

WINTER WHEAT

1990 Missouri Crop Performance

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1990 MISSOURI WINTER WHEAT PERFORMANCE TESTS

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1990 MISSOURI WINTER WHEAT PERFORMANCE TESTS

Genetic improvement of wheat varieties has contributed about 40 to 50 percent of the total improvement in wheat yields attained over the past 40 years. Both public and private wheat breeding programs are constantly striving towards greater yield potential, improved quality and host plant resistance to disease and insect pests. The objective of the Missouri Winter Wheat Performance Tests is to provide the growers in Missouri with a reliable, unbiased, up-to-date source of information that will permit valid comparisons among improved wheat varieties. This information should help Missouri wheat growers select varieties best suited to their particular area and growing conditions. This report summarizes soft and hard red winter wheat variety trials conducted throughout Missouri during the 1989-90 cropping season.

Entries and Seed Sources

In 1990, 64 soft red and 25 hard red winter wheats were tested in Missouri. The soft red winter wheats were comprised of 34 proprietary varieties, 18 public varieties and 12 public experimental entries. The hard red winter wheats were comprised of 7 proprietary varieties, 17 public varieties and 1 public experimental entry. Names of proprietary entries evaluated in 1990 and their seed sources are listed in Table 1. Public varieties adapted to Missouri growing conditions or recommended by the state of origin, were entered into the appropriate variety test. Numbered entries preceded by a state designation (eg. MO10501, IL82-3298) are experimental lines provided by the foundation seed organization or wheat breeder of the originating state. Named public varieties were acquired from the foundation seed organization of the originating state or from the Missouri Foundation Seed Program. Proprietary entries are submitted for testing on a fee basis by their owners.

Variety Testing Procedures

Locations

The soft red winter wheats were planted at seven locations throughout the state (Fig 1.) including Portageville and Bertrand in the southeast, Mount Vernon and Lamar in the southwest and Columbia, Novelty and in Grundy County near Trenton in the northern region of the state. The hard red winter wheats were planted at three sites including Columbia, Mount Vernon and Grundy County. All locations were harvested in 1990.

Seeding Methods

All entries were seeded at approximately 1.5 million seeds per acre, roughly equivalent to seeding 1.5 bushels per acre. Actual seeding rates for each entry varied according to seed size of the seed lot provided. Actual seeding rates were

Table 1. Names and sources of proprietary soft and hard red winter wheats tested in Missouri during 1990.

Brand	Variety Name(s)	Source
<u>Soft Red Winter Wheats</u>		
Agripro	Agripro Hancock, Agripro Lincoln, Agripro Twain, Agripro Cherokee (ABI 85*1), ABI 85-81	Agripro Biosciences Inc., Rte. 2 Box 411, Brookston, IN 47923
FFR	FFR 525, FFR 544	FFR Cooperative, P.O. Box 322, Battlefield, IN 47920
Hartzler	Hartzler 2200, Hartzler 2300	Hartzler Seed Co., Rte. 1 P.O. Box 458, Harrisonville, MO 64701
HybriTech	HybriTech Pacer	HybriTech Seed, 5912 N. Meridian, Wichita, KS 67204
Merschman	Merschman Bintee V, Merschman Genie IV, Merschman Julie III, Merschman Katie IV, Merschman Katie V	Merschman Seeds, 103 Ave. D, West Point, IA 52656
MFA	MFA Dominator, MFA EXP 6560, MFA Sundance	MFA Incorporated, 615 Locust, Columbia, MO 65201
Missouri	Missouri 8841 Brand	Missouri Seed Improvement Association, 3211 Lemone Industrial Dr., Columbia, MO 65201
Northrup King	Coker 833, Coker 916, Coker 9803 (X8633), Coker 9877	The New Northrup King Co., R.R. #2, Box 200, Highland, IL 62249
Pioneer	Pioneer 2548, Pioneer 2551, Pioneer 2555	Pioneer Hi-Bred International Inc., 1000 W. Jefferson, Tipton, IN 46072
Reeds	Reeds 1002, Reeds 1004, Reeds 1008	Reeds Seed Inc., P.O. Box 230, Chillicothe, MO 64601
Terra	Terra SR86, Terra SR87, Terra SR200, Terra SR201	Terra International, 950 S. Broadway, Lima, OH 45804
<u>Hard Red Winter Wheats</u>		
Agripro	Agripro Sierra	Agripro Biosciences Inc., P.O. Box 30, 806 N. 2nd, Berthoud, CO 80513
HybriTech	Quantum 574, Quantum 577	HybriTech Seed, 5912 N. Meridian, Wichita, KS 67204
Merschman	Merschman Meggie III	Merschman Seeds, 103 Ave. D, West Point, IA 52656
Pioneer	Pioneer 2163	Pioneer Hi-Bred International Inc., 1000 W. Jefferson, Tipton, IN 46072
Terra	Terra HR151, Terra HR152	Terra International, 950 S. Broadway, Lima, OH 45804

calculated from the thousand kernel weights determined for each entry. All entries were seeded into conventional seedbeds using an experimental plot drill equipped with double-disk openers.

Agronomic Practices

Basic agronomic practices are given in Table 2 by location. All locations were planted according to the Hessian Fly-free date recommended for each location. Nitrogen was applied in split fall/spring applications. Spring nitrogen applications were generally made after initial green up. Preplant phosphorous and potassium applications were based on soil test recommendations provided by the University of Missouri Soil Testing Laboratory located at Columbia.

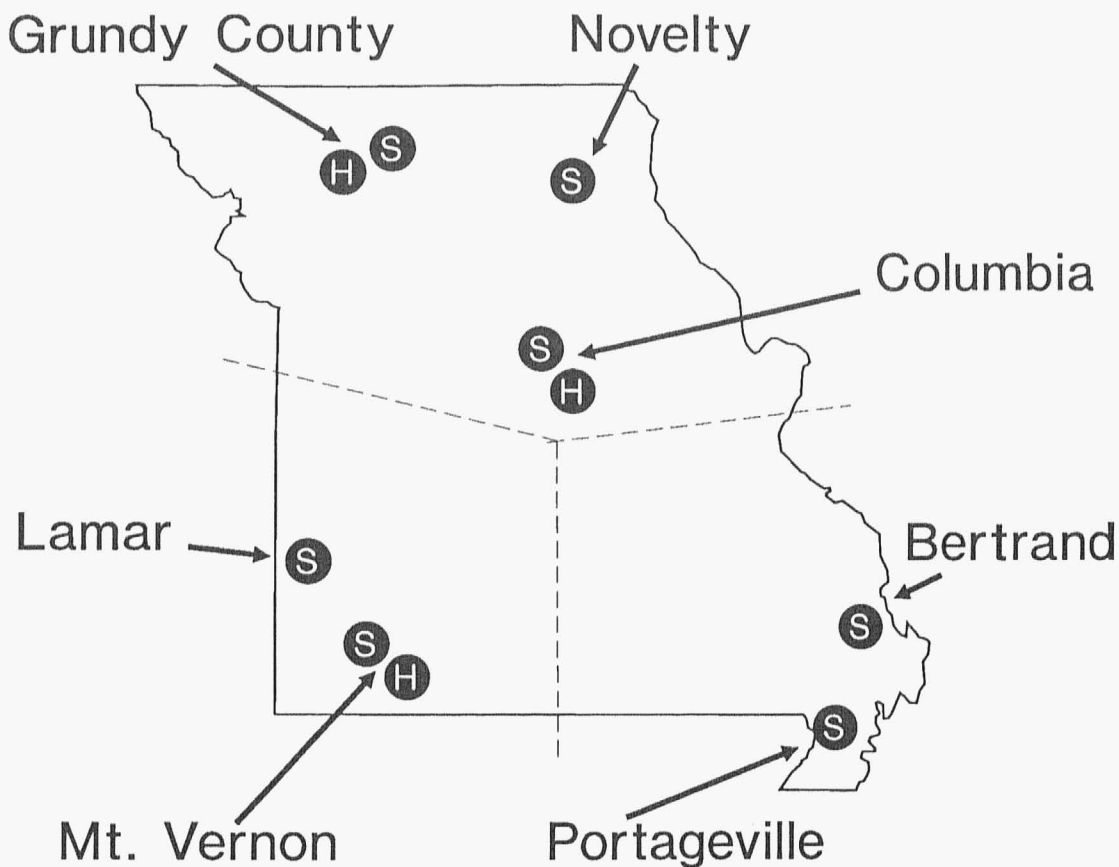


Fig 1. Soft (S) and hard (H) red wheat test locations for Missouri winter wheat performance tests during 1990.

Experimental Design

Each experiment was planted using a lattice design with four replications. Test plots consisted of a 15 foot, 6-row plot with 7-inch row spacing.

Table 2. Summary of agronomic practices used on wheat performance trials in Missouri during 1990. Fall nitrogen (N), phosphorus (P₂O₅) and potassium (K₂O) were preplant applied and incorporated.

Location	Planting Date	N			P ₂ O ₅	K ₂ O	Previous Crop
		Fall	Spring	Total			
----- pounds per acre -----							
<u>Northern</u>							
Columbia	10/05/89	30	70	100	40	30	Fallow
Grundy County	10/03/89	30	80	110	50	50	Wheat
Novelty	9/29/89	40	60	100	50	100	Soybean
<u>Southwest</u>							
Lamar	10/17/89	27	90	117	69	90	Soybean
Mt. Vernon	10/18/89	40	80	120	30	55	Wheat
<u>Southeast</u>							
Bertrand	10/24/89	30	90	120	58	75	Corn
Portageville	10/25/89	40	80	120	0	0	Cotton

Description of Data Collected

Yield: All rows of each test plot were harvested using a Kincaid experimental plot combine. Recorded grain yields were adjusted to 13% grain moisture content, and are reported in bushels per acre based on a 60 pound per bushel test weight. In addition to yields obtained in 1990, two (1989-90) and three (1988-90) year averages are provided for entries tested during previous cropping seasons.

Survival: Percent winter survival was estimated for each plot after initial spring green-up. Differences were noted and recorded at locations where significant winter injury occurred.

Heading Date: Heading was noted when 50% of the heads in a plot had extended above the flag leaf collars. Heading dates were recorded in Julian days (number of days from January 1) for statistical purposes. Corresponding calendar dates also are presented.

Plant Height: Plant height was measured in inches from the soil surface to the top of the head, excluding the awns if present. Reported values have been rounded to the nearest inch.

Lodging: Lodging severity was rated at locations where lodging was significant. Plots were rated on a severity scale of 0 to 9 where 0 = no lodging and 9 = plants completely flat.

Disease Rating: Disease notes were taken at locations where the incidence was severe enough to warrant. Powdery mildew (*Erysiphe graminis* DC. f.sp. *tritici* E.

Marchal) ratings were obtained at the Columbia, Grundy County, Lamar, Novelty and Mt. Vernon sites. Septoria leaf blotch (*Septoria tritici* Rob. in Desm.) severity was rated at the Portageville site only. Septoria glume blotch (*Septoria nodorum* [Berk.] Berk.) and scab (*Fusarium* spp.) were significant at most locations during the 1990 cropping season, but were not rated. Powdery mildew was visually assessed to estimate percent infected leaf area of the entire crop canopy. Septoria leaf blotch was rated using a two-digit scale to assess severity. The first digit indicates the progress of the disease up the canopy (8=flag leaf involvement) while the second digit indicates the severity of the disease on the top leaf affected.

Test Weight and Harvest Moisture: Test weight (pounds per bushel) and percent grain moisture content were obtained for each plot immediately after harvest using a Dickey-john GAC II moisture meter.

Thousand Kernel Weight: Thousand kernel weight was obtained from the mean of four replications of each entry per location by counting 250 seeds from the sample collected for test weight and harvest moisture percentage.

Statistical Analyses and Interpretation

The data collected at each location were analyzed as a four-replication, lattice design . If an observation was missing in one replication, the average of those observations in the remaining replications was used to approximate the missing observation. Fisher's least significant difference at the 0.05 probability level [LSD ($p=0.05$)] and coefficients of variation percentages (CV%) were calculated from analyses of variance by each and across all locations. The LSD is used to compare the performance of two specific varieties at a time. If the mean of a variety exceeds that of another variety by more than the LSD, then the difference observed will be a true difference in 19 out of 20 instances under conditions similar to those of the test.

Variety selection should be based on yield stability in your production environment over years and locations, and consider other characteristics such as test weight, height, heading date and disease resistance. Where these additional characteristics were not measured in your production environment, they can be evaluated from locations in which they were rated. Data collected on all traits measured during 1990 are presented in Tables 3 through 11 for the soft red wheats and in Tables 12 through 15 for the hard red wheats. Where a variety has been in the test for two or three years, combined analyses of the yield data over years are presented.

1990 Test Conditions

Most trials were planted into adequate topsoil moisture and emergence and fall tillering were good. Significant winter injury and/or freeze damage occurred at Columbia, Bertrand and Mount Vernon due to sub-zero December conditions without

snow cover and spring freezes at these locations. Generally cooler than normal temperatures persisted throughout much of the growing season. In addition, rainfall throughout the growing season was well above normal, resulting in significant disease infections of powdery mildew, Septoria leaf blotch and Septoria glume blotch at most locations. In addition, conditions during flowering, primarily in early varieties, resulted in wide-spread scab infections in the state. The Columbia, Lamar and Portageville locations were most severely affected. Disease levels throughout the state had a significant impact on yields and test weights at most test locations.

The 1990 Missouri Wheat Crop

Projected Crop Statistics

Missouri's 1990 wheat crop was harvested from 2,000,000 acres, up from a harvested acreage of 1,850,000 acres in 1989. The statewide average yield projected as of July 18, 1990 by the Missouri Department of Agriculture was 37 bu/a, down from 47 bu/a reported for the 1989 crop year. Projected district average yields ranged from a high of 44 bu/a in the northeast region to a low of 31 bu/a in the south-central region. Projected production of the 1990 Missouri wheat crop is 74,000,000 bu.

Due to budgetary constraints, the Missouri Agricultural Statistics Office did not conduct a state-wide winter wheat variety survey for 1989-90 cropping season. Future wheat variety surveys will be conducted every other year beginning with the 1990-91 season.

New Variety Descriptions

Madison Soft Red Winter Wheat

'Madison' is a new release from the Virginia Agricultural Experiment Station. Madison was tested in Missouri as 'VA85-52-24' during the 1989-90 cropping season. Madison was derived from the pedigree Abe//Blueboy/VA71-54-147/3/VA72-54-14. Madison is a early-maturing, white-chaffed variety of intermediate plant height and straw strength. Madison is moderately resistant to powdery mildew, resistant to wheat spindle streak virus and moderately tolerant to Septoria leaf blotch. Data from the USDA-ARS Cereal Rust Laboratory indicate Madison probably possesses Lr10 and Lr11 leaf rust and Sr6, Sr17 and Sr36 stem rust genes. Milling and baking quality of Madison is good. Application for Plant Variety Protection (PVP) of Madison soft red winter wheat will be made by the Virginia Agricultural Experiment Station. Foundation seed of Madison will be initially available in the fall of 1990 from the Virginia Crop Improvement Association.

Wakefield Soft Red Winter Wheat

'Wakefield' is a new release from the Virginia Agricultural Experiment Station. Wakefield was tested in Missouri as 'VA85-52-34' during the 1989-90 cropping season. Wakefield is an apically awnletted, white-chaffed, mid-to-late season variety of intermediate plant height and straw strength. Wakefield was selected from a

composite of four populations using CI13836/8*Chancellor as a source of powdery mildew resistance. Wakefield does possess the PM1 gene for powdery mildew resistance, however, powdery mildew races virulent to PM1 do exist in Missouri. Wakefield has some resistance to wheat spindle streak virus and is moderately tolerant to Septoria leaf blotch. Data from the USDA-ARS Cereal Rust Laboratory indicate Wakefield probably possesses Lr10 leaf rust and Sr10 and Sr15 stem rust genes. Application for Plant Variety Protection (PVP) of Wakefield soft red winter wheat will be made by the Virginia Agricultural Experiment Station. Foundation seed of Wakefield will be initially available in the fall of 1990 from the Virginia Crop Improvement Association.

Agripro Cherokee Soft Red Winter Wheat

'Agripro Cherokee' (PI542072) is a new proprietary release from Agripro Biosciences, Inc., Brookston, Indiana. Agripro Cherokee was tested in Missouri as 'ABI 85*1' during the 1989-90 cropping season. The pedigree of Agripro Cherokee is Era/Tobari//Lovrin II/3/Monon/Blueboy/4/NAPB75-822-2. Agripro Cherokee is a early maturing, white-chaffed variety possessing intermediate plant height and good straw strength. Agripro Cherokee possesses resistance to a number of diseases including stem rust (*Puccinia graminis* Pers. f. sp. *tritici* Eriks & Henn.), stripe rust (*P. striiformis* West.), powdery mildew, soilborne mosaic virus and wheat spindle streak mosaic virus. Agripro Cherokee is expected to be primarily adapted to the upper mid-south from I-64 to the Arkansas-Louisiana border to the east coast, but excluding the the gulf coast and eastern coastal plain. Pending final approval, exclusive ownership and distribution of Agripro Cherokee by Agripro Biosciences, Inc. is protected (PVP Certificate No. 9000102) under the Federal Plant Variety Protection Act of 1970. Certified seed of Agripro Cherokee will be available in the fall of 1991. More detailed information on Agripro Cherokee is available from the company on request.

Coker 9806 Soft Red Winter Wheat

'Coker 9806' is a new proprietary release from the Northrup King Co., Bay, Arkansas. Coker 9806 was tested in Missouri as 'Coker X8633' during the 1989-90 cropping season. Coker 9806 is an awn tipped, early-to-mid maturing variety possessing intermediate plant height and excellent straw strength. In 1989, Coker 9806 expressed resistance to the prevalent field races of leaf rust, stem rust, powdery mildew and Septoria glume blotch. Coker 9806 also is resistant to the soilborne mosaic virus complex found in the mid-south. Coker 9806 is moderately susceptible to stripe rust and Septoria leaf blotch, susceptible to Hessian fly and sensitive to metribuzin (Sencor) herbicide. Coker 9806 is expected to be adapted to the lower mid-west, mid-south and southeast wheat growing regions of the United States except the gulf coast. Pending final approval, exclusive ownership and distribution of Coker 9806 by Northrup King is protected under the Federal Plant Variety Protection Act of 1970. More detailed information on Coker 9806 is available from the company on request.

Table 3. Performance of soft red winter wheats tested across seven locations in Missouri during 1990. Varieties listed alphabetically.

Variety	Statewide Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging Score ²	Winter Survival	Heading Date		Powdery Mildew ³
	90	89-90	88-90							Julian	Calendar	
	----- bushels/acre -----			- lb/bu -	- g -	- % -	- inches -		- % -			- % -
ABI 85-81	49.6			53.3	27.9	12.2	36	3.5	98	135	05/15	0
Adder	36.1	44.8	46.0	54.9	31.6	12.3	34	1.0	97	139	05/19	12
Agripro Cherokee (ABI 85*1)	38.3			54.0	30.4	12.4	37	2.5	94	137	05/17	0
Agripro Hancock	41.8	51.9	54.8	52.0	26.4	12.2	35	1.4	98	137	05/17	1
Agripro Lincoln	38.3	47.1	50.4	53.6	29.8	12.0	37	4.0	97	135	05/15	0
Agripro Traveller	40.8	48.8	50.9	52.7	26.5	12.5	35	3.3	93	135	05/15	4
Agripro Twain	38.7	51.7	54.3	53.2	31.3	12.2	36	1.7	96	136	05/16	0
AR26-415	41.9			54.7	28.7	12.8	35	1.7	93	138	05/18	0
Arkan (hard check)	28.3	38.5	44.0	51.9	25.9	12.0	34	3.0	97	135	05/15	20
Arthur 71	32.2	38.5	42.1	55.5	30.0	12.5	37	3.6	97	137	05/17	4
Auburn	40.2	43.0	44.3	56.9	28.0	13.0	39	0.9	95	143	05/23	6
Becker	43.3	48.5	53.9	53.1	30.5	12.4	35	0.9	95	140	05/20	16
Caldwell	34.0	43.3	49.5	52.5	24.6	12.2	36	2.2	96	137	05/17	20
Cardinal	47.2	53.5	56.8	54.7	31.2	12.9	39	1.4	97	140	05/20	9
Clark	37.4	47.3	51.9	54.4	31.4	12.4	34	2.1	96	133	05/13	9
Coker 833	43.9			56.2	31.4	13.8	39	2.0	96	142	05/22	1
Coker 916	39.9	48.8	53.7	52.9	29.0	12.1	34	2.5	94	134	05/14	1
Coker 9803 (X8633)	43.3			56.5	28.9	12.7	33	2.5	86	135	05/15	0
Coker 9877	38.4	49.9	52.5	52.4	30.2	15.5	38	1.9	92	143	05/23	0
Compton	37.2	44.1	47.8	55.2	28.9	12.3	36	2.3	94	139	05/19	2
Dynasty	35.9	47.3	51.2	52.3	25.8	12.2	36	1.4	97	139	05/19	6
FFR 525	50.1	55.7		56.2	34.6	12.3	35	3.2	93	136	05/16	0
FFR 544	37.5			52.1	31.4	12.7	36	1.5	97	137	05/17	2
Florida 302	40.5	50.8	53.2	53.2	33.5	12.7	37	1.8	86	139	05/19	0
Florida 303	30.4	40.8	44.8	53.0	30.1	12.6	34	1.1	66	136	05/16	0
Hartzler 2200	49.1	54.6		57.9	28.0	13.8	37	1.9	95	137	05/17	0
Hartzler 2300	37.1			52.2	25.9	12.1	36	2.3	96	137	05/17	14
HybriTech Pacer	43.1	50.4		54.3	27.0	12.4	36	3.6	98	137	05/17	0
IL82-3298	43.6	52.9		57.6	30.4	13.4	40	2.1	97	140	05/20	18
Keiser	37.5	45.6	48.9	55.0	33.8	13.0	40	2.1	94	137	05/17	0
KY83-38	43.3	51.7		54.3	30.9	12.3	37	2.8	92	139	05/19	5
Madison (VA85-52-24)	47.8			54.1	30.9	12.6	36	2.8	98	135	05/15	0
Merschman Bintee V	43.4			56.7	27.1	13.4	38	0.9	97	140	05/20	8
Merschman Genie IV	36.9			52.7	26.2	12.4	36	3.6	96	133	05/13	4

Merschman Julie III	46.8	54.6		55.0	27.9	13.1	36	1.5	97	137	05/17	2
Merschman Katie IV	35.6	45.3	52.8	49.3	28.1	12.3	35	4.3	99	133	05/13	22
Merschman Katie V	41.4			51.1	29.5	11.8	34	2.5	96	134	05/14	1
MFA Dominator	39.7			55.6	26.8	13.1	38	0.9	96	143	05/23	11
MFA EXP 6560	49.4			57.8	28.0	13.9	37	2.1	98	137	05/17	4
MFA Sundance	45.4			52.2	28.5	12.1	36	2.5	97	136	05/16	1
Missouri 8841 Brand	39.1	46.3		55.6	26.8	13.1	38	0.6	95	143	05/23	11
MO9965sb	46.9			54.0	28.7	12.5	35	1.0	96	133	05/13	13
MO10136	50.2			57.5	29.5	12.6	37	1.3	96	137	05/17	1
MO10501	44.1	51.5	55.8	55.1	28.8	12.9	40	2.6	98	137	05/17	6
MO10534	39.9			55.0	28.0	12.5	37	2.5	97	136	05/16	7
MO11489	44.8	49.6		55.5	29.2	12.4	34	1.3	97	137	05/17	14
MO11769	45.2	49.9		55.8	28.2	12.3	33	3.2	95	135	05/15	13
MO11785	40.1	49.9		56.4	29.0	12.6	36	3.8	98	136	05/16	13
Pike	38.7	45.2	51.1	54.1	28.9	12.8	36	3.1	97	139	05/19	16
Pioneer 2548	58.5 **	63.1 **		55.5	29.1	12.3	35	1.8	97	136	05/16	0
Pioneer 2551	45.0	51.3	54.7	52.4	27.5	12.1	36	1.7	97	138	05/18	5
Pioneer 2555	48.2	57.4	61.3 **	52.8	32.8	12.3	37	1.6	97	137	05/17	1
Reeds 1002	41.2			51.0	28.9	11.6	34	2.5	96	134	05/14	1
Reeds 1004	40.6	47.3	49.6	56.3	33.2	12.6	38	2.5	95	137	05/17	4
Reeds 1008	44.6	51.1	55.8	54.8	29.8	12.7	39	2.4	94	139	05/19	0
Rosen	42.5	47.6	51.7	52.9	29.8	12.0	36	2.1	96	137	05/17	5
Satuda	45.5	54.7	56.4	56.0	30.1	12.7	34	3.1	95	137	05/17	0
TAM 107 (hard check)	40.8	51.1	55.0	54.7	31.7	12.0	34	3.9	98	131	05/11	0
Terra SR200	43.2			50.9	29.1	11.8	34	2.7	97	133	05/13	1
Terra SR201	34.9	46.0		48.7	27.7	12.3	35	4.3	98	132	05/12	22
Terra SR86	40.3	49.5	54.0	53.8	27.2	12.6	38	2.6	96	137	05/17	9
Terra SR87	40.6	47.5	51.7	53.5	28.3	12.5	37	2.9	95	136	05/16	5
Tyler	43.9	51.4	55.8	54.3	29.4	12.8	39	2.2	95	139	05/19	0
Wakefield (VA85-52-34)	48.0			54.6	33.8	12.8	37	2.1	95	138	05/18	0
Average	41.8	49.1	51.8	54.1	29.2	12.6	36	2.3	95	137	05/17	5
LSD (p=0.05)	2.7	2.4	1.9	0.7	1.0	0.8	1	0.6	7	1		3
CV%	12.2	12.9	11.4	2.6	6.3	3.4	4.0	42.7	4.0	<1		68
Location Years	7	14	20	7	7	7	7	6	6	3		5

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

Table 4. Performance of soft red winter wheats tested at Columbia, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging Score ²	Winter Survival	Heading Date		Powdery Mildew ³
	90	89-90	88-90							Julian	Calendar	
	----- bushels/acre -----			- lb/bu -	- g -	- % -	- inches -		- % -		- % -	
ABI 85-81	48.3			51.6	24.2	11.4	38	4.0	98	135	05/15	0
Adder	30.7	50.3	53.9	50.8	22.5	11.2	36	0.8	98	139	05/19	0
Agripro Cherokee (ABI 85*1)	41.8			54.3	28.7	11.6	40	2.0	91	136	05/16	1
Agripro Hancock	33.3	55.2	62.1	50.3	25.7	11.1	37	4.3	98	137	05/17	0
Agripro Lincoln	37.3	51.1	57.9	49.9	23.7	11.8	38	2.5	95	135	05/15	5
Agripro Traveller	38.5	59.0	58.9	49.8	28.0	11.2	37	0.8	92	134	05/14	1
Agripro Twain	38.7	63.5	67.9	53.7	24.3	12.2	40	1.0	96	135	05/15	0
AR26-415	40.3			52.2	27.5	11.5	37	0.8	95	136	05/16	20
Arkan (hard check)	22.9	45.8		49.9	21.4	11.3	36	1.8	98	134	05/14	18
Arthur 71	32.3	43.7	50.6	53.5	26.7	11.8	39	4.0	99	137	05/17	2
Auburn	43.1	53.9	56.9	56.2	23.5	12.4	43	0.8	97	145	05/25	8
Becker	36.3	44.5	56.7	50.8	25.9	11.3	39	0.0	94	140	05/20	12
Caldwell	32.2	47.4	58.0	48.8	19.7	11.2	40	1.8	95	137	05/17	17
Cardinal	44.8	55.2	60.7	51.8	27.6	12.1	42	1.0	96	140	05/20	12
Clark	32.6	53.6	58.5	52.2	26.6	11.8	38	3.0	97	132	05/12	10
Coker 833	38.4			54.9	28.3	14.1	40	1.8	89	143	05/23	0
Coker 916	38.8	58.4	64.1	49.1	25.2	11.2	36	2.0	94	133	05/13	1
Coker 9803 (X8633)	42.3			53.9	22.9	12.0	35	2.3	95	133	05/13	1
Coker 9877	37.3	56.7	58.2	51.5	27.0	15.3	40	1.8	93	144	05/24	0
Compton	34.7	51.8	56.6	53.7	24.6	11.5	39	1.0	91	139	05/19	0
Dynasty	33.2	53.4	59.7	49.1	21.0	11.4	39	1.0	93	139	05/19	6
FFR 525	44.4	59.0		53.3	29.4	11.3	38	5.0	97	134	05/14	0
FFR 544	30.8			48.5	25.1	11.9	38	2.0	98	135	05/15	2
Florida 302	41.5	61.4	65.6	51.6	29.9	11.6	40	1.8	92	138	05/18	0
Florida 303	30.1	45.1	43.0	49.6	25.9	11.5	38	0.8	51	134	05/14	0
Hartzler 2200	47.4	61.8		55.5	23.3	13.2	40	2.8	91	136	05/16	0
Hartzler 2300	32.0			47.4	21.5	11.1	40	1.3	96	137	05/17	15
HybriTech Pacer	40.0	53.5		51.6	23.3	11.5	38	3.3	97	136	05/16	1
IL82-3298	35.2	55.8		55.3	25.2	12.6	43	2.8	98	139	05/19	20
Keiser	35.3	43.2	52.7	52.6	27.4	11.8	42	2.3	94	138	05/18	3
KY83-38	47.0	60.8		51.9	28.8	12.1	39	2.5	94	136	05/16	0
Madison (VA85-52-24)	41.8			51.9	26.5	11.7	37	3.5	97	134	05/14	1
Merschman Bintee V	36.7			53.9	21.9	12.6	41	0.8	96	140	05/20	7
Merschman Genie IV	31.1			48.6	22.6	11.4	40	2.5	95	132	05/12	8

Merschman Julie III	46.8	62.3		52.9	24.3	12.3	38	1.3	97	136	05/16	0
Merschman Katie IV	26.6	42.2	54.7	44.6	23.6	11.5	37	4.0	98	132	05/12	19
Merschman Katie V	39.4			47.9	24.8	10.8	36	1.0	92	133	05/13	1
MFA Dominator	29.2			51.9	21.0	11.8	41	1.0	98	145	05/25	10
MFA EXP 6560	46.2			55.9	24.1	13.1	39	2.3	96	136	05/16	4
MFA Sundance	39.8			49.1	24.4	11.3	37	3.0	98	135	05/15	0
Missouri 8841 Brand	29.4	51.1		51.9	21.2	11.8	42	0.0	98	146	05/26	10
MO9965sb	49.4			53.2	24.4	11.7	39	0.3	96	133	05/13	12
MO10136	54.7 *			57.3	25.9	11.9	39	0.5	92	135	05/15	1
MO10501	50.7	66.1	70.2 *	54.0	25.7	12.1	43	2.0	97	135	05/15	6
MO10534	40.1			52.6	24.1	12.0	40	2.0	96	135	05/15	7
MO11489	43.1	58.8		51.9	23.1	11.6	38	0.3	95	137	05/17	17
MO11769	47.8	58.4		54.5	24.9	11.3	37	4.0	96	135	05/15	14
MO11785	35.8	48.9		53.7	24.2	11.8	37	4.0	98	136	05/16	12
Pike	33.9	46.2	56.9	50.9	23.3	11.9	38	3.3	97	138	05/18	22
Pioneer 2548	56.2 **	75.9 **		53.3	24.7	11.4	36	2.3	97	134	05/14	0
Pioneer 2551	38.1	61.6	68.6 *	48.2	23.7	11.0	38	2.3	98	138	05/18	6
Pioneer 2555	40.8	67.1	73.0 **	49.2	25.6	11.3	38	2.3	96	136	05/16	2
Reeds 1002	34.7			48.8	24.8	10.5	36	2.3	95	133	05/13	0
Reeds 1004	36.4	52.5	57.7	52.9	29.2	11.5	40	4.0	84	137	05/17	3
Reeds 1008	42.3	54.3	63.5	52.5	23.3	11.6	41	2.3	94	139	05/19	0
Rosen	39.1	52.8	58.6	50.3	24.9	11.1	37	2.0	95	136	05/16	5
Satuda	45.2	60.1	64.8	54.1	27.7	12.1	37	2.5	92	136	05/16	1
TAM 107 (hard check)	29.4	51.7	63.8	51.2	25.7	10.9	36	5.5	97	129	05/09	0
Terra SR200	39.8			48.4	23.9	10.9	37	2.3	98	132	05/12	1
Terra SR201	24.5	41.9		44.9	23.5	11.1	37	4.8	98	132	05/12	20
Terra SR86	40.5	56.5	64.2	50.5	23.5	11.9	42	2.5	96	138	05/18	14
Terra SR87	40.6	54.9	61.6	50.7	24.5	11.7	38	2.8	96	135	05/15	5
Tyler	40.0	54.0	63.6	51.5	23.0	11.7	41	3.3	96	138	05/18	0
Wakefield (VA85-52-34)	44.3			50.8	28.4	11.7	39	2.8	96	138	05/18	0
Average	38.7	54.6	59.9	51.6	24.9	11.7	39	2.2	95	136	05/16	6
LSD (p=0.05)	5.4	6.1	4.5	1.9	1.8	0.5	2	1.3	6	1		4
CV%	10.0	11.4	9.4	2.7	5.3	3.3	4.0	42.7	4.3	<1		50

1 Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

2 Lodging scores of 0 to 9 represent none to total lodging, respectively.

3 Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 5. Performance of soft red winter wheats tested in Grundy County, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging Score ²	Winter Survival	Powdery Mildew ³
	90	89-90	88-90							
	----- bushels/acre -----			- lb/bu -	- g -	- % -	- inches -	- % -	- % -	
ABI 85-81	60.4			53.2	28.7	10.7	40	3.8	98	0
Adder	50.3	35.7	36.5	51.1	29.5	10.8	38	1.5	98	0
Agripro Cherokee (ABI 85*1)	44.0			52.0	32.0	11.2	40	2.8	97	0
Agripro Hancock	55.0	42.7	42.1	52.5	32.6	10.3	39	3.8	97	0
Agripro Lincoln	50.0	42.4	45.7	53.3	29.6	11.5	41	2.5	99	1
Agripro Traveller	46.2	40.6	36.8	51.0	32.1	11.2	38	2.3	98	0
Agripro Twain	54.6	47.9 *	48.1	54.0	29.1	11.9	38	2.0	98	0
AR26-415	43.7			51.4	32.2	10.9	40	1.8	99	8
Arkan (hard check)	36.7	27.6	34.1	50.9	27.2	10.6	37	3.5	98	6
Arthur 71	44.7	27.6	33.1	55.2	35.9	11.4	41	3.3	97	1
Auburn	50.1	37.0	40.2	53.7	28.0	11.0	42	0.5	95	3
Becker	55.0	36.5	44.5	52.5	31.4	11.0	38	0.8	98	14
Caldwell	43.1	38.2	44.3	52.6	26.5	11.2	39	2.8	98	9
Cardinal	61.3	42.6	45.4	53.4	32.4	11.7	43	1.5	98	4
Clark	59.9	40.3	42.0	54.3	32.8	11.5	38	1.3	99	6
Coker 833	51.7			52.1	30.6	11.1	43	3.3	98	0
Coker 916	53.4	35.3	39.2	52.7	31.6	11.0	38	1.8	97	2
Coker 9803 (X8633)	54.1			53.7	30.3	11.3	36	3.0	98	1
Coker 9877	44.5	39.8	37.9	50.8	30.1	10.9	42	2.8	97	0
Compton	50.2	33.3	37.4	55.1	32.3	11.1	40	1.8	94	1
Dynasty	48.2	38.6	46.8	52.0	27.0	11.0	41	1.5	98	1
FFR 525	61.4	43.7		54.8	37.5	11.1	39	1.8	98	0
FFR 544	49.3			51.1	34.6	11.4	40	1.0	98	1
Florida 302	54.3	43.9	40.3	51.8	34.3	10.8	41	1.8	98	0
Florida 303	38.7	26.5	24.0	49.9	32.0	10.4	38	1.0	93	0
Hartzler 2200	58.7	41.5		56.4	30.4	12.4	40	1.3	96	1
Hartzler 2300	45.6			52.0	28.7	11.0	39	1.8	98	10
HybriTech Pacer	49.3	32.4		53.2	27.3	10.6	40	4.5	98	0
IL82-3298	57.5	49.2 *		55.9	31.4	12.2	44	2.3	99	8
Keiser	45.6	38.8	38.0	52.4	31.0	10.4	44	3.5	98	4
KY83-38	49.7	36.2		53.5	36.2	11.8	41	1.5	98	1
Madison (VA85-52-24)	64.1			53.0	32.4	11.4	40	2.0	98	0
Merschman Bintee V	59.8			55.7	28.4	11.9	40	1.0	97	4
Merschman Genie IV	51.6			52.9	29.3	11.1	40	5.0	98	2

Merschman Julie III	56.0	43.3		53.7	30.4	11.4	42	1.3	98	1
Merschman Katie IV	45.6	35.5	45.5	49.3	30.6	10.8	38	3.3	99	18
Merschman Katie V	51.2			50.5	32.6	10.3	38	2.0	98	0
MFA Dominator	58.8			54.5	27.7	11.7	41	1.3	97	8
MFA EXP 6560	57.3			56.9	29.5	12.2	40	2.5	97	1
MFA Sundance	52.9			50.8	29.1	10.5	40	2.3	98	2
Missouri 8841 Brand	59.4	42.8		54.5	28.2	11.7	40	1.3	97	6
MO9965sb	55.7			53.4	31.6	11.0	36	1.5	97	6
MO10136	58.9			54.9	30.5	11.2	41	1.0	98	2
MO10501	52.5	37.1	41.6	54.9	31.1	11.8	44	2.3	98	3
MO10534	46.1			54.5	29.9	11.4	40	2.3	97	4
MO11489	59.7	39.7		55.3	31.5	11.4	37	1.3	97	11
MO11769	56.0	39.3		55.1	31.1	11.3	37	2.8	98	5
MO11785	52.8	36.0		55.5	32.4	11.4	39	4.0	98	9
Pike	55.0	40.3	47.2	53.7	31.0	11.8	40	2.8	99	12
Pioneer 2548	73.4 **	53.0 **		53.2	32.0	10.5	39	2.0	98	1
Pioneer 2551	62.0	39.8	45.7	52.3	29.8	10.5	39	2.0	99	2
Pioneer 2555	54.1	40.3	44.7	50.4	35.0	10.9	40	0.8	98	0
Reeds 1002	56.6			50.1	30.9	10.1	38	1.8	98	0
Reeds 1004	51.2	32.8	37.8	54.5	35.2	11.5	41	2.5	98	3
Reeds 1008	59.5	44.1	49.0	54.2	32.2	11.2	43	3.3	98	0
Rosen	52.9	37.7	41.7	51.5	32.3	10.8	41	1.8	98	1
Saluda	51.5	41.9	47.8	54.1	32.9	11.4	38	3.5	98	0
TAM 107 (hard check)	57.2	47.6 *	53.4 **	54.2	31.5	11.0	37	2.8	98	0
Terra SR200	59.5			50.4	29.1	10.1	37	2.0	98	0
Terra SR201	46.8	35.8		49.1	32.1	10.7	38	3.5	98	18
Terra SR86	43.1	39.7	44.6	53.5	30.4	11.3	42	2.5	99	6
Terra SR87	52.2	40.0	44.6	53.1	31.2	11.1	41	2.5	99	3
Tyler	59.8	41.6	45.6	54.6	32.1	11.4	44	2.5	98	0
Wakefield (VA85-52-34)	54.6			53.0	33.8	11.4	41	3.0	99	0
Average	53.0	39.2	42.1	53.0	31.1	11.1	40	2.2	98	3
LSD (p=0.05)	7.1	6.8	6.0	1.6	2.5	0.4	2	1.2	2	4
CV%	9.6	17.5	17.8	2.2	5.7	2.5	2.9	37.9	1.3	96

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 6. Performance of soft red winter wheats tested at Novelty, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging Score ²	Winter Survival	Heading Date		Powdery Mildew ³
	90	89-90	88-90							Julian	Calendar	
	----- bushels/acre -----			- lb/bu -	- g -	- % -	- inches -	- % -			- % -	
ABI 85-81	45.4			53.2	30.3	13.4	37	4.9	99	141	05/21	1
Adder	36.9	45.6		51.4	28.1	13.1	37	2.7	95	143	05/23	3
Agripro Cherokee (ABI 85*1)	35.9			52.9	32.4	13.5	40	3.0	98	141	05/21	0
Agripro Hancock	36.5	51.1		53.8	32.3	13.0	35	6.4	98	141	05/21	0
Agripro Lincoln	29.7	40.9		49.4	24.5	14.0	39	4.8	99	140	05/20	7
Agripro Traveller	42.5	48.7		51.4	26.1	12.9	35	2.8	99	141	05/21	0
Agripro Twain	36.8	45.		52.9	30.5	13.9	36	3.4	96	141	05/21	0
AR26-415	42.2			53.4	33.2	13.3	38	1.5	99	142	05/22	13
Arkan (hard check)	18.0	31.0		47.7	26.7	13.2	34	3.3	99	142	05/22	29
Arthur 71	27.0	32.6		53.7	29.9	13.4	37	5.0	99	143	05/23	7
Auburn	37.7	42.0		54.4	27.3	13.4	41	2.8	98	145	05/25	9
Becker	35.8	39.9		51.6	30.2	13.5	36	2.2	95	145	05/25	19
Caldwell	33.8	38.3		49.8	25.2	13.5	40	2.0	99	141	05/21	22
Cardinal	42.3	45.7		51.7	29.9	13.7	41	1.8	99	144	05/24	12
Clark	35.6	35.6		53.6	31.0	13.2	36	3.4	99	138	05/18	9
Coker 833	37.4			52.2	31.7	16.5	41	3.3	99	147	05/27	2
Coker 916	38.2	43.5		51.9	31.0	13.4	36	3.9	97	139	05/19	1
Coker 9803 (X8633)	40.8			54.0	29.3	13.4	35	3.9	98	148	05/28	0
Coker 9877	41.3	49.7		49.0	32.9	21.2	40	2.6	95	141	05/21	0
Compton	32.8	39.0		54.5	30.1	12.8	39	3.8	97	144	05/24	6
Dynasty	36.4	44.4		50.8	26.0	13.4	38	2.2	99	143	05/23	14
FFR 525	60.3 **	59.1 *		56.6	38.3	13.1	38	3.8	98	141	05/21	0
FFR 544	25.4			48.5	30.4	13.7	37	2.7	99	142	05/22	2
Florida 302	49.6	55.5 *		52.6	35.4	14.1	40	2.3	91	144	05/24	0
Florida 303	37.1	35.1		52.0	31.6	14.9	36	0.1	50	142	05/22	0
Hartzler 2200	48.5	48.9		56.6	30.4	14.5	40	4.2	99	141	05/21	0
Hartzler 2300	39.4			50.2	25.9	13.2	39	1.9	98	140	05/20	14
HybriTech Pacer	42.1	47.5		53.8	28.2	13.3	39	4.4	99	142	05/22	2
IL82-3298	34.8	42.5		54.4	29.2	14.7	43	3.8	99	146	05/26	24
Keiser	32.3	41.7		52.9	32.7	13.9	43	4.4	98	143	05/23	7
KY83-38	44.0	51.4		54.1	35.0	13.3	38	5.1	95	142	05/22	0
Madison (VA85-52-24)	45.4			52.7	32.7	13.5	39	5.0	99	139	05/19	0
Merschman Bintee V	43.1			53.7	27.6	14.1	41	1.8	99	145	05/25	14
Merschman Genie IV	28.9			50.5	28.7	13.6	39	5.4	99	138	05/18	7

Merschman Julie III	46.4	52.8	53.2	29.8	14.6	38	2.8	99	142	05/22	2
Merschman Katie IV	35.1	40.0	50.1	31.4	13.5	36	3.9	99	139	05/19	33
Merschman Katie V	40.4		50.7	31.2	13.0	36	4.6	98	140	05/20	1
MFA Dominator	38.6		52.5	26.5	13.9	41	2.1	99	145	05/25	15
MFA EXP 6560	47.0		56.3	29.9	15.0	40	3.3	99	142	05/22	6
MFA Sundance	46.9		51.6	30.9	13.2	40	3.4	99	143	05/23	2
Missouri 8841 Brand	42.5	48	52.9	26.1	14.0	41	1.2	99	144	05/24	15
MO9965sb	44.1		51.5	28.1	13.5	36	0.9	99	139	05/19	16
MO10136	54.5 *		57.3	31.8	13.1	40	2.8	99	142	05/22	1
MO10501	39.2	46.8	54.9	30.6	13.7	42	4.8	99	142	05/22	7
MO10534	40.0		55.2	30.3	13.4	38	3.2	99	142	05/22	9
MO11489	48.3	50.2	54.7	28.9	13.2	36	3.3	99	141	05/21	22
MO11769	49.2	47.3	56.2	30.7	12.9	36	4.9	99	139	05/19	17
MO11785	37.6	44.2	56.1	31.4	13.3	37	4.9	98	141	05/21	21
Pike	38.5	45.5	55.2	31.9	13.6	39	4.8	99	143	05/23	14
Pioneer 2548	58.3 *	63.1 **	55.9	30.1	13.3	35	2.7	99	142	05/22	0
Pioneer 2551	43.9	54.9	49.6	29.3	13.2	40	3.3	98	143	05/23	4
Pioneer 2555	50.7	53.9	52.2	33.7	13.2	39	2.2	99	141	05/21	1
Reeds 1002	37.6		49.9	30.7	12.8	36	4.3	99	141	05/21	1
Reeds 1004	35.6	46.0	55.7	34.5	13.6	39	3.2	99	142	05/22	2
Reeds 1008	38.3	47.5	53.6	31.7	13.5	41	4.8	96	144	05/24	0
Rosen	37.	40.0	51.9	30.0	13.1	37	2.9	99	142	05/22	11
Saluda	43.9	56.7 *	55.4	32.6	13.2	35	5.0	98	141	05/21	0
TAM 107 (hard check)	40.5	55.2 *	55.0	34.9	12.8	35	4.8	99	137	05/17	0
Terra SR200	36.1		49.7	30.3	13.0	35	4.6	99	139	05/19	3
Terra SR201	37.7	45.6	49.5	31.7	13.4	37	4.1	99	137	05/17	26
Terra SR86	38.2	47.0	51.2	27.5	13.5	41	3.9	99	140	05/20	6
Terra SR87	40.2	48.7	53.1	30.5	13.5	38	3.6	99	142	05/22	10
Tyler	34.5	45.8	52.4	30.3	13.9	41	4.6	98	144	05/24	0
Wakefield (VA85-52-34)	49.6		53.0	35.9	13.6	39	3.3	98	143	05/23	0
Average	40.1	46.2	52.8	30.5	13.7	38	3.5	97	142	05/22	7
LSD (p=0.05)	6.8	8.0	1.9	2.0	0.6	2	1.5	3	2		7
CV%	12.2	17.6	2.6	4.7	3.4	4.2	32.0	2.4	<1		72

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content. No data obtained in 1988 from the Novelty site.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 7. Performance of soft red winter wheats tested at Bertrand, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Winter Survival
	90	89-90	88-90					
	bushels/acre			- lb/bu -	- g -	- % -	- inches -	- % -
ABI 85-81	38.6**			52.7	26.9	16.1	28	94
Adder	32.0	47.6	54.6	50.1	24.6	16.3	26	93
Agripro Cherokee (ABI 85*1)	28.5			53.4	29.4	15.8	30	85
Agripro Hancock	29.8	51.8*	59.8	55.0	28.3	16.1	29	96
Agripro Lincoln	29.7	48.1	54.2	53.9	27.1	15.9	29	94
Agripro Traveller	22.4	39.1	51.4	56.1	31.4	15.7	26	73
Agripro Twain	21.1	46.3	50.9	55.4	26.5	15.4	29	83
AR26-415	23.8			56.6	32.8	15.7	26	73
Arkan (hard check)	19.2	37.5	47.0	54.6	24.5	15.9	27	91
Arthur 71	24.7	40.8	45.5	55.6	30.4	16.5	27	86
Auburn	26.4	39.8	47.3	58.3	29.8	16.0	30	88
Becker	30.5	48.1	55.0	52.8	31.6	16.3	27	87
Caldwell	22.2	40.9	52.0	54.7	25.5	15.3	27	89
Cardinal	36.5*	51.9*	60.8	55.6	31.7	16.4	31	94
Clark	26.7	44.9	52.7	53.9	31.0	16.0	26	85
Coker 833	30.4			56.5	30.5	16.7	31	91
Coker 916	23.0	44.8	56.4	54.7	29.7	15.5	25	76
Coker 9803 (X8633)	16.0			58.0	30.5	15.9	25	30
Coker 9877	25.3	46.7	57.6	51.8	30.2	19.4	30	71
Compton	27.2	44.9	52.5	54.7	28.9	16.3	27	86
Dynasty	28.9	49.1	55.3	53.2	26.5	15.8	28	93
FFR 525	21.6	48.5		56.9	34.3	15.8	26	68
FFR 544	27.0			51.7	31.0	15.7	28	88
Florida 302	14.2	39.1	53.1	55.3	34.7	16.3	27	41
Florida 303	3.1	32.7	46.3	53.9	30.8	16.4	26	3
Hartzler 2200	30.4	49.5		57.0	25.9	16.9	28	88
Hartzler 2300	29.6			54.4	27.2	15.4	29	89
HybriTech Pacer	33.9*	51.5*		53.7	25.7	16.5	28	97
IL82-3298	29.1	48.9		57.6	28.7	16.3	32	89
Keiser	30.3	50.4*	57.0	55.8	32.9	14.8	33	78
KY83-38	22.6	44.2		56.0	36.0	16.6	28	63
Madison (VA85-52-24)	34.3*			54.7	32.3	16.7	27	93
Merschman Bintee V	32.0			56.5	26.4	17.1	31	93
Merschman Genie IV	25.4			55.6	27.9	16.0	27	85

Merschman Julie III	27.3	46.4		54.7	26.8	16.9	29	92
Merschman Katie IV	27.2	42.5	53.1	48.5	25.6	16.0	29	97
Merschman Katie V	30.6			51.1	30.3	15.7	26	91
MFA Dominator	30.0			57.9	29.5	16.7	32	86
MFA EXP 6560	34.6 *			56.3	25.9	17.5	31	96
MFA Sundance	29.9			53.3	29.7	16.1	26	90
Missouri 8841 Brand	26.9	45.0		58.2	29.6	16.3	31	80
MO9965sb	27.1			52.7	28.3	15.8	28	83
MO10136	32.5			56.3	30.1	16.3	27	89
MO10501	29.8	49.0	58.5	54.6	29.7	16.7	31	96
MO10534	28.0			54.2	26.6	16.2	29	90
MO11489	32.1	43.1		55.2	27.4	15.6	27	92
MO11769	19.4	37.5		53.7	24.4	16.0	25	83
MO11785	35.4 *	50.0		57.0	28.5	16.1	29	95
Pike	27.5	43.0	52.9	54.2	30.2	16.6	30	92
Pioneer 2548	34.4 *	55.1 **		55.6	28.1	15.9	27	90
Pioneer 2551	27.5	48.3	57.4	54.2	27.5	15.7	28	90
Pioneer 2555	30.1	52.6 *	65.1 **	54.4	33.8	15.8	28	94
Reeds 1002	27.6			51.2	30.7	15.4	26	87
Reeds 1004	27.5	44.1	50.7	56.4	30.8	16.2	29	90
Reeds 1008	26.5	46.0	57.9	55.9	30.8	17.0	30	77
Rosen	30.4	45.2	54.0	53.6	30.4	15.2	28	87
Satuda	25.6	45.1	57.5	56.2	29.8	16.9	25	84
TAM 107 (hard check)	24.2	45.4	55.7	54.2	29.6	15.1	27	93
Terra SR200	27.0			50.8	29.0	15.8	26	93
Terra SR201	27.8	42.5		48.9	26.1	16.6	28	95
Terra SR86	29.2	47.3	58.5	55.0	27.2	16.5	30	84
Terra SR87	23.6	40.0	49.8	55.5	28.3	15.9	30	79
Tyler	25.2	49.0	60.0	54.1	29.0	16.7	32	79
Wakefield (VA85-52-34)	26.3			56.1	34.2	16.4	29	80
Average	27.3	45.5	54.4	54.6	29.2	16.2	28	84
LSD (p=0.05)	5.2	4.9	4.2	1.4	2.8	0.9	2	11
CV%	13.8	10.9	9.7	1.9	6.8	4.2	5.3	9.5

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 8. Performance of soft red winter wheats tested at Portageville, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging Score ²	Winter Survival	Septoria Leaf Blotch ³
	90	89-90	88-90							
	----- bushels/acre -----			- lb/bu -	- g -	- % -	- inches -		- % -	
ABI 85-81	58.3			53.0	25.0	10.0	36	1.3	99	80
Adder	40.7	54.0	51.5	51.7	21.7	9.7	33	0.3	99	82
Agripro Cherokee (ABI 85*1)	50.6			56.4	28.0	10.3	37	0.8	99	81
Agripro Hancock	57.1	68.2	64.3 *	55.0	25.6	9.9	36	1.3	99	69
Agripro Lincoln	43.4	55.7	55.8	56.3	26.0	10.3	37	0.8	99	81
Agripro Traveller	58.3	55.7	57.0	57.0	29.3	10.0	35	0.0	99	78
Agripro Twain	51.6	61.0	59.7	56.7	27.3	10.7	38	0.3	99	78
AR26-415	63.3			58.9	31.5	10.5	34	0.0	99	76
Arkan (hard check)	55.6	58.6	56.6	59.3	28.9	10.5	36	0.8	99	82
Arthur 71	38.4	48.1	49.3	58.2	25.9	10.1	38	2.3	99	84
Auburn	55.5	55.9	51.2	58.5	25.6	12.2	40	0.0	99	70
Becker	48.9	63.1	62.0	54.1	27.7	10.0	33	0.0	99	76
Caldwell	43.3	49.7	51.3	53.2	20.2	10.2	36	0.5	99	79
Cardinal	61.3	70.6 *	64.8 *	57.5	30.7	10.6	39	0.0	99	75
Clark	47.4	59.2	56.7	57.9	31.4	10.5	33	1.0	99	82
Coker 833	63.3			60.2	31.1	12.0	38	0.0	99	68
Coker 916	47.3	57.4	57.2	55.0	26.1	9.7	31	1.3	99	79
Coker 9803 (X8633)	52.4			59.8	28.4	10.8	31	1.0	99	76
Coker 9877	55.2	57.6	58.5	54.0	28.7	13.3	39	0.0	99	70
Compton	37.9	50.0	50.7	55.2	26.2	9.7	35	1.0	99	84
Dynasty	38.4	54.5	53.8	53.3	21.8	9.7	36	0.0	99	85
FFR 525	60.9	68.2		57.2	31.1	10.4	35	1.3	99	79
FFR 544	43.7			54.7	29.0	10.6	35	0.3	99	81
Florida 302	60.9	60.2	62.0	55.6	31.2	10.2	38	0.0	99	75
Florida 303	45.7	51.6	54.0	54.9	27.4	10.2	33	0.0	99	81
Hartzler 2200	57.9	65.7		59.4	26.0	12.6	35	0.0	99	73
Hartzler 2300	47.1			54.5	22.8	10.1	35	0.3	99	77
HybriTech Pacer	53.8	62.9		55.6	23.8	10.1	35	0.5	99	80
IL82-3298	61.7	66.9		60.5	30.9	11.4	40	0.0	99	73
Keiser	58.2	58.2	57.5	57.8	30.7	10.4	39	0.0	99	69
KY83-38	60.1	63.9		58.1	32.1	10.8	38	0.0	99	75
Madison (VA85-52-24)	56.0			56.7	29.0	10.5	34	0.8	99	81
Merschman Bintee V	52.2			58.7	24.9	11.4	41	0.0	99	75
Merschman Genie IV	49.1			55.5	23.8	10.3	35	1.0	99	81

Merschman Julie III	56.4	67.2		55.6	25.4	10.5	35	0.3	99	78
Merschman Katie IV	49.7	59.6	61.5	55.5	26.3	10.7	35	2.3	99	81
Merschman Katie V	46.7			53.4	28.5	9.7	32	0.5	99	76
MFA Dominator	49.4			58.2	25.0	11.4	40	0.0	99	72
MFA EXP 6560	62.2			60.1	26.5	12.2	35	0.3	99	78
MFA Sundance	57.7			54.9	26.3	10.0	36	0.0	99	76
Missouri 8841 Brand	46.0	52.7		57.9	25.2	11.8	40	0.0	99	71
MO9965sb	63.4			57.0	27.5	10.6	35	0.0	99	75
MO10136	53.2			58.0	25.2	10.3	37	0.3	99	80
MO10501	53.8	58.9	60.2	56.2	25.7	10.5	41	0.3	99	82
MO10534	49.6			57.1	25.8	10.3	37	0.3	99	82
MO11489	50.3	59.5		55.8	24.3	10.2	33	0.0	99	77
MO11769	59.3	62.2		56.1	26.2	10.3	32	1.0	99	78
MO11785	49.8	58.7		56.8	24.0	10.4	36	0.0	99	79
Pike	51.0	55.9	58.6	57.3	26.8	10.5	36	0.5	99	76
Pioneer 2548	73.7 **	74.5 **		58.1	28.5	10.5	34	0.0	99	72
Pioneer 2551	54.1	61.1	60.4	53.1	24.3	10.1	34	0.0	99	73
Pioneer 2555	64.9	73.4 *	68.4 **	56.6	32.5	10.2	36	0.0	99	72
Reeds 1002	51.4			53.9	28.0	9.8	33	0.8	99	79
Reeds 1004	51.0	57.0	56.1	58.2	31.4	10.6	39	0.8	99	78
Reeds 1008	55.9	60.5	60.5	56.5	29.0	10.7	39	0.0	99	71
Rosen	52.7	58.8	57.7	54.6	27.1	10.0	34	1.0	99	79
Saluda	57.2	69.9 *	64.6 *	57.7	26.6	10.4	34	0.3	99	82
TAM 107 (hard check)	61.7	66.0	62.4	59.0	34.0	10.3	34	0.8	99	78
Terra SR200	56.2			54.4	29.9	9.9	33	0.8	99	77
Terra SR201	48.6	56.3		54.3	26.3	10.6	35	2.5	99	81
Terra SR86	49.6	57.1	57.6	54.8	22.7	10.2	38	0.3	99	78
Terra SR87	54.1	61.5	62.6	56.0	27.3	10.4	37	0.3	99	80
Tyler	58.5	64.0	61.0	56.5	29.0	10.4	40	0.0	99	69
Wakefield (VA85-52-34)	65.9			56.2	30.6	10.7	37	0.0	99	74
Average	53.6	60.3	58.3	56.4	27.3	10.5	36	0.5	99	77
LSD (p=0.05)	6.1	5.7	4.5	1.8	2.1	0.6	2	0.6	NS	4
CV%	8.3	9.6	9.7	2.8	5.6	3.9	3.5	89.3		4

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Septoria leaf blotch (*Septoria tritici* Rob. in Desm.) severity rates represent a two digit scale. The first digit indicates the progress of the disease up the canopy (8=flag leaf involvement). The second digit of 0 to 9 indicates increasing severity of Septoria leaf blotch on the top leaf affected.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 9. Performance of soft red winter wheats tested at Lamar, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging Score ²	Winter Survival	Powdery Mildew ³
	90	89-90	88-90							
	----- bushels/acre -----			- lb/bu -	- g -	- % -	- inches -	- % -	- % -	
ABI 85-81	42.2			52.8	25.8	11.7	35	4.1	99	0
Adder	28.0	45.6	41.6	52.0	25.9	11.6	32	2.5	99	0
Agripro Cherokee (ABI 85*1)	30.3			52.9	27.9	11.9	36	3.2	98	0
Agripro Hancock	34.9	53.4	53.5	52.8	28.9	11.5	35	3.7	99	0
Agripro Lincoln	34.6	49.9	42.8	52.6	26.0	11.8	37	5.6	99	2
Agripro Traveller	32.4	45.4	45.7	51.0	30.7	11.3	34	3.3	99	0
Agripro Twain	29.2	50.2	46.9	54.2	27.5	12.4	34	2.9	99	0
AR26-415	36.6			53.5	29.8	11.8	35	1.5	98	9
Arkan (hard check)	13.7	38.2	37.1	46.3	23.3	10.6	31	4.7	99	30
Arthur 71	24.7	42.2	37.6	54.3	27.5	11.9	34	3.8	99	7
Auburn	30.6	41.0	35.3	59.7	29.4	12.1	37	1.1	94	5
Becker	45.0	55.7	50.7	54.0	30.9	12.2	35	0.4	99	21
Caldwell	23.1	48.2	45.6	52.7	25.5	11.9	34	4.1	99	32
Cardinal	41.2	60.3	57.2	55.6	31.5	12.3	36	2.7	99	11
Clark	22.9	51.5	52.1	53.6	31.8	11.5	31	2.9	99	12
Coker 833	42.7			58.0	31.7	12.2	38	2.3	99	1
Coker 916	36.9	53.8	54.2	50.2	26.6	11.6	33	3.8	98	1
Coker 9803 (X8633)	44.8			57.1	27.7	12.0	32	4.3	98	0
Coker 9877	37.0	55.7	54.5	55.2	28.3	12.2	37	3.5	99	0
Compton	39.7	52.7	48.1	57.0	29.7	11.8	36	3.2	99	1
Dynasty	28.7	50.5	48.9	51.2	25.4	11.4	34	1.4	99	3
FFR 525	45.2	60.1		55.5	32.3	11.6	33	4.8	99	0
FFR 544	33.8			55.1	32.3	12.1	36	2.3	99	1
Florida 302	35.4	49.7	44.9	52.2	31.5	11.8	36	3.9	99	0
Florida 303	31.7	48.3	50.1	53.8	29.2	11.8	34	3.7	99	0
Hartzler 2200	47.0	62.0		60.3	28.6	12.8	36	2.5	99	1
Hartzler 2300	26.4			51.2	27.6	11.4	33	4.4	99	16
HybriTech Pacer	38.9	56.9		54.2	26.1	11.9	36	4.3	99	0
IL82-3298	40.3	56.8		59.7	31.5	11.6	39	1.9	99	18
Keiser	28.7	49.7	46.4	53.9	29.1	11.7	38	4.7	99	5
KY83-38	41.9	58.3		56.0	30.7	12.6	37	2.6	99	0
Madison (VA85-52-24)	44.2			52.6	28.1	11.8	35	3.5	99	0
Merschman Bintee V	33.9			58.3	29.1	12.5	35	1.0	99	7
Merschman Genie IV	27.9			49.7	23.7	11.6	35	5.0	99	1

Merschman Julie III	42.5	57.8		57.4	27.7	12.1	36	2.4	99	3
Merschman Katie IV	18.7	53.5	53.3	44.4	25.1	11.6	34	5.5	99	19
Merschman Katie V	36.1			49.4	26.6	11.2	32	4.3	99	1
MFA Dominator	28.4			55.6	26.3	12.2	35	1.0	98	12
MFA EXP 6560	46.6			59.5	28.4	12.9	38	2.6	99	3
MFA Sundance	37.7			51.1	26.4	11.7	34	3.4	99	1
Missouri 8841 Brand	28.2	46.3		56.9	26.6	12.2	35	1.0	99	12
MO9965sb	34.4			51.7	27.9	11.9	35	2.5	99	21
MO10136	45.9			58.7	29.2	12.4	37	1.7	98	0
MO10501	38.0	57.5	55.2	54.9	27.9	12.1	38	4.0	98	8
MO10534	30.0			53.6	26.0	11.5	36	3.5	99	7
MO11489	29.1	54.5		56.9	30.5	12.1	33	2.0	99	8
MO11769	34.5	57.3		57.6	28.0	11.6	32	5.0	99	14
MO11785	31.2	59.1		55.9	24.9	12.3	34	4.4	99	11
Pike	23.4	45.4	44.9	51.1	27.1	12.4	33	3.8	99	15
Pioneer 2548	52.0 **	67.6 **		55.1	29.0	12.2	35	2.2	99	0
Pioneer 2551	23.6	51.9	48.2	52.8	28.3	11.5	32	2.5	99	8
Pioneer 2555	39.7	63.3 *	62.0 **	50.2	30.4	11.4	36	2.9	99	0
Reeds 1002	35.6			50.4	26.8	11.0	32	3.5	99	1
Reeds 1004	36.1	54.8	50.0	56.3	32.7	11.6	35	2.7	99	6
Reeds 1008	47.0	58.5	52.6	55.9	29.9	12.3	38	2.0	99	0
Rosen	35.9	52.5	49.2	51.1	27.0	11.4	35	3.5	99	6
Saluda	42.8	57.9	48.2	55.3	28.6	12.1	32	4.9	99	0
TAM 107 (hard check)	30.6	50.5	50.7	53.2	31.0	11.7	32	4.1	99	0
Terra SR200	34.9			48.2	28.2	11.2	32	4.3	99	2
Terra SR201	16.1	50.9		41.5	22.9	11.3	34	5.1	99	22
Terra SR86	34.0	51.6	47.7	54.9	28.0	11.9	36	3.4	99	12
Terra SR87	28.2	47.8	46.8	49.7	24.9	12.0	34	5.3	99	2
Tyler	47.3 *	57.0	53.0	55.5	29.7	12.2	38	2.4	99	0
Wakefield (VA85-52-34)	44.9			55.4	34.0	12.2	36	3.1	99	0
Average	34.8	53.0	48.6	53.7	28.3	11.9	35	3.3	99	6
LSD (p=0.05)	4.8	4.9	4.0	2.2	2.1	0.5	1	0.8	1	4
CV%	10.0	9.4	10.2	2.9	5.3	2.8	2.8	18.7	<1	48

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 10. Performance of soft red winter wheats tested at Mt. Vernon, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	1,000 Kernel Weight	Grain Moisture	Plant Height	Lodging ² Score	Heading Date		Powdery Mildew ³
	90	89-90	88-90						Julian	Calendar	
	----- bushels/acre -----								- lb/bu -	- g -	
ABI 85-81	41.8			56.2	33.3	12.4	39	3.2	131	05/11	1
Adder	29.0	35.0	37.8	56.0	31.1	12.8	37	1.3	135	05/15	1
Agripro Cherokee (ABI 85*1)	29.3			56.7	35.2	12.5	40	3.0	133	05/13	1
Agripro Hancock	37.6	40.6	46.7	56.3	34.8	12.3	37	4.6	134	05/14	1
Agripro Lincoln	32.7	41.7	46.3	55.3	29.5	12.5	38	3.6	131	05/11	6
Agripro Traveller	36.2	53.1 **	55.2 *	56.3	35.2	12.7	38	1.2	130	05/10	0
Agripro Twain	34.8	47.9 *	52.2 *	55.7	33.7	13.3	39	1.0	132	05/12	0
AR26-415	34.0			58.0	34.8	12.7	37	0.8	135	05/15	19
Arkan (hard check)	26.4	30.9	34.0	54.4	29.3	12.0	36	4.3	129	05/09	33
Arthur 71	30.2	34.8	36.6	58.6	34.6	12.6	40	3.0	133	05/13	13
Auburn	28.0	31.8	34.8	57.2	30.0	14.1	38	0.5	139	05/19	16
Becker	36.8	51.8 *	54.7 *	55.0	34.5	12.3	35	1.6	135	05/15	38
Caldwell	31.0	40.2	45.9	56.0	29.7	12.2	39	2.0	134	05/14	25
Cardinal	37.0	48.1 *	51.9 *	56.5	35.5	13.2	41	0.8	135	05/15	24
Clark	31.8	45.9	49.3	56.2	34.6	12.7	38	1.1	131	05/11	14
Coker 833	33.7			58.9	35.2	14.2	39	1.2	137	05/17	1
Coker 916	32.9	48.8 *	51.3 *	55.8	32.1	12.4	38	2.4	131	05/11	1
Coker 9803 (X8633)	37.8			58.5	32.4	13.9	35	0.9	131	05/11	0
Coker 9877	23.9	43.0	48.2	53.9	33.3	16.7	37	0.3	136	05/16	0
Compton	31.5	37.1	41.6	56.6	30.0	12.4	38	3.0	134	05/14	8
Dynasty	34.6	40.4	42.8	53.3	31.3	12.8	39	2.0	135	05/15	6
FFR 525	41.7	51.2 *		58.7	39.0	12.9	39	2.8	132	05/12	1
FFR 544	37.7			55.7	40.0	13.3	39	1.1	133	05/13	11
Florida 302	21.4	45.8	53.2 *	53.6	37.2	14.2	37	0.9	136	05/16	0
Florida 303	19.7	46.6 *	51.1 *	55.8	34.0	13.2	35	0.7	134	05/14	0
Hartzler 2200	43.5	52.9 *		60.1	32.8	14.5	39	0.6	134	05/14	0
Hartzler 2300	34.6			56.1	29.2	12.3	39	3.0	134	05/14	24
HybriTech Pacer	33.9	47.9 *		57.6	31.2	12.8	37	4.6	133	05/13	3
IL82-3298	38.8	50.3 *		60.2	36.9	14.0	42	1.7	135	05/15	24
Keiser	26.3	37.2	42.0	54.5	33.6	12.8	41	1.9	136	05/16	14
KY83-38	33.8	47.0 *		56.1	38.7	13.5	40	1.0	134	05/14	0
Madison (VA85-52-24)	40.8			57.2	36.2	12.7	39	2.0	131	05/11	0
Merschman Bintee V	37.6			60.5	31.5	14.2	38	0.5	136	05/16	8
Merschman Genie IV	31.6			56.2	28.3	12.6	38	3.1	129	05/09	1

Merschman Julie III	40.5	52.5 *		57.8	31.8	13.6	38	1.2	133	05/13	5
Merschman Katie IV	34.8	44.2	49.0	52.8	32.1	12.4	38	6.8	128	05/08	21
Merschman Katie V	34.2			54.1	32.2	11.6	36	2.1	128	05/08	3
MFA Dominator	30.9			58.3	31.3	13.9	39	0.6	138	05/18	15
MFA EXP 6560	42.4			60.9	32.4	14.3	40	2.2	133	05/13	6
MFA Sundance	39.3			54.9	33.5	12.4	38	3.7	130	05/10	9
Missouri 8841 Brand	28.6	37.5		57.1	29.8	13.9	39	0.5	138	05/18	15
MO9965sb	42.8			57.5	33.1	12.8	37	0.2	129	05/09	11
MO10136	41.7			59.5	32.5	13.1	39	1.7	133	05/13	3
MO10501	36.4	44.8	49.4	56.7	31.5	13.2	43	1.8	134	05/14	20
MO10534	35.9			58.1	33.1	12.8	38	3.3	132	05/12	13
MO11489	38.0	41.2		57.9	31.8	13.0	36	1.0	134	05/14	26
MO11769	37.9	47.3 *		57.2	31.6	12.6	35	1.6	132	05/12	14
MO11785	39.0	52.1 *		60.1	33.2	12.9	38	5.7	131	05/11	18
Pike	32.4	40.2	46.3	56.5	31.0	13.0	39	3.5	134	05/14	28
Pioneer 2548	51.7 **	52.2 *		58.1	33.3	12.6	37	0.8	133	05/13	0
Pioneer 2551	46.1	41.6	47.6	56.8	30.7	12.6	38	0.9	135	05/15	14
Pioneer 2555	44.6	51.4 *	54.8 *	56.8	39.1	13.2	39	2.0	133	05/13	1
Reeds 1002	36.7			53.5	32.6	12.0	36	2.2	128	05/08	10
Reeds 1004	35.3	44.0	45.2	58.8	38.1	13.1	41	1.4	133	05/13	14
Reeds 1008	35.6	46.9 *	51.7 *	55.9	32.4	12.9	40	1.9	136	05/16	3
Rosen	35.7	46.4 *	48.9	56.7	35.8	12.4	40	1.5	133	05/13	15
Saluda	36.7	50.9 *	55.3 **	59.2	32.7	12.9	36	2.0	133	05/13	0
TAM 107 (hard check)	35.4	40.9	44.1	56.3	34.8	12.1	36	5.7	127	05/07	1
Terra SR200	33.8			53.2	33.7	11.5	37	2.5	128	05/08	4
Terra SR201	35.6	48.8 *		52.7	31.5	12.4	38	3.4	127	05/07	25
Terra SR86	36.0	47.3 *	51.5 *	56.4	31.4	12.8	40	2.5	134	05/14	20
Terra SR87	37.3	39.5	44.8	57.5	32.8	13.1	39	2.7	133	05/13	13
Tyler	34.0	48.1 *	51.9 *	56.0	33.6	13.1	40	0.7	136	05/16	0
Wakefield (VA85-52-34)	41.0			57.6	41.1	13.3	40	0.5	135	05/15	0
Average	35.4	44.7	47.4	56.7	33.3	13.0	38	2.1	133	05/13	10
LSD (p=0.05)	4.7	6.7	4.9	1.8	2.4	0.4	2	1.8	1		10
CV%	9.5	15.2	13.0	2.3	5.1	2.4	3.7	59.7	1		74

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 11. Grain yields¹ of soft red winter wheats tested across the northern (Columbia, Grundy County and Novelty), southeast (Bertrand and Portageville) and southwest (Lamar and Mt. Vernon) regions of Missouri during 1990. Varieties listed alphabetically.

Variety	Northern Region			Southeast Region			Southwest Region		
	90	89-90	88-90	90	89-90	88-90	90	89-90	88-90
	----- bushels/acre -----								
ABI 85-81	51.8			48.5			47.5		
Adder	39.4	43.9	45.3	35.8	50.8	53.1	31.6	40.3	39.7
Agripro Cherokee (ABI 85*1)	40.0			40.8			33.2		
Agripro Hancock	41.6	49.7	51.9	43.5	60.0	62.0	40.6	47.0	50.1
Agripro Lincoln	39.6	44.8	49.1	37.3	51.9	55.0	37.5	45.8	44.5
Agripro Traveller	43.2	49.4	48.1	39.3	47.4	54.2	38.8	49.3	50.5
Agripro Twain	42.3	52.1	54.8 *	35.1	53.6	55.3	37.1	49.1	49.6
AR26-415	42.4			42.9	57.6		40.2		
Arkan (hard check)	25.8	34.8	41.2	36.9	48.0	51.8	23.6	34.6	35.6
Arthur 71	33.3	34.6	39.6	31.6	44.4	47.4	31.1	38.5	37.1
Auburn	43.6	44.3	46.9	41.5	47.8	49.3	33.8	36.4	35.1
Becker	43.9	40.3	47.9	39.9	55.6	58.5	45.7	53.8	52.7
Caldwell	35.9	41.3	48.0	33.5	45.3	51.6	31.8	44.2	45.7
Cardinal	48.6	47.9	51.2	48.9	61.2 *	62.8	43.4	54.2	54.5
Clark	42.0	43.2	46.6	36.9	52.0	54.7	31.0	48.7	50.7
Coker 833	42.7			47.1			42.5		
Coker 916	43.6	45.7	49.6	35.1	51.1	56.8	39.2	51.3	52.8
Coker 9803 (X8633)	47.0			34.4			46.7		
Coker 9877	40.4	48.7	48.4	40.4	52.0	58.0	33.3	49.3	51.4
Compton	39.2	41.4	45.1	32.0	47.4	51.6	39.4	44.9	44.9
Dynasty	38.3	45.5	51.0	32.7	51.8	54.6	35.4	45.5	45.8
FFR 525	56.4 *	53.9		41.5	58.4		49.1	55.7	
FFR 544	36.5			36.0			40.6		
Florida 302	47.3	53.6	53.6	38.3	49.7	57.6	32.3	47.7	49.0
Florida 303	35.0	35.5	33.9	24.6	42.2	50.2	29.4	47.4	50.6
Hartzler 2200	51.1	50.8		44.4	57.6		50.8	57.4 *	
Hartzler 2300	38.1			37.7			35.0		
HybriTech Pacer	44.0	44.5		44.7	57.2		40.3	52.4	
IL82-3298	41.8	49.2		44.9	57.9		44.9	53.5	
Keiser	37.7	41.2	44.4	44.0	54.3	57.2	30.6	43.4	44.2
KY83-38	45.8	49.5		40.4	54.1		42.3	52.6	
Madison (VA85-52-24)	50.2			44.8			47.2		
Merschman Bintee V	45.9			42.5			40.3		
Merschman Genie IV	38.5			37.1			34.3		

Merschman Julie III	49.7	52.8		42.8	56.8		46.4	55.2	
Merschman Katie IV	36.3	39.3	47.6	38.6	51.0		31.6	48.8	51.1
Merschman Katie V	43.1			40.6			39.8		
MFA Dominator	43.4			39.7			34.0		
MFA EXP 6560	50.6			46.9			50.3		
MFA Sundance	47.5			43.5			44.1		
Missouri 8841 Brand	44.9	47.5		36.7	48.8		32.8	41.9	
MO9965sb	50.5			44.5			44.1		
MO10136	56.9 *			41.5			49.0		
MO10501	47.2	50.0	53.6	41.6	53.9	59.3	41.9	51.2	52.3
MO10534	42.6			38.2			37.5		
MO11489	51.8	49.6		41.4	51.3		37.8	47.9	
MO11769	50.7	48.3		40.4	49.9		41.7	52.3	
MO11785	39.4	43.0		41.0	54.3		40.2	55.6	
Pike	43.2	44.0	50.5	39.2	49.4	55.7	31.3	42.8	45.6
Pioneer 2548	61.2 **	64.0 **		54.1 **	64.8 **		58.8 **	59.9 **	
Pioneer 2551	49.3	52.1	56.6 *	41.6	54.7	58.9	41.7	46.7	47.9
Pioneer 2555	48.7	53.7	57.6 *	48.0	63.0 *	66.7 **	47.7	57.3 *	58.4 **
Reeds 1002	42.6			39.0			41.4		
Reeds 1004	41.1	43.8	47.3	40.4	50.5	53.4	40.2	49.4	47.6
Reeds 1008	46.1	48.6	54.1	40.9	53.2	59.2	46.1	52.7	52.1
Rosen	43.2	43.5	47.6	43.0	52.0	55.9	40.9	49.5	49.1
Saluda	47.7	52.9	56.4 *	41.0	57.5	61.0	46.8	54.4	51.8
TAM 107 (hard check)	41.6	51.5	57.8 **	42.9	55.7	59.1	37.5	45.7	47.4
Terra SR200	46.6			42.0			39.4		
Terra SR201	36.2	41.1		37.8	49.4		29.9	49.8	
Terra SR86	40.7	47.7	52.5	39.6	52.2	58.1	40.5	49.5	49.6
Terra SR87	43.0	47.8	52.0	40.3	50.8	56.2	37.4	43.7	45.8
Tyler	44.7	47.1	52.4	41.5	56.5	60.5	45.1	52.6	52.5
Wakefield (VA85-52-34)	49.7			44.8			48.7		
Average	43.9	46.7	49.5	40.4	52.9	56.3	39.8	48.9	48.0
LSD (p=0.05)	4.6	4.0	3.5	4.7	3.7	3.1	4.2	4.1	3.2
CV%	13.0	15.3	14.3	11.8	10.2	9.7	10.8	12.2	11.6

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 12. Performance of hard red winter wheats averaged across Columbia, Mt. Vernon and Grundy County locations in Missouri during 1990. Varieties listed alphabetically.

Variety	Statewide Grain Yield ¹			Test Weight	Grain Moisture	Plant Height	Lodging Score ²	Powdery Mildew ³
	90	89-90	88-90					
	----- bushels/acre -----			- lb/bu -	- % -	- inches -		- % -
Agripro Sierra	38.0	40.6		52.6	11.4	36	0.7	18
Arkan	32.0	33.9	41.0	52.8	11.1	36	2.8	18
Caldwell (soft check)	35.2	38.8	44.9 *	51.4	11.3	38	1.5	21
Centura	31.1	36.9	42.9	53.7	11.7	42	3.8	24
Century	43.3 *	40.3	45.7 *	53.4	11.5	40	4.1	0
Chisholm	39.6	38.8	44.9 *	54.9	12.2	36	2.1	23
Cody	29.9	32.2	38.7	53.8	11.8	40	2.0	35
Dodge	23.1	26.8	34.4	52.5	11.6	36	1.0	47
Karl	43.5 *	38.3	44.0	55.6	11.6	34	2.8	12
Merschman Meggie III	27.6	35.7	39.7	49.5	11.1	38	2.0	20
Newton	31.1	34.1	40.0	53.6	11.7	40	2.2	26
Norkan	26.5	28.5	36.7	52.7	11.7	38	1.3	37
OK84287	36.3			54.0	12.1	36	4.7	32
Pioneer 2163	44.0 *			52.9	11.5	36	1.0	6
Quantum 574 (hybrid)	43.1 *	40.1		54.3	11.5	39	2.5	26
Quantum 577 (hybrid)	42.7 *			53.8	11.6	39	2.5	21
Redland	36.5	37.8	44.5	52.7	11.5	41	2.8	11
Siouxland	43.9 *	38.5	42.6	55.2	11.6	43	1.4	1
TAM 105	35.3			52.7	11.6	39	1.2	16
TAM 107	45.2 **	44.0 **	46.9 **	53.6	11.2	35	2.5	0
TAM 108	34.1			50.7	11.4	39	3.2	18
TAM 200	31.9			54.2	11.9	35	4.6	0
TAM 201	29.0			48.2	11.5	32	2.7	18
Terra 151	25.7	30.2		53.2	11.9	36	4.3	23
Terra 152	39.4	40.9		54.3	12.3	37	3.3	23
Average	35.5	36.5	41.9	53.0	11.6	38	2.5	19
LSD (p=0.05)	3.6	2.7	2.2	1.1	0.3	1	0.9	5
CV%	12.5	13.2	11.5	2.7	3.0	3	44.9	32

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f. sp. *tritici*) visually assessed to estimate percent infected leaf area at Columbia and Mt Vernon locations only.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 13. Performance of hard red winter wheats tested at Columbia, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	Grain Moisture	Plant Height	Lodging ² Score	Winter Survival	Heading Date		Powdery Mildew ³
	90	89-90	88-90						Julian	Calendar	
	bushels/acre			- lb/bu -	- % -	- inches -		- % -			- % -
Agripro Sierra	22.6	44.9		47.4	10.8	35	0.9	94	138	05/18	19
Arkan	20.1	41.4	48.5	46.7	11.0	35	1.8	96	134	05/14	23
Caldwell (soft check)	26.4	41.3	50.4	47.7	10.9	39	2.2	93	136	05/16	27
Centura	16.2	40.2 *	47.2	48.7	11.0	40	2.2	96	142	05/22	28
Century	25.9	50.8	54.9 **	50.4	11.2	39	3.8	93	137	05/17	0
Chisholm	28.6	46.1	51.0	52.0	11.9	35	1.6	91	132	05/12	35
Cody	19.7	36.7	43.0	50.4	11.1	39	1.7	93	141	05/21	40
Dodge	13.2	30.2	38.6	47.9	10.8	35	1.0	98	139	05/19	60
Karl	33.7 *	47.8 *	51.5	53.7	11.2	32	3.6	95	133	05/13	20
Merschman Meggie III	15.5	41.4	47.3	45.4	10.7	37	2.1	94	138	05/18	25
Newton	16.0	36.0	43.5	47.9	11.1	39	1.6	97	140	05/20	38
Norkan	11.7	27.9	36.7	48.5	10.9	36	1.5	96	142	05/22	45
OK84287	22.4			51.8	11.6	34	4.0	96	133	05/13	50
Pioneer 2163	28.4			48.9	10.9	35	1.2	93	136	05/16	11
Quantum 574 (hybrid)	32.3 *	47.1 *		51.5	11.1	36	3.3	98	135	05/15	39
Quantum 577 (hybrid)	35.3 **			51.7	11.3	36	2.9	97	135	05/15	37
Redland	19.4	38.9	44.6	48.8	11.2	41	4.2	92	147	05/27	21
Siouxland	32.2 *	45.6	49.0	53.0	11.1	41	1.9	93	136	05/16	0
TAM 105	23.3			49.6	11.2	39	1.1	91	140	05/20	29
TAM 107	30.6 *	51.0 **	57.1 **	51.4	10.8	34	3.7	94	129	05/09	0
TAM 108	23.2			47.0	10.8	38	1.5	90	142	05/22	23
TAM 200	21.7			52.2	11.7	34	3.6	89	136	05/16	0
TAM 201	20.8			44.2	11.2	31	2.0	73	133	05/13	22
Terra 151	19.2	38.0		50.0	11.3	35	5.2	96	135	05/15	36
Terra 152	28.8	46.5		50.4	11.6	36	1.8	81	134	05/14	30
Average	23.5	41.8	47.4	49.6	11.1	36	2.4	93	137	05/17	26
LSD (p=0.05)	5.1	4.2	3.4	2.3	0.5	2	1.0	4	1		8
CV%	15.8	10.2	8.8	3.4	3.0	4	29.2	3	<1		22

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f.sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 14. Performance of hard red winter wheats tested within Grundy County, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	Grain Moisture	Plant Height	Lodging Score ²
	90	89-90	88-90				
	bushels/acre			- lb/bu -	- % -	- inches -	
Agripro Sierra	41.6	32.5		52.3	11.1	38	1.3
Arkan	39.1	27.7	37.0	53.3	11.2	37	2.6
Caldwell (soft check)	41.4	35.0 *	42.3 *	50.6	11.5	39	1.8
Centura	36.8	28.9	39.0 *	53.7	11.8	44	3.4
Century	54.7 *	31.1	38.4	52.5	11.3	40	4.3
Chisholm	54.2 *	31.8	39.6 *	56.8	12.4	37	2.1
Cody	36.5	25.7	36.6	52.5	11.8	41	3.1
Dodge	28.4	20.9	28.7	52.4	11.8	38	2.1
Karl	54.7 *	30.7	40.9 *	56.0	11.7	36	2.4
Merschman Meggie III	29.4	25.6	33.3	49.4	11.3	40	1.8
Newton	41.2	30.1	37.9	54.5	11.7	41	2.2
Norkan	33.1	24.4	32.6	52.4	11.9	38	1.8
OK84287	50.9			54.8	12.3	38	3.3
Pioneer 2163	55.0 *			53.5	11.5	39	1.4
Quantum 574 (hybrid)	52.0 *	32.5		54.2	11.5	40	2.6
Quantum 577 (hybrid)	49.7			53.7	11.8	40	2.4
Redland	41.3	28.4	39.9 *	51.5	11.2	42	4.0
Siouxland	56.7 *	34.4 *	41.6 *	54.9	11.5	45	1.2
TAM 105	39.1			50.5	11.5	40	1.5
TAM 107	56.7 **	38.8 **	42.3 **	53.0	11.3	37	1.5
TAM 108	34.4			49.9	11.7	41	3.8
TAM 200	36.4			52.8	11.9	37	3.5
TAM 201	32.4			48.7	12.0	33	2.5
Terra 151	22.9	22.7		52.1	12.4	37	4.4
Terra 152	47.9	36.3 *		55.2	12.8	39	3.3
Average	42.7	29.9	37.9	52.8	11.7	39	2.6
LSD (p=0.05)	5.3	4.7	4.2	1.2	0.6	2	1.0
CV%	9.0	16.0	13.9	1.6	3.8	3	29.4

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

Table 15. Performance of hard red winter wheats tested at Mt. Vernon, Missouri during 1990. Varieties listed alphabetically.

Variety	Grain Yield ¹			Test Weight	Grain Moisture	Plant Height	Lodging ² Score	Heading Date		Powdery ³ Mildew
	90	89-90	88-90					Julian	Calendar	
	----- bushels/acre -----			- lb/bu -	- % -	- inches -				- % -
Agripro Sierra	48.7 *	44.5 *		57.7	12.1	36	0.5	135	05/15	30
Arkan	35.3	32.7	37.3	56.2	11.2	37	3.5	129	05/09	30
Caldwell (soft check)	37.4	40.0	42.2	55.4	11.5	38	0.9	134	05/14	25
Centura	41.9	41.5 *	42.5	59.2	12.4	42	5.7	135	05/15	28
Century	52.0 **	38.9	43.9	58.6	12.1	40	3.2	134	05/14	0
Chisholm	35.5	38.5	44.1	55.9	12.2	37	2.3	128	05/08	22
Cody	32.1	34.2	36.4	57.3	12.3	41	1.3	135	05/15	41
Dodge	29.7	29.4	35.8	57.1	12.2	37	0.3	136	05/16	45
Karl	42.0	36.3	39.7	56.9	11.8	35	2.3	127	05/07	14
Merschman Meggie III	33.9	40.0	38.5	53.9	11.4	37	2.0	135	05/15	21
Newton	38.1	36.1	38.6	58.0	12.2	39	2.9	135	05/15	28
Norkan	34.3	33.2	40.7	57.2	12.3	40	0.7	136	05/16	40
OK84287	37.0			55.5	12.2	37	7.0	128	05/08	21
Pioneer 2163	49.8 *			56.8	12.1	35	0.5	132	05/12	5
Quantum 574 (hybrid)	44.4	40.6		57.3	12.0	41	1.3	132	05/12	24
Quantum 577 (hybrid)	44.8			56.1	11.6	40	3.0	131	05/11	18
Redland	49.9 *	46.1 **	48.9 **	57.6	12.3	41	0.5	138	05/18	10
Siouxland	42.9	35.4	37.1	58.2	12.2	43	0.6	131	05/11	3
TAM 105	45.7			57.6	12.1	38	0.8	135	05/15	16
TAM 107	48.2 *	42.0 *	41.2	56.1	11.6	34	2.6	127	05/07	1
TAM 108	42.1			54.9	11.6	38	4.5	136	05/16	23
TAM 200	38.6			58.4	12.1	35	6.6	132	05/12	1
TAM 201	31.7			51.6	11.3	32	3.7	130	05/10	22
Terra 151	32.1	30.0		56.5	11.8	37	3.2	133	05/13	20
Terra 152	41.9	39.9		57.0	12.5	37	4.6	132	05/12	22
Average	40.4	37.7	40.5	56.7	12.0	38	2.6	133	05/13	20
LSD (p=0.05)	4.5	5.2	4.0	1.2	0.3	2	1.8	1		7
CV%	8.0	14.1	12.2	1.6	1.7	3	51.8	<1		24

¹ Yields are based on 60 pound per bushel test weight adjusted to 13.0 percent moisture content.

² Lodging scores of 0 to 9 represent none to total lodging, respectively.

³ Powdery mildew (*Erysiphe graminis* f. sp. *tritici*) visually assessed to estimate percent infected leaf area of crop canopy.

** Indicates highest yielding variety within a column.

* Indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05).

