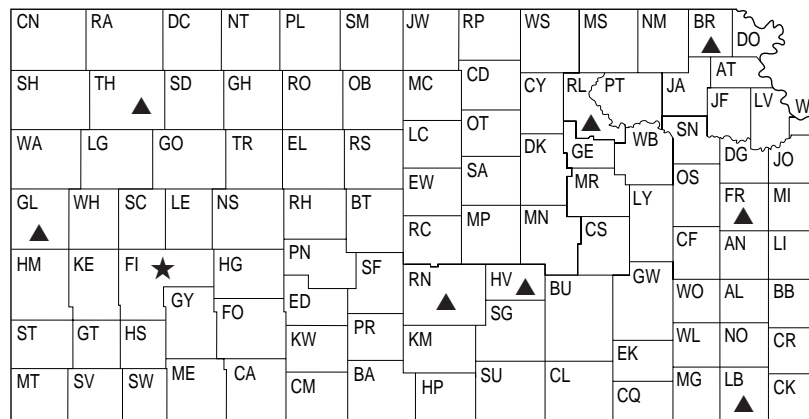




1995
KANSAS PERFORMANCE TESTS WITH
SPRING OAT
VARIETIES



▲ dryland ★ irrigated

Report of Progress 743

Agricultural Experiment Station * Kansas State University, Manhattan * Marc A. Johnson, Director

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1995 KANSAS PERFORMANCE TESTS WITH SPRING OAT VARIETIES

INTRODUCTION

The number of acres utilized for spring oats production is small in comparison to the acreage used for the major crops in Kansas. However, this does not limit the potential importance of spring oats on individual producer's farms. Spring oats often are used in crop rotations or when winter wheat acreage is restricted or winter-damaged. Either grain or forage production from spring oats can make a significant contribution to a crop or livestock enterprise.

Spring oat production figures for 1995 and preceding years are given in Table 1. Oat production for 1995 at 3.8 million bushels was substantially lower than the 5.5 million bushels produced in 1994. The lower production was a combined result of lower acreage and slightly lower yields. In 1995, only 65% of the planted acres were harvested.

Table 1. Acreage, yield, and total production of spring oats in Kansas, 1975-1995 (Crops Report; Kansas Agricultural Statistics, August 11, 1995).

Year	Total Acres (1,000's)		Yield bu/acre	Total Production 1,000 bu
	Sown	Harvested		
1995	130	85	45	3,825
1994	160	120	46	5,520
1993	70	30	34	1,020
1992	200	140	56	7,840
1991	160	110	53	5,830
1990	160	120	55	6,600
1975-89	213	153	46	7,040
1975-95	194	138	47	6,487

1995 PERFORMANCE TESTS

The Kansas Agricultural Experiment Station conducts trials of various crops at several locations throughout the state to provide agronomic information on new and established varieties and hybrids under current growing conditions. Table 2 lists the oat varieties included in 1995 Kansas tests. Because very few oat varieties are developed by private companies, most of

the varieties in the tests have been developed and released by public universities or agricultural experiment stations.

Table 2. Spring oat varieties grown in 1995 Kansas performance tests.

Variety	State	Year Released	Variety	State	Year Released
Armor	OH	1991	Larry*	IL	1980
Bates*	MO	1977	Ogle*	IL	1980
Brawn	IL	1993	Prairie	WI	1992
Dane	WI	1990	Premier*	MN	1990
Don*	IL	1985	Settler	SD	1989
Hazel	IL	1985	Starter	MN	1986
Horicon	WI	1990			

* Certified seed produced in Kansas in 1995.

Spring oat tests have been conducted at various locations for several years. Locations of 1995 spring oat test sites are shown on the map on the front cover. Site descriptions, management practices, and growing conditions are summarized in Table 3. The location codes listed in parentheses after each location name are used as column headers in the data tables.

Performance of specific varieties in 1995 can best be determined by examining Tables 4 through 8. The information in these tables is derived from replicated varietal comparisons at the sites listed in Table 3. Yields are reported in Table 4 as bushels per acre (32 pounds per bushel) adjusted to a moisture content of 12.5 % and as percentages of the test averages to speed recognition of highest yielding entries (more than 100%, the test average).

Table 6 provides yield performance of most entries over several years at the different testing locations. Measurements of characteristics often contributing to yield performance are shown in Table 5 (test weights and harvest moisture), Table 7 (maturity differences), and Table 8 (lodging and shattering for locations where varietal differences in these characters were noted).

Table 3. Oat Performance Test site descriptions, management, and conditions in 1995.

County and cooperators	Site, nearest town, and location code	Dates of planting & harvest	Soil type and previous crop	Fertilizers applied, lbs/a			Seeding rate and row spacing
				N	P	K	
BROWN Brian Marsh Conditions:	Cornbelt Expt Field Powhattan (BR)	2/24 7/14	Grundy silty clay loam Soybean, 1994	40	---	---	90 lb/a 8" row spacing
RILEY K. Roozeboom Conditions:	Agronomy North Farm Manhattan (RL)	2/22 7/10	Ivan silt loam Oats, 1994	30	---	---	64 lb/a 10" row spacing
FRANKLIN Keith Janssen Conditions:	EC KS Expt Field Ottawa (FR)	2/23 7/14	Woodson silt loam Soybean, 1994	66	26	13	64 lb/a 7" row spacing
LABETTE Jim Long Conditions:	SE Agric Res Ctr Parsons (LB)	2/23 7/7	Parsons silt loam Corn, 1994	40	48	48	65 lb/a 7" row spacing
HARVEY Mark Claassen Conditions:	Harvey Co Expt Fld Hesston (HV)	2/24 7/10	Ladysmith silty clay loam Oats, 1994	86	24	---	60 lb/a (approx.) 7" row spacing
RENO William Heer Conditions:	SC Expt Field Hutchinson (RN)	2/23 7/7	Ost silt loam Wheat, 1994	100	40	---	64 lb/a 8" row spacing
THOMAS Pat Evans Conditions:	NW Res-Ext Ctr Colby (TH)	2/27 7/26	Keith silt loam Wheat, 1993	40	---	---	65 lb/a 12" row spacing
GREELEY Alan Schlegel Conditions:	SW Res-Ext Ctr Tribune (GR)	3/16 7/27	Ulysses silt loam Sorghum, 1993	45	---	---	64 lb/a 10" row spacing
FINNEY Irr Merle Witt Conditions:	SW Res-Ext Ctr Garden City Unit (FN)	3/16 7/17	Keith silt loam Wheat, 1993	50	---	---	70 lb/a 10" row spacing

1994 - 1995 SUMMARIES

Tables 9-12 present performance information averaged over the past two growing seasons. This type of analysis was possible because the same entries were in all tests over the 2 years. For these summaries, the tests were grouped into regions: Northeast = Brown and Riley Co. tests; Southeast = Franklin and Labette Co. tests; Central = Harvey and Reno Co. tests; and West = Thomas, Greeley, and Finney Co. tests. The "State" column presents averages over all tests for the past 2 years. In addition to the summary statistics described below, each column in these tables also includes the number of experiments that contributed to the averages presented in that column.

At the bottom of each column of replicated data in the various tables is the L.S.D. (Least Significant

Difference). Unless two varieties differ by more than the L.S.D. given, little confidence can be placed in one being superior to the other. The use of the L.S.D. is intended to reduce the chance of overemphasizing small differences in yield or other characteristics. Small variations in soil structure, fertility, water-holding characteristics, and other test-site characteristics can cause considerable yield variation among plots of the same variety grown only a short distance apart.

Another statistical parameter is the coefficient of variation (C.V.) shown at the bottom of most columns. This figure, if properly interpreted, can be used to estimate the degree of confidence one may have in the data presented. In this testing program, C.V.'s below 10% generally indicate reliable, uniform data, whereas C.V.'s from 11 to 15% usually indicate less desirable but generally useful data for the rough performance comparisons desired from these tests.

Table 4. Yield from 1995 Kansas Spring Oat Performance Tests.

Cultivar	Test Location										Test Location									
	BR	RL	FR	LB	HV	RN	TH	GR	FN	Avg	BR	RL	FR	LB	HV	RN	TH	GR	FN	Avg.
	bushels per acre at 12% moisture										percent of test average									
Armor	67	50	26	18	26	44	92	41	62	55	97	97	85	81	81	96	102	79	87	93
Bates	83	63	41	27	36	58	107	68	77	71	121	123	133	125	111	126	118	132	109	121
Brawn	73	62	51	30	49	40	99	67	84	68	107	121	164	138	153	86	109	130	118	116
Dane	52	54	27	14	41	48	86	44	73	55	75	106	86	66	129	104	95	86	102	94
Don	86	67	42	19	42	41	92	54	76	64	125	131	133	87	131	89	101	104	106	110
Hazel	52	48	28	16	31	38	71	62	64	53	76	94	89	75	95	82	79	120	90	90
Horicon	56	40	21	10	27	49	79	41	70	50	82	78	69	47	83	106	87	80	99	86
Larry	64	36	15	17	18	48	88	54	71	53	93	71	48	77	57	105	97	104	100	91
Ogle	72	68	40	44	42	45	114	55	61	65	105	131	128	200	131	97	126	107	85	110
Prairie	65	60	35	26	33	50	102	49	68	62	95	117	111	118	103	109	113	96	95	105
Premier	75	39	29	25	24	52	98	56	72	60	108	76	95	112	74	113	108	107	101	102
Settler	83	53	23	23	29	46	79	39	77	58	120	102	74	104	90	101	88	75	108	98
Starter	67	28	27	16	20	39	71	42	70	49	97	54	86	72	62	85	78	80	98	84
Test Average	69	51	31	22	32	46	91	52	71	59	69	51	31	22	32	46	91	52	71	59
C.V. (%)	8	11	13	20	7	21	5	11	10	11	8	11	13	20	7	21	5	11	10	11
L.S.D.(0.05)**	7	7	5	5	3	NS	6	7	8	3	10	13	16	24	9	NS	6	13	12	5

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 5. Test weight and moisture from 1995 Kansas Spring Oat Performance Tests.

Cultivar	Test Location										Test Location									
	BR	RL	FR	LB	HV	RN	TH	GR	FN	Avg	BR	RL	FR	LB	HV	RN	TH	GR	FN	Avg.
	test weight, pounds per bushel										% moisture									
Armor	33	26	30	21	29	37	35	31	25	30	19	15	10	9	9	10	10	12	13	12
Bates	37	31	36	28	38	35	38	37	31	34	14	13	10	10	9	11	10	10	11	11
Brawn	35	29	33	22	35	35	35	35	27	32	15	13	10	10	9	10	10	9	11	11
Dane	35	28	31	23	35	35	35	33	27	31	15	15	11	11	9	10	10	12	19	12
Don	38	30	34	22	35	36	38	38	32	34	14	12	10	11	9	10	10	10	10	11
Hazel	35	29	35	23	33	38	36	36	27	32	16	13	10	8	9	10	10	10	11	11
Horicon	32	28	32	23	33	37	33	33	27	31	20	20	11	9	9	10	10	12	18	13
Larry	37	27	32	23	33	37	35	35	27	32	14	14	13	12	9	10	10	10	10	11
Ogle	34	28	31	23	32	36	35	33	25	31	17	13	10	9	9	10	10	10	15	11
Prairie	34	26	30	21	29	34	34	34	25	30	17	13	11	7	8	9	10	11	12	11
Premier	38	29	34	24	34	37	38	37	30	33	15	17	11	11	9	10	10	11	14	12
Settler	36	30	34	24	35	35	37	34	30	33	16	16	10	10	9	9	10	10	12	11
Starter	36	28	33	24	35	37	37	35	28	33	14	14	10	13	9	10	10	11	12	11
Test Average	35	28	33	23	33	36	36	35	28	32	16	14	10	10	9	10	10	11	13	11
C.V. (%)	4	3	3	5	3	6	2	2	4	4	14	7	11	25	2	8	2	12	13	12
L.S.D.(0.05)**	2	1	1	1	1	NS	1	1	1	1	3	1	1	NS	0	NS	0	2	2	1

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 6. Period-of-years yield (percent of test average) from Kansas Spring Oat Performance Tests.

Cultivar	Brown				Riley			Franklin				Labette			
	95	94	92	91	95	94	91	95	94	92	91	95	94	93	92
Armor	97	92	122	--	97	104	--	85	86	112	--	81	106	97	87
Bates	121	92	85	107	123	100	104	133	95	89	100	125	106	172	84
Brawn	107	93	--	--	121	108	--	164	108	--	--	138	81	--	--
Dane	75	114	108	113	106	113	103	86	100	103	108	66	105	149	128
Don	125	127	104	128	131	125	130	133	129	95	103	87	96	107	79
Hazel	76	94	98	90	94	84	94	89	88	104	95	75	94	27	84
Horicon	82	96	106	90	78	89	78	69	90	106	90	47	82	100	124
Larry	93	89	93	99	71	104	117	48	104	89	111	77	128	74	109
Ogle	105	82	104	105	131	93	117	128	109	115	112	200	80	122	109
Prairie	95	102	--	--	117	100	--	111	112	--	--	118	101	--	--
Premier	108	103	86	103	76	101	80	95	106	90	91	112	113	94	101
Settler	120	103	--	--	102	92	--	74	92	--	--	104	106	--	--
Starter	97	113	95	88	54	107	77	86	114	96	91	72	103	58	95
Average	69	58	80	72	51	63	57	31	48	86	69	22	46	42	65
C.V. (%)	8	8	--	--	11	5	--	13	12	--	--	20	11	--	--
L.S.D.(0.05)	10	9	23	11	13	6	30	16	16	14	9	24	15	29	23

Table 6. (continued).

Cultivar	Harvey				Reno				Thomas				Finney			
	95	94	92	91	95	94	93	92	95	94	92	91	95	94	93	92
Armor	81	94	134	--	96	96	102	--	102	107	92	--	87	88	108	122
Bates	111	119	132	110	126	115	108	122	118	104	125	109	109	107	101	109
Brawn	153	88	--	--	86	124	--	--	109	107	--	--	118	85	--	--
Dane	129	94	51	103	104	80	125	110	95	95	94	84	102	106	110	75
Don	131	115	93	102	89	124	113	106	101	103	91	111	106	118	113	116
Hazel	95	90	83	96	82	110	106	125	79	107	--	100	90	96	98	95
Horicon	83	90	98	92	106	89	105	126	87	94	95	110	99	97	99	96
Larry	57	121	90	97	105	86	110	100	97	112	108	95	100	105	97	96
Ogle	131	105	100	93	97	104	125	116	126	116	105	120	85	95	90	111
Prairie	103	94	--	--	109	121	--	--	113	122	--	--	95	92	--	--
Premier	74	101	127	102	113	95	88	106	108	100	90	94	101	110	98	121
Settler	90	102	--	--	101	99	--	--	88	85	--	--	108	88	--	--
Starter	62	89	92	106	85	58	71	87	78	89	--	92	98	113	87	86
Average	32	62	63	46	46	56	49	57	91	54	67	93	71	85	73	96
C.V. (%)	7	5	--	--	21	10	--	--	5	8	--	--	10	8	--	--
L.S.D.(0.05)	9	6	26	14	NS	12	18	15	6	9	14	14	12	10	NS	12

Table 7. Maturity and height from 1995 Kansas Spring Oat Performance Tests.

Cultivar	Test Location										Test Location									
	BR	RL	FR	LB	HV	RN	TH	GR	FN	Avg	BR	FR	LB	HV	RN	TH	GR	FN	Avg	
	maturity, days earlier or later heading than Bates										height, inches									
Armor	10	9	11	6	8	8	6	7	9	8	35	42	38	38	42	45	42	40	39	
Bates	6/5	6/4	5/28	5/21	6/2	5/26	6/11	6/13	6/12	6/3	39	39	37	37	43	44	41	34	39	
Brawn	6	5	6	5	3	4	3	4	5	4	32	35	36	36	41	42	36	33	34	
Dane	3	1	6	0	2	2	1	4	2	2	36	39	36	37	42	46	40	35	34	
Don	0	1	-1	0	2	2	0	1	1	1	38	39	37	38	42	44	38	34	37	
Hazel	5	4	5	5	4	1	3	4	6	4	34	36	35	37	42	45	38	36	35	
Horicon	9	8	9	7	7	8	5	6	6	7	36	38	37	37	41	46	39	38	37	
Larry	6	5	9	0	5	1	3	4	5	4	34	37	31	36	41	42	37	37	38	
Ogle	9	6	7	3	6	5	5	6	8	6	35	40	39	38	43	48	39	37	36	
Prairie	9	7	10	7	7	5	6	6	9	7	34	39	36	37	42	45	38	37	36	
Premier	6	8	8	4	8	8	5	5	8	7	37	40	37	35	42	47	41	38	39	
Settler	7	8	9	5	9	8	6	6	8	7	37	41	36	38	43	45	43	39	41	
Starter	1	7	7	1	5	2	1	4	2	3	37	36	36	35	41	46	41	36	38	
Test Average	5	5	6	3	5	4	3	4	5	5	35	38	36	37	42	45	39	36	37	
C.V. (%)	13	15	2	5	7	1	4	4	5	5	5	5	6	6	2	3	3	4	4	
L.S.D.(0.05)**	2	2	1	1	1	1	1	1	1	0	2	2	NS	3	1	2	1	2	2	

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 8. Lodging, shattering, and diseases from 1995 Kansas Spring Oat Tests.

Cultivar	Test Location							Test Loc.				Test Location	
	BR	RL	LB	HV	TH	FI	Avg	BR	HV	TH	Avg	LB	HV
	lodging, %							shattering, %				BYD*	
Armor	3	5	70	6	5	0	15	0	1	4	2	5	6
Bates	23	24	74	7	0	43	28	0	3	4	2	6	4
Brawn	10	3	63	1	0	6	14	1	1	4	2	5	4
Dane	14	0	38	1	0	20	12	0	0	3	1	6	7
Don	13	34	78	11	10	79	37	1	2	4	2	6	5
Hazel	14	11	63	11	3	3	17	0	1	3	1	6	5
Horicon	4	1	40	1	0	5	9	0	0	3	1	8	8
Larry	8	9	86	7	5	40	26	1	0	3	1	8	9
Ogle	1	3	61	2	3	0	12	0	0	3	1	4	4
Prairie	6	6	78	14	5	4	19	0	1	3	1	5	3
Premier	9	8	65	6	8	1	16	0	0	3	1	7	9
Settler	19	21	75	8	10	16	25	0	1	3	1	6	8
Starter	23	3	76	8	10	15	22	1	0	3	1	8	8
Test Average	11	10	67	6	4	18	19	0	1	3	1	6	6
C.V. (%)	71	78	20	34	70	94	51	300	79	22	52	20	12
L.S.D.(0.05)**	9	9	16	2	4	20	5	NS	1	NS	0	1	1

* Barley Yellow Dwarf, rated at late flower - early boot; 1 = no disease symptoms, 9 = severe stunting and yellowing.

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 9. Yield from 1994 and 1995 Kansas Spring Oat Performance Tests.

Cultivar	Region					Region				
	N-east	S-east	Central	West	State	N-east	S-east	Central	West	State
	bushels per acre at 12% moisture					percent of average				
Armor	59	32	45	66	52	98	90	93	93	94
Bates	66	41	58	79	63	109	114	118	112	113
Brawn	64	42	53	76	60	106	119	108	108	109
Dane	61	33	48	69	54	101	93	98	98	98
Don	75	40	56	75	63	124	112	114	106	113
Hazel	53	31	46	68	51	87	88	94	95	92
Horicon	51	27	45	64	48	85	75	92	91	87
Larry	53	33	48	73	53	89	92	97	103	96
Ogle	60	43	52	75	59	100	120	106	106	106
Prairie	62	39	52	73	58	103	108	107	103	105
Premier	59	36	47	74	56	98	100	97	105	100
Settler	63	33	48	63	53	105	94	99	90	96
Starter	57	34	37	65	50	95	96	75	93	90
No. Tests	4	4	4	5	17	4	4	4	5	17
Test Average	60	36	49	71	55	60	36	49	71	55
C.V. (%)	8	19	12	8	11	8	19	12	8	11
L.S.D.(0.05)**	3	4	4	3	2	5	12	7	4	3

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 10. Test weight and moisture from 1994 and 1995 Kansas Spring Oat Tests.

Cultivar	Region					Region				
	N-east	S-east	Central	West	State	N-east	S-east	Central	West	State
	test weight, pounds per bushel					% moisture				
Armor	30	27	32	31	30	14	11	10	12	12
Bates	33	32	35	35	34	12	11	9	10	10
Brawn	30	28	32	31	31	13	11	9	10	11
Dane	30	28	32	31	30	13	11	10	12	11
Don	34	30	35	35	34	12	10	9	10	10
Hazel	31	30	34	33	32	13	10	9	10	11
Horicon	30	29	32	31	31	16	10	10	12	12
Larry	31	29	33	33	32	13	12	10	10	11
Ogle	30	28	32	31	31	13	10	10	11	11
Prairie	30	28	31	31	30	13	10	10	11	11
Premier	33	30	34	35	34	14	11	10	11	12
Settler	33	30	34	33	33	14	11	9	10	11
Starter	33	30	34	34	33	13	11	10	10	11
No. Tests	4	4	4	5	17	4	4	4	5	17
Test Average	31	29	33	33	32	13	11	10	11	11
C.V. (%)	3	5	5	2	4	9	14	9	9	10
L.S.D.(0.05)**	1	1	1	0	0	1	1	1	1	0

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 11. Maturity and height from 1994 and 1995 Kansas Spring Oat Performance

Cultivar	Region					Region				
	N-east	S-east	Central	West	State	N-east	S-east	Central	West	State
	maturity, days earlier or later than Bates					height, inches				
Armor	8	6	7	7	7	37	35	37	36	37
Bates	5/31	5/27	5/26	6/6	5/30	37	34	39	34	36
Brawn	5	5	4	5	5	33	32	35	31	33
Dane	1	2	1	2	1	36	34	38	33	35
Don	0	0	1	1	1	36	34	38	33	35
Hazel	4	4	3	3	3	34	32	37	32	34
Horicon	6	6	5	5	6	36	35	37	35	36
Larry	3	3	1	3	3	34	32	36	33	34
Ogle	6	4	5	5	5	37	35	38	34	36
Prairie	7	6	6	7	6	35	34	37	34	35
Premier	6	5	6	4	5	37	34	39	36	36
Settler	7	5	6	6	6	37	35	39	37	37
Starter	2	2	2	2	2	35	34	38	35	35
No Tests	4	4	4	5	17	3	4	4	5	16
Test Average	4	4	4	4	4	36	34	38	34	35
C.V. (%)	5	3	3	3	4	5	6	3	4	5
L.S.D.(0.05)**	1	1	0	0	0	1	1	1	1	1

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Table 12. Lodging and shattering from 1994 and 1995 Kansas Spring Oat Tests.*

Cultivar	Region					Region		
	N-east	S-east	Central	West	State	Central	West	State
	lodging, %					shattering, %		
Armor	3	41	5	3	10	0	3	1
Bates	18	45	17	17	22	2	3	2
Brawn	5	36	0	2	8	1	2	1
Dane	6	22	4	7	8	1	2	1
Don	19	46	7	33	24	2	3	2
Hazel	10	36	4	3	11	1	2	1
Horicon	3	23	4	2	6	0	2	1
Larry	11	50	4	15	16	1	2	1
Ogle	2	35	1	1	7	0	2	1
Prairie	5	45	5	3	11	0	2	1
Premier	7	39	8	7	12	0	3	1
Settler	32	44	5	13	21	1	2	1
Starter	17	45	4	11	16	1	3	2
No. Tests	3	2	3	3	11	2	2	4
Test Average	10	39	5	9	13	1	2	1
C.V. (%)	78	26	158	112	69	81	34	57
L.S.D.(0.05)**	6	9	5	7	3	1	NS	0

* Only tests with significant levels of lodging or shattering were included in the analysis.

** Unless two varieties differ by more than the L.S.D., little confidence can be placed in one being superior.

Excerpts from the UNIVERSITY RESEARCH POLICY AGREEMENT WITH COOPERATING SEED COMPANIES*

Permission is hereby given to Kansas State University to test our varieties and/or hybrids designated on the attached entry forms in the manner indicated on the test announcement. I understand that all results from Kansas crop performance tests belong to the University and to the public and shall be controlled by the University so as to produce the greatest benefit to the public. It is further agreed that the name of the University shall not be used by the company in any commercial advertising either in regard to this agreement or any other related matter.

* This agreement must be signed by an authorized individual before results involving the company's entries can be published by the Experiment Station. Except for the limitation that the name "KANSAS STATE UNIVERSITY" cannot be used in advertising (you may use something like "official state tests" or "state yield trials"), this does not preclude the use of data for advertising, if done in a fair manner.

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NOTE: Trade names are used to identify products. No endorsement is intended, nor is any criticism implied of similar products not named.

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