UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION

Bureau of Plant Industry,
Soils, and Agricultural Engineering

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COMPARISON OF WINTER WHEAT VARIETIES GROWN IN COOPERATIVE PLOT AND NURSERY EXPERIMENTS IN THE HARD RED WINTER WHEAT REGION IN 1952

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By

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Division of Cereal Crops and Diseases

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1/ The writer expresses appreciation to Dorothy M. Wilson, Charles Pulham, and George F. Worker, Jr., for their assistance in preparing this report.

EXPERIMENTS IN 1952

Some records are broken every year. The 1952 crop year provided its share. The southwest experienced a drought of unusual severity, whereas Kansas and Nebraska produced their largest wheat crops and Oklahoma equalled any previous year. Rust threatened but did not damage the wheat much if any, thanks to an extended dry, hot and windy period early in June. The crop ripened earlier than normal in nearly all areas, especially in the central and northwestern districts. Some of the loss caused by 1951 floods was repaid by the good crop produced in part because of high subsoil moisture storage.

Investigational work was conducted at an efficient and accelerated rate in 1952. New lines of inquiry or greatly increased programs were established in several states from state, federal, and private funds on wheat insects, mosaic, and rust, and to some extent on other problems. This is very encouraging and results from these projects will be helpful to the understanding and perhaps solution of many wheat questions.

This volume summarizes the data on wheat variety tests but does not give the full scope of these and related fundamental studies. It is intended that this report will be of value to all workers with wheat in the region by providing local and regional results with old and new varieties.

Many persons contribute a part or all of their time to wheat research. To all who cooperate and contribute to this program is extended special acknowledgment and thanks. A list follows this paragraph of those persons most active in breeding and varietal testing work. Omissions or errors are regretted and should be called to the writer's attention.

COOPERATING AGENCIES, STATIONS, AND PERSONNEL

(The asterisk (*) indicates Government field stations)

BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING:		
Division of Cereal Crops and Diseases		H. A. Rodenhiser
Wheat Investigations		S. C. Salmon
Hard Red Winter Wheat Coordinator		L. P. Reitz
Rust, Smut, Mosaic		C. O. Johnston, H. H. McKinney, W. C. Haskett, H. Fellows
Milling and Baking		J. A. Shellenberger, Karl Finney
TEXAS AGRICULTURAL EXPERIMENT STATION:		
Agronomy (Corn and Small Grains)		J. E. Adams
College Station	Agricultural Exp. Station	E. S. McFadden
Denton	Substation No. 6	I. M. Atkins (State Leader)
Chillicothe	Substation No. 12	J. R. Quinby
Bushland	Amarillo Experiment Station	K. B. Porter
NEW MEXICO AGRICULTURAL EXPERIMENT STATION:		
Clovis	Agr. Exp. Station	R. W. Livers
OKLAHOMA AGRICULTURAL EXPERIMENT STATION:		
Field Crops and Soils		H. F. Murphy
Stillwater	A. & M. College	A. M. Schlehuber (State Leader), T. H. Johnston, H. C. Young
Cherokee	Wheatland Conservation Sta.	A. A. Garrett
*Woodward	Southern Great Plains Sta.2/	R. Hunter
Goodwell	Panhandle Agr. Exp. Sta.	Raymond Peck
KANSAS AGRICULTURAL EXPERIMENT STATION:		
Agronomy		H. E. Myers
Manhattan	Kansas State College	H. H. Laude, E. G. Heyne, John Schmidt, D.E.Weibel,R.H.Painter, E. D. Hansing, W. H. Sill
Hays	Ft. Hays Branch Exp. Sta.	Wm. Ross, Wayne Fowler, R. C. Bellingham
Colby	Colby Branch Station	E. H. Coles, Ted Walters
Garden City	Garden City Agr. Exp. Sta.	A. E. Lowe, A. B. Erhart
COLORADO AGRICULTURAL EXPERIMENT STATION:		
Agronomy		D. W. Robertson
*Akron	U. S. Dry Land Field Sta.2/	J. F. Brandon, T. E. Haus
Fort Collins	State Agricultural College	T. E. Haus
Hesperus	Fort Lewis Substation	H. O. Mann
IOWA AGRICULTURAL EXPERIMENT STATION:		
Ames	Iowa State College	R. E. Atkins
NEBRASKA AGRICULTURAL EXPERIMENT STATION		
Agronomy		F. D. Keim
Crops Research		T. A. Kiesselbach
Lincoln	Agricultural Exp. Sta.	L. P. Reitz, V. A. Johnson
North Platte	North Platte Experiment Sta.	M. Greenwood
Alliance	Box Butte Experiment Farm	L. P. Reitz, Robert O'Keefe
WYOMING AGRICULTURAL EXPERIMENT STATION:		
Agronomy		A. F. Vass
Laramie	Agr. Experiment Station	R. P. Pfeifer
Sheridan	U. S. Dry Land Field Sta.2/	C. R. Hills

SOUTH DAKOTA AGRICULTURAL EXPERIMENT STATION:

Agronomy		W. W. Worzella
Brookings	Agr. Experiment Station	J. E. Grafius

MINNESOTA AGRICULTURAL EXPERIMENT STATION:

Agronomy and Plant Genetics		W. M. Myers
St. Paul	University Farm	E. R. Ausemus
Waseca	Southeast Experiment Sta.	R. E. Hodgson
Grand Rapids		E. R. Ausemus

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION:

Agronomy		T. E. Stoa
Dickinson	Dickinson Substation	T. J. Conlon

MONTANA AGRICULTURAL EXPERIMENT STATION:

Agronomy		A. H. Post
Bozeman	Montana Experiment Station	E. R. Hehn
Moccasin	Judith Basin Branch Station	Ralph Williams
Havre	North Montana Branch Station	L. O. Baker
Huntley	Huntley Field Station	Stanley Brooks

CANADA DEPARTMENT OF AGRICULTURE:

Lethbridge, Alta., Agr. Exp. Station	J. E. Andrews

2/ Cooperation with Division of Soil Management and Irrigation, Bureau of Plant Industry, Soils, and Agricultural Engineering, as well as with the State experiment stations.

ACCESSION NUMBERS ASSIGNED

Cereal Investigation or C. I. numbers were assigned to several varieties of hard winter wheat this year. These numbers are prepared by the Division of Cereal Crops and Diseases and have national standing. Therefore C. I. numbers should be used in interstate communications. In this report state numbers are not shown when a C. I. number has been assigned. New numbers this year are as follows:

C. I. No.	Name	State No.
12871	Early Blackhull-Tenmarq x Oro-Mediterranean-Hope	Ks. 471238
12872	Mediterranean-Hope-Pawnee x Oro-Illinois 1-Com.	Ks. 49383
12873	Mediterranean-Hope x Pawnee^2	Ks. 50249
12874	Mediterranean-Hope x Comanche^2	Ks. 50266
12875	Pawnee x Cheyenne	Nebr. 483405
12896	Egypt Na 101 x Hope-Cheyenne	Ks. 49R1476-8
12897	Bobin^2-Gaza x Pawnee	Ks. 49R1012-3
12925	Rio-Rex x Cheyenne	Moro 472361
12926	Rio x Rex	Moro 43131
12927	Rio-Rex x Cheyenne	Moro 482161
12928	Rio-Rex x Nebred	Moro 482215
12929	Rio-Rex x Nebred	Moro 482232
12930	Rio-Rex x Nebred	Moro 482235
12931	Blackhull x Rex-Rio	Moro 482260
12932	Blackhull-Rex x Rex-Rio	Moro 482271
12933	Blackhull-Rex x Cheyenne	Moro 482296
12934	Rex x Rio^3-1	Pullman, Wn.
12935	do. -5	do.

C. I. No.	Name	State No.
12936	do. -14	do.
12937	Marquillo-Oro x Oro-Turkey-Florence	Ks. 47B5
12938	do.	Ks. 47B6
12939	do.	Ks. 47B9
12940	Comanche x Oro-Turkey-Florence	Ks. 47B129
12941	Oro x Oro-Turkey-Florence	Ks. 47B167
12942	do.	Ks. 47B168
13001	Oro x Blackhull-Hard Federation	Okla.Wdw.44h2-24
13002	Kanred x Clarkan	Tex. 73-44-2B
13003	do.	Tex. 73-44-2C
13004	Martin-Tenmarq x Chiefkan	Tex. 160-44-135
13090	Westar Selection	Okla. 515437
13091	Minturki X Timstein-Vulgare[2]	Minn. II-40-100
13092	Yogo x (H44-Minturki II-29-72)	Minn. II-40-107
13093	(Illinois 1-Chinese x Timopheevi) x Wisconsin Ped. 2	Wis. H143-1-1-4-27

NEW VARIETIES

Sioux was the only winter wheat variety released in the region in 1952. This variety was selected in Nebraska from the cross Cheyenne x Turkey and has been carried in various uniform experiments as C. I. 12142. Sioux is well adapted to the western half of Nebraska where it is now recommended. Its high yield of grain, bunt resistance, capacity to tiller, and good winterhardiness are its principal characteristics of merit. It has high loaf volume potentialities but has rather short dough mixing requirements.

Comanche x Blackhull-Hard Federation (C. I. 12517) is being increased in Oklahoma but no definite release date has been set.

UNIFORM VARIETIES IN FIELD PLOTS OR ADVANCED NURSERIES

Uniform tests are planned by districts. The southern district includes Texas, New Mexico, and Oklahoma; the central district involves Kansas, Colorado, and Nebraska; the northeastern district includes Iowa, South Dakota and Minnesota; and the northwestern district is made up by Wyoming and Montana. Some tests, as the bunt test, for example, are region wide. The uniform yield nursery occupies two districts and hardiness tests are largely confined to the two northern areas.

Uniform plot varieties for 1952 and 1953 are as follows:

Variety	C. I. No.	1952				1953			
		S	C	NE	NW	S	C	NE	NW
Kharkof	1442	X	X		X	X	X		X
Tenmarq	6936	X	X			X	X		
Early Blackhull	8856	X				X			
Comanche	11673	X	X			X	X		
Pawnee	11669		X				X		
Red Chief	12109	X	X			X	X		
Kiowa	12133	X	X				X		
Ponca	12128	X	X			X	X		
Hard Federation Hybrid	12515	X				X			
Comanche x Blkhull-Hd. Fed.	12517	X				X	X		
Minturki	6155			X				X	

Variety	C. I. No.	1952				1953			
		S	C	NE	NW	S	C	NE	NW
Yogo	8033				X				X
Minter	12138			X	X			X	X
H44 x Minturki[2]	12532			X					
Iohardi	12510			X				X	
Turkey x Oro	12705				X				
H44-Minhardi x Marmin	12704			X				X	
Minn. 2834	13005							X	
Mint. x Timo.-vulgare[2]	12806							X	

In addition to the uniform set of varieties, each station grows several varieties of local interest. All varieties reported by the various cooperators are included in the station data for plot varieties, thus giving a rather complete account of advanced testing. Permanent check varieties are Kharkof, Tenmarq, and Early Blackhull in the southern district, with Pawnee, Tenmarq, and Kharkof so designated in the central district. In the northeast Minturki and in the northwest Kharkof is used. New varieties and a few commercial varieties are included on a temporary basis.

PLOT DATA

Field plot or advanced nursery data are given in table 1. The data for each station are tabulated separately and the varieties are listed in declining order of yield for 1952. Summary tables for various data are given in tables 2 to 14.

Over the region as a whole there were some general crop growing conditions worthy of mention. Much of the central and eastern area received heavy rain in mid-summer of 1951 providing deep storage of soil moisture. Following this, drought conditions prevailed generally over the whole winter wheat belt for the remainder of the season. The southwest was deprived of moisture, except locally, resulting in failure to get stands at the usual planting season. Generally, the wheat went into the winter in good condition. A rather dry, open winter caused great concern for the wheat but only a limited amount of winterkilling was reported. Above normal January and February temperatures probably set the stage for what proved to be an early harvest. Dry weather retarded plant growth but the phenologic cycle was ahead of normal all season from Texas to northern Montana. High temperatures in early June, almost no rain, and high wind movement hastened maturity and caused some damage. Such weather arrested rust development. Much of the crop was harvested with very low moisture content, the combines running night and day in some areas. It is estimated that Kansas garnered 150 million bushels of wheat during one week at the peak of the harvest.

Cutworms attacked the crop early in the spring in central and southern areas. Mites were abundant in the area from southwest Kansas across the Panhandle of Texas. Greenbugs were common in north-central Texas and across Oklahoma into Kansas but damage was not extensive. Hessian fly was found all across Nebraska this year doing greatest damage in the southeastern and far western areas. An outbreak at Lincoln provided a set of readings in the nursery plantings. Sawfly extended its range this year into Wyoming, Nebraska, and South Dakota. Say's plant bug was observed in large numbers in northwestern Nebraska, in Wyoming, and Montana where some damage to wheat was done.

The rusts were widespread but did relatively little damage except locally. What threatened to be a serious attack from both was checked by rapid ripening of the crop accompanied and hastened by hot, dry weather. Mosaic took a new turn this year with evidence in Kansas, Nebraska, and Oklahoma suggesting a soil borne virus in the wheat.

Yellow streak, the western virus of such destructiveness in 1949 shifted to eastern Wyoming and was noticed elsewhere in very limited amounts. Bunt was very scarce. Root rot problems near Crowell, Texas, in the Blackwell, Oklahoma, area and in western Nebraska attracted some attention.

Crop failures were noted at Goodwell, Oklahoma, from dry conditions and late sowing, and at Ft. Collins, Colorado, hail destroyed all plantings.

At Denton, Texas, there were 29 varieties in the advanced nursery test where the similar types C. I. 12517 and C. I. 12515 surpassed all others in yield. Two Sinvalocho hybrids ranked third and fourth. These four wheats had low leaf rust infection also. Comanche has the best period-of-years average yield although some of the newer wheats are very promising.

Drought at Chillicothe cut short the potential yield of early maturing varieties for the second straight year. Later varieties were the highest in yield of grain. Kanred and Kharkof, high this year, rank 14 and 16 on the average. Apache, Westar, Comanche, and C. I. 12702 have good averages.

At Bushland the crop was in a precarious position all year due to drought. The irrigated plots averaged 18.8 and the dryland plots averaged 12.7 bushels to the acre. Since there was no variety x treatment interaction, the data were combined and appear as one test. Triumph and Red Chief were high in yield while Blue Jacket and C. I. 12517 have the best period averages. Varieties with Blackhull blood have done well at this station.

A near-failure due to drought occurred at Clovis, New Mexico. In general, Blackhull wheat derivatives looked best at this station. This may be a drought hardiness factor possessed by these wheats or their response may be related to mite resistance. More work is required to establish the factors responsible.

At Stillwater, Oklahoma, five Blackhull derivatives were highest in yield. For three years C. I. 12517 has been the outstanding variety in this station's tests. This wheat is being increased. C. I. 12515 probably differs only slightly from it and has an outstanding record also. Ponca was distinctly superior to Pawnee this year. Leaf rust was too light to read, a rare thing for Stillwater.

In the Cherokee test, C. I. 12517, Wichita, and Ponca were at the top for yield. C. I. 12517 and C. I. 12515 have the best period averages followed by Red Chief.

In the Woodward trial C. I. 12515 and C. I. 12517 were outstanding this year and have been for two and three years. They originated at the Woodward station so have a long record of good performance here. Low temperatures April 9 and 10 damaged early jointing varieties, causing a collapse of the culms and some loss of yield.

In general, it was a Triumph year in Kansas. Early wheats did extremely well. Some others made a creditable showing too, however. At Manhattan, Triumph was followed in yield by C. I. 12517, C. I. 12707, and Ponca. Long-time averages show Pawnee and Triumph to be best. Considerable lodging and leaf rust was noted. Shattering in Vigo, Iohardi, and Wichita seriously reduced the yield of these varieties.

In the Garden City test, Triumph, Ponca, Kiowa, and Comanche produced the best grain crop. This was made almost completely on stored water because on June 9 less than an inch of precipitation had been received since January. The wheat plants had exhausted the upper 5 feet of soil moisture by this date and were depleting the water stored in the sixth foot of soil.

At Hays, Kansas, yield bore a direct relation to earliness with late varieties yielding only about two-thirds as much as early ones. Pawnee, Comanche, and Early Blackhull have the highest average yields.

Kiowa, Triumph, Pawnee, and Ponca were best at Colby. Kiowa has about the best all around record of varieties tested at this station. Susceptibility to loose smut is a major fault.

At Akron, Colorado, late varieties were generally lower in yield than early and mid-early ones. In view of the drought in this area it is remarkable to note that five varieties exceeded 20 bushels to the acre.

At Lincoln, Nebraska, Pawnee and Red Chief had the highest yields. Pawnee has the best long-time record. Later varieties generally ranked far down the list. Leaf rust was heavy this year but came in too late to do much damage. Shattering by two varieties and lodging by several detracted from their appearance.

Best yields at North Platte were made by three unnamed selections and Pawnee. C. I. 12711 has a fine two-year record. Nebred has the best all-around long record.

At Alliance, Nebraska, two unnamed wheats, Sioux, and Comanche, yielded over 39 bushels to the acre. C. I. 12523 and Sioux have the best period averages. Stem rust threatened to do damage but came too late in 1952.

In the Brookings, South Dakota, test yields ranged from 32.8 to 28.7 bushels per acre. Pawnee was the only variety failing to survive the winter with a full stand. Stem rust was moderately heavy on all varieties. C. I. 12704 has the highest 4-year average yield.

At Waseca, Minnesota, selection 2827 outyielded all varieties but showed weak straw and high susceptibility to rust. The rust caused little or no shriveling of the grain. Minter continues to perform about as well as any wheat at this station.

Yields at St. Paul, Minnesota, were unaffected by differential winterkilling. Minter was highest in yield. Considerable infection from rust occurred. C. I. 12704 has the highest 4-year average yield.

Lower survival was noted for Iohardi at Grand Rapids, Minnesota. Minter was the highest yielding entry this year and appears to be the best variety in terms of the period average yields available.

At Sheridan, Cheyenne and Kanred were highest in yield this year and have the best long-time average.

At Havre, Montana, the wheat headed and ripened much earlier than usual. Drought was the principal factor depressing yields. Yogo was midway in rank in 1952 but continues to show a high average yield. C. I. 12108 has shown promise in 10 years of testing.

Pawnee and Comanche were 5 to 7 bushels higher in yield than other varieties at Ames, Iowa. Lodging was excessive, straw was long, and weight per bushel was low. All varieties have period averages 10 to 26% above Kharkof.

Yogo, Newturk, and Cheyenne were highest in yield at Moccasin, Montana, in 1952. All test weights were good. Comanche suffered some loss of stand due to winterkilling and gave a poor yield. Yogo and Karmont are justifiably popular in this area because of their long record of relatively good performance.

At Huntley, Cheyenne led other varieties but may not be significantly better. Poor seed of Yogo and possibly winterkilling of Comanche resulted in poor stands at harvest. Drought was quite intense at this station so yields and test weights were low.

Four other Montana tests have been combined on one page because three were irrigated tests and the fourth is on the western slope of the state. This grouping shows the varieties in order of declining yield only for Sidney. The outstanding variety at Huntley and Bozeman was the stiff strawed selection M482296 (C. I. 21933).

Table 1.--Yield of grain and other data for winter wheat varieties grown in replicated plots in cooperative experiments at 28 stations in the region in 1952, with period average yields.

Denton, Texas
Ten plots, rod rows

Variety	C. I. or Sel. No.	Date Headed	Date Ripe	Plant Height	Leaf rust	Weight per bushel	Av. acre yield 1952	Av. acre yield 1948,1950 1952	No. Yrs. Grown	Percent of Kharkof	Rank
		Apr.	May	Ins.	%	Lbs.	Bus.	Bus.			
Com. x Blk.-Hd. Fed.	12517	20	26	38	3	60.0	37.8	--	1	127.7	2
Hard Fed. Hyb.	12515	20	28	39	8	60.0	36.6	--	1	123.6	3
Sinvalocho x Wichita	201-47-4	21	29	37	T	60.0	35.9	--	1	---	-
12701 x Wichita	12702	21	26	41	T	61.0	34.8	--	2	121.4	5
Wichita	11952	17	25	37	53	60.0	32.8	22.4	8	104.8	13
Comanche	11673	21	29	38	28	58.5	32.7	21.9	12	134.0	1
Blackhull	6251	24	28	41	43	62.0	32.6	22.4	19	109.3	9
Red May Sel. 1/	7250-1	22	25	38	15	57.0	32.6	--	2	111.4	-
Ponca	12128	19	27	36	13	59.0	32.4	22.3	3	104.7	14
Sv.-Wich. x Hope-Chey.	208-46-12	21	30	37	T	60.0	32.2	--	2	118.8	6
Fronteira x Red May 1/	131-46-3	19	26	38	T	58.0	32.0	--	-	---	-
Sv.-Wich. x Hope-Chey.	208-46-32	19	28	38	T	58.0	31.9	--	-	---	-
12701 x Wichita	12703	18	26	37	T	61.0	31.7	--	2	108.1	10
Kanred	5146	24	28	40	41	58.0	31.4	22.4	19	113.4	8
Tenmarq	6936	23	28	39	43	57.4	31.2	21.6	19	118.3	7
12701 x Wichita	237-46-23-2	19	26	38	3	61.0	30.8	--	-	---	-
Quanah	12145	20	30	38	10	59.0	30.4	21.4	4	105.6	12
Kiowa	12133	20	29	37	63	59.0	30.2	22.2	3	104.2	16
Sv.-Wich. x Hope-Chey.	12701	17	27	37	18	59.0	29.9	--	2	98.7	20
Early Blackhull	8856	16	25	36	45	62.0	29.8	20.3	17	121.5	4
Fronteira x Red May 1/	131-46-8	19	28	38	T	57.0	29.8	--	-	---	-
Kharkof	1442	25	30	40	38	60.0	29.6	21.3	19	100.0	18
Triumph	12132	13	26	35	45	60.0	29.0	20.4	5	99.0	19
12701 x Wichita	237-46-26-2	11	24	36	3	60.0	28.9	--	2	97.7	21
Denton 1/	8265	23	29	42	3	57.6	28.3	20.9	19	107.5	11
Mediterranean	10086	24	26	43	5	58.0	28.2	19.7	19	104.4	15
Red Chief	12109	22	30	39	55	62.0	26.1	19.8	8	102.5	17
Blackhawk 1/	12218	25	30	45	T	58.0	23.4	--	1	---	-
Vigo 1/	12220	24	26	44	20	58.0	22.3	--	1	---	-

1/ Soft wheats. Standard error of a difference = 1.68 bushels

Chillicothe, Texas
Ten plots, rod rows

Variety	C. I. or Sel. No.	Date first headed	Weight per bushel	Av. acre yield			No. yrs.. Grown	Percent of Kharkof	Rank
				1952	1951-1952	1948-1952			
		Apr.	Lbs.	Bus.	Bus.	Bus.			
Kanred	5146	22	58	26.7	23.9	27.1	15	102.9	14
Kharkof	1442	22	58	25.7	22.4	27.3	15	100.0	16
Hard Fed. Hyb.	12515	18	60	25.4	--	--	1	98.8	17
Comanche	11673	18	60	24.8	21.9	27.4	15	114.3	4
Westar	12110	20	59	24.8	22.8	--	8	122.9	2
Chiefk. x Mt.-Tq.	13004	20	59	24.6	22.5	--	2	100.4	15
Apache	12122	15	59	24.0	24.0	--	5	138.1	1
Tenmarq	6936	18	58	23.4	20.8	25.3	15	106.8	9
Sinvalocho x Wichita	201-4704	18	61	23.2	21.0	--	2	93.8	20
12701 x Wichita	12702	15	60	22.9	23.2	--	4	119.7	3
do	237-46-26-2	10	60	22.7	22.0	--	2	98.0	18
Blue Jacket	12502	20	62	22.4	--	--	1	---	--
Ponca	12128	17	61	22.3	20.5	29.1	5	106.4	10
Sv.-Wich. x Hope-Chey.	208-46-12	18	59	22.2	21.1	--	3	95.8	19
Mqo.-Oro x Wichita	218-46-5	19	60	22.2	20.7	--	3	110.9	6
Kiowa	12133	18	60	22.2	21.9	28.3	5	103.6	13
Blackhull	6251	20	60	21.9	19.2	25.7	15	105.2	12
Wichita	11952	11	61	21.7	21.2	27.8	11	112.4	5
Mqo.-Oro x Wichita	47-2364	11	61	21.1	--	--	1	---	--
12701 x Wichita	237-46-23-2	15	59	20.8	20.2	--	2	90.0	22
Red Chief	12109	20	62	20.8	20.5	27.0	11	106.9	8
12701 x Wichita	237-46-18-2	11	59	20.7	--	--	1	---	--
Chiefk. x Mqo.-Oro	244-46-13	20	58	20.7	--	--	1	---	--
Sv.-Wich. x Hope-Chey.	208-46-32	15	58	20.2	--	--	1	---	--
Quanah	12145	12	60	20.0	18.6	27.3	6	109.7	7
Early Blackhull	8856	7	60	19.3	17.7	25.6	15	105.7	11
Sv.-Wich. x Hope-Chey.	12701	10	60	18.0	16.0	--	3	78.3	22
12701 x Wichita	12703	15	60	18.0	--	--	2	75.8	23
Triumph	12132	9	60	15.1	12.2	22.7	7	93.4	21

Standard error of a difference = 1.61 bushels.

Bushland, Texas
Ten plots, 4 irrigated

Variety	C. I. No.	Date Headed	Date Ripe	Plant Height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1949-1952	No. Yrs. Grown	Percent of Kharkof	Rank
		May	June	Ins.	Lbs.	Bus.					
Triumph	12132	17	19	24	59.0	19.0	14.3	17.1	6	100.3	9
Red Chief	12109	24	25	28	58.3	16.8	14.8	19.6	9	116.0	4
Blue Jacket	12502	25	25	28	59.5	16.4	14.8	--	3	128.9	1
Com. x Blk.-Hd-Fed.	12517	24	24	25	54.0	15.9	--	--	2	121.1	2
Early Blackhull	8856	18	19	25	58.5	15.7	12.1	16.5	15	100.9	7
Comanche	11673	25	25	25	53.8	15.2	12.2	17.5	13	112.9	5
Kiowa	12133	24	25	23	56.5	15.2	14.0	18.6	5	117.6	3
Hd.Fed. Hybrid	12515	25	25	26	53.8	15.1	--	--	1	---	--
Ponca	12128	25	25	24	53.5	14.7	11.9	--	4	100.4	8
Tenmarq	6936	27	26	26	53.5	14.5	12.4	16.3	16	109.0	6
Kharkof	1442	29	27	25	54.8	13.7	13.8	15.8	16	100.0	10

Standard error of a difference = 1.06 bushels (from uniform nursery).

Clovis, New Mexico
Five 1/10 acre plots

Variety	C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952
			July	Ins.	Lbs.	Bus.	Bus.
Blackhull	6251	6/2	6	22	58.3	8.2	---
Westar	12110	6/3	6	20	56.7	6.3	4.5
Chiefkan	11754	6/3	6	24	57.8	5.2	4.0
Turkey	1558	6/9	7	22	55.6	4.7	3.1
Apache	12122	5/31	5	20	57.5	4.3	4.3
Cheyenne	8885	6/11	10	21	56.7	4.1	5.0
Triumph	12132	5/26	4	20	56.7	3.6	3.1
Tenmarq	6936	6/6	8	21	55.7	3.3	3.1
Wichita	11952	5/30	4	19	56.7	3.2	3.8
Pawnee	11669	6/4	6	20	55.2	3.0	3.2
Comanche	11673	6/6	7	21	55.5	2.2	2.8

Standard error of a difference = 0.77 bushels.

Stillwater (Perkins), Oklahoma
Four 1/68 acre plots

Variety	C. I. No.	Date Headed	Date Ripe	Plant Height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1948-1952	No. yrs. Grown	Percent of Kharkof	Rank
		May	June	Ins.	Lbs.	Bus.	Bus.	Bus.			
Com. x Blk.-Hd.Fed.	12517	6	10	35	62.5	24.4	23.5	--	3	127.0	1
Blk.-Oro x Pawnee	12516	7	12	35	63.2	23.8	21.7	--	2	107.9	6
Com. x Chey.-Blk.	12708	8	11	35	62.8	23.3	--	--	1	---	--
Hd. Fed. Hyb.	12515	7	9	35	62.6	22.9	22.9	--	2	114.0	2
Blk.-Oro x Pawnee	12709	9	13	32	63.5	22.0	21.2	--	2	105.5	7
Ponca	12128	7	8	32	61.2	21.3	19.6	20.7	5	100.1	13
Westar	12110	8	12	35	60.2	21.2	19.7	22.5	7	110.9	3
Com. x Blk.-Hd. Fed.	12710	9	12	32	61.5	21.1	--	--	1	---	--
Kharkof	1442	10	12	33	61.1	21.1	20.1	20.7	20	100.0	14
Kiowa	12133	6	9	34	62.2	20.4	19.4	21.5	5	104.3	8
Red Chief	12109	8	12	35	64.3	20.4	17.8	20.7	10	104.2	9
Comanche	11673	6	9	35	60.3	20.1	18.8	20.5	12	108.2	5
Early Blackhull	8856	1	4	39	64.1	20.1	17.1	20.6	20	94.6	17
Clarkan 1/	8858	9	12	37	62.8	20.0	18.2	21.0	16	102.3	12
Cheyenne	8885	11	12	31	60.6	19.8	19.5	20.8	20	102.8	11
Tenmarq	6936	8	12	35	60.5	19.5	17.9	19.7	20	98.1	15
Wichita	11952	3	4	36	63.4	19.3	18.1	20.4	8	95.6	16
Quanah	12145	7	9	35	61.1	19.2	17.1	18.1	5	87.7	18
Triumph	12132	2	4	35	63.2	18.3	16.9	20.2	10	103.3	10
Pawnee	11669	7	10	33	60.8	17.7	17.3	19.8	12	110.1	4

1/ Soft wheat

Standard error of a difference = 1.26 bushels

Cherokee, Oklahoma
Five plots, rod rows

Variety	C. I. No.	Degree headed May 15	Date ripe	Lodging	Plant height	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
							1952	1951-1952	1948-1952			
		%	June	%	Ins.	Lbs.	Bus.	Bus.	Bus.			
Com. x Blk.-Hd. Fed.	12517	100	13	7	41	61.2	42.6	42.0	--	3	138.0	1
Wichita	11952	100	12	8	40	62.8	39.2	33.5	29.7	7	115.7	4
Ponca	12128	100	13	4	40	59.4	37.9	27.2	25.1	5	95.8	16
Blk.-Oro x Pawnee	12516	97	13	10	42	61.8	37.8	34.5	--	2	112.2	6
Pawnee	11669	100	14	5	41	60.3	37.6	28.6	25.9	7	106.1	12
Early Blackhull	8856	100	9	15	40	64.0	36.9	29.7	26.0	7	107.2	11
Triumph	12132	100	7	10	38	63.1	36.4	27.9	26.9	7	111.9	7
Hard Fed. Hyb.	12515	92	13	10	42	61.2	36.0	36.1	--	2	117.2	2
Comanche	11673	100	14	7	41	58.9	35.9	33.1	29.3	7	113.9	5
Com. x Chey.-Blkh.	12708	98	15	4	42	59.9	35.7	--	--	1	--	--
Kiowa	12133	100	13	2	41	60.7	35.1	33.7	28.7	5	109.8	9
Red Chief	12109	100	16	3	46	62.5	34.2	30.3	29.3	7	116.4	3
Blk.-Oro x Pawnee	12709	48	16	3	42	60.4	33.9	31.6	--	2	102.6	13
Westar	12110	75	17	4	43	59.0	33.4	30.5	26.9	7	110.4	8
Com. x Blk.-Hd. Fed.	12710	50	17	4	42	58.0	32.2	--	--	1	---	--
Quanah	12145	85	17	8	41	59.0	31.7	24.1	20.3	5	77.5	17
Cheyenne	8885	25	17	1	42	58.2	31.0	27.8	27.0	7	107.8	10
Kharkof	1442	25	16	10	43	59.8	29.8	30.8	26.2	7	100.0	14
Tenmarq	6936	58	15	4	44	57.9	29.6	28.2	24.8	7	98.2	15

Standard error of a difference = 1.77 bushels

Woodward, Oklahoma
Five plots, rod rows

Variety	C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1948-1952	No. Yrs. Grown	Percent of Kharkof	Rank
		May	June	Ins.	Lbs.	Bus.	Bus.	Bus.			
Hard Fed. Hybrid	12515	7	12	34	62.2	30.9	27.1	--	2	127.2	1
Com. x Blk.-Hd. Fed.	12517	6	12	32	62.6	30.3	25.9	--	3	126.8	2
Cheyenne	8885	13	15	34	60.7	29.8	25.9	23.7	21	109.6	10
Com. x Blk.-Hd. Fed.	12710	11	15	34	60.8	29.3	--	--	1	---	--
Com. x Chey.-Blk.	12708	10	14	34	61.6	27.9	--	--	1	---	--
Blk.-Oro x Pawnee	12516	7	13	33	62.2	27.8	25.8	--	2	120.9	4
Pawnee	11669	6	10	33	60.8	26.6	21.9	21.9	15	123.1	3
Triunph 1/	12132	2	8	31	62.6	26.4	17.4	19.3	8	104.2	13
Comanche	11673	6	11	32	60.2	26.4	23.9	21.2	15	116.3	7
Blk.-Oro x Pawnee	12709	11	15	33	62.6	26.4	23.8	--	2	111.7	8
Wichita 1/	11952	4	9	31	62.8	26.1	21.9	22.4	11	118.0	5
Red Chief	12109	8	14	37	62.5	26.1	25.5	23.8	11	117.2	6
Kiowa	12133	6	12	32	60.8	25.9	23.2	21.4	5	106.3	11
Ponca	12128	6	11	32	61.3	24.6	19.5	20.6	5	102.0	14
Westar	12110	8	14	34	60.2	23.9	21.6	22.5	9	110.0	9
Early Blackhull	8856	3	8	34	62.0	23.2	20.3	19.9	21	97.7	16
Tenmarq	6936	9	14	34	60.5	22.9	22.0	20.4	21	106.2	12
Kharkof	1442	12	15	34	59.7	22.2	21.3	20.2	21	100.0	15
Quanah	12145	7	13	31	59.7	19.0	16.9	17.3	5	85.7	17

1/ Damaged most by low temperatures April 9 and 10

Standard error of a difference = 1.67 bushels.

Manhattan, Kansas
Three 1/54 acre plots

Variety	C. I. No.	Date headed	Plant ht.	Lodging	Shattering	Rust		Loose smut	Weight		Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
						Leaf	Stem		1000 seeds	per bu.	1952	1951-1952	1949-1952			
		May	Ins.	%	%	%	%	%	G.	Lbs.	Bus.	Bus.	Bus.			
Triumph	12132	9	42	12	3	87	0	0	36	64.0	54.3	51.0	44.9	7	151.5	2
Com. x Blk.-Hd.Fed.	12517	13	48	18	7	10	3	T	34	63.2	45.3	--	--	1	---	--
Pawnee Sel. 33	12707	7	41	10	3	40	0	T	30	64.0	43.7	40.2	--	2	116.9	14
Ponca	12128	15	45	12	5	5	4	T	33	62.3	42.7	44.5	42.7	8	149.3	4
Mqo.-Oro x Oro-Tq.	12406	15	46	10	4	13	5	T	32	62.8	41.4	43.2	40.7	4	134.2	9
Moking	12556	22	55	10	T	77	7	3	36	62.7	41.1	40.3	37.8	6	133.0	10
Kiowa	12133	14	46	15	3	80	2	1	33	63.3	40.8	43.8	40.2	7	142.4	5
Comanche	11673	16	49	17	4	40	3	T	33	61.6	40.2	42.4	39.5	15	138.0	7
Stafford	12706	18	49	13	5	50	3	1	35	64.2	39.1	42.8	--	3	124.5	12
Kan Queen	12762	20	55	10	T	77	8	1	38	64.7	38.0	41.3	--	3	114.1	15
Pawnee	11669	13	45	12	8	67	3	0	32	63.0	37.5	41.6	40.9	15	152.2	1
Mqo.-Oro x Pawnee	12505	16	46	10	5	10	2	1	32	62.6	38.0	42.4	41.2	4	136.1	8
Mqo.-Oro x Oro-Tq.	K.2795	17	47	15	6	7	8	T	32	62.0	36.5	43.0	42.0	6	149.9	3
Tenmarq	6936	17	50	10	5	70	2	0	34	62.9	35.5	40.5	36.6	21	119.0	13
Red Jacket	12713	17	53	10	3	73	6	T	33	64.7	33.3	37.5	--	3	108.7	16
Blue Jacket	12502	18	52	8	3	73	6	4	32	64.8	32.9	38.5	36.8	6	132.9	11
Wichita	11952	11	45	15	28	77	0	T	37	64.1	32.0	36.6	39.0	13	138.7	6
Sioux	12142	20	47	10	3	83	7	0	28	62.0	31.1	--	--	1	---	--
Kanred	5146	21	49	25	4	27	3	1	30	61.5	30.5	34.5	32.5	21	104.1	18
Kharkof	1442	23	51	15	6	57	6	2	28	61.7	28.8	34.4	30.3	21	100.0	19
Turkey	1558	22	51	32	4	53	6	2	32	62.6	27.7	34.9	34.4	21	104.6	17
Iohardi	12510	20	54	8	45	80	8	0	33	63.6	20.5	29.8	--	3	91.1	20
Vigo	12220	22	56	5	85	13	13	T	35	62.2	9.7	24.2	--	2	70.5	21

Standard error of a difference = 2.05 bushels.

Garden City, Kansas
Three 1/45 acre plots on fallow

Variety	C. I. No.	Date First Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1947-1950, 1952	No. Yrs. Grown	Percent of Kharkof 1/	Rank
		May	June	Ins.	Lbs.	Bus.	Bus.			
Triumph	12132	12	16	30	60.6	34.1	28.0	6	113.6	11
Ponca	12128	15	18	34	59.0	29.3	30.0	5	127.4	6
Kiowa	12133	15	19	34	60.3	28.5	31.9	6	130.6	4
Comanche	11673	16	20	36	58.5	28.1	30.6	13	135.4	1
Tenmarq	6936	18	20	38	57.5	26.6	27.5	13	121.4	7
Red Chief	12109	21	21	38	60.8	26.3	24.6	10	116.4	8
Stafford	12706	22	22	38	59.9	25.6	--	2	134.3	2
Early Blackhull	8856	11	16	34	62.6	25.5	24.9	13	115.2	9
Com. x Blk.-Hd. Fed.	12517	14	18	32	59.1	24.0	--	1	---	--
Mqo.-Oro x Oro-Tq.	12406	16	20	35	58.8	23.7	--	1	---	--
Red Jacket	12713	21	22	40	60.2	23.7	--	2	128.2	5
Pawnee	11669	16	20	34	59.8	23.5	29.5	13	132.3	3
Blue Jacket	12502	23	22	39	60.6	21.8	26.1	5	111.0	12
Turkey	1558	24	23	35	57.5	19.6	23.5	13	100.0	13
Wichita	11952	13	17	35	60.9	18.0	26.1	11	114.7	10

1/ Turkey used in place of Kharkof.

Standard error of a difference = 1.34 bushels

Hays, Kansas

Four 1/50 acre plots; two on fallow, two on crop land

Variety	C. I. or Sel. No.	Date headed	Plant height	Leaf rust	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
						1952	1951-1952	1947-1952			
		May	Ins.	%	Lbs.	Bus.	Bus.	Bus.			
Early Blackhull 1/	8856	13	44	11	62.9	44.4	37.0	28.8	21	118.9	2
Triumph	12132	13	42	18	62.0	44.4	36.6	28.2	7	103.3	14
Wichita 2/	11952	15	45	16	61.6	41.0	37.7	29.0	12	114.8	4
Apache	12122	18	40	4	59.8	32.9	36.6	--	8	113.8	5
Com. x Blk.-Hd. Fed. 3/	12517	16	41	0	57.8	32.6	--	--	1	---	--
Pawnee	11669	16	43	2	60.4	32.4	35.1	27.4	15	123.5	1
Comanche	11673	16	44	3	59.5	32.4	36.1	27.2	16	116.2	3
Kiowa	12133	16	43	14	60.9	31.7	36.7	28.8	8	112.1	8
Chiefk. x Oro-Tq.	12518	16	43	14	60.0	31.1	36.0	--	4	109.5	10
Stafford	12706	19	44	2	59.3	30.5	35.1	--	3	110.2	9
Mqo.-Oro x Oro-Tq. 3/	12406	16	41	1	58.3	30.4	33.6	--	2	103.9	13
Tenmarq	6936	18	46	4	56.8	29.5	33.4	26.4	21	113.3	6
Blue Jacket	12502	17	47	2	61.3	29.2	34.7	28.4	6	105.0	12
Blackhull	6251	19	43	5	60.4	29.0	31.8	24.5	21	106.3	11
Kharkof	1442	21	42	1	53.5	27.8	32.3	27.0	21	100.0	16
Red Chief	12109	19	47	2	59.1	27.3	32.5	27.1	12	113.3	7
Ponca	12128	16	43	T	58.8	26.7	31.1	26.7	7	97.7	18
Turkey	1558	20	42	3	56.5	26.4	29.3	25.1	21	98.5	17
Red Jacket	12713	19	46	1	59.4	26.2	32.4	--	3	100.6	15

1/ Four percent lodging. 2/ One percent lodging. 3/ Trace of winterkilling.

Standard error of a difference = 2.29 bushels.

Colby, Kansas
Three 1/50 acre plots

Variety	C. I. No.	Date headed	Plant height	Weight per bushel	Av. acre yield		No. Yrs. Grown	Percent of Kharkof	Rank
					1952	1950 & 1952			
		May	Ins.	Lbs.	Bus.	Bus.			
Kiowa	12133	22	39	60.3	48.4	49.5	5	115.7	2
Triumph	12132	17	37	60.2	45.8	46.2	5	108.3	7
Pawnee	11669	22	37	59.7	44.8	48.5	10	116.7	1
Ponca	12128	22	37	59.3	44.3	45.5	5	107.0	8
Com. x Blk.-Hd. Fed.	12517	22	38	59.7	42.4	--	1	---	--
Mqo.-Oro x Oro-Tq.	12406	23	39	59.7	41.9	--	1	---	--
Stafford	12706	26	42	61.2	40.1	47.3	2	103.1	10
Comanche	11673	23	40	57.8	40.0	47.9	11	112.4	4
Wichita	11952	19	39	60.3	39.9	51.2	10	113.1	3
Cheyenne	8885	27	38	59.5	39.9	48.2	14	108.5	6
Sioux	12142	26	37	59.8	38.3	--	1	---	--
Tenmarq	6936	24	39	59.5	37.7	47.3	13	109.5	5
Turkey	1558	26	41	58.8	37.2	45.9	14	100.0	12
Red Jacket	12713	26	42	62.1	36.9	46.4	2	101.2	11
Red Chief	12109	25	42	59.5	36.1	43.5	9	105.5	9
Blue Jacket	12502	26	43	60.6	35.8	44.7	4	98.1	13

Standard error of a diference = 2.34 bushels.

Akron, Colorado

Four 1/41 acre plots; 2 after corn, 2 on fallow

Variety	C. I. No.	Date Headed	Plant Height	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
					1952	1951-1952	1948-1952			
			Ins.	Lbs.	Bus.	Bus.	Bus.			
Comanche	11673	5/31	38	57.3	21.2	20.1	18.7	14	109.2	3
Triumph	12132	5/28	39	58.8	21.1	18.4	--	3	87.3	13
Early Blackhull	8856	5/28	40	59.5	20.8	18.8	17.9	21	109.6	2
Kiowa	12133	6/3	38	55.3	20.4	21.6	19.1	6	105.2	9
Wichita	11952	5/30	38	58.5	20.0	19.6	18.5	12	105.9	8
Cheyenne	8885	6/10	38	55.8	19.6	20.1	19.7	21	107.4	5
Red Chief	12109	6/7	43	58.3	19.1	19.2	19.6	11	106.6	7
Pawnee	11669	6/2	39	55.8	18.7	19.7	18.3	14	107.2	6
Ponca	12128	6/3	37	55.5	18.7	18.8	18.9	5	98.4	11
Tenmarq	6936	6/7	40	55.2	17.9	19.9	19.1	21	108.7	4
Kharkof	1442	6/10	38	56.3	19.1	20.4	19.2	21	100.0	10
Alton	1438	6/11	40	55.5	17.8	18.0	17.1	21	82.3	14
Chiefk. x Oro-Tq.	12518	6/3	39	56.5	16.9	--	--	1	---	--
Kan.-H. Fed. x Minh.-Mint.	11970	6/3	43	54.3	16.4	18.5	18.8	14	110.5	1
Minturki	6155	6/10	39	55.0	16.0	17.4	18.0	21	93.0	12

Standard error of a difference = 1.43 bushels.

Lincoln, Nebraska
Five 1/51 acre plots

Variety	C. I. No.	Date		Plant height	Lodging	Shattering	Leaf rust	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
		Headed	Ripe						1952	1951-1952	1949-1952			
		May	June	Ins.	%	%	%	Lbs.	Bus.	Bus.	Bus.			
Red Chief	12109	27	30	51	0	0	63	62.2	36.2	34.5	31.9	10	114.0	4
Pawnee	11669	24	28	45	20	1	65	58.9	36.1	30.4	34.1	16	125.7	1
Ponca	12128	24	28	45	19	T	2	60.0	35.8	28.5	31.2	5	104.0	11
Cheyenne	8885	29	30	48	6	T	80	58.3	35.6	30.7	32.3	21	111.9	5
Kiowa	12133	24	28	46	9	T	85	59.9	35.5	29.2	28.9	5	101.2	13
Turkey x Cheyenne	12711	25	28	45	13	1	75	58.9	35.4	--	--	1	---	--
Nebred	10094	28	30	46	28	T	90	58.6	35.3	32.7	33.9	21	108.1	8
Blue Jacket	12502	26	30	51	2	T	65	61.4	35.2	31.2	--	3	104.1	10
Hung. Sel. x Nebred	12507	29	30	48	2	1	38	57.8	35.2	30.2	32.1	6	117.3	2
Sioux	12142	28	30	47	5	1	70	56.9	33.0	31.6	33.0	7	108.9	7
Tk.-Tq.-Chey. x Tk.	12523	26	30	48	4	1	23	59.2	32.8	31.5	34.9	6	116.8	3
Comanche	11673	25	28	45	20	T	65	58.7	32.1	28.5	30.7	14	111.4	6
Pawnee x Cheyenne	12715	25	28	46	0	10	75	59.4	31.5	--	--	1	---	--
Turkey	12137	29	30	49	31	0	80	57.8	30.7	27.8	29.6	21	99.5	15
Blackhawk	12218	6/1	7/1	52	T	T	2	57.2	29.7	--	--	1	---	--
Kharkof	1442	31	30	49	5	T	73	57.1	28.3	26.2	29.0	21	100.0	14
Tenmarq	6936	29	30	47	8	T	65	57.5	27.8	25.8	29.6	21	105.7	9
Iohardi	12510	28	30	51	T	12	85	59.9	24.4	26.9	29.6	4	101.8	12
Minter	12138	31	7/1	51	34	T	33	55.4	23.6	25.3	28.9	4	99.4	16

Standard error or a difference = 1.56 bushels.

North Platte, Nebraska
Five 1/50 acre plots on fallow

Variety	C. I. No.	Date Headed	Date Ripe	Plant height	weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1948-1952	No. Yrs. Grown	Percent of Kharkof	Rank
		June	June	Ins.	Lbs.	Bus.	Bus.	Bus.			
Pawnee x Cheyenne	12715	4	7/1	35	57	34.8	--	--	1	---	--
Turkey x Cheyenne	12711	2	30	33	56	33.0	29.9	--	2	112.0	1
Pawnee	11669	1	29	33	56	32.8	23.0	25.6	14	107.4	5
Hung. Sel. x Nebred	12507	4	7/1	34	56	32.0	24.0	25.4	5	93.7	13
Ponca	12128	2	30	33	55	31.8	19.3	24.6	5	91.0	14
Cheyenne	8885	5	7/1	33	56	31.8	26.8	28.3	20	107.9	4
Comanche	11673	2	30	35	53	31.8	23.4	25.7	14	102.7	8
Nebred	10094	4	7/1	33	56	29.6	31.5	30.5	18	108.4	3
Kiowa	12133	2	30	33	56	29.5	25.6	26.2	6	98.4	12
Sioux	12142	4	7/1	33	55	29.0	26.6	27.8	5	102.7	9
N P Turkey	12143	3	30	33	55	28.9	22.5	25.7	20	105.5	6
Tenmarq	6936	4	7/1	35	54	28.0	23.3	26.0	20	100.0	10
Kharkof	1442	5	7/2	36	55	27.7	26.7	27.1	20	100.0	11
Red Chief	12109	3	7/1	37	58	27.3	29.1	27.2	10	110.1	2
Tk.-Tq.-Chey. x Tk.	12523	3	30	35	55	26.3	29.1	28.2	5	104.1	7

Standard error of a difference = 1.12 bushels.

Alliance, Nebraska
Six plots on fallow, rod rows

Variety	C. I. or Sel. No.	Survival	Date headed	Plant height	Stem rust 1/	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1948-1952	No. Yrs. Grown	Percent of Kharkof	Rank
		%	June	Ins.	%	Lbs.	Bus.	Bus.	Bus.			
Pawnee x Cheyenne	483251	80	9	42	T	61.0	42.1	--	--	1	---	--
Chey. Sel. x Turkey	461289	90	6	45	1	61.4	40.2	--	--	1	---	--
Sioux	12142	90	9	42	T	59.9	39.2	22.6	31.8	8	113.5	2
Comanche	11673	80	9	45	T	59.3	39.2	22.0	29.1	12	101.2	8
Hung. Sel. x Nebred	12507	80	8	42	5	60.2	38.4	20.4	27.9	7	94.4	11
Tk.-Tq.-Chey. x Tk.	12523	80	9	44	T	60.7	37.8	20.8	31.5	5	115.2	1
Ponca	12128	80	9	42	1	60.4	37.5	19.1	29.3	5	107.4	4
Chey. Sel. x Turkey	462239	90	8	40	T	61.3	37.1	--	--	1	---	--
Hope x Cheyenne[2]	12717	80	9	42	T	60.4	37.1	22.8	--	3	103.4	7
Nebred	10094	90	9	40	T	61.7	36.5	22.9	30.4	13	104.3	6
Kiowa	12133	90	6	44	1	61.0	36.1	22.8	28.9	6	105.2	5
Chey.-R. Chief x Pn.-Mqo.-Oro	492303	90	9	39	20	61.6	35.3	--	--	1	---	--
Cheyenne	8885	80	8	43	10	60.3	34.6	24.2	31.1	15	110.0	3
Nebred	483491	90	9	41	T	60.5	34.6	--	--	1	---	--
Turkey	12137	90	6	44	3	60.6	34.5	21.4	26.9	5	98.5	10
Kharkof	1442	90	7	44	T	60.7	33.3	21.0	27.3	15	100.0	9
Red Chief	12109	90	5	48	T	63.0	31.7	18.9	25.1	10	87.6	14
Hope-Turkey x Chey.	NP44541	80	6	42	T	58.4	31.2	16.7	--	4	93.7	12
Tenmarq	6936	80	6	43	1	59.1	30.0	15.7	25.7	15	91.7	13
Chey.-H44 x Chey. Sel.	461529	90	7	41	0	60.5	28.5	--	--	1	---	--

1/ One replication.

Standard error of a difference = 2.83 bushels.

Ames, Iowa
Three nursery plots

Variety	C. I. No.	Date		Plant height	Lodging	Leaf Rust	Weight per bushel	Av. acre yield		No. yrs. Grown	Percent of Kharkof	Rank
		Head	Ripe					1952	1951-1952			
		June	July	Ins.	%	%	Lbs.	Bus.	Bus.			
Pawnee	11669	5/31	1	45	35	40	58.2	42.4	--	3	126.1	2
Comanche	11673	5/31	1	45	43	30	56.3	40.6	25.1	2	122.4	3
Minturki	6155	5	4	49	50	50	56.1	35.0	27.7	3	126.5	1
H44 x Minturki^2	12532	5	3	48	43	50	57.2	32.1	26.0	3	118.4	4
Minter	12138	6	3	48	53	70	55.2	31.2	25.0	4	113.6	5
H44-Minh. x Marmin	12704	4	4	46	63	50	55.1	30.3	24.7	3	110.8	7
Iohardi	12510	3	2	49	30	50	59.3	29.0	24.5	4	111.3	6
Kharkof	1442	5	4	44	68	60	53.0	26.7	20.5	4	100.0	8

Standard error of a difference = 3.48 bushels

Brookings, South Dakota
Two 1/50 acre plots

Variety	C.I. or Sel. No.	Date headed	Plant height	Weight per bushel	Stem rust	Av. acre yield		No. Yrs. Grown	Percent of Minturki	Rank
						1952	1948-1950,1952			
		June	Ins.	Lbs.	%	Bus.	Bus.			
H44-Mint. x Marmin	12704	12	31	57	40	32.8	33.6	4	119.1	1
Iowin	10017	10	33	59	60	32.4	27.5	5	93.8	9
Minter	12138	12	32	59	30	31.3	32.0	7	109.7	4
H44-Minh. x Mint.	M.2786	10	32	58	60	31.3	--	1	---	--
H44 x Minturki^2	12532	12	32	58	80	30.9	31.6	4	112.0	3
Marmin x H44-Minh.	M.2768	11	30	57	70	30.9	--	1	---	--
H44 x Minturki^3	M.2784	12	32	56	50	30.5	33.2	4	117.5	2
Nebred	10094	10	26	58	80	30.5	29.3	7	98.0	7
Marmin	11502	10	32	58	80	30.2	31.4	5	96.9	8
Hope x Minturki^2	M.2724	11	32	59	50	30.2	--	1	---	--
Iohardi	12510	10	33	60	80	29.4	--	3	108.7	5
Minturki	6155	13	31	57	60	28.7	28.2	7	100.0	6
Pawnee 1/	11669	8	29	58	50	28.7	16.6	6	70.0	10

1/ 80% survival; other varieties 100%.

Standard error of a difference = 2.11 bushels.

Waseca, Minnesota
Three 1/46 acre plots

Variety	C.I. or Minn. No.	Date		Plant height	Lodging	Rust		Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Minturki	Rank
		Head	Ripe			Stem	Leaf		1952	1951-1952	1949-1952			
		June	July	Ins.	%	%	%	Lbs.	Bus.	Bus.	Bus.			
Mint.-Io. x H44-Mint.^{2}	M.2827	14	15	43	33	80	40	60.8	33.0	32.4	--	2	100.8	2
H44 x Minturki^4	M.2844	15	15	40	0	44	40	60.5	31.8	--	--	1	---	-
Minter	12138	14	14	40	0	17	40	60.5	31.6	31.9	30.5	10	105.2	1
Minturki	6155	15	15	43	17	55	40	60.0	31.1	32.1	30.9	19	100.0	3
Iohardi	12510	11	12	42	57	70	45	60.7	31.1	33.1	30.1	4	97.4	5
H44-Minh. x Marmin	12704	14	14	40	0	15	30	58.3	30.8	32.6	28.3	5	94.6	6
Blackhawk	12218	16	17	44	0	60	20	60.0	30.2	33.9	31.9	9	98.5	4
Minh. x H44-Mint.^{2}	12807	15	14	40	17	7	30	59.8	29.3	--	--	1	---	-
H44 x Minturki^2	M.2845	15	14	41	0	9	35	60.3	28.9	--	--	1	---	-
Mint. x Timo.-Vulg.^{2}	12806	21	21	44	0	30	45	61.8	28.5	--	--	1	---	-
Kanred x Minhardi	11726	17	15	39	0	55	45	59.0	28.3	--	--	1	---	-
H44-Minh. x Marmin	M.2811	16	15	41	0	44	40	60.3	27.6	30.3	--	3	91.8	7
Mint.-Io. x H44-Mint.^{2}	M.2828	15	15	40	0	9	35	60.8	26.8	29.1	--	2	90.7	8
H44 x Minturki^2	M.2829	14	14	41	40	24	35	59.8	24.5	27.9	--	2	86.9	9
H44 x Minturki^4	M.2843	16	15	40	0	17	30	57.5	22.8	--	--	1	---	-

Standard error of a difference = 2.75 bushels.

St. Paul, Minnesota
Three 1/40 acre plots

Variety	C.I. or Minn. No.	Date		Plant height	Rust		Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Minturki	Rank
		Head	Ripe		Stem	Leaf		1952	1951-1952	1949-1952			
		June	July	Ins.	%	%	Lbs.	Bus.	Bus.	Bus.			
Minter	12138	9	10	32	15	50	59.0	32.5	32.0	28.3	8	106.4	5
H44-Minh. x Marmin	12704	8	10	31	15	70	57.9	31.4	33.2	29.1	5	112.8	1
Minturki	6155	11	12	34	15	35	57.9	31.2	29.4	26.1	13	100.0	7
Blackhawk	12218	9	13	32	30	10	59.2	28.3	33.2	27.6	7	103.5	6
Minh. x H44-Mint.^{2}	12807	11	11	32	15	30	60.1	27.6	--	--	1	---	-
Mint.-Io. x H44-Mint.^{2}	M.2828	10	11	30	10	15	62.1	27.5	32.9	--	2	111.9	2
do.	M.2827	9	11	35	30	10	59.7	26.8	31.6	--	2	107.5	4
Mint. x Timo.-Vulg.^{2}	12806	16	--	32	5	35	61.6	26.7	--	--	1	---	-
H44-Minh. x Marmin	M.2811	10	12	29	25	60	59.8	26.6	31.9	--	3	109.8	3
H44 x Minturki^4	M.2844	9	10	31	15	60	60.9	25.9	--	--	1	---	-
Kanred x Minhardi	11726	12	14	34	--	60	58.7	24.0	--	--	1	---	-
H44 x Minturki^2	M.2845	9	11	33	5	40	61.2	23.6	--	--	1	---	-
H44 x Minturki^4	M.2843	8	12	30	15	50	57.6	23.4	--	--	1	---	-
Iohardi	12510	8	10	32	40	70	59.6	23.3	30.5	25.6	4	98.1	9
H44 x Minturki^2	M.2829	8	10	29	15	40	60.3	22.3	29.0	--	2	98.7	8

Standard error of a difference = 2.10 bushels.

Grand Rapids, Minnesota
Three 1/40 acre plots

Variety	C.I. or Minn. No.	Date Head	Date Ripe	Survival	Plant height	Leaf rust	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1949-1952	No. Yrs. Grown	Percent of Minturki	Rank
		June	July	%	Ins.	%	Lbs.	Bus.	Bus.	Bus.			
Minter	12138	15	27	88	30	30	61.0	30.3	38.4	39.5	8	109.9	1
Minh. x H44-Mint.	12807	17	28	85	30	30	60.5	24.6	--	--	1	---	-
H44 x Minturki^4	M.2844	15	26	88	28	40	61.7	23.7	--	--	1	---	-
Blackhawk	12218	15	27	93	29	30	60.2	23.5	34.2	37.9	7	96.4	4
Mint. x Timo.-Vulg.^{2} 1/	12806	25	8/6	92	35	50	59.5	23.0	--	--	1	---	-
Minturki	6155	16	26	87	28	50	59.0	22.7	34.5	37.5	12	100.0	3
H44-Minh. x Marmin	12704	15	27	83	27	40	59.3	22.4	33.6	35.5	6	90.0	8
H44 x Minturki^4	M.2843	15	28	85	27	30	59.5	21.4	--	--	1	---	-
H44 x Minturki^2	M.2829	15	28	83	27	30	60.5	21.1	30.7	--	2	89.1	9
Mint.-Io. x H44-Mint.^{2}	M.2828	16	27	82	30	50	60.7	21.0	32.0	--	2	92.9	7
H44 x Minturki^2	M.2845	16	28	85	28	50	59.3	20.7	--	--	1	---	-
Mint.-Io. x H44-Mint.^{2}	M.2827	15	27	83	30	30	60.7	19.8	32.2	--	2	93.3	6
Kanred x Minhardi	11726	17	26	83	28	50	58.2	19.8	--	--	1	---	-
H44-Minh. x Marmin	M.2811	16	27	82	26	50	59.3	18.6	38.9	--	3	103.4	2
Iohardi	12510	15	25	78	26	50	60.2	17.9	30.8	35.6	4	94.7	5

1/ Lodged 32%.

Standard error of a difference = 2.95 bushels.

Sheridan, Wyoming
Three 1/50 acre plots

Variety	C. I. No.	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
			1952	1951-1952	1949-1952			
		Lbs.	Bus.	Bus.	Bus.			
Cheyenne	8885	59	20.5	21.4	34.2	18	108.2	1
Kanred	5146	58	17.4	20.6	34.6	22	106.4	2
Turkey x Oro	12705	56	16.2	17.8	--	3	93.9	11
Minter	12138	56	16.2	19.6	33.0	8	98.3	8
Nebred	10094	58	15.6	18.1	33.0	16	102.3	4
Kharkof	1442	59	15.6	17.9	30.3	22	100.0	7
Marmin	11502	57	14.6	17.1	29.7	17	93.9	10
Ridit x Kharkof	12521	56	14.6	18.0	30.5	4	100.7	5
Yogo	8033	56	14.1	17.9	31.7	22	100.6	6
Martin x Tenmarq	11824	54	14.1	16.9	31.9	4	105.0	3
Karmont	6700	58	13.5	17.6	30.9	22	97.8	9

Standard error of a difference = 1.67 bushels.

Havre, Montana
Four 1/50 acre plots

Variety	C. I. No.	Date Headed	Plant height	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
					1952	1951-1952	1942-1952			
		June	Ins.	Lbs.	Bus.	Bus.	Bus.			
M. 36-Belog. x Kanred	12108	5	20	58.1	19.7	28.0	21.8	10	107.3	2
Karmont	6700	5	21	57.7	18.4	26.4	20.6	19	104.2	3
Minter	12138	5	19	56.9	17.6	23.7	--	8	98.5	6
Newturk	6935	5	20	57.3	17.5	24.4	--	13	100.0	4
Yogo	8033	7	19	58.1	17.3	24.2	22.3	19	111.1	1
Turkey x Oro	12705	5	20	55.3	17.0	22.2	--	3	75.5	7
Kharkof	1442	5	21	56.9	17.0	25.4	20.3	19	100.0	5
Kharkof M.C.22	6938	7	20	55.9	15.9	--	--	1	---	-

Standard error of a difference = 0.88 bushels.

Moccasin, Montana
Six nursery plots

Variety	C.I. or Mont. No.	Date headed	Plant height	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
					1952	1951-1952	1946-1952			
		June	Ins.	Lbs.	Bus.	Bus.	Bus.			
Yogo	8033	16	28	60	20.2	18.1	25.9	19	108.0	2
Newturk	6935	12	26	60	19.6	17.9	24.4	18	103.9	5
Cheyenne	8885	13	24	61	19.5	17.2	--	7	106.8	3
Yogo x Wasatch	-4	14	25	60	19.1	--	--	1	---	--
do	-9	15	23	60	17.9	16.6	--	3	116.2	1
do	-3	13	24	61	17.4	--	--	1	---	--
do	-8	14	25	60	16.6	--	--	1	---	--
Karmont	6700	13	25	60	16.6	16.9	25.1	19	103.0	6
Wasatch	11925	14	25	60	16.5	13.8	--	5	95.6	10
Minter	12138	14	24	61	16.1	14.8	23.8	8	99.2	8
Turkey x Oro	12705	14	27	59	15.6	13.6	--	3	94.5	11
Yogo x Wasatch	-6	11	23	61	15.3	--	--	1	---	--
Nebred	10094	13	22	59	15.2	14.1	23.4	14	97.9	9
Kharkof	1442	14	24	60	14.7	13.5	24.0	18	100.0	7
Tenmarq	6936	10	25	59	14.3	14.2	--	2	105.6	4
Comanche	11673	10	27	59	9.6	8.9	--	5	81.9	12

Standard error of a difference = 2.22 bushels.

Huntley, Montana
Six nursery plots

Variety	C.I. or Mont. No.	Date first Head	Plant height	Weight per bushel	Av. acre yield	
					1952	1951-1952
		May	Ins.	Lbs.	Bus.	Bus.
Cheyenne	8885	27	23	55.3	16.4	23.0
Tenmarq	6936	26	29	53.8	14.6	22.0
Karmont	6700	28	26	53.2	14.4	20.6
Kharkof	1442	27	27	53.5	14.4	20.5
Newturk	6935	27	27	52.0	14.3	21.1
Wasatch	11925	28	24	53.5	14.2	19.7
Yogo x Wasatch	-9	29	29	53.6	14.0	18.8
do.	-6	28	26	55.6	13.7	--
do.	-3	28	25	53.7	13.7	--
do.	-4	28	24	54.2	13.7	--
do.	-8	28	27	51.8	13.4	--
Comanche 1/	11673	26	26	53.3	14.0	21.2
Turkey x Oro	12705	27	28	52.4	13.8	21.4
Nebred	10094	27	24	53.3	13.7	20.1
Minter	12138	29	26	51.7	12.8	18.1
Yogo 1/	8033	30	26	52.0	12.5	19.3

1/ Stands thin May 19.

Standard error of a differenee = not significant.

Other Montana Tests
Irrigated Nurseries except Creston

Variety	C. I. or Sel. No.	Sidney		Huntley			Bozeman		Creston	
		yield per acre	wt. per bu.	yield per acre	wt. per bu.	lodging	yield per acre	wt. per bu.	yield per acre	lodging
		Bus.	Lbs.	Bus.	Lbs.	%	Bus.	Lbs.	Bus.	%
Karmont	6700	75.7	60.0	72.4	61.9	93	45.2	61.6	--	--
Cheyenne	8885	74.8	60.2	--	--	--	43.8	63.7	32.4	0
Yogo x Wasatch	-9	71.7	59.2	--	--	--	--	--	27.2	8
Tenmarq	6936	71.2	59.8	--	--	--	--	--	25.3	0
Turkey x Cro	12705	69.7	59.2	--	--	--	49.8	62.9	25.5	2
Kharkof	1442	69.4	60.0	--	--	--	--	--	33.5	52
Nebred	10094	67.6	59.8	--	--	--	--	--	32.6	0
Newturk	6935	63.9	59.5	60.5	62.2	87	--	--	32.4	0
Wasatch	11925	62.9	59.5	72.3	62.3	58	36.5	63.4	23.6	0
Minter	12138	60.7	59.7	--	--	--	47.7	63.1	30.5	10
Comanche	11673	43.8	59.3	78.8	62.3	35	38.2	63.8	28.6	0
Yogo	8033	--	59.5	68.6	62.1	83	41.6	63.6	31.7	0
Blkh.-Rex x Cheyenne	M482296	--	--	90.6	63.2	20	47.0	63.9	--	--
Rio-Rex x Nebred	M42235	--	--	83.6	62.1	52	46.1	63.8	--	--
Rex x Rio	M43096	--	--	75.7	63.3	62	49.5	64.2	--	--
Huntley 5B	---	--	--	69.0	61.8	25	--	--	--	--
Rio-Rex x Cheyenne	M472361	--	--	--	--	--	50.7	63.7	23.6	0
Com. x C.T.F.	12940	--	--	--	--	--	46.4	62.7	--	--
Yogo x Wasatch	-3	--	--	--	--	--	45.2	63.0	26.2	0
Rex-Rio x Nebred	M482215	--	--	--	--	--	43.2	64.1	--	--
Yogo x Wasatch	-8	--	--	--	--	--	42.6	63.6	34.5	7
do.	-4	--	--	--	--	--	37.7	62.8	--	--
do.	-6	--	--	--	--	--	35.8	64.0	22.4	0
Rio x Rex	M43131	--	--	--	--	--	41.9	62.9	--	--
Mqo.-Cro x C.T.F.	12939	--	--	--	--	--	41.4	62.8	--	--
L.S.D. (5%)	---	4.7	--	15.6	--	--	9.1	--	6.7	--

STANDARD ERRORS

Standard errors have been calculated on the yield data for the current year. A summary of these is shown in table 2 together with the number of plots and average yields at each station. A footnote indicates where nursery plots were used in place of field plots.

The analysis of variance was used on the data at each station. The square root of the mean square due to error, or the standard deviation, was divided by the square root of the number of replications of each variety to obtain the standard error of the mean. The standard error of a difference between any two variety means was obtained by multiplying the standard error of a mean by the square foot of 2. Error expressed as a percentage of the standard deviation is given also. These statistics have considerable practical value to the agronomist even though complete random arrangement of plots was not followed at all stations.

SUMMARY OF PLOT DATA

Summaries of yield data for 1952 and the recent two-year period appear in the sections which follow along with an average of other agronomic data for 1952.

Yields by Districts

In the southern district C. I. 12517 and C. I. 12515 have the highest 6-station average yield as is shown by table 3. Comanche ranked third. Wichita and Ponca did well also. Nine varieties have been grown uniformly for the last two years in this district. Data in table 4 show that Kiowa and Comanche have the highest yields. Triumph has not done well during these two years.

In the central district Ponca and Comanche had the highest 8-station average yield for 1952 (table 5). For the 2-year period top rank clearly goes to Kiowa but Comanche is a good second (table 6). In both years Tenmarq and Kharkof are low in rank.

Only four varieties were grown uniformly in the northeastern district. Results are given in tables 7 and 8 with Minter best in both comparisons and Iohardi lowest as a result of rather consistent low yields in 1952.

In tables 9 and 10 are the yields made by varieties grown in the northwestern district. Yogo and Karmont continue to be about the best varieties in the tests.

Summary of Agronomic Data

Insofar as the same kind of note was recorded on a series of varieties in a district, such data were averaged and have been placed in tables 11, 12, 13, and 14. In all cases the varieties are given in declining order of weight per bushel. Red Chief and Early Blackhull were heaviest in the southern district, Tenmarq was the lightest. Maturity rank was about as usual with Triumph earliest and Kharkof latest. Plant height varied from 33 to 37 inches with Red Chief tallest.

Red Chief in the central district was tallest, stiffest, and had the heaviest test weight. Ponca was distinctly more resistant to leaf rust.

In the northeastern district Iohardi was heaviest in weight per bushel and earliest. C. I. 12704 was slightly shorter than the others and Minter was slightly lowest in stem rust and lodging.

Only three traits were noted in the northwestern uniform trials as shown in table 14.

Table 2. Number of plots, average yields, and standard errors for the variety test at the cooperating stations in 1952.

State and Station	No. of plots	No. of var.	Average yield all var.	Standard error of a			Coefficient of variability
				Single plot	Difference in means	Mean	
			Bus.	Bus.	Bus.	Bus.	%
TEXAS							
Denton	10*	29	30.9	3.76	1.68	1.19	12.18
Chillicothe	10*	29	22.0	3.61	1.61	1.14	16.42
Bushland	10*	25	15.8	2.36	1.06	0.75	14.90
NEW MEXICO							
Clovis	5	11	4.4	1.22	0.77	0.54	27.78
OKLAHOMA							
Stillwater	4	20	20.8	1.78	1.26	0.89	8.57
Cherokee	5*	19	35.1	2.79	1.77	1.25	7.96
Woodward	5*	19	26.1	2.65	1.67	1.18	10.14
KANSAS							
Manhattan	3	23	35.5	2.78	2.05	1.45	7.07
Garden City	3	15	25.2	1.64	1.34	0.95	6.51
Hays	4	20	31.6	3.24	2.29	1.62	10.28
Colby	3	16	40.6	2.86	2.34	1.65	7.00
COLORADO							
Akron	4	15	18.9	2.02	1.43	1.01	10.69
NEBRASKA							
Lincoln	5	19	32.3	2.47	1.84	1.10	7.63
North Platte	5	15	30.3	1.77	1.12	.79	5.86
Alliance	6*	20	35.7	4.89	2.83	2.00	13.71
Wyoming							
Sheridan	3	12	15.7	2.04	1.67	1.18	13.06

Table 2 Cont.

State and Station	No. of plots	No. of var.	Average yield all var.	Standard error of a			Coefficient of variability
				Single plot	Difference in means	Mean	
			Bus.	Bus.	Bus.	Bus.	%
IOWA							
Ames	3*	8 1/	33.4	4.28	3.48	2.46	12.80
MINNESOTA							
Waseca	3	15	29.1	3.36	2.75	1.94	11.55
St. Paul	3	15	26.7	2.57	2.10	1.48	9.62
Grand Rapids	3	15	22.0	3.62	2.95	2.09	16.45
SOUTH DAKOTA							
Brookings	2	13	30.6	2.10	2.10	1.48	6.90
MONTANA							
Moccasin	6*	16	16.5	3.85	2.22	1.57	23.33
Havre	4	8	17.6	1.24	0.88	0.62	7.07
Huntley	6*	16	14.0	2.67	N.S.	N.S.	14.07

* Nursery-size plots. 1/ Analysis based on 36 entries.

Table 3. Summary of average yields of varieties grown uniformly at 6 stations in the southern district, 1952.

Variety	C. I. No.	Average yield in bushels per acre at						Six-station average
		Dent-on	Chilli-cothe	Bush-land	Still-water	Chero-kee	Wood-ward	
Comanche x Blk.-Hd.Fed.	12517	37.8	(22.0)*	15.9	24.4	42.6	30.3	28.8
Hard Federation Hyb.	12515	36.6	25.4	15.1	22.9	36.0	30.9	27.8
Comanche	11673	32.7	24.8	15.2	20.1	35.9	26.4	25.9
Wichita	11952	32.8	21.7	(15.8)*	19.3	39.2	26.1	25.8
Ponca	12128	32.4	22.3	14.7	21.3	37.9	24.6	25.5
Kiowa	12133	30.2	22.2	15.2	20.4	35.1	25.9	24.8
Early Blackhull	8856	29.8	19.3	15.7	20.1	36.9	23.2	24.2
Red Chief	12109	26.1	20.8	16.8	20.4	34.2	26.1	24.1
Triumph	12132	29.0	15.1	19.0	18.3	36.4	26.4	24.0
Kharkof	1442	29.6	25.7	13.7	21.1	29.8	22.2	23.7
Tenmarq	6936	31.2	23.4	14.5	19.5	29.6	22.9	23.5
Quanah	12145	30.4	20.0	(15.8)*	19.2	31.7	19.0	22.7

* Variety not grown. Average of all entries used in calculating the Six-station average.

Table 4. Two-year summary of varietal yields from plot tests in the southern district, 1951 and 1952.

Variety	C. I. No.	Average yield in bushels per acre at						Six-station average	Rank
		Dent-on	Chilli-cothe	Bush-land	Still-water	Chero-kee	Wood-ward		
Number of years grown--------		1	2	2	2	2	2	11	
Kiowa	12133	30.2	21.9	14.0	19.4	33.7	23.2	23.1	1
Comanche	11673	32.7	21.9	12.2	18.8	33.1	23.9	23.0	2
Ponca	12128	32.4	20.5	11.9	19.6	27.2	19.5	20.9	6
Red Chief	12109	26.1	20.5	14.8	17.8	30.3	25.5	22.2	4
Early Blackhull	8856	29.8	17.7	12.1	17.1	29.7	20.3	20.3	7
Triumph	12132	29.0	12.2	14.3	16.9	27.9	17.4	18.8	8
Kharkof	1442	29.6	22.4	13.8	20.1	30.8	21.3	22.4	3
Tenmarq	6936	31.2	20.8	12.4	17.9	28.2	22.0	21.3	5
Quanah	12145	30.4	18.6	(12.4)*	17.1	24.1	16.9	18.8	9

* Grown only one year

Table 5. Summary of average yields of the varieties grown uniformly at 8 stations in the central district in 1952.

Variety	C. I. No.	Average yield in bushels per acre at								Eight-station average
		Manhattan	Hays	Garden City	Colby	Akron	Lincoln	North Platte	Alliance	
Ponca	12128	42.7	26.7	29.3	44.3	18.7	35.8	31.8	37.5	34.4
Comanche	11673	40.2	32.4	28.1	40.0	21.2	32.1	31.8	39.2	34.3
Kiowa	12133	40.8	31.7	28.5	48.4	20.4	35.5	29.5	36.1	33.9
Pawnee	11669	37.5	32.4	23.5	44.8	18.7	36.1	32.8	34.6*	32.6
Red Chief	12109	37.5*	27.3	26.3	36.1	19.1	36.2	27.3	31.7	30.2
Tenmarq	6936	35.5	29.5	26.6	37.7	17.9	27.8	28.0	30.0	29.1
Kharkof	1442	28.8	27.8	19.6	37.2	19.1	28.3	27.7	33.3	27.7

Note: Turkey instead of Kharkof at Garden City and Colby.
* Six-variety average used for this variety.

Table 6. Two-year summary of varietal yields from plot tests at 8 stations in the central district in 1951 and 1952.

Variety	C. I. No.	Average yield in bushels per acre at								Eight station average
		Manhattan	Hays	Garden City	Colby	Akron	Lincoln	North Platte	Alliance	
Number of years----------		2	2	1	1	2	2	2	2	14
Kiowa	12133	43.8	36.7	28.5	48.4	21.6	29.2	25.6	22.8	31.2
Comanche	11673	42.4	36.1	28.1	40.0	20.1	28.5	23.4	22.0	29.5
Red Chief	12109	38.0*	32.5	26.3	36.1	19.2	34.5	29.1	18.9	29.1
Pawnee	11669	41.6	35.1	23.5	44.8	19.7	30.4	23.0	18.5*	28.9
Ponca	12128	44.5	31.1	29.3	44.3	18.8	28.5	19.3	19.1	28.3
Tenmarq	6936	40.5	33.4	26.6	37.7	19.9	25.8	23.3	15.7	27.3
Kharkof	1442	34.4	32.3	19.6**	37.2**	20.4	26.2	26.7	21.0	27.1

* Grown only one year. ** Turkey

Table 7. Summary of average yields of 4 varieties grown uniformly at 5 stations in 1952 in the northeastern district.

Variety	C. I. No.	Average yield per acre in bushels at					
		Ames	Brookings	Waseca	St. Paul	Grand Rapids	Five stations
Minter	12138	31.2	31.3	31.6	32.5	30.3	31.4
Minturki	6155	35.0	28.7	31.1	31.2	22.7	29.7
H44-Minh. x Marmin	12704	30.3	32.8	30.8	31.4	22.4	29.5
Iohardi	12510	29.0	29.4	31.1	23.3	17.9	26.1

Table 8. Two-year summary of yields of 4 varieties grown in the northeastern district in 1951 and 1952.

Variety	C. I. No.	Average yield per acre in bushels at					
		Ames	Brookings	Waseca	St. Paul	Grand Rapids	Five stations
Number of years--------		2	1	2	2	2	9
Minter	12138	25.0	31.3	31.9	32.0	38.4	31.8
H44-Minh. x Marmin	12704	24.7	32.8	32.6	33.2	33.6	31.2
Minturki	6155	27.7	28.7	32.1	29.4	34.5	30.7
Iohardi	12510	24.5	29.4	33.1	30.5	30.8	29.7

Table 9. Summary of average yields of varieties grown uniformly in the northwestern district at 4 stations in 1952.

Variety	C. I. No.	Average bushels per acre at				
		Sheridan	Huntley	Moccasin	Havre	Four stations
Yogo	8033	14.1	12.5	20.2	17.3	16.0
Karmont	6700	13.5	14.4	16.6	18.4	15.7
Minter	12138	16.2	12.8	16.1	17.6	15.7
Kharkof	1442	15.6	14.4	14.7	17.0	15.4
Turkey x Oro	12705	16.2	13.8	15.6	17.0	15.6

Table 10. Two-year summary of average yields of varieties grown in the northwestern district in 1951 and 1952.

Variety	C. I. No.	Average bushels per acre at				
		Sheridan	Huntley	Moccasin	Havre	Four stations
Karmont	6700	17.6	20.6	16.9	26.4	20.4
Yogo	8033	17.9	19.3	18.1	24.2	19.9
Kharkof	1442	17.9	20.5	13.5	25.4	19.4
Turkey x Oro	12705	17.8	21.4	13.6	22.2	18.8
Minter	12138	19.6	18.1	14.8	23.7	19.0

Table 11. Summary of agronomic data other than yield for varieties grown in plot tests in the southern distrct, 1952.

Variety	C. I. No.	Av. Date Headed	Av. Date Ripe	Plant height	Weight per bushel
		May	June	Ins.	Lbs.
Number of stations----------		5	5	5	6
Red Chief	12109	4	13	37	61.9
Early Blackhull	8856	4/27	7	35	61.8
Triumph	12132	4/27	7	33	61.3
Com. x Blk.-Hd. Fed.	12517	3	11	34.	60.1
Hard Fed. Hybrid	12515	3	11	35	60.0
Kiowa	12133	3	11	33	59.9
Ponca	12128	3	11	33	59.2
Kharkof	1442	8	14	35	58.9
Comanche	11673	3	11	34	58.6
Tenmarq	6936	5	13	36	58.0

Table 12. Summary of agronomic data other than yield for varieties grown in plots in the central district, 1952.

Variety	C. I. No.	Av. date Headed	Av. date Ripe	Plant height	Lodging	Shattering	Leaf rust	Weight per bushel
		May	June	Ins.	%	%	%	Lbs.
Number of stations----------		8	3	8	2	2	3	8
Red Chief	12109	26	27	45	5	2	45	60.7
Kiowa	12133	24	27	40	12	2	60	59.6
Pawnee	11669	24	26	40	16	5	45	59.3
Ponca	12128	25	25	40	16	3	2	58.8
Comanche	11673	25	26	42	19	2	36	58.2
Tenmarq	6936	27	27	42	9	3	46	57.8
Kharkof	1442	30	28	42	10	3	42	57.6

Table 13. Summary of agronomic data other than yield for plot varieties grown in northeastern district, 1952.

Variety	C. I. No.	Av. Date Headed	Av. Date Ripe	Plant height	Rust Leaf	Rust Stem	Lodging	Weight per bushel
		June	July	Ins.	%	%	%	Lbs.
Number of stations----------		5	4	5	4	3	2	5
Iohardi	12510	9	12	36	54	63	44	60.0
Minter	12138	11	14	36	48	21	27	58.9
Minturki	6155	12	14	37	44	43	34	58.0
H44-Minh. x Marmin	12704	11	14	35	48	23	32	57.5

Table 14. Summary of agronomic data other than yield for plot varieties grown in the northwestern district, 1952.

Variety	C. I. No.	Date headed	Plant height	Weight per bushel
		June	Ins.	Lbs.
Number of stations----------		3	3	4
	1442	5	24	57.4
	6700	5	24	57.2
	8033	7	24	56.5
	12138	6	23	56.4
	12705	5	25	55.7

UNIFORM YIELD NURSERY

This uniform test was sown at 17 stations over a six-state area in the central and southern Plains. Kharkof, Blackhull, and Early Blackhull were retained as permanent check varieties. Three new selections were added to the list grown in 1951 and seven were discontinued giving a test of 21 varieties for 1952. Hail destroyed the nursery at Ft. Collins, Colorado. The varieties grown in the 1952 tests were the following:

	Name	C. I. No.	State No.
1	Kharkof	1442	
2	Blackhull	6251	
3	Early Blackhull	8856	
4	Pawnee	11669	
5	Comanche	11673	
6	Triumph	12132	
7	Blue Jacket	12502	
8	Mqo.-Oro x Oro-Tenmarq	12406	K. 431420
9	Hd. Fed. Hybrid	12515	Wd. 43h1-399
10	Comanche x Blackhull-Hd.Fed.	12517	Wd. 43h2-123
11	Quivira Hybrid	12525	
12	12701 x Wichita	12702	Tx. 237-46-22
13	12701 x Wichita	12703	Tx. 237-46-23-1
14	Stafford	12706	
15	Pawnee Sel. 33	12707	
16	Comanche x Chey.-Blackhull	12708	Wd. 43h3 86
17	Blackhull-Oro x Pawnee	12709	Wd. 43h1-398
*18	Comanche x Blackhull-Hd.Fed.	12710	Wd. 43h2-315
19	Pawnee x Cheyenne	12715	Nebr. 47NP1965
20	Turkey x Cheyenne	12711	Nebr. 40672
21	Hope-Turkey x Cheyenne	12716	Nebr. 44NP555

* First 18 are old entries.

DATA OBTAINED

The data collected in 1952 are presented in table 15. In all cases, differential response of varieties has been the basis for including certain observations. For example, when all varieties survive 100%, no survival column is shown. Equally comprehensive notes were not taken at all stations but the more important local responses are shown by the data or by the comments in the text paragraphs below.

General conditions over the area have been discussed in this report under "Plot Data" and apply to the uniform nursery also except as otherwise indicated in this section. Fall and winter drouth was a major seasonal deficiency. This carried over into the early spring months. Subsoil reserves of moisture provided for the plant's needs for several months. Near the time of ripening high temperatures and rapidly moving winds swept over most of the area causing premature ripening at some stations.

Three tests were harvested in Texas. At Denton C. I. 12517 made over 40 bushels to the acre and only two yielded less than 30 bushels or less than Kharkof. Leaf rust was prominent. In the Chillicothe test Kharkof was second high in yield. Early varieties did poorly. Pawnee and Comanche have good 14-year records. The Bushland test favored Stafford, Triumph, and Blackhull. Late varieties were poorest. Pawnee, Blackhull, and Blue Jacket rank highest in the period averages.

One test in New Mexico at Clovis was almost a failure from drought and was further depleted by birds near harvest time. Such low yields are of doubtful value in a single year. The two-year averages give the Blackhull wheats some of the top ranking positions although Pawnee ranks high also.

Oklahoma had three tests. At Stillwater leaf rust broke out late to low readings on susceptible varieties. All varieties exceeded 60 pounds to the bushel. C. I. 12709, 12515, and Stafford yielded over 40 bushels to the acre. C. I. Nos. 12517, 12709, and 12515 have the highest period averages. At Cherokee the yields were good also. Stem and leaf rust, lodging, and Septoria (mainly on C. I. 12716) were evident. C. I. 12702, C. I. 12517, Stafford, and Comanche had the best yields. These, except Stafford, have good period averages. In the Woodward test weights per bushel exceeded 60 pounds. Yields above 32 bushels to the acre were made by C. I. Nos. 12515, 12702, 12709, and 12710. Best four-year averages have been made by C. I. 12517 and C. I. 12515.

Three tests were in Kansas. Shattering at Manhattan affected the yields of several varieties. Even so, high yields and excellent test weights were recorded. Triumph, Early Blackhull, C. I. 12515 and C. I. 12517 were the highest producers. Two-year averages favor C. I. 12517 although several have good records also. Earliness at Hays tended to overshadow other factors. Good yields were recorded for Triumph, C. I. 12525, Early Blackhull, Pawnee, and others. The best two-year record has been made by C. I. 12517. In the Colby test Triumph, C. I. 12715 and C. I. 12711 were high in yield. Two-year records made by C. I. 12515 and C. I. 12517 are impressive.

Two tests in Colorado were harvested, whereas a third was lost from hail. Severe drought at Akron reduced yields but C. I. 12715 produced 18.2 bushels to the acre. C. I. 12517 has the best two-year average. At Hesperus C. I. 12702 and C. I. 12515 had the highest yields and the latter with C. I. 12406 had the best three-year averages.

At Ames, Iowa, severe leaf rust was noted and much lodging. Yields of Triumph, Blue Jacket, C. I. 12715, and C. I. 12406 were highest. Three-year averages favor Triumph, Blue Jacket, C. I. 12517, and Pawnee.

Among the three tests in Nebraska, C. I. 12711 was highest in yield at North Platte and ranked second and seventh at Lincoln and Alliance. C. I. 12515 was highest at Lincoln and lowest at Alliance. Different survivals at the latter station were recorded. Hessian fly and leaf rust at Lincoln and stem rust at Alliance were added hazards this year. Pawnee, C. I. 12517, and C. I. 12406 rank first, respectively, at the three Nebraska stations.

Table 15. Yield and other data for varieties grown in the uniform yield nursery in cooperative experiments at 16 stations in the hard winter wheat region in 1952, and period averages. UYN

Denton, Texas
Four plots

C. I. No.	Date Headed	Date Ripe	Plant height	Leaf rust	Weight per bushel	Av. acre yield 1952	Av. acre yield 1950 & 1952	No. Yrs. Grown	Percent of Kharkof	Rank
	April	May	Ins.	%	Lbs.	Bus.	Bus.			
12517	20	26	38	3	60.0	40.0	25.3	2	125.2	4
12710	23	27	41	3	59.5	37.6	--	1	---	-
12711	21	26	38	60	59.0	37.5	--	1	---	-
12702	21	26	41	T	61.0	37.4	24.8	2	122.5	5
12515	20	28	39	8	60.0	37.1	24.1	2	119.1	6
12406	21	27	38	15	60.0	37.1	25.1	3	116.5	7
6251	24	28	41	43	62.0	35.5	22.8	17	114.5	8
11673	21	29	38	28	58.5	34.0	21.9	14	126.4	3
12708	20	28	38	18	59.0	33.9	--	1	---	-
12709	22	29	37	5	61.0	33.6	--	1	---	-
12706	23	29	43	45	61.0	32.6	--	1	---	-
12525	8	23	33	23	59.0	32.4	20.8	2	103.0	10
12703	18	26	37	T	61.0	32.3	21.6	2	106.9	9
12716	22	27	38	40	59.0	31.8	--	1	---	-
12502	23	29	42	48	62.0	31.6	20.9	3	95.8	12
12132	13	26	35	45	60.0	31.4	20.0	6	95.3	13
8856	16	25	36	45	62.0	31.1	19.9	17	137.7	1
11669	21	27	37	45	59.0	31.1	20.1	14	137.0	2
1442	25	30	40	38	60.0	30.6	20.2	17	100.0	11
12715	19	27	37	53	59.0	29.6	--	1	---	-
12707	14	23	34	58	60.0	24.8	--	1	---	-

Standard error of a difference = 2.61 bushels

Chillicothe, Texas
Four plots

C. I. No.	Date headed	Top growth 3/4	Weight per bushel	Av. acre yield			No. yrs. grown	Percent of Kharkof	Rank
				1952	1951-1952	1949-1952			
	April	%	Lbs.	Bus.	Bus.	Bus.			
12708	20	65	59	29.7	27.2	--	2	111.3	4
1442	22	60	60	29.6	24.4	26.2	14	100.0	10
11673	18	60	60	29.1	23.6	25.2	14	119.4	2
12709	20	65	61	28.8	24.5	--	2	100.4	9
12716	20	80	59	28.6	--	--	1	---	-
11669	15	70	59	28.3	23.1	26.9	14	119.4	1
12515	18	60	59	28.3	25.2	29.1	4	111.2	5
12711	20	75	60	27.8	--	--	1	---	-
12710	18	60	57	27.8	23.2	--	2	94.9	14
12715	18	65	61	26.5	--	--	1	---	-
12502	20	70	62	25.6	24.5	26.4	5	97.7	12
12706	20	75	61	24.6	20.6	--	2	84.2	15
6251	20	50	61	24.5	20.1	22.2	14	104.4	7
8856	7	85	60	22.8	17.9	23.1	14	108.8	6
12702	15	75	59	21.9	22.5	--	3	97.7	13
12406	18	55	59	21.9	18.9	24.3	5	98.8	11
12703	15	70	61	20.3	20.5	--	3	80.5	16
12525	6	70	61	19.2	17.8	--	3	68.7	17
12132	9	75	59	15.6	12.3	19.4	8	103.0	8
12707	7	80	59	14.2	16.1	--	2	65.8	18
12517	Not grown			--	--	--	3	111.6	3

Standard error of a difference = 3.43 bushels

Bushland, Texas
Ten plots, four irrigated

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield Dry 1952	Irrig. 1952	1952 Av.	1951-1952	1949-1952	No. Yrs. Grown	Percent of Kharkof	Rank
	May	June	Ins.	Lbs.	Bus.	Bus.	Bus.	Bus.	Bus.			
12706	24	25	27	58.5	16.3	24.0	20.2	15.1	--	2	109.8	4
12132	17	19	24	59.0	16.6	21.4	19.0	14.3	18.1	6	97.9	12
6251	25	26	27	57.8	13.9	23.8	18.9	15.2	19.5	14	112.8	2
12715	24	24	25	57.3	15.2	19.7	17.5	--	--	1	---	-
12708	25	25	26	54.8	13.1	20.4	16.8	12.5	--	2	90.5	15
12517	24	24	25	54.0	10.9	20.9	15.9	12.7	18.4	4	101.5	8
12502	25	25	28	59.5	13.1	19.6	16.4	14.8	20.0	5	110.7	3
12525	16	18	23	58.0	13.8	18.9	16.4	11.3	--	3	74.2	18
12703	23	23	22	57.8	12.1	20.1	16.1	13.0	--	3	103.8	6
12702	23	22	25	56.3	12.7	19.2	16.0	12.1	--	3	91.8	14
11669	22	21	24	55.8	13.5	18.3	15.9	12.0	18.6	14	115.1	1
12515	25	25	26	53.8	11.8	18.3	15.1	13.6	18.6	4	102.3	7
8856	18	19	25	58.5	12.7	18.6	15.7	12.1	17.8	14	98.5	11
11673	25	25	25	53.8	11.5	18.8	15.2	12.2	18.0	14	108.4	5
12707	16	18	24	57.5	13.4	17.0	15.2	10.8	--	2	78.5	17
12710	25	25	25	53.8	12.1	16.7	14.4	13.9	--	2	101.1	9
12711	24	24	25	55.0	10.8	17.9	14.4	--	--	1	---	-
12406	24	24	25	55.0	11.5	16.4	14.0	10.3	15.3	5	85.7	16
1442	29	27	25	54.8	10.8	16.5	13.7	13.8	18.1	14	100.0	10
12709	25	25	25	54.8	12.5	14.3	13.4	12.8	--	2	92.7	13
12716	28	27	24	55.5	10.3	15.9	13.1	--	--	1	---	-

Standard error of a difference = 1.13 bushels dry; 1.96 bushels irrigated
(Variety x treatment interaction not significant)

Clovis, New Mexico
Three plots

C. I. No.	Date Headed	Plant Height	Loss to birds	Av. acre yield	
				1952 [1]	1950 and 1952
	June	Ins.	%	Bus.	Bus.
12706 [2]	8	19	30	3.0	---
12502 [2]	6	18	12	3.0	9.6
12716 [2]	11	16	13	2.3	---
6251 [2]	7	15	23	2.1	8.4
12703	6	16	20	2.0	7.6
12711	10	15	19	2.0	---
11669 [2]	5	14	29	1.8	8.1
12702 [2]	3	16	26	1.8	8.2
12515	5	16	28	1.7	8.1
1442	12	16	12	1.6	6.9
12710	10	15	23	1.5	---
12517	5	16	32	1.5	6.4
12132	5/30	14	39	1.4	6.8
8856	1	13	56	1.4	6.6
12406	8	15	37	1.4	5.2
12709	10	15	15	1.3	---
12715 [2]	10	17	18	1.2	---
12525 [2]	5/29	15	41	1.0	6.1
12708	7	16	32	0.9	---
12707	5/29	14	48	0.8	---
11673	7	14	34	0.7	7.2

[1] Adjusted yields
[2] Weight per bushel above 57 lbs.; others ranged from 52 to 56 lbs.

Standard error of a difference = 0.44 bushels.

Stillwater, Oklahoma
Four plots

C. I. No.	Date Headed	Date Ripe	Plant height	Leaf rust 1/	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1949-1952	No. Yrs. Grown	Percent of Kharkof	Rank
	May	June	Ins.	%	Lbs.	Bus.	Bus.	Bus.			
12709	6	11	42	10	62.0	41.9	39.1	--	2	125.0	2
12515	3	8	44	12	62.0	41.3	38.8	35.1	4	122.4	3
12706	6	9	44	18	63.3	40.9	34.7	--	2	111.0	10
12702	3	7	45	1	61.7	38.5	38.0	--	3	119.9	4
12517	2	7	43	10	61.3	38.4	39.7	35.9	4	125.5	1
12710	6	11	42	12	60.0	38.1	36.5	--	2	116.6	6
11673	4	8	42	10	60.7	37.5	36.1	31.3	14	115.3	7
12132	4/29	5	40	30	62.6	36.7	31.1	28.6	8	113.7	9
12708	6	9	41	10	61.4	36.2	35.6	--	2	113.9	8
12711	5	8	39	30	62.2	35.4	--	--	1	---	-
12703	2	7	44	T	61.0	35.3	32.2	--	3	99.2	14
6251	7	10	41	13	62.7	34.5	31.7	29.0	19	106.7	11
8856	4/28	5	44	20	63.2	34.1	29.6	27.5	19	106.7	12
12406	4	9	41	10	60.5	33.7	31.3	28.4	5	98.0	16
12716	6	9	40	30	60.5	33.2	--	--	1	---	-
12715	5	9	41	25	61.2	32.8	--	--	1	---	-
12525	4/23	4	39	T	61.2	32.3	27.4	--	3	89.2	17
1442	8	9	43	20	61.4	32.1	31.3	28.6	19	100.0	13
12502	5	8	47	25	62.7	31.7	30.7	28.4	5	98.3	15
11669	3	7	40	30	61.7	30.6	30.4	27.9	16	118.7	5
12707	4/25	4	39	20	61.6	24.7	23.0	--	2	73.4	18

1/ Pustule type 4 except type 3 for 12525, 12702, 12703.

Standard error of a difference = 2.12 bushels

Cherokee, Oklahoma
Four plots

C. I. No.	Degree headed May 15	Date ripe	Lodging	Plant height	Rust June 5		Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
					Leaf	Stem		1952	1951-1952	1949-1952			
	%	June	%	Ins.	%	%	Lbs	Bus.	Bus.	Bus.			
12702	100	11	10	43	T	T	61.8	44.2	35.3	--	3	125.0	2
12517	100	12	8	41	15	10	61.0	43.9	41.9	35.4	4	144.4	1
12706	100	17	8	46	25	T	62.4	39.2	31.0	--	2	110.3	9
11673	98	13	5	41	25	T	59.1	39.0	33.2	29.6	6	117.9	4
8856	100	7	18	39	35	T	64.2	38.5	29.5	24.7	6	102.2	15
12715	100	16	4	41	35	5	60.5	38.5	--	--	1	---	--
12515	100	13	5	40	15	5	61.1	38.1	34.7	25.6	4	104.4	12
12406	100	16	4	42	5	T	59.8	37.8	34.4	30.4	5	124.2	3
12132	100	7	13	37	--	T	62.7	37.8	27.6	27.7	6	116.3	6
12708	87	14	5	42	15	T	61.1	37.5	32.5	--	2	115.9	7
12703	100	13	8	41	T	T	62.3	37.1	30.4	--	3	104.5	11
12711	97	17	4	40	35	5	59.7	36.9	--	--	1	---	--
12709	85	16	4	42	15	T	61.6	36.7	32.9	--	2	117.3	5
12525	100	7	15	37	--	T	62.5	35.7	31.8	--	3	102.4	14
6251	87	17	6	43	30	T	62.7	35.1	27.7	23.0	6	99.8	17
12502	100	17	2	45	40	5	64.2	35.0	32.7	28.2	5	113.6	8
11669	100	12	2	40	35	T	60.4	34.9	24.7	24.3	6	103.2	13
12716	57	17	2	43	25	T	59.9	33.9	--	--	1	---	--
12710	58	17	10	42	25	T	58.5	33.4	29.7	--	2	105.7	10
12707	100	9	18	38	--	5	62.8	33.0	26.4	--	2	94.1	18
1442	38	17	4	44	30	T	59.2	30.6	28.1	24.5	6	100.0	16

Note: Early maturing varieties damaged by frost April 9 and 10.

Standard error of a difference = 1.85 bushels.

Woodward, Oklahoma
Four plots

C. I. No.	Dates		Plant height	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
	Headed	Ripe			1952	1951-1952	1949-1952			
	May	June	Ins.	Lbs.	Bus.	Bus.	Bus.			
12515	7	13	34	62.4	34.3	28.6	31.2	4	128.9	2
12702	7	12	34	63.0	33.7	28.3	--	3	127.2	3
12709	11	15	35	62.6	32.6	26.1	--	2	116.3	5
12710	11	15	34	61.9	32.5	25.9	--	2	115.4	7
12711	8	11	32	62.3	31.5	--	--	1	---	-
12517	7	13	33	62.2	30.3	25.3	31.4	4	129.7	1
12706	10	14	37	62.6	30.0	23.3	--	2	103.6	11
12708	11	15	35	62.2	29.7	23.0	--	2	102.2	13
12502	9	14	38	63.0	29.4	22.6	24.2	5	99.8	15
6251	11	15	36	62.6	28.4	23.1	25.3	21	104.5	9
11673	7	12	32	61.4	28.1	22.8	25.7	16	115.6	6
12716	10	14	35	60.5	27.8	--	--	1	---	-
11669	7	10	32	62.0	27.0	21.1	24.9	18	120.8	4
1442	13	16	34	60.5	27.0	22.5	24.2	21	100.0	14
12703	7	13	33	61.9	26.2	20.1	--	3	90.4	16
12525 1/	3	10	28	62.9	26.1	19.1	--	3	82.5	17
12715	7	13	33	61.4	26.1	--	--	1	---	-
12132	3	8	30	62.2	25.9	19.4	23.9	8	111.1	8
8856	3	8	33	62.8	25.5	18.9	23.3	21	104.3	10
12406	9	14	32	61.0	24.3	19.9	24.7	5	102.9	12
12707 1/	1	7	30	61.4	24.3	17.8	--	2	79.1	18

1/ These in particular, and other early varieties damaged by frost April 9 and 10.

Standard error of a difference = 2.36 bushels.

Manhattan, Kansas
Six plots

C. I. No.	Date headed	Plant height	Shattering	Stem rust 1/	Bunt 1/	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
							1952	1951-1952	1949-1952			
	May	Ins.	%	%	%	Lbs.	Bus.	Bus.	Bus.			
12132	13	38	1	60	75	62.2	50.2	43.1	31.8	8	122.7	9
8856	13	40	T	60	75	64.4	49.0	40.0	28.9	21	117.0	14
12515	19	42	2	60	1	62.4	48.3	43.4	31.1	4	125.6	6
12517	17	41	1	60	2	61.3	46.6	40.1	32.1	4	129.5	4
6251	20	45	4	60	70	63.4	45.4	40.8	33 5	21	115.1	15
12709	22	42	1	60	3	62.5	43.8	40.6	--	2	139.5	1
12525	12	38	6	70	50	62.7	42.7	36.2	--	3	110.4	16
12703	16	41	T	50	60	62.1	42.3	38.9	--	3	122.7	10
12706	22	46	5	60	75	63.5	42.2	40.4	--	2	138.8	2
12502	20	45	1	60	80	63.9	41.9	38.3	33.0	5	123.6	8
12406	19	45	7	40	0	60.8	41.8	39.5	33.1	5	122.3	11
11673	18	40	1	60	2	59.6	41.4	38.2	31.3	16	124.5	7
12707	13	38	T	60	65	63.2	41.1	35.0	--	2	120.1	12
12702	16	42	15	50	40	61.8	41.0	38.3	--	3	126.0	5
12711	20	41	5	60	3	60.1	37.1	--	--	1	---	--
12708	22	43	12	70	1	62.2	34.3	34.4	--	2	118.2	13
12715	19	41	13	60	60	60.7	32.9	--	--	1	---	--
11669	18	39	12	60	25	61.3	32.6	30.3	27.0	18	130.6	3
1442	23	43	9	60	70	61.1	30.8	29.1	24.8	21	100.0	18
12710	22	43	18	60	3	63.0	30.2	31.6	--	2	108.6	17
12716	22	44	35	10	0	60.8	29.7	--	--	1	---	--

1/ Data from separate disease nursery.

Note: Two replications harvested June 21, others June 23.

Standard error of a difference = 2.66 bushels.

Hays, Kansas
Four plots

C. I. No.	Date Headed	Plant Height	Lodging	Leaf rust	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
						1952	1951-1952	1949-1952			
	May	Ins.	%	%	Lbs.	Bus.	Bus.	Bus.			
12132	14	41	10	23	61.0	41.9	39.5	23.4	8	118.0	13
12525	12	40	3	1	62.5	41.1	36.2	--	3	124.5	10
8856	14	42	3	4	61.5	37.0	37.2	26.7	20	115.9	15
11669	19	41	3	5	56.5	36.1	37.2	27.7	17	129.9	8
11673	18	44	3	3	57.0	35.8	39.2	28.2	16	125.6	9
12515	18	43	26	3	56.5	35.1	38.4	27.1	4	136.4	5
12707	12	40	23	18	61.0	34.0	33.7	--	2	134.0	7
12711	19	44	4	13	58.5	33.0	--	--	1	---	--
12706	20	44	9	1	59.0	32.7	38.7	--	2	153.7	1
6251	20	45	8	4	58.5	32.1	36.0	25.8	20	112.8	16
12517	17	41	5	T	57.5	31.7	41.6	30.5	4	153.5	2
12715	20	45	0	4	59.0	31.4	--	--	1	---	--
12406	20	42	0	0	56.5	31.0	33.5	25.5	5	116.3	14
12709	19	41	4	0	57.0	30.7	37.6	--	2	149.3	4
12708	20	45	5	T	57.0	30.3	37.7	--	2	149.9	3
12702	17	45	23	T	59.5	29.2	35.2	--	3	134.9	6
12703	16	44	16	0	59.5	28.2	33.7	--	3	119.3	12
12716	24	44	4	11	56.0	24.3	--	--	1	---	--
12502	21	47	8	2	58.0	24.1	30.1	22.9	5	108.4	17
1442	23	40	8	1	55.0	23.1	25.2	19.9	20	100.0	18
12710	22	44	9	1	53.0	20.7	30.8	--	2	122.5	11

Standard error of a difference = 3.55 bushels.

Colby, Kansas
Four plots

C. I. No.	Date Headed	Plant Height	Lodging	Weight per bushel	Av. acre yield		No. Yrs. Grown	Percent of Kharkof	Rank
					1952	1950 & 1952			
	May	Ins.	%	Lbs.	Bus.	Bus.			
12132	20	35	T	62.0	41.6	33.2	3	97.5	8
12715	26	35	T	61.3	41.0	--	1	---	--
12711	24	36	1	59.5	40.5	--	1	---	--
12709	25	37	2	61.3	39.7	--	1	---	--
12515	23	37	2	60.3	38.9	40.6	2	132.5	1
12703	20	36	1	61.3	38.8	36.4	2	119.0	4
12702	22	37	2	60.5	37.9	37.1	2	121.2	3
8856	19	37	T	62.5	36.5	33.6	4	84.0	13
12406	23	37	T	57.0	35.6	31.4	3	92.6	11
12706	27	40	T	61.0	35.4	--	1	---	--
12517	23	36	2	59.3	34.6	40.3	2	131.7	2
12710	27	36	1	57.5	33.4	--	1	---	--
11673	23	36	1	58.5	33.3	34.0	3	101.7	6
12707	15	32	2	63.0	33.2	--	1	---	--
6251	25	37	T	58.5	32.6	31.7	4	92.7	10
12525	15	33	T	61.5	32.4	31.7	2	103.6	5
12708	26	37	1	59.0	32.0	--	1	---	--
11669	23	35	T	59.3	31.9	30.9	3	95.5	9
12716	27	35	T	60.0	31.7	--	1	---	--
1442	27	37	T	57.5	31.1	30.6	4	100.0	7
12502	26	40	T	61.0	30.1	28.6	3	89.2	12

Standard error of a difference = 2.07 bushels.

Akron, Colorado
Five plots

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1949,1950, 1952	No. Yrs. Grown	Percent of Kharkof	Rank
	June	July	Ins.	Lbs.	Bus.	Bus.			
12715	11	5	36	58	18.2	--	1	---	--
11673	9	1	37	55	16.9	19.0	14	107.1	7
12406	11	3	37	57	16.5	19.5	4	101.6	10
12708	8	5	38	56	15.3	--	1	---	--
12703	7	3	38	57	15.3	--	2	107.7	5
12706	9	5	38	58	15.3	--	1	---	--
12515	9	2	37	54	15.1	16.8	3	101.8	9
12709	11	5	37	54	15.1	--	1	---	--
12710	9	4	37	52	15.1	--	1	---	--
12702	7	1	37	56	15.0	--	2	116.1	2
12517	6	2	35	53	14.7	20.5	3	124.2	1
11669	8	2	37	56	14.3	18.8	15	110.3	4
12132	5	1	36	53	14.3	18.6	7	103.1	8
1442	14	4	36	56	13.9	16.5	17	100.0	11
12711	14	4	35	56	13.1	--	1	---	--
6251	9	5	37	57	12.8	16.8	17	107.5	6
12707	7	2	36	58	12.3	--	1	---	--
12525	6	6/30	36	55	12.1	--	2	95.7	12
12502	10	4	38	58	11.9	16.3	4	86.8	13
8856	7	3	37	56	11.6	18.9	17	111.5	3
12716	10	4	35	57	11.1	--	1	---	--

Hesperus, Colorado
Five plots irrigated

C. I. No.	Date Headed	Date Ripe	Lodging	Weight per bushel	Av. acre yield 1952	Av. acre yield 1949,1950, 1952	No. Yrs. Grown	Percent of Kharkof	Rank
	June		%	Lbs.	Bus.	Bus.			
12702	14	7/30	2	63.0	39.6	--	2	109.5	7
12515	14	8/1	1	62.0	38.8	42.4	3	117.2	4
12502	14	7/31	0	63.0	38.1	41.4	4	117.9	3
12406	15	8/2	2	62.0	36.9	43.8	4	126.2	1
12517	14	8/1	1	62.5	36.3	38.9	3	107.6	8
12708	16	8/3	2	61.5	35.6	--	1	---	--
6251	14	8/1	3	62.5	35.3	37.7	13	116.1	5
1442	17	8/3	10	62.0	33.7	36.2	13	100.0	11
12132	11	7/28	3	62.0	31.9	37.4	6	102.0	10
12706	14	8/2	5	62.5	31.1	--	1	---	--
8856	11	7/30	4	62.0	30.6	34.2	13	103.6	9
12707	6	7/29	5	63.0	30.3	--	1	---	--
12709	16	8/3	0	63.0	29.7	--	1	---	--
12715	16	8/3	2	64.0	29.2	--	1	---	--
12711	17	8/4	0	62.5	28.8	--	1	---	--
11669	13	8/1	2	60.5	28.5	39.1	13	109.6	6
11673	14	8/1	1	61.0	27.8	38.9	13	121.0	2
12710	15	8/1	3	62.0	27.1	--	1	---	--
12716	15	8/2	3	64.0	26.4	--	1	---	--
12703	13	7/30	0	62.5	26.3	--	2	69.4	12
12525	9	7/30	4	63.0	23.5	--	2	57.5	13

Ames, Iowa
Three plots, triple lattice

C. I. No.	Date Headed	Date Ripe	Plant height	Lodging	Leaf rust %	Leaf rust Type	Weight per bushel	Av. acre yield 1952	Av. acre yield 1949,1950, 1952	No. Yrs. Grown	Percent of Kharkof	Rank
	May	July	Ins.	%			Lbs.	Bus.	Bus.			
12132	25	6/29	42	47	70	4	60.4	46.3	46.1	6	121.9	6
12502 1/	6/1	3	47	40	60	3	62.0	44.2	44.6	3	130.6	3
12715	6/2	2	47	19	50	4	59.0	43.6	--	1	---	--
12406	6/1	2	46	50	20	2-3	58.9	43.2	41.0	3	120.0	8
8856	28	6/29	44	73	40	3	61.4	43.0	40.3	11	105.3	10
11669	31	1	45	35	40	3	58.2	42.4	43.3	11	104.0	11
12702	30	1	45	45	20	0-2	59.2	42.0	--	2	140.1	1
12703	29	1	44	42	20	0-2	60.7	41.5	--	2	120.6	7
12706	6/2	3	47	72	50	3	60.8	40.9	--	1	---	--
11673	31	1	45	43	30	3	56.3	40.6	43.1	11	118.6	9
12716	6/3	2	46	30	50	3	58.0	39.5	--	1	---	--
12517	31	1	45	77	20	2-3	59.1	39.3	44.4	3	130.0	4
12525	24	1	39	90	20	0-4	60.1	38.4	--	2	132.6	2
12711	6/1	1	45	33	50	4	58.5	38.3	--	1	---	--
12708	6/3	3	45	80	30	0-3	56.5	35.6	--	1	---	--
12515	31	2	44	87	20	0-4	57.3	35.4	43.0	3	125.9	5
12709	6/3	3	45	83	30	0-3	56.6	33.8	--	1	---	--
6251	6/2	3	46	75	40	3	59.0	32.9	38.0	11	100.6	12
12710	6/4	2	45	68	30	3	53.0	28.2	--	1	---	--
1442	6/5	4	44	68	60	3	53.0	26.7	34.2	11	100.0	13
12707	24	6/30	42	37	60	3	60.2	26.7	--	1	---	--

1/ 18 loose smut heads in 3 rows.

Standard error of a difference = 3.48 bushels

Lincoln, Nebraska
Five plots

C. I. No.	Date Headed	Date Ripe	Plant height	Fly	Rust Leaf	Rust Stem 2/	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1949-1952	No. Yrs. Grown	Percent of Kharkof	Rank
	May	June	Ins.	1/	%	%	Lbs.	Bus.	Bus.	Bus.			
12515	26	25	44	5	3	25	60.8	40.9	36.9	40.0	4	128.8	2
12711	26	25	41	4	35	60	60.0	39.7	--	--	1	---	--
12406	26	25	44	0	T	30	59.7	39.4	36.9	37.2	5	121.3	3
12702	25	25	42	5	T	30	61.3	38.4	30.8	--	3	108.1	10
12502	26	25	49	3	30	40	62.0	37.8	34.4	35.6	5	117.6	5
12706	27	26	47	4	10	35	61.6	37.3	33.1	--	2	112.8	9
12715	26	26	43	2	53	35	60.4	36.8	--	--	1	---	--
11669	25	25	41	3	38	30	60.3	35.3	32.6	35.5	18	130.3	1
6251	27	26	44	4	35	40	61.5	34.6	29.5	29.5	21	107.8	12
12517	26	25	43	5	7	50	60.6	34.4	31.7	36.2	4	116.5	7
11673	25	25	44	4	18	35	59.6	34.1	30.9	34.2	16	113.0	8
12709	27	28	42	5	T	30	61.1	33.5	31.8	--	2	108.2	11
12716	27	26	44	4	55	5	59.3	33.5	--	--	1	---	--
12703	24	25	42	4	1	5	61.8	33.3	28.2	--	3	97.1	17
1442	29	28	46	5	40	30	57.7	32.9	29.4	31.0	21	100.0	16
12707	18	20	38	2	35	15	61.2	32.3	31.1	--	2	105.8	15
12132	21	23	38	3	60	25	62.2	32.3	30.5	34.5	8	117.0	6
12708	27	26	43	4	4	40	59.2	31.8	31.3	--	2	106.6	13
8856	22	24	43	3	50	35	61.5	31.3	28.0	31.5	21	120.0	4
12710	28	28	42	5	2	35	57.7	31.1	31.3	--	2	106.5	14
12525	20	23	35	4	20	50	63.5	26.6	23.7	--	3	90.6	18

1/ 5 = heavy infestation; 0 = none.
2/ Data from separate disease nursery.

Standard error of a difference = 2.47 bushels.

North Platte, Nebraska
Three plots

C. I. No.	Date Headed	Date Ripe	Plant height	Weight per bushel	Av. acre yield 1952	Av. acre yield 1951-1952	Av. acre yield 1949-1952	No. Yrs. Grown	Percent of Kharkof	Rank
	June	June	Ins.	Lbs.	Bus.	Bus.	Bus.			
12711	1	30	36	62.0	38.3	--	--	1	---	--
12715	1	29	37	62.5	36.3	--	--	1	---	--
11669	5/30	28	38	60.0	35.8	20.5	26.8	14	122.6	3
12517	5/30	27	39	59.5	33.5	20.5	30.1	4	128.3	1
12132	5/28	26	38	61.0	33.4	17.3	22.6	8	88.0	14
12515	5/30	27	38	59.5	33.2	19.5	28.9	4	123.2	2
12707	5/27	25	36	61.5	32.1	17.7	--	2	88.7	12
11673	5/31	29	38	60.0	32.4	18.2	24.2	12	113.7	4
8856	5/28	26	39	59.0	30.6	17.0	19.8	15	99.7	8
12702	5/30	28	40	59.5	30.1	17.6	--	3	91.7	11
12716	3	7/1	37	60.5	30.0	--	--	1	---	--
12706	1	30	41	58.0	29.7	19.2	--	2	96.5	10
12703	5/30	28	38	59.0	29.4	16.5	--	3	75.6	17
1442	4	7/1	39	60.0	29.3	19.9	23.5	15	100.0	7
12502	1	30	41	62.0	28.7	18.2	23.4	5	101.9	6
6251	2	29	40	59.5	28.7	17.6	19.1	15	97.1	9
12525	5/27	25	33	63.5	28.5	15.0	--	3	67.5	18
12710	2	30	37	55.0	27.2	16.7	--	2	83.9	15
12708	2	30	37	57.0	27.2	16.5	--	2	82.7	16
12709	1	29	37	57.0	25.2	17.6	--	2	88.4	13
12406	1	30	38	59.0	24.3	16.3	25.5	5	110.9	5

Standard error of a difference = 2.47 bushels.

Alliance, Nebraska
Three plots

C. I. No.	Spring Survival	Date headed	Plant height	Stem rust 1/	Weight per bushel	Av. acre yield			No. Yrs. Grown	Percent of Kharkof	Rank
						1952	1951-1952	1949-1952			
	%	June	Ins.	%	Lbs.	Bus.	Bus.	Bus.			
11669	90	5	42	T	60.6	42.7	22.6	26.1	14	101.7	6
12707	90	1	42	15	61.5	41.0	20.5	--	2	104.1	4
12132	80	6	43	10	61.6	39.7	19.9	24.8	8	94.8	10
12525	80	1	40	10	62.1	39.3	19.7	--	3	80.4	17
12517	80	7	44	30	62.0	38.7	21.9	27.4	4	111.6	2
12702	80	5	47	1	60.8	36.6	18.3	--	3	85.3	15
12711	80	5	45	T	60.7	36.0	--	--	1	---	--
12706	90	6	50	1	62.0	35.3	19.9	--	2	101.0	7
12502	90	8	48	5	62.5	34.7	20.2	24.9	5	102.9	5
12716	90	9	44	1	59.8	34.4	--	--	1	---	--
6251	70	9	45	5	62.2	34.3	17.2	23.8	17	93.8	11
12708	80	5	44	35	60.3	34.0	17.0	--	2	86.3	13
12715	90	8	44	T	60.8	33.9	--	--	1	---	--
12709	90	8	43	5	59.7	33.9	17.0	--	2	86.0	14
11673	80	9	45	T	59.3	33.9	19.0	24.4	14	97.3	9
8856	60	5	45	3	61.8	33.0	16.5	23.6	17	87.9	12
1442	90	7	44	T	60.7	32.7	19.7	24.6	17	100.0	8
12710	70	8	41	10	58.5	32.6	16.3	--	2	82.7	16
12406	80	6	44	5	59.7	32.5	21.4	27.0	5	113.9	1
12703	90	5	46	T	60.5	32.5	16.3	--	3	78.1	18
12515	70	6	44	20	59.7	30.6	22.5	26.8	4	109.2	3

1/ One replication

Standard error of a difference = 3.41 bushels.

STANDARD ERRORS

A statistical summary of the yields produced in the various uniform nursery tests is made in table 16. Standard methods of computing the values were used as explained in connection with the plot tests. Standard deviation in percent of the general average indicates the relative variation at each of the stations.

SUMMARY OF NURSERY YIELDS

Yields at 15 stations have been brought together in table 17. This shows how each of the 21 entries performed over the region in 1952. It is of special interest that the two very similar entries C. I. 12515 and C. I. 12517 ranked highest in the averages and differed by only one-tenth of a bushel. Triumph and C. I. 12702 also had high average yields. Pawnee Sel. 33 and Kharkof averaged lowest. The two entries having the highest averages by states were the following: Texas, C. I. 12515 and C. I. 12708; Oklahoma, C. I. 12702 and C. I. 12515; Kansas, Triumph and C. I. 12515; and Nebraska, C. I. 12711 and Pawnee.

Eighteen varieties were grown at 10 stations both in 1951 and 1952. The average yields appear together in table 18. C. I. 12515 and C. I. 12517 were highest in rank, surpassing the nearest competitor by two bushels to the acre. C. I. 12709 and C. I. 12702 also rank well up in the ten-station averages.

Table 16. Number of plots, average yields, and standard errors for the uniform yield nursery at the various stations in 1952.

State and Station	No. of plots	No. of var.	Average yield all var.	Standard error of a			Coefficient of variability
				Single plot	Difference between means	Mean	
				Bus.	Bus.	Bus.	
TEXAS							
Denton	4	99	32.1	3.69	2.61	1.84	11.49
Chillicothe	4	79	23.9	4.85	3.43	2.42	20.31
Bushland	10	21	15.9	3.59	1.55	1.09	23.25
NEW MEXICO							
Clovis	3	22	1.7	0.54	0.44	0.31	32.50
OKLAHOMA							
Stillwater	4	21	35.2	3.00	2.12	1.50	8.52
Cherokee	4	21	37.0	2.62	1.85	1.31	7.09
Woodward	4	21	28.6	3.33	2.36	1.67	11.65
KANSAS							
Manhattan	6	21	40.3	4.62	2.66	1.88	11.47
Hays	4	21	31.6	5.02	3.55	2.51	15.89
Colby	4	21	35.3	2.93	2.07	1.47	8.29
COLORADO							
Akron	3	21	14.3	--	--	--	---
Hesperus	5	21	31.7	--	--	--	---
IOWA							
Ames	3	21	38.2	4.28	3.48	2.46	11.20
NEBRASKA							
Lincoln	5	21	34.6	3.90	2.47	1.74	11.25
North Platte	3	21	30.7	3.03	2.47	1.75	9.88
Alliance	3	21	35.5	4.17	3.41	2.41	11.75

Table 17. Summary of the average yields in bushels per acre made by the 21 entries grown in uniform yield nursery at 15 stations in 1952, with state averages.

Variety	C. I. No.	Texas					Clovis New Mexico
		Denton	Chillicothe	Bushland	Average	Rank	
Hard Federation Hybrid	12515	37.1	28.3	15.1	26.8	1	1.7
Comanche x Blk.-Hd.Fed.	12517	40.0	*	15.9	--	--	1.5
Triumph	12132	31.4	15.6	19.0	22.0	19	1.4
12701 x Wichita	12702	37.4	21.9	16.0	25.1	9	1.8
Turkey x Cheyenne	12711	37.5	27.8	14.4	26.6	3	2.0
Comanche	11673	34.0	29.1	15.2	26.1	6	0.7
Stafford	12706	32.6	24.6	20.2	25.8	7	3.0
Blk.-Oro x Pawnee	12709	33.6	28.8	13.4	25.3	8	1.3
Quivira Hybrid	12525	32.4	19.2	16.4	22.7	18	1.0
Early Blackhull	8856	31.1	22.8	15.7	23.2	16	1.4
Blackhull	6251	35.5	24.5	18.9	26.3	5	2.1
Pawnee	11669	31.1	28.3	15.9	25.1	10	1.8
Mqo.-Oro x Oro-Tq.	12406	37.1	21.9	14.0	24.3	15	1.4
Pawnee x Cheyenne	12715	29.6	26.5	17.5	24.5	12	1.2
12701 x Wichita	12703	32.3	20.3	16.1	22.9	17	2.0
Blue Jacket	12502	31.6	25.6	16.4	24.5	13	3.0
Comanche x Chey.-Blk.	12708	33.9	29.7	16.8	26.8	2	0.9
Pawnee Sel. 33	12707	24.8	14.2	15.2	18.1	20	0.8
Comanche x Blk.-Hd.Fed.	12710	37.6	27.8	14.4	26.6	4	1.5
Hope-Turkey x Cheyenne	12716	31.8	28.6	13.1	24.5	14	2.3
Kharkof	1442	30.6	29.6	13.7	24.6	11	1.6

* Not grown.

Table 17 Cont.

Variety	C. I. No.	Oklahoma					Kansas				
		Still-water	Cher-okee	Wood-ward	Aver-age	Rank	Man-hattan	Hays	Colby	Aver-age	Rank
Hard Federation Hybrid	12515	41.3	38.1	34.3	37.9	2	48.3	35.1	38.9	40.8	2
Comanche x Blk.-Hd.Fed.	12517	38.4	43.9	30.3	37.5	3	46.6	31.7	34.6	37.6	6
Triumph	12132	36.7	37.8	25.9	33.5	10	50.2	41.9	41.6	44.6	1
12701 x Wichita	12702	38.5	44.2	33.7	38.8	1	41.0	29.2	37.9	36.0	14
Turkey x Cheyenne	12711	35.4	36.9	31.5	34.6	8	37.1	33.0	40.5	36.9	7
Comanche	11673	37.5	39.0	28.1	34.9	6	41.4	35.8	33.3	36.8	8
Stafford	12706	40.9	39.2	30.0	36.7	5	42.2	32.7	35.4	36.8	9
Blk.-Oro x Pawnee	12709	41.9	36.7	32.6	37.1	4	43.8	30.7	39.7	38.1	5
Quivira Hybrid	12525	32.3	35.7	26.1	31.4	18	42.7	41.1	32.4	38.7	4
Early Blackhull	8856	34.1	38.5	25.5	32.7	12	49.0	37.0	36.5	40.8	3
Blackhull	6251	34.5	35.1	28.4	32.7	13	45.4	32.1	32.6	36.7	10
Pawnee	11669	30.6	34.9	27.0	30.8	19	32.6	36.1	31.9	33.5	16
Mqo.-Oro x Oro-Tq.	12406	33.7	37.8	24.3	31.9	16	41.8	31.0	35.6	36.1	12
Pawnee x Cheyenne	12715	32.8	38.5	26.1	32.5	14	32.9	31.4	41.0	35.1	15
12701 x Wichita	12703	35.3	37.1	26.2	32.9	11	42.3	28.2	38.8	26.4	11
Blue Jacket	12502	31.7	35.0	29.4	32.0	15	41.9	24.1	30.1	32.0	18
Comanche x Chey.-Blk.	12708	36.2	37.5	29.7	34.5	9	34.3	30.3	32.0	32.2	17
Pawnee Sel. 33	12707	24.7	33.0	24.3	27.3	21	41.1	34.0	33.2	36.1	13
Comanche x Blk.-Hd.Fed.	12710	38.1	33.4	32.5	34.7	7	30.2	20.7	33.4	28.1	21
Hope-Turkey x Cheyenne	12716	33.2	33.9	27.8	31.6	17	29.7	24.3	31.7	28.6	19
Kharkof	1442	32.1	30.6	27.0	29.9	20	30.8	23.1	31.1	28.3	20

Table 17 Con.

Variety	C. I. No.	Akron Colo-rado	Ames Iowa	Nebraska					Fifteen station av.
				Lincoln	North Platte	Alli-ance	Aver-age	Rank	
Hard Federation Hybrid	12515	15.1	35.4	40.9	33.2	30.6	34.9	8	31.6
Comanche x Blk.-Hd.Fed.	12517	14.7	39.3	34.4	33.5	38.7	35.5	4	31.5
Triumph	12132	14.3	46.3	32.3	33.4	39.7	35.1	5	31.2
12701 x Wichita	12702	15.0	42.0	38.4	30.1	36.6	35.0	7	30.9
Turkey x Cheyenne	12711	13.1	38.3	39.7	38.3	36.0	38.0	1	30.8
Comanche	11673	16.9	40.6	34.1	32.4	33.9	33.5	11	30.1
Stafford	12706	15.3	40.9	37.3	29.7	35.3	34.1	9	30.6
Blk.-Oro x Pawnee	12709	15.1	33.8	33.5	25.2	33.9	30.9	20	29.6
Quivira Hybrid	12525	12.1	38.4	26.6	28.5	39.3	31.5	18	28.3
Early Blackhull	8856	11.6	43.0	31.3	30.6	33.0	31.6	16	29.4
Blackhull	6251	12.8	32.9	34.6	28.7	34.3	32.5	13	28.8
Pawnee	11669	14.3	42.4	35.3	35.8	42.7	37.9	2	29.4
Mqo.-Oro x Oro-Tq.	12406	16.5	43.2	39.4	24.3	32.5	32.1	14	29.0
Pawnee x Cheyenne	12715	18.2	43.6	36.8	36.3	33.9	35.7	3	29.8
12701 x Wichita	12703	15.3	41.5	33.3	29.4	32.5	31.7	15	28.7
Blue Jacket	12502	11.9	44.2	37.8	28.7	34.7	33.7	10	28.4
Comanche x Chey.-Blk.	12708	15.3	35.6	31.8	27.2	34.0	31.0	19	28.3
Pawnee Sel. 33	12707	12.3	26.7	32.3	32.1	41.0	35.1	6	26.0
Comanche x Blk.-Hd.Fed.	12710	15.1	28.2	31.1	27.2	32.6	30.3	21	26.9
Hope-Turkey x Cheyenne	12716	11.1	39.5	33.5	30.0	34.4	32.6	12	27.0
Kharkof	1442	13.9	26.7	32.9	29.3	32.7	31.6	17	25.7

Table 18. Summary of two-year average yields in bushels per acre for 18 varieties grown in the uniform yield nursery at 10 stations in 1951 and 1952.

Variety	C. I. No.	Texas			Oklahoma			
		Chilli-cothe	Bush-land	Aver-age	Still-water	Chero-kee	Wood-ward	Aver-age
Hard Fed. Hybrid	12515	25.2	13.6	19.4	38.8	34.7	28.6	34.0
Com. x Blk.-Hd. Fed.	12517	25.3[1/]	12.7	19.0	39.7	41.9	25.3	35.6
Blk.-Oro x Pawnee	12709	24.5	12.8	18.7	39.1	32.9	26.1	32.7
12701 x Wichita	12702	22.5	12.1	17.3	38.0	35.3	28.3	33.9
Stafford	12706	20.6	15.1	17.9	34.7	31.0	23.3	29.7
Comanche	11673	23.6	12.2	17.9	36.1	33.2	22.8	30.7
Com. x Chey.-Blk.	12708	27.2	12.5	19.9	35.6	32.5	23.0	30.4
Blue Jacket	12502	24.5	14.8	19.7	30.7	32.7	22.6	28.7
Mqo.-Oro x Oro-Tq.	12406	18.9	10.3	14.6	31.3	34.4	19.9	28.5
Blackhull	6251	20.1	15.2	17.7	31.7	27.7	23.1	27.5
Com. x Blk.-Hd.Fed.	12710	23.2	13.9	18.6	36.5	29.7	25.9	30.7
Triumph	12132	12.3	14.3	13.3	31.1	27.6	19.4	26.0
Pawnee	11669	23.1	12.0	17.6	30.4	24.7	21.1	25.4
12701 x Wichita	12703	20.5	13.0	16.8	32.2	30.4	20.1	27.6
Early Blackhull	8856	17.9	12.1	15.0	29.6	29.5	18.9	26.0
Kharkof	1442	24.4	13.8	19.1	31.3	28.1	22.5	27.3
Quivira Hybrid	12525	17.8	11.3	14.6	27.4	31.8	19.1	26.1
Pawnee Sel. 33	12707	16.1	10.8	13.5	23.0	26.4	17.8	22.4

1/ Not grown in 1952, yield for sister line used.

Table 18 Cont.

Variety	C. I. No.	Kansas			Nebraska				Ten station av.
		Man-hattan	Hays	Aver-age	Lincoln	North Platte	Alli-ance	Aver-age	
Hard Fed. Hybrid	12515	43.4	38.4	40.9	36.9	19.5	22.5	26.3	30.2
Com. x Blk.-Hd.Fed.	12517	40.1	41.6	40.9	31.7	20.5	21.9	24.7	30.2
Blk.-Oro x Pawnee	12709	40.6	37.6	39.1	31.8	17.6	16.0	22.1	28.0
12701 x Wichita	12702	38.3	35.2	36.8	30.8	17.6	18.3	22.2	27.6
Stafford	12706	40.4	38.7	39.6	33.1	19.2	19.9	24.1	27.6
Comanche	11673	38.2	39.2	28.7	30.9	18.2	19.0	22.7	27.3
Com. x Chey.-Blk.	12708	34.4	37.7	36.1	31.3	16.5	17.0	21.6	26.8
Blue Jacket	12502	38.3	30.1	34.2	34.4	18.2	20.2	24.3	26.7
Mqo.-Oro x Oro-Tq.	12406	39.6	33.5	36.6	36.9	16.3	21.4	24.9	26.3
Blackhull	6251	40.8	36.0	38.4	29.5	17.6	16.2	21.4	25.9
Com. x Blk.-Hd.Fed.	12710	31.6	30.8	31.2	31.3	16.7	16.3	21.4	25.6
Triumph	12132	43.1	39.5	41.3	30.5	17.3	19.9	22.6	25.5
Pawnee	11669	30.3	37.2	33.8	32.6	20.5	22.6	25.2	25.5
12701 x Wichita	12703	38.9	33.7	36.3	28.2	16.5	16.3	20.3	25.0
Early Blackhull	8856	40.0	37.2	38.6	28.0	17.0	16.5	20.5	24.7
Kharkof	1442	29.1	25.2	27.2	29.4	19.9	19.7	23.0	24.3
Quivira Hybrid	12525	36.2	36.2	36.2	23.7	15.0	19.7	19.5	23.8
Pawnee Sel. 33	12707	35.0	33.7	34.4	31.1	17.7	20.5	23.1	23.2

SUMMARY OF AGRONOMIC DATA

Data other than yield have been averaged and appear in table 19. Varieties are in order of declining average weight per bushel. It is obvious that Blue Jacket, Early Blackhull and Quivira Hybrid were heaviest at the 14 stations. C. I. 12710 averaged lightest. There is a close relation from year to year in the rank of varieties for this character. Maturity was checked at numerous stations and accurately ranks the varieties for earliness. Plant height ranged from 33 to 41 inches. Lodging at four stations showed that C. I. 12715, C. I. 12716, and Pawnee stood best and that nine entries lodged more than Kharkof. Leaf rust at six stations points out the good resistance of the Sinvalocho, Marquillo, and Hard Federation derivatives. Stem rust at two stations was light and inconclusive.

Table 19. Summary of agronomic data other than yield for varieties grown in the uniform yield nursery, 1952.

Variety	C. I. No.	Date headed	Date ripe	Plant height	Lodging	Rust leaf	Rust stem	Weight per bushel.
		May	June	Ins.	%	%	%	Lbs.
Number of stations----------		13	8	13	4	6	2	14
Blue Jacket	12502	20	19	41	13	34	5	61.6
Early Blackhull	8856	13	14	37	24	32	2	61.3
Quivira Hybrid	12525	11	14	33	27	13 1/	5	61.1
Pawnee Sel. 33	12707	11	13	34	20	38	10	60.9
Stafford	12706	20	19	41	22	25	1	60.8
Blackhull	6251	20	19	39	22	28 1/	5	60.6
Triumph	12132	13	14	35	18	46 1/	5	60.6
12701 x Wichita	12703	16	17	37	17	4	T	60.5
Pawnee x Cheyenne	12715	19	18	37	6	37	3	60.2
12701 x Wichita	12702	17	16	39	20	4	1	60.1
Turkey x Cheyenne	12711	19	18	37	11	37	3	59.5
Blk.-Oro x Pawnee	12709	20 3/	19	37	23	10	3	59.4 2/
Com. x Blk.-Hd.Fed.	12517	20 3/	17	37	23	9	20	59.3 2/
Pawnee	11669	17	16	36	10	32	T	59.3
Hard Fed. Hybrid	12515	18	18	38	30	10	13	59.2
Com. x Chey.-Blk.	12708	20	19	38	23	13	18	59.1 2/
Hope-Tk. x Cheyenne	12716	21	19	38	9	35	1	59.0
Mqo.-Oro x Oro-Tq.	12406	19	18	38	14	8	3	58.9
Kharkof	1442	22	20	38	20	32	T	58.6
Comanche	11673	18	18	37	13	19	T	58.5
Com. x Blk.-Hard Fed.	12710	21	19	37	22	14	5	57.2

1/ Five stations.
2/ Thirteen stations.
3/ Twelve stations.

UNIFORM WINTERHARDINESS NURSERY

As in previous years, two uniform hardiness nurseries were maintained. The "supplementary" unit contains new selections of interest to workers in all parts of the region. It was a single-row nursery planted in duplicate series in 1951-52 at Alliance, Akron, Brookings, St. Paul, Moccasin, and Dickinson. Usable data this year were obtained at all stations except Akron and Dickinson. These were summarized and sent out before harvest to breeders concerned with the entries in the test. The four-station average survival for Kharkof, Turkey, and Tenmarq were 72.5, 63.5, and 61.8 percent, respectively. Among the 127 tested, 51 exceeded the average for Tenmarq and 10 surpassed Kharkof. One entry killed completely at all stations. As groups, the wheat x rye selections, and the Yogo x Minter bulks had the highest average survival.

The "uniform" replicated nursery contains varieties of interest to workers in the more northern states, for the most part. In 1951-52, 16 varieties were tested at nine stations. Survivals appear in table 20. Minturki and Kharkof M. C. 22 had the best survival. Yogo, usually among the hardiest, had thin stands at several stations and this may have influenced results.

The uniform nursery was harvested for yield at seven stations. The data are summarized in table 21. Kharkof and Sioux averaged highest, and C. I. 12517, owing to winterkilling at several stations, yielded least. Weights per bushel are shown for six stations in table 22. Iohardi was clearly the best in this respect. Various other notes were taken on the varieties at some stations.

Table 20. Survival of wheat planted in the Uniform Winterhardiness Nursery, 1951-1952.

Plot No.	Name	C. I. or Sel. No.	Average survival at 1/									9-station average
			Alliance Nebr.	Laramie Wyo.	Archer Wyo.	Albin Wyo.	St. Paul Minn.	Waseca Minn.	Brookings S.Dak.	Dickinson N.Dak.	Lethbridge Alta.	
			%	%	%	%	%	%	%	%	%	%
1	Kharkof	1442	93	88	48	83	0	90	100	11	55	63.1
2	Kharkof M.C. 22	6938	93	75	43	88	17	100	100	20	75	67.9
3	Nebred	10094	93	88	31	88	0	63	93	3	40	55.4
4	Minturki	6155	93	79	45	91	17	87	100	9	75	66.2
5	Iohardi	12510	97	83	44	93	0	80	83	3	30	57.0
6	Minter	12138	93	89	35	95	8	53	100	4	55	59.1
7	Turkey x Oro	12705	92	88	43	85	0	87	93	5	38	59.0
8	Cheyenne x Turkey	12142	93	78	40	89	0	87	93	2	30	56.9
9	Turkey x Cheyenne	12711	82	90	43	96	0	90	97	1	33	59.1
10	Yogo	8033	95	83	28	83	7	78	100	1	53	58.7
11	Minhardi	5149	93	87	38	86	5	80	100	1	53	60.3
12	Hope-Tk. x Chey.	12716	98	84	45	91	2	63	97	0	38	57.6
13	Mint.-Io. x H44 Mint.[2]	II-40-42	93	68	41	88	3	90	93	1	58	59.4
14	Hope x Cheyenne[2]	12717	80	89	63	89	3	77	90	0	40	59.0
15	Comanche x Blk.Hd. Fed.	12517	78	75	13	80	0	72	37	1	5	40.1
16	Yogo x Wasatch[2/]	Mont. 9	87	--	--	--	2	60	90	1	--	48.0

1/ Nurseries were sown at Sheridan, Wyo., Ames, Ia., and Havre, Mont., but differential readings were not obtained.

2/ Not grown at Laramie, Archer, and Albin, Wyo.; and Lethbridge, Alta., Canada.

Table 21. Average yields of varieties harvested in the uniform winterhardiness nursery, 1952.

Variety	C.I. or Sel. No.	Average bushels per acre at							Seven station average	Rank
		Ames	Alli-ance	Havre	Sheri-dan	Gill-ette	Archer	Lara-mie		
Kharkof	1442	23.0	32.7	28.3	27.0	8.0	17.4	50.4	26.7	1
Kharkof M.C. 22	6938	19.5	34.3	22.8	19.6	6.5	16.3	41.1	22.9	8
Nebred	10094	15.8	39.6	29.5	21.6	8.6	16.4	37.1	24.1	3
Minturki	6155	23.9	31.4	21.1	27.1	8.3	14.1	39.7	23.7	5
Iohardi	12510	42.6	38.9	24.6	23.1	5.5	11.9	22.1	24.1	4
Minter	12138	18.5	32.1	25.3	18.7	6.0	15.9	35.9	21.8	12
Turkey x Oro	12705	26.4	32.2	22.4	22.1	5.6	15.1	40.5	23.5	7
Sioux	12142	15.5	38.4	25.9	22.3	6.1	16.2	51.9	25.2	2
Turkey x Cheyenne	12711	14.5	36.0	28.8	22.1	9.2	13.0	34.2	22.5	9
Yogo	8033	13.9	27.6	29.6	24.6	10.2	16.1	43.0	23.6	6
Minhardi	5149	13.3	36.8	23.0	18.4	4.2	12.2	38.0	20.8	14
Hope-Tk. x Chey.	12716	16.5	34.4	25.7	24.7	4.7	16.0	31.7	22.0	11
Mint.-Io. x H44-M.^{2}	II-40-52	34.2	35.9	23.9	16.1	4.7	12.0	25.4	21.7	13
Hope x Cheyenne^2	12717	17.2	34.9	25.5	23.3	6.4	17.2	31.5	22.3	10
Com. x Blk.-Hd.Fed.	12517	15.0	38.7	22.4	20.1	5.5	6.9	19.5	18.3	15
Yogo x Wasatch	Mont. 9	24.7	30.4	27.3	28.2	--	--	--	27.6 1/	--
Cheyenne	8885	--	34.5	--	33.0	7.0	19.0	39.9	26.7 1/	--
Hope-Tk. x Chey.	NP44541	--	35.0	--	22.4	7.7	13.8	32.8	22.3 1/	--
Oro x Mqo.-Oro	N.45711	--	--	--	24.0	5.0	16.0	32.8	19.4 1/	--
	L.S.D.	8.7	6.8	NS	6.7	3.1	5.9	14.0	--	--

1/ Average for stations shown.

Table 22. Average weight per bushel for varieties grown in the uniform winterhardiness nursery, 1952.

Variety	C. I. No.	Pounds per bushel at						Six-station average
		Ames	Alliance	Havre	Sheridan	Archer	Laramie	
Kharkof	1442	47.0	60.7	59.0	60.3	53.0	59.5	56.6
Kharkof M.C. 22	6938	51.2	58.7	56.7	56.0	56.0	57.1	56.0
Nebred	10094	50.0	61.7	58.5	57.9	56.5	60.6	57.5
Minturki	6155	52.2	58.9	57.6	59.5	55.0	58.1	56.9
Iohardi	12510	55.3	62.1	60.7	60.4	59.0	59.4	59.5
Minter	12138	51.0	59.6	57.5	--	56.5	59.4	56.8 1/
Turkey x Oro	12705	55.2	60.4	56.4	59.2	56.5	58.6	57.7
Sioux	12142	49.0	59.9	56.0	57.3	56.0	59.7	56.3
Turkey x Cheyenne	12711	48.2	60.7	57.4	57.8	56.5	59.9	56.8
Yogo	8033	51.0	60.0	59.7	59.7	57.5	60.3	58.0
Minhardi	5149	53.4	59.1	57.8	--	57.0	57.5	57.0 1/
Hope-Tk. x Cheyenne	12716	49.2	59.8	58.2	57.8	58.0	59.3	57.1
Mint.-Io. x H44-M.^{2}	II-40-52	55.4	61.1	59.6	--	55.5	58.7	58.1 1/
Hope x Cheyenne^2	12717	49.6	60.7	57.9	58.3	55.0	60.0	56.9
Com. x Blk.-Hd.Fed.	12517	54.0	62.0	54.4	56.4	56.0	54.5	56.2

1/ Five-station average.

DATA FROM THE DISEASE NURSERIES

The uniform bunt nursery was grown at six stations in 1952. A separate report on this test has been prepared which is available for cooperators and other interested persons.

The uniform rust nursery data likewise will appear as a separate report.

DATA FROM THE QUALITY LABORATORY

Grain harvested from the uniform plots, uniform yield nursery, and uniform winterhardiness nursery along with that from promising new strains of local interest was sent by cooperators to the Federal Hard Wheat Quality Laboratory for milling and baking studies. Results on these samples will appear in a separate report prepared by laboratory workers.