10	33.5	28.5	31.0	12	34.4 1/
13523	31.6	27.1	32.6	30.4	12	67.1	20.5	74.0	23.7	46.3	3	28.1	30.5	29.3	14	33.7
13534	31.5	29.7	31.4	30.9	10	53.7	23.4	66.1	30.9	43.5	8	37.7	36.4	37.1	6	33.6
13669	29.9	29.0	31.7	30.2	13	55.1	20.1	54.3	18.1	36.9	14	36.6	31.3	34.0	9	33.2
11673	38.0	27.9	31.6	32.5	6-7	50.7	26.5	63.0	29.1	42.3	9-10	31.7	29.6	30.7	13	33.0 1/
8856	26.0	30.2	30.8	29.0	14	53.9	21.5	58.1	25.0	39.6	13	35.0	27.5	31.3	11	32.8
1442	27.4	21.0	28.8	25.7	15	39.8	21.0	53.1	23.2	34.3	15	20.4	20.0	20.2	15	26.1

1/ Regional average based on 15 stations only.

Table 5. Summary of agronomic data other than yield for varieties grown in the southern regional performance nursery in 1962.

Variety	C. I. No.	Date		Winter survival	Plant height	Lodging	Rust		Weight per bushel
		Headed	Ripe				Leaf	Stem	
		May	June	%	In.	%	%	%	Lbs.
Number of stations		18	7	8	18	5	4	4	18
Wichita x Mql-Oro	13536	14	15	86	31	55	4	76	60.7
Early Blackhull	8856	12	12	87	31	37	36	65	60.6
Cmn x Mi-Hope-Pn-Oro-Il 1-Cmn	13548	17	18	88	32	7	7	14	59.5
Newest Improved Triumph	13668	11	10	87	29	38	40	70	59.4
RCh-Tk-Oro-Fn x Mql-Oro	13537	18	18	90	32	7	6	15	59.3
Improved Triumph	13667	11	11	87	30	36	41	62	59.3
Triumph	12132	12	11	87	30	17	44	70	59.1
Nbr-Hope-Tk x Cnn-Pnc	13546	15	15	88	31	21	34	11	58.9
Pnc x Mi-Hope-Pn	13532	15	16	87	31	6	1	4	58.5
Super Triumph	13669	11	9	87	30	37	39	60	58.4
Concho	12517	16	17	86	32	27	34	82	58.4
Cmn-Honor-Forward-Cmn-Mi-Hope x LPr 25	13680	16	15	69	31	25	8	76	58.3
Comanche	11673	16	17	87	32	24	32	68	58.2
Cmn-Mi-Hope x Iowin	13534	17	17	88	31	17	45	31	57.3
Svl-Wi-Hope-Cnn-Wi^2 x SS	13681	17	15	87	25	2	12	75	56.4
Kharkof	1442	20	21	89	33	30	54	80	56.2
Triumph x T-Ae	13523	17	19	42	31	15	0	33	56.0

NORTHERN REGIONAL PERFORMANCE NURSERY

Sixteen varieties were included in the northern regional nursery in 1962. The nursery was grown at 13 stations. Yield data were reported from 9. Severe winterkilling caused the abandonment of the nursery at Alliance, Nebraska and Dickinson, North Dakota. The nursery at St. Paul, Minnesota was destroyed by hail. Single rod-row observation plots only were grown at Lincoln, Nebraska. Both dryland and irrigated tests were grown at Clovis, New Mexico. Data from the reporting stations appear in table 6. Varieties in the nursery in 1962 are listed below.

Entry No.	Variety or pedigree	C. I. No.	State submitting
1	Kharkof	1442	
2	Minter	12138	
3	Yogo	8033	
4	Nebred	10094	
5	Cheyenne	8885	
6	Nbr-Hope-Tk x Cnn-Pnc	13546	Nebr.
7	Tk-Cnn x Hope-Cnn^2	13547	Nebr.
8*	Ponca x Cheyenne^2	13666	Nebr.
9*	Frontana x Minter^2	13682	Minn.
10*	Winalta	13670	Lethbridge, Alberta
11	So. Dakota Selection	13526	So. Dak.
12	So. Dakota Selection	13528	So. Dak.
13	So. Dakota Selection	13198	So. Dak.
14	Yogo x (Tk x Oro 221)-117	13542	Mont.
15	(Yogo x Rescue 21) x Marmin-1065	13544	Mont.
16	Marmin x (Yogo x Rescue 5)-342	13545	Mont.

* New entry in 1962

DATA OBTAINED

Major environmental factors affecting performance at the Nebraska stations were described in connection with the southern regional performance nursery. Best performance at North Platte was recorded for those varieties possessing resistance or moderate resistance to stem rust. Winalta and C. I. 13547 were slightly the most productive with 48.4 and 48.2 bushel yields respectively. C. I. 13547 and C. I. 13546 have considerably the highest 2-year average yields at North Platte.

At Lincoln, C. I. 13666 and C. I. 13682 showed mixed reaction to leaf rust as did several varieties to stem rust. C. I. 13547 with resistance to races 56 and 29 was the most stem rust resistant variety. C. I. 13546, C. I. 13547 and C. I. 13526 in that order were earliest maturing.

Winter survival among varieties in the northern regional nursery was markedly better than survival among varieties in the southern nursery at Alliance, Nebraska. C. I. 13542 with 50 percent stand survival was the most winterhardy. Next in order of survival were Minter, C. I. 13528, C. I. 13198, and C. I. 13682. C. I. 13546 and C. I. 13666 were the least hardy.

Timely moisture and moderate temperatures contributed to excellent yields reported from Archer, Wyoming. Stem rust became heavy but came too late to materially affect yields and test weights which were the best in several years. Yields ranged from 42.0 to 29.6 bushels per acre and test weights from 66.0 to 63.5 pounds per bushel.

Growing conditions were nearly as good at Sheridan as at Archer, Wyoming. Lack of moisture during the early spring probably reduced yields somewhat. Diseases or insects were not a problem. Yield differences at Sheridan were not significant statistically. Bushel weights ranged from 63.0 to 61.0 pounds.

Winter snowfall was heavy at Brookings. Moderate winterkilling occurred. Frequent and heavy spring and summer precipitation was received and contributed to heavy leaf and stem rust infections. Scab also was prevalent. The combination of winter injury, diseases and lodging produced very low yields and test weights. Only 3 varieties produced grain weighing as much as 50 pounds per bushel. They were Minter, C. I. 13682, and C. I. 13198. The grain from 4 varieties weighed less than 40 pounds. Only 5 varieties made yields higher than 10 bushels per acre. C. I. 13547, C. I. 13526, C. I. 13546, and C. I. 13528 lodged the least.

Severe hail on June 23 completely destroyed the nursery at St. Paul, Minnesota. The 3 South Dakota varieties showed the best resistance to mildew at St. Paul.

Moisture was plentiful throughout the season at Waseca. Temperatures generally were below normal. One period of severe cold occurred before there was sufficient snow cover to afford protection to the nursery. Stem rust became severe on varieties susceptible to race 56. Leaf rust also was heavy. Yield differences were not statistically significant. C. I. 13542, C. I. 13545, and C. I. 13544 survived the winter with the best stands.

Fall soil moisture at Havre, Montana was critical with barely enough for germination and fair emergence. Stands of varieties were further reduced during a dry open winter. Wind damage occurred during the winter and spring. The only spring precipitation of consequence was an inch of rain when the varieties were in the early boot stage. C. I. 13528 and C. I. 13542 were slightly the most productive varieties. C. I. 13547 produced the highest test weight grain. C. I. 13526 survived the winter with the best stand. C. I. 13547 has a 3-bushel 2-year average yield advantage over other varieties.

The soil was short of moisture at Lethbridge when the winter wheat was seeded. By October 10 all varieties had emerged to 90-100 percent stands and plants were in the 2-leaf stage and about 3 inches tall. Severe cold, particularly in February caused heavy killing in the more tender varieties. Yield data are largely a reflection of winter survival. C. I. 13198, C. I. 13542, C. I. 13682, and Yogo survived with the best stands. The 3 Nebraska varieties and C. I. 13545 survived with the poorest stands.

Conditions at Colby, Kansas and Clovis, New Mexico have already been described. Although not recorded, considerable stem rust developed in the

nursery at Colby and contributed to the relatively low yields and low test weights of the susceptible late maturing varieties. C. I. 13526, C. I. 13682, and C. I. 13546 in that order were highest yielding and among the varieties highest in test weight.

C. I. 13546 was the second-most productive variety in the dryland test at Clovis but was one of the poorest yielders in the irrigated test. The reverse was true for C. I. 13547 which was second-highest yielder in the irrigated nursery but low yielding in the dryland nursery. Kharkof and Cheyenne were productive in both tests.

Table 6. Yield and other data for varieties grown in the northern regional performance nursery at 12 stations in the hard red winter wheat region in 1962.

North Platte, Nebraska--Four replications

C. I. No.	Date headed	Winter leaf damage 1/	Plant height	Stem rust	Weight per bushel	Av. acre yield: 1962	1961-1962	No. years grown	Percent of Kharkof
	May		In.	%	Lbs.	Bu.	Bu.		
13670	24	2.8	40	20	60.3	48.4	--	1	151.7
13547	21	3.5	33	9	61.5	48.2	48.0	2	259.5
13528	23	2.0	37	21	61.0	47.5	42.9	4	163.3
13682	26	2.5	43	8	59.0	47.4	--	1	148.6
13546	19	4.0	31	10	61.5	46.1	46.7	2	252.4
12138	28	3.0	43	20	59.6	43.6	34.6	4	137.5
13198	28	3.0	43	13	59.6	42.1	36.5	3	161.7
13526	22	3.3	34	13	60.9	41.2	40.9	4	152.9
13666	20	3.0	33	58	61.5	38.8	--	1	121.6
10094	24	3.0	36	58	55.8	36.8	23.4	4	122.0
13544	27	3.8	42	70	54.7	35.3	23.8	3	135.0
13545	25	3.8	40	40	53.9	33.4	22.5	3	116.5
8885	24	2.8	38	68	55.2	33.1	21.2	4	120.6
1442	25	2.8	39	65	51.6	31.9	18.5	4	100.0
13542	27	2.3	44	50	51.5	28.0	17.2	3	107.9
8033	28	2.8	43	55	50.0	25.2	14.9	4	89.5

1/ Winter leaf damage rating; 0 = no damage, 10 = severe damage.

Standard error of a difference = 2.06 bushels.

Lincoln, Nebraska
Single plots

C. I. No.	Date headed	Rust		Plant height	Weight per bushel
		Leaf	Stem		
	May	%	%	In.	Lbs.
1442	25	60S	90S	29	47.5
12138	26	60S	20MR-60S	31	53.5
8033	26	80S	90S	32	-- 1/
10094	23	90S	80S	28	53.0
8885	24	70S	90S	28	51.5
13546	18	70S	10MR	27	59.5
13547	22	70S	2R	26	60.0
13666	21	5R-70S	80S	27	57.5
13682	26	2R-70S	20MR-70S	32	55.0
13670	24	60S	20MR-90S	30	57.0
13526	21	70S	10MR	27	60.5
13528	24	70S	20MR-80S	27	58.0
13198	26	50S	20MR-80S	30	55.5
13542	26	70S	80S	31	-- 1/
13544	26	40S	80S	29	52.0
13545	24	60S	80S	29	54.0

1/ Insufficient seed for bushel weight determination.

Alliance, Nebraska
Four replications

C. I. No.	Winter survival
	%
1442	23
12138	48
8033	38
10094	23
8885	21
13546	9
13547	18
13666	11
13682	40
13670	28
13526	35
13528	45
13198	40
13542	50
13544	28
13545	30

Archer, Wyoming
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Average acre yield	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.		
13198	14	42	63.5	42.0	2	107.2
13670	11	39	65.0	41.6	1	111.5
13544	14	42	65.0	41.2	2	101.1
8885	12	39	63.5	39.4	5	100.0
12138	16	44	63.5	38.9	7	94.3
13542	15	45	64.5	38.6	2	97.7
1442	16	44	63.5	37.3	7	100.0
10094	11	39	65.5	36.7	7	102.4
8033	15	43	63.5	36.0	7	92.9
13545	14	40	64.0	35.7	2	94.5
13546	5	34	65.0	35.4	1	94.9
13547	9	35	65.0	34.4	1	92.2
13528	10	41	64.5	34.4	3	96.5
13682	14	41	63.5	34.2	1	91.7
13526	9	37	66.0	32.9	3	101.6
13666	5	35	66.0	29.6	1	79.4

Standard error of a difference = 2.31 bushels.

Sheridan, Wyoming
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	June	In.	Lbs.	Bu.	Bu.		
8885	15	47	62	34.9	31.4	6	116.4
13542	15	47	63	32.2	27.8	3	97.5
8033	15	48	62	31.2	28.9	11	105.7
13544	15	47	62	30.9	29.6	3	106.7
13546	8	44	61	30.6	34.0	2	122.1
13545	13	43	61	30.2	26.1	3	89.5
1442	12	42	62	30.1	27.9	11	100.0
13670	10	44	62	30.0	--	1	99.7
13528	11	41	61	29.8	31.3	4	96.2
13547	11	42	63	29.6	30.3	2	108.8
13198	11	44	62	29.6	28.3	3	97.7
13682	10	43	61	27.0	--	1	89.7
10094	11	41	63	26.3	28.4	11	104.9
12138	12	45	62	24.0	25.7	11	99.4
13526	10	39	62	23.8	24.9	4	83.0
13666	10	43	62	23.7	--	1	78.7

Standard error of a difference = non-significant.

Brookings, South Dakota
Three replications

C. I. No.	Date headed	Winter survival	Plant height	Lodging	Stem rust	Weight per bushel	Av. acre yield 1962	No. years grown	Percent of Kharkof
	June	%	In.	%	%	Lbs.	Bu.		
13526	20	85	46	5	1R	49.0	15.2	3	167.8
13546	17	85	42	5	1R	45.5	13.1	1	409.4
13682	24	88	48	15	Tr.R	50.0	12.5	1	390.6
12138	25	98	50	25	5X	50.2	10.7	9	133.7
13198	24	98	47	15	Tr.R	50.0	10.6	2	229.4
13528	23	88	45	5	Tr.R	46.5	9.9	3	171.3
13670	21	88	47	8	Tr.R	46.0	8.9	1	278.1
13547	19	75	44	1	1R	48.0	7.5	1	234.4
13544	25	83	48	20	100S	43.0	6.6	2	117.5
13545	25	80	48	45	20X	41.0	4.6	2	62.2
13666	19	65	45	80	100S	35.0	3.5	1	109.4
1442	24	93	42	75	40S	39.1	3.2	9	100.0
8885	23	93	43	50	100S	37.0	2.7	5	92.3
8033	26	90	47	45	40S	41.3	2.4	9	114.2
13542	24	83	45	80	60S	40.0	2.2	2	65.0
10094	22	98	43	65	100S	39.0	2.0	9	106.5

All varieties were completely susceptible to leaf rust.

Standard error of a difference = 1.13 bushels.

St. Paul, Minnesota
Three replications

C. I. No.	Date headed June	Mildew 1/
1442	15	5
12138	15	3
8033	15	5
10094	12	5
8885	13	5
13546	7	4
13547	10	3
13666	10	3
13682	14	4
13670	13	3
13526	9	2
13528	12	2
13198	14	2
13542	15	4
13544	14	3
13545	15	3

1/ Mildew rating on 1-5 scale;
1 = resistant, 5 = susceptible.

Waseca, Minnesota
Three replications

C. I. No.	Date Headed	Date Ripe	Plant height	Winter survival	Lodging 1/	Rust Leaf	Rust Stem	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	June	July	In.	%		%	%	Lbs.	Bu.	Bu.		
13198	13	17	44	72	3	80	20	55.3	36.1	43.1	2	151.8
13547	10	18	39	69	2	80	10	56.3	35.1	42.0	2	147.9
12138	12	18	46	79	3	50	15	55.7	33.6	41.5	2	146.0
13670	11	15	42	74	3	80	60	50.8	32.9	--	1	241.9
13682	13	19	43	76	3	60	15S	56.2	30.4	--	1	223.5
13546	8	19	37	52	2	80	30S	52.3	27.2	43.7	2	153.9
13526	10	18	40	55	2	60	10	53.2	26.2	34.9	2	122.9
13528	12	16	40	49	2	80	30	52.3	25.8	38.9	2	137.0
13545	13	13	47	82	4	80	80	47.0	22.8	30.2	2	106.3
8033	14	13	47	78	5	80	80	51.2	22.2	29.9	2	105.1
13544	14	17	47	81	3	80	80	49.2	20.2	31.0	2	109.2
8885	11	13	42	70	2	80	80	48.2	14.9	20.8	2	73.2
1442	12	13	44	78	3	90	90	45.8	13.6	28.4	2	100.0
13542	13	13	47	82	5	80	80	43.0	12.9	23.6	2	82.9
10094	12	12	41	70	3	80	80	43.2	11.1	19.4	2	68.1
13666	11	13	39	59	2	80	80	38.0	8.1	--	1	59.6

1/ Based on 1-9 scale; 1 = erect, 9 = completely lodged.

Standard error of a difference = non-significant.

Havre, Montana
Three replications

C. I. No.	Date headed	Plant height	Winter survival	Weight per bushel	Av. acre yield: 1962	Av. acre yield: 1961-1962	No. years grown	Percent of Kharkof
	June	In.	%	Lbs.	Bu.	Bu.		
13528	11	27	76	57	16.6	13.4	3	92.0
13542	15	30	70	56	16.6	13.8	2	98.9
13547	10	27	60	60	15.7	17.6	2	126.3
1442	15	29	63	56	14.1	13.9	9	100.0
10094	12	27	73	57	13.4	14.3	9	95.4
13545	15	31	47	56	13.2	13.4	2	96.4
13198	14	30	76	56	12.8	13.0	2	93.5
13526	11	24	80	58	12.5	12.5	3	102.5
13544	18	30	40	56	12.5	10.4	2	74.8
13670	12	28	70	57	12.1	--	1	85.8
13682	13	30	70	55	11.8	--	1	83.7
13666	12	25	43	59	11.6	--	1	82.3
13546	13	26	67	56	11.5	14.3	2	102.5
8033	15	29	70	55	11.5	12.0	9	96.7
12138	15	27	60	56	10.5	10.9	9	86.9
8885	15	27	60	56	8.5	12.0	4	97.0

Standard error of a difference = 2.99 bushels.

Lethbridge, Alberta
Four replications

C. I. No.	Date Headed	Date Ripe	Plant height	Winter survival	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	June	July	In.	%	Bu.	Bu.		
13542	18	27	30	61	21.4	19.0	3	112.8
8885	20	30	28	40	19.9	20.6	6	110.6
13682	17	28	29	61	19.9	--	1	126.8
13528	17	29	27	43	19.0	19.0	4	103.0
8033	19	28	28	58	18.8	19.6	9	108.3
12138	19	30	28	53	18.0	16.9	9	101.8
13198	18	29	27	66	17.9	15.7	3	100.9
13544	21	30	28	21	16.7	18.1	3	105.5
10094	19	29	26	31	16.5	17.5	9	98.5
13670	17	28	27	55	16.4	--	1	104.5
1442	20	30	28	23	15.7	16.2	9	100.0
13526	17	27	25	49	14.3	14.8	4	98.2
13545	20	8/1	28	6	13.8	14.8	3	94.9
13666	20	31	27	11	11.5	--	1	73.2
13547	18	31	28	10	11.4	15.4	2	95.4
13546	19	31	25	6	7.5	14.0	2	86.7

Standard error of a difference = 0.84 bushels.

Colby, Kansas
Four replications

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1962	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.		
13526	19	37	58.0	36.3	2	113.4
13682	25	41	58.5	32.9	1	146.2
13546	17	36	56.5	32.9	1	146.2
13528	22	38	57.0	31.9	2	114.6
12138	25	44	57.0	31.9	2	111.8
13670	21	39	57.5	31.1	1	138.2
13544	26	41	56.5	29.2	2	97.0
13198	25	43	57.5	28.8	2	103.8
10094	21	36	52.5	27.3	2	93.2
13547	21	37	56.5	26.8	1	119.1
13666	23	38	53.0	23.7	1	105.3
13545	24	41	55.0	23.2	2	99.4
1442	24	41	52.0	22.5	2	100.0
8885	23	39	52.0	22.1	2	109.4
13542	27	44	51.0	17.1	2	75.9
8033	26	44	50.5	16.8	2	73.7

Standard error of a difference = 2.78 bushels.

Clovis, New Mexico
Three replications, dryland

C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield 1962	Av. acre yield 1961-1962	No. years grown	Percent of Kharkof
	May	In.	Lbs.	Bu.	Bu.		
1442	12	27	59	29.7	23.2	4	100.0
13546	5	30	59	29.0	28.4	2	122.7
13666	8	29	62	28.6	--	1	96.3
8885	11	28	61	26.9	23.2	4	98.1
10094	10	24	59	25.6	23.9	4	97.6
13526	8	27	60	24.2	20.6	4	78.1
13670	11	28	61	24.0	--	1	80.8
13544	12	29	59	23.7	22.6	3	89.7
13542	13	28	58	23.4	21.1	3	83.8
13545	12	28	58	21.8	20.2	3	75.7
13528	10	28	59	20.2	18.3	4	80.5
13198	17	27	59	18.8	19.5	3	81.0
8033	13	27	58	18.7	18.7	4	77.8
13547	8	28	61	18.0	21.3	2	92.0
13682	14	27	57	13.7	--	1	46.1
12138	13	28	58	11.6	15.4	4	75.3

Standard error of a difference = 3.52 bushels.

Clovis, New Mexico
Three replications, irrigated

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Average acre yield	Percent of Kharkof
	May	June	In.	Lbs.	Bu.	
8885	16	25	37	58	42.1	124.2
13547	12	16	35	59	38.6	113.9
10094	16	20	35	60	34.0	100.3
1442	14	7/1	38	59	33.9	100.0
13542	19	7/1	37	58	33.4	98.5
13666	10	20	35	58	33.2	97.9
13682	17	25	36	59	32.3	95.3
13670	16	25	36	60	31.6	93.2
13544	14	23	36	58	31.6	93.2
13198	19	25	37	59	30.0	88.5
12138	19	27	36	59	29.6	87.3
13526	13	20	36	59	29.5	87.0
13545	14	25	38	58	27.5	81.1
13546	8	16	37	59	27.3	80.5
13528	15	25	36	58	25.4	74.9
8033	19	28	36	60	24.5	72.3

Standard error of a difference = 1.66 bushels.

STANDARD ERRORS

Mean yields and standard errors for the northern regional performance nursery at 9 stations reporting yield data are given in table 7. Average nursery yields ranged from 39.2 bushels at North Platte, Nebraska, down to 7.2 bushels at Brookings, South Dakota. Non-significant yield differences were reported from Sheridan, Wyoming, and Waseca, Minnesota. Coefficient of variability was lowest at Havre, Montana, and highest at Waseca.

SUMMARY OF NURSERY YIELDS

Station, state, and regional yields of varieties in the northern regional performance nursery are summarized in table 8. Winalta made the highest average yield among varieties grown in 1962. Second and third ranked varieties on a regional basis were the South Dakota entries C. I. 13198 and C. I. 13528. C. I. 13546, despite heavy loss of stands at five stations, ranked fourth in the nursery with a respectable 25.9 bushel average. It also has the highest 2-year average yield among 13 varieties grown in 1961 and 1962 (table 9). C. I. 13547 is the second most productive variety on a 2-year basis followed by the South Dakota varieties C. I. 13528, C. I. 13198, and C. I. 13526.

SUMMARY OF AGRONOMIC DATA

Agronomic data other than yield for entries in the northern regional nursery are summarized in table 10. Varieties are arranged according to average bushel weight. C. I. 13546 was earliest heading but was not the earliest maturing at 2 reporting stations probably due to thin stands. South Dakota Selection, C. I. 13198 was slightly the most winterhardy followed by C. I. 13542, Minter, Yogo, and C. I. 13682 in that order. C. I. 13547 lodged the least and was slightly the most resistant to stem rust.

Table 7.--Number of replications, mean yields, and standard errors for the northern regional performance nursery at 9 reporting stations in 1962.

State and Station	Number replications	Number varieties	Av. yield all varieties	Standard error of Diff. in means	Standard error of Mean	Coefficient of variability
			Bu.	Bu.	Bu.	%
NEW MEXICO						
Clovis (dryland)	3	16	23.0	3.52	2.49	15.4
Clovis (irrigated)	3	16	31.5	1.66	1.17	6.4
KANSAS						
Colby	4	16	27.2	2.78	1.97	14.5
NEBRASKA						
North Platte	4	16	39.2	2.06	1.46	7.4
WYOMING						
Archer	4	16	36.7	2.31	1.63	8.9
Sheridan	4	16	29.0	ns	ns	16.0
SOUTH DAKOTA						
Brookings	3	16	7.2	1.13	0.80	19.1
MINNESOTA						
Waseca	3	16	19.6	ns	ns	66.9
MONTANA						
Havre	3	16	12.8	2.99	2.11	6.2
ALBERTA						
Lethbridge	4	16	16.6	0.84	0.59	7.2

Table 8.--Summary of average yields in bushels per acre made by 16 varieties grown in the northern regional performance nursery at 9 stations in 1962, with state averages and ranks.

Variety	C. I. No.	New Mexico		Kansas		Nebraska	
		Clovis	Rank	Colby	Rank	North Platte	Rank
Winalta	13670	24.0	7	31.1	6	48.4	1
So. Dak. Sel.	13198	18.8	12	28.8	8	42.1	7
So. Dak. Sel.	13528	20.2	11	31.9	4-5	47.5	3
Nbr-Hope-Tk x Cnn-Pnc	13546	29.0	2	32.9	2-3	46.1	5
Frontana x Minter[2]	13682	13.7	15	32.9	2-3	47.4	4
So. Dak. Sel.	13526	24.2	6	36.3	1	41.2	8
Tk-Cnn x Hope-Cnn[2]	13547	18.0	14	26.8	10	48.2	2
Minter	12138	11.6	16	31.9	4-5	43.6	6
(Yogo-Rescue 21)x Mn-1065	13544	23.7	8	29.2	7	35.3	11
Cheyenne	8885	26.9	4	22.1	14	33.1	13
Mn x(Yogo-Rescue 5)-342	13545	21.8	10	23.2	12	33.4	12
Kharkof	1442	29.7	1	22.5	13	31.9	14
Nebred	10094	25.6	5	27.3	9	36.8	10
Yogo x (Tk-Oro 221)-117	13542	23.4	9	17.1	15	28.0	15
Yogo	8033	18.7	13	16.8	16	25.2	16
Ponca x Cheyenne[2]	13666	28.6	3	23.7	11	38.8	9

C. I. No.	Wyoming				So. Dakota		Minnesota		Montana		Alberta		9 station average
	Archer	Sheridan	Average	Rank	Brookings	Rank	Waseca	Rank	Havre	Rank	Lethbridge	Rank	
13670	41.6	30.0	35.8	3-4	8.9	7	32.9	4	12.1	10	16.4	10	27.3
13198	42.0	29.6	35.8	3-4	10.6	5	36.1	1	12.8	7	17.9	7	26.5
13528	34.4	29.8	32.1	10	9.9	6	25.8	8	16.6	1	19.0	4	26.1
13546	35.4	30.6	33.0	8-9	13.1	2	27.2	6	11.5	13	7.5	16	25.9
13682	34.2	27.0	30.6	14	12.5	3	30.4	5	11.8	11	19.9	3	25.5
13526	32.9	23.8	28.4	15	15.2	1	26.2	7	12.5	8	14.3	12	25.2
13547	34.4	29.6	32.0	11	7.5	8	35.1	2	15.7	3	11.4	15	25.2
12138	38.9	24.0	31.5	12-13	10.7	4	33.6	3	10.5	15	18.0	6	24.8
13544	41.2	30.9	36.1	2	6.6	9	20.2	11	12.5	9	16.7	8	24.0
8885	39.4	34.9	37.2	1	2.7	13	14.9	12	8.5	16	19.9	2	22.5
13545	35.7	30.2	33.0	8-9	4.6	10	22.8	9	13.2	6	13.8	13	22.1
1442	37.3	30.1	33.7	6	3.2	12	13.6	13	14.1	4	15.7	11	22.0
10094	36.7	26.3	31.5	12-13	2.0	16	11.1	15	13.4	5	16.5	9	21.7
13542	38.6	32.2	35.4	5	2.2	15	12.9	14	16.6	2	21.4	1	21.4
8033	36.0	31.2	33.6	7	2.4	14	22.2	10	11.5	14	18.8	5	20.3
13666	29.6	23.7	26.7	16	3.5	11	8.1	16	11.6	12	11.5	14	19.9

Table 9.--Summary of two-year average yields for 13 varieties grown in the northern regional performance nursery at 6 stations in 1961 and 1962, with state averages and ranks.

Variety	C. I. No.	New Mexico		Nebraska		Wyoming		Minnesota		Montana		Alberta		6 station average
		Clovis	Rank	North Platte	Rank	Sheridan	Rank	Waseca	Rank	Havre	Rank	Lethbridge	Rank	
Nbr-Hope-Tk x Cnn-Pnc	13546	28.4	1	46.7	2	34.0	1	43.7	1	14.3	2-3	14.0	13	30.2
Tk-Cnn x Hope-Cnn^2	13547	21.3	6	48.0	1	30.3	4	42.0	3	17.6	1	15.4	10	29.1
So. Dak. Sel.	13528	18.3	12	42.9	3	31.3	3	38.9	5	13.4	6-7	19.0	3-4	27.3
So. Dak. Sel.	13198	19.5	10	36.5	5	28.3	8	43.1	2	13.0	8	15.7	9	26.0
So. Dak. Sel.	13526	20.6	8	40.9	4	24.9	13	34.9	6	12.5	9	14.8	11-12	24.8
Minter	12138	15.4	13	34.6	6	25.7	12	41.5	4	10.9	12	16.9	7	24.2
(Yogo-Rescue 21)x Mm-1065	13544	22.6	5	23.8	7	29.6	5	31.0	7	10.4	13	18.1	5	22.6
Cheyenne	8885	23.2	3-4	21.2	10	31.4	2	20.8	12	12.0	10-11	20.6	1	21.5
Kharkof	1442	23.2	3-4	18.5	11	27.9	9	28.4	10	13.9	4	16.2	8	21.4
Mm x(Yogo-Rescue 5)-342	13545	20.2	9	22.5	9	26.1	11	30.2	8	13.4	6-7	14.8	11-12	21.2
Nebred	10094	23.9	2	23.4	8	28.4	7	19.4	13	14.3	2-3	17.5	6	21.2
Yogo	8033	18.7	11	14.9	13	28.9	6	29.9	9	12.0	10-11	19.6	2	20.7
Yogo x (Tk-Oro 221)-117	13542	21.1	7	17.2	12	27.8	10	23.6	11	13.8	5	19.0	3-4	20.4

Table 10.--Summary of agronomic data other than yield for varieties grown in the northern regional performance nursery in 1962.

Variety	C. I. No.	Date		Winter survival	Plant height	Lodging	Rust		Weight per bushel
		Headed	Ripe				Leaf	Stem	
		June	July	%	In.	%	%	%	Lbs.
Number of stations---		11	2	5	10	2	2	4	9
Tk-Cnn x Hope-Cnn^2	13547	3	25	46	34	7	75	6	59.0
So. Dak. Sel.	13526	3	23	61	34	9	65	9	58.6
So. Dak. Sel.	13198	7	23	70	38	20	65	21	57.6
Nbr-Hope-Tk x Cnn-Pnc	13546	1	25	44	33	9	75	13	57.4
Winalta	13670	5	22	63	36	16	70	34	57.4
So. Dak. Sel.	13528	5	23	60	35	9	75	25	57.4
Minter	12138	7	24	68	39	25	55	15	57.3
Frontana x Minter^2	13682	7	24	67	38	20	48	11	57.2
(Yogo-Rescue 21) x Mm-1065	13544	8	24	51	38	22	60	83	55.3
Ponca x Cheyenne^2	13666	3	22	38	34	46	59	80	54.9
Mm x (Yogo-Rescue 5)-342	13545	7	23	49	38	41	70	55	54.4
Nebred	10094	5	21	59	34	45	85	80	54.2
Cheyenne	8885	6	22	57	36	31	75	85	54.0
Kharkof	1442	7	22	56	37	50	75	71	52.9
Yogo	8033	8	21	67	39	47	80	66	47.9
Yogo x (Tk-Oro 221)-117	13542	8	20	69	39	64	75	68	47.4

UNIFORM WINTERHARDINESS NURSERY

A uniform winterhardiness nursery comprised of duplicated observation rows of experimental varieties was grown at 7 locations in 1962. The nursery contained 225 entries. Differential survival of strains was recorded at Alliance, Brookings, Moccasin, and Fargo. Survival data were summarized in a separate report which was distributed to cooperators before wheat harvest.

DISEASE NURSERIES

A uniform bunt nursery containing 30 entries was grown at 7 locations. Infection data will be compiled and summarized in a separate report for distribution to cooperators.

A soil-borne mosaic nursery is grown each year at Urbana, Illinois, and Powhattan, Kansas, two areas in which this disease is annually recurring. The nursery contained 115 entries in 1962. Infection data were summarized and distributed to cooperators prior to harvest.

The uniform and international rust nurseries are grown annually at a number of locations in the region. Data are summarized and distributed by W. Q. Loegering, Beltsville, Maryland.

Wheat streak mosaic infection data were reported from 3 stations growing the regional streak mosaic nursery in 1962. These are summarized in table 11 together with period-of-years average ratings. C. I. 13546 had slightly the best rating in 1962 and has the best average rating as well. Concho ranked second in 1962 followed by Okla. Sel. 59R2419 and C. I. 13549.

Table 11.--Streak mosaic data for 25 varieties grown in the regional streak mosaic nursery in 1962.

Variety	C. I. or Sel.No.	Mosaic rating - 1962 1/				No. years tested	Average mosaic rating
		Manhattan	Lincoln	Alliance	3-sta. average		
Nbr-Hope-Tk x Cnn-Pnc	13546	2.0	1.0	2.5	1.8	2	1.7
Concho	12517	2.0	1.5	2.5	2.0	4	2.6
Concho x Tst-Pn^2	59R2419	1.0	-- 2/	3.0	2.0 3/	2	2.0
Wheat-Rye x IVc1-Cmn	13549	3.0	3.0	1.0	2.3	4	1.8
Rodco (bronze component)	---	2.0	2.5	2.5	2.3	1	---
Concho x Tst-Pn^2	59R2349	2.0	2.0	3.0	2.3	2	2.1
BlueJacket	12502	2.0	2.3	2.7	2.3	4	2.2
Mql-Oro-Tnf x Pn	52A1	2.0	3.0	2.5	2.5	4	2.7
Aztec	13016	2.0	2.5	3.0	2.5	2	2.2
Concho x Tst-Pn^2	56R3955	-- 2/	2.0	3.0	2.5 3/	1	---
Ctr x Mi-Hope-Pn	R6002	2.0	3.0	3.0	2.7	4	2.8
Ctr x Mi-Hope-Pn	R6073	3.0	2.0	3.0	2.7	4	2.9
Triumph	12132	3.0	3.0	2.0	2.7	4	2.6
Mql-Oro x Oro-Tm	12406	2.0	3.0	3.0	2.7	1	---
Ponca x Cheyenne^2	57234	3.0	3.0	2.0	2.7	2	2.7
Improved Triumph	13667	3.0	3.0	2.5	2.8	1	---
RCh-Tk-Oro-Fn x Mql-Oro	13537	3.0	2.5	3.0	2.8	1	---
Bison	12518	3.0	3.0	3.0	3.0	4	2.5
Rodco (white component)	---	2.0	4.5	3.5	3.3	1	---
Tascosa	13023	3.0	3.5	3.5	3.3	1	---
Wichita x Mql-Oro	13536	3.0	4.0	3.0	3.3	1	---
Ottawa	12804	3.0	4.5	5.0	4.2	2	3.8
Kaw	12871	4.0	4.0	5.0	4.3	2	4.1
Pawnee	11669	4.0	4.8	4.3	4.4	4	3.9
Mql-Oro x Pn	12851	4.7	4.8	3.8	4.4	4	4.6

1/ Ratings based on 0-5 scale of stunting; 0=no stunting, 5= completely stunted. Reported values in some instances reflect degree of yellowing in addition to stunting. A rating of 3 indicates some field tolerance.

2/ Winterkilled.

3/ Average based on 2 stations only.

QUALITY DATA

Grain samples from regional nurseries are submitted each year to the Hard Winter Wheat Quality Laboratory in amounts as follows:

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

Quality Series samples are evaluated individually from each location, in addition to which evaluation is made on composite samples from each district. Evaluation of varieties in the Southern and Northern Regional Performance Nurseries is based on composites of grain of each variety from all locations. Results of sample evaluation are reported annually to the cooperators by Karl Finney.