

# Spring Oats

1990 Missouri Crop Performance

Kephart, McKendry, Tague, Berg

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# 1990 MISSOURI SPRING OATS PERFORMANCE TESTS

K. D. Kephart, A. L. McKendry, D. N. Tague and J. E. Berg

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Authors: Kenneth D. Kephart, Assistant Professor and State Extension Agronomist-Small Grains; Anne L. McKendry, Assistant Professor and Small Grains Breeder; David N. Tague, Senior Research Laboratory Technician; and James E. Berg, Research Specialist, Department of Agronomy, University of Missouri, Columbia.

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# 1990 Missouri Spring Oats Performance Tests

## Introduction

Oat breeding programs are constantly striving towards greater yield potential, improved quality and better host plant resistance to disease and insect pests. The objective of the Missouri Spring Oats 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 oat varieties. This information should help Missouri oat producers select varieties best suited to their particular area and growing conditions. This report summarizes spring oat variety trials conducted throughout Missouri during the 1990 cropping season.

## Variety Testing Procedures

### Entries and Seed Sources

In 1990, 36 spring oats were tested in Missouri. The spring oats were comprised of 15 public varieties and 21 public experimental entries. Named public varieties were acquired from the foundation seed organization of the originating state or from the Missouri Foundation Seed Program. Basic agronomic characteristics of these varieties are summarized in Table 1. In 1990, foundation seed lots of 'Don', 'Hazel' and 'Ogle' spring oats were obtained from the Illinois Foundation Seed program for comparison with lots maintained in Missouri. Numbered entries (e.g. MO7929, SD820045) are experimental lines provided by the foundation seed organization or oat breeder of the originating state.

### Locations

All spring oat entries were planted at Columbia, Novelty and Spickard, Missouri in the spring of 1990. All three locations were harvested in 1990.

### Agronomic Practices

Basic agronomic practices are given in Table 2 by location. All fertilizer applications were preplant applied and incorporated. Phosphorous and potassium applications were based on soil test recommendations provided by the University of Missouri Soil Testing Laboratory located at Columbia.

## Seeding Methods

All entries were seeded at approximately 1.5 million seeds per acre, roughly equivalent to seeding 2.5 to 3 bushels per acre. Actual seeding rates for each entry varied according to seed size of the seed lot provided. Actual seeding rates were calculated from the thousand kernel weights determined for each entry (Table 3). All entries were seeded into conventional seedbeds using an experimental plot drill equipped with double-disk openers.

## 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.

## 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 32 pound per bushel test weight. In addition to yields obtained in 1990, two (1989-90), three (1988-90) and four (1987-90) year averages are provided for entries tested during previous cropping seasons.

### 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.

### 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.

Table 1. Characteristics of 15 public spring oat varieties tested under Missouri conditions during 1990. Varieties are listed alphabetically.

Variety	State of Origin	Year of Release	PVP <sup>1</sup>	Kernel Color	Awn Type	Maturity	Disease Reactions <sup>2</sup>			
							Barley Yellow Dwarf	Crown Rust	Stem Rust	Loose Smut
Bates	Missouri	1977	N	yellow	partially	early-to-mid	S	S	-	MS
Dane	Wisconsin	1990	Y	tan	none	mid-to-late	S	R	S	R
Don	Illinois	1985	N	white	none	early	MS	R	S	R
Grundy	Iowa	1971	N	yellow	none	early	S	S	-	S
Hamilton	Iowa	1989	N	tan	partially	early-to-mid	S	S	-	-
Hazel	Illinois	1985	N	tan	partially	mid-season	R	R	S	S
Horicon	Wisconsin	1989	Y	tan		mid-to-late	MS	R	-	R
Larry	Illinois	1980	N	yellow	partially	early	MR	S	S	S
Noble	Indiana	1973	Y	yellow	none	mid-season	MS	S	S	R
Ogle	Illinois	1980	N	yellow	partially	mid-season	MR	S	S	S
Otee	Illinois	1973	N	white	partially	early	MS	S	S	R
Porter	Indiana	1981	Y	tan	none	late	MR	MR	S	R
Proat	Minnesota	1985	Y	white	partially	late	S	R	-	R
Starter	Minnesota	1990	Y	yellow		early	MS	MS	-	R
Webster	Iowa	1984	N	yellow	awned	mid-season	MS	R	S	MR

<sup>1</sup> "N"=not protected and "Y"=protected by the Federal Plant Variety Protection (PVP) Act of 1970.

<sup>2</sup> "R"=resistant, "MR"=moderately resistant, "MS"=moderately susceptible, "S"=susceptible and "-"=unknown disease reaction.

Table 2. Summary of agronomic practices used on oat performance trials in Missouri during 1990. Nitrogen (N), phosphorus ( $P_2O_5$ ) and potassium ( $K_2O$ ) were preplant applied and incorporated.

Location	Planting Date	N	$P_2O_5$	$K_2O$	Previous Crop
----- pounds per acre -----					
Columbia	April 12	60	45	45	oats/fallow
Novelty	March 22	40	50	100	soybeans
Spickard	April 7	75			sudan grass

### 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 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 oat traits measured during 1990 are presented in Tables 4 through 7. 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 and Results

Excessive rainfall during late March and early April made early planting difficult to achieve, but all three locations were planted by mid-April. More than adequate spring moisture and mild temperatures through late-May produced excellent stands and promoted lush spring growth, but delayed heading and grain development. Oat feeding aphid populations

were sufficient to transmit barley yellow dwarf virus to most varieties, particularly at Columbia. During the last week of May, the weather changed to hot and dry conditions that persisted through most of June and hastened maturity.

In 1990, average oat yields varied from 65.9 bushels per acre (bu/ac) at Novelty to 51.0 bu/ac at Columbia. Average test weights were heaviest at Novelty (32.6 lb/bu), and lightest at Columbia (28.0 lb/bu). The Novelty site was planted earliest, two weeks before the Columbia site. Light rains and snow immediately after planting encouraged uniform germination and rapid emergence. Uniform stands and rapid growth permitted the Novelty site to reach more advanced stages of growth before hot and dry weather developed. Partial avoidance of these stresses probably allowed oats at Novelty to perform better than at the other two sites in 1990. The Spickard location was planted April 7 and experienced the most lodging of all three sites tested. Yields and test weights at Spickard were intermediate to those at Novelty and Columbia.

'MO8368', an experimental line from MU, was the top yielding entry (75.2 bu/ac) across all locations in 1990 and possessed the heaviest test weight (33.3 lb/bu) (Table 4). Ogle was the top yielding commercial variety, averaging 73.7 bu/ac across all locations. Ogle matured earlier than most other varieties tested in 1990 and possesses good resistance to barley yellow dwarf. Averaged across all three locations, no other entries equaled the yield of Ogle and MO8368.

## New Variety Descriptions

Table 3. Seed size of entries and adjusted seeding rates used for establishing spring oat performance testing trials in 1990.

Variety	1,000 Seed Weight	Seed Density	Adjusted <sup>1</sup> Seeding Rate
	- g -	- seeds/lb -	- lb/ac -
B605X Multiline	29.2	15,548	86
Bates	29.1	15,601	86
D226X Multiline	28.1	16,157	83
Dane	30.6	14,837	91
Don	29.9	15,184	88
Don (IL Foundation)	34.1	13,314	101
Grundy	24.8	18,306	73
Hamilton	33.9	13,392	96
Hazel	30.1	15,083	89
Hazel (IL Foundation)	32.8	13,841	97
Horicon	26.7	17,003	79
IAX933-11-2	28.2	16,099	83
IL81-1882	32.6	13,926	96
IL82-2070	36.6	12,404	108
IL83-8037-1	24.4	18,607	72
Larry	33.6	13,512	99
MO7399	32.1	14,143	95
MO7929	31.4	14,459	93
MO7941	21.3	21,315	63
MO8054	31.3	14,504	93
MO8139	30.7	14,788	91
MO8236	31.9	14,232	94
MO8291	30.0	15,133	89
MO8368	25.9	17,529	77
ND810104	26.1	17,395	77
Noble	27.5	16,509	81
Ogle	30.7	14,788	91
Ogle (IL Foundation)	31.3	14,505	93
Otee	25.5	17,803	75
Pd7869D1-5-3-2-10	32.0	14,188	95
Porter	26.6	17,068	79
Proat	25.5	17,804	75
SD820045	27.5	16,509	81
Starter	31.1	14,598	92
Webster	30.8	14,740	91
WIX5229-1	26.3	17,262	78

<sup>1</sup> Adjusted to seed 1.5 million seeds per acre for each entry.

### Dane Spring Oats

'Dane' spring oats was developed by the Wisconsin Agricultural Experiment Station and released in 1990. Dane is described as an early maturing type, but observed maturation of Dane in Missouri indicate it is later than both Ogle and Hazel at these latitudes. Straw strength and lodging resistance is equal to that of Ogle. Dane possesses excellent resistance to crown rust (*Puccinia coronata* Corda.), but is susceptible to barley yellow dwarf. Across all locations in 1990, Dane yields were not equal to those of Ogle, but were greater than the average of all varieties tested in Missouri during 1990 (Table 4). Pending final approval, exclusive ownership and distribution of Dane spring oats by the Wisconsin Agriculture Experiment Station is protected under the Title V option the Federal Plant Variety Protection Act of 1970, with only foundation and certified classes commercially available. Certified seed of Dane will be available in the spring of 1991 from the Wisconsin Crop Improvement Association.

Table 4. Performance of spring oats tested across three locations (Columbia, Novelty and Spickard) in Missouri during 1990. Varieties are listed alphabetically.

Variety	Grain Yield <sup>1</sup>				Test Weight	Grain Moisture	Plant Height	Lodging <sup>2</sup>
	90	89-90	88-90	87-90				
	----- bushels/acre -----				- lb/bu -	- % -	- inches -	
B605X Multiline	55.9				30.3	12.7	38	1.9
Bates	60.3	65.5	59.8	62.1	32.2	12.3	37	2.4
D226X Multiline	48.3				28.7	12.8	37	2.8
Dane	67.0				29.5	12.4	36	1.1
Don	56.7	63.7	60.3	56.9	30.8	12.3	36	3.3
Don (IL Foundation)	60.6				31.3	12.5	35	2.5
Grundy	28.7	35.4	38.1	45.8	27.3	13.3	37	1.6
Hamilton	55.4	65.4			29.5	12.5	37	1.7
Hazel	64.7	70.4	65.2	61.0	31.0	12.3	38	2.9
Hazel (IL Foundation)	60.0				30.6	12.7	36	3.7
Horicon	56.0	63.5	57.6		29.2	13.2	38	1.3
IAX933-11-2	58.1	59.3			28.7	12.6	40	2.9
IL81-1882	62.9	72.3			30.0	12.3	37	1.8
IL82-2070	61.6				30.3	12.1	36	2.2
IL83-8037-1	60.2	67.1			28.3	12.4	35	2.7
Larry	56.6	64.3	58.8	59.0	30.4	12.4	34	2.6
MO07399	57.1				31.8	12.6	35	2.2
MO07929	59.0	62.9	59.1	60.4	30.2	12.1	37	1.9
MO07941	64.6	66.4	62.3	66.2	32.6	12.5	33	0.9
MO08054	65.8	<b>74.8 *</b>	<b>69.8 *</b>		29.7	12.6	39	1.8
MO08139	63.9	71.7	67.6		29.7	12.6	38	1.8
MO08236	67.4				32.8	12.2	36	3.3
MO08291	58.9				30.6	12.3	35	3.3
MO08368	<b>75.2 **</b>				33.3	12.3	34	1.8
ND810104	59.7	63.8			28.7	13.3	38	0.8
Noble	50.4	54.6	50.4	56.3	29.0	12.7	38	2.3
Ogle	<b>73.7 *</b>	<b>77.6 **</b>	<b>73.0 **</b>	<b>74.8 **</b>	30.6	12.3	39	1.3
Ogle (IL Foundation)	<b>73.6 *</b>				30.6	12.3	39	1.3
Otee	50.4	57.9	53.9	54.1	30.0	12.6	37	1.3
Pd7869D1-5-3-1	61.7	61.2			29.1	12.4	36	2.2
Porter	54.7	61.4	57.5	60.1	28.1	13.0	39	1.8
Proat	36.6	42.2	39.3	42.2	27.4	12.8	36	2.3
SD820045	57.0	58.7			30.4	12.8	39	3.8
Starter	58.3	59.6	55.7	55.0	30.4	12.4	38	4.7
Webster	52.3	60.5	54.4	52.5	29.5	12.4	37	1.8
WIX5229-1	58.4				28.4	12.8	36	3.6
Average	58.9	62.5	57.8	57.6	30.0	12.5	37	2.3
LSD (p=0.05)	6.1	5.2	4.3	3.8	0.9	0.4	2	0.9
CV%	12.9	13.4	13.7	14.0	3.9	3.7	5	48.7
Location Years	3	5	7	10				

<sup>1</sup> Yields are based on 32 pound per bushel test weight adjusted to 13.0 percent moisture content.

<sup>2</sup> Lodging scores of 0 to 9 represent none to total lodging, respectively.

\*\* Indicates highest yielding oat variety within a column.

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



Table 5. Performance of spring oats tested at Columbia, Missouri during 1990. Varieties are listed alphabetically.

Variety	Grain Yield <sup>1</sup>				Test Weight	Grain Moisture	Plant Height	Lodging <sup>2</sup>
	90	89-90	88-90	87-90				
	----- bushels/acre -----				- lb/bu -	- % -	- inches -	
B605X Multiline	49.1				29.6	11.3	33	1.6
Bates	55.4	<b>82.4 *</b>	72.7	70.8	30.8	11.0	34	1.3
D226X Multiline	44.4				37.6	10.9	35	1.5
Dane	55.2				28.7	11.0	32	0.2
Don	56.4	<b>79.8 *</b>	<b>74.9 *</b>	70.5	30.3	10.8	33	3.2
Don (IL Foundation)	<b>60.1 *</b>				32.1	10.8	33	2.2
Grundy	29.6	47.1	49.5	52.8	26.8	11.0	33	2.3
Hamilton	53.4	<b>82.2 *</b>			28.1	10.8	32	1.5
Hazel	54.4	<b>83.2 *</b>	<b>78.8 *</b>	71.2	27.0	11.0	33	3.1
Hazel (IL Foundation)	54.8				28.2	11.0	32	2.1
Horicon	42.6				26.4	11.5	34	0.8
IAX933-11-2	50.0	72.8	64.8		26.9	10.9	35	2.0
IL81-1882	49.3	76.4			26.7	10.9	33	1.1
IL82-2070	53.4	<b>89.2 **</b>			27.0	10.7	31	0.3
IL83-8037-1	45.1				22.9	10.8	31	3.2
Larry	51.4	<b>79.0 *</b>	70.6	68.9	29.5	10.7	31	1.4
MO07399	55.2				30.1	11.1	33	1.7
MO07929	54.5	73.9	69.2	68.3	27.6	11.0	33	1.5
MO07941	48.5	72.4	68.5	70.2	28.9	11.0	30	0.8
MO08054	50.6	<b>88.0 *</b>	<b>81.7 *</b>		26.7	11.0	34	0.7
MO08139	53.0	<b>87.6 *</b>	<b>80.6 *</b>		26.9	10.9	33	0.4
MO08236	<b>60.1 *</b>				31.4	10.8	32	2.8
MO08291	<b>58.1 *</b>				28.3	10.6	32	3.1
MO08368	<b>63.3 **</b>				32.8	10.8	30	0.8
ND810104	53.0	73.9			27.0	11.6	34	0.0
Noble	46.3	73.0	64.4	68.1	27.6	11.0	33	1.2
Ogle	57.3	<b>86.9 *</b>	<b>82.8 **</b>	<b>80.7 **</b>	27.9	11.0	35	0.9
Ogle (IL Foundation)	56.2				27.5	11.0	35	0.0
Otee	46.1	69.8	62.8	61.0	27.4	11.2	33	1.6
Pd7869D1-5-3-1	47.5	71.9			24.9	10.8	32	1.9
Porter	44.8	67.5	62.7	64.8	24.7	11.5	35	2.2
Proat	35.1	44.8	40.3	42.7	25.7	11.2	33	2.0
SD820045	47.9	70.1			28.1	11.0	34	3.5
Starter	45.5	74.2	68.2	61.0	29.9	10.8	33	4.5
Webster	50.1	72.8	63.9	59.3	29.4	11.0	34	1.6
WIX5229-1	57.9				25.0	11.0	33	2.1
Average	51.0	74.8	68.0	65.3	28.0	11.0	33	1.7
LSD (p=0.05)	5.3	10.5	9.0	8.8	1.4	0.3	1	1.0
CV%	7.5	14.3	15.6	18.1	3.6	2.0	3	41.0

<sup>1</sup> Yields are based on 32 pound per bushel test weight adjusted to 13.0 percent moisture content.

<sup>2</sup> Lodging scores of 0 to 9 represent none to total lodging, respectively.

\*\* Indicates highest yielding oat variety within a column.

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

Table 6. Performance of spring oats tested at Novelty, Missouri during 1990. Varieties are listed alphabetically.

Variety	Grain Yield <sup>1</sup>				Test Weight	Grain Moisture	Plant Height	Lodging <sup>2</sup>
	90	89-90	88-90	87-90				
	----- bushels/acre -----				- lb/bu -	- % -	- inches -	
B605X Multiline	59.2				32.9	11.9	41	3.0
Bates	62.9	50.7		55.1	34.1	11.6	39	3.0
D226X Multiline	57.8				30.9	12.3	41	3.5
Dane	72.2				31.7	11.7	40	1.3
Don	62.7	53.5		51.9	32.8	11.4	38	3.5
Don (II Foundation)	70.5				33.1	11.6	38	3.5
Grundy	37.5	31.7		40.7	29.1	12.6	41	1.5
Hamilton	63.8	58.6			31.6	11.7	41	1.8
Hazel	<b>76.2 *</b>	<b>63.7 *</b>		58.7	34.2	11.8	39	3.3
Hazel (IL Foundation)	68.8				33.6	12.2	39	3.3
Horicon	64.2	56.2			32.2	12.6	42	1.5
IAX933-11-2	70.2	47.5			31.7	12.1	43	2.3
IL81-1882	<b>73.1 *</b>	<b>61.5 *</b>			33.9	11.6	39	0.3
IL82-2070	67.6				33.3	11.4	39	2.0
IL83-8037-1	70.1	<b>59.4 *</b>			33.8	11.9	39	1.0
Larry	65.7	54.8		57.3	32.4	11.5	37	2.0
MO07399	63.5				34.4	11.7	36	2.5
MO07929	60.1	51.7		54.9	33.6	11.6	40	1.0
MO07941	70.1	56.8		60.7	36.1	11.4	35	0.3
MO08054	<b>73.3 *</b>	<b>64.3 *</b>			32.4	12.2	42	1.3
MO08139	66.6	57.4			32.4	11.9	42	1.3
MO08236	70.5				34.0	11.2	38	2.5
MO08291	62.3				32.9	11.5	37	3.3
MO08368	<b>80.2 *</b>				34.1	11.7	36	2.3
ND810104	64.0	57.0			31.2	12.5	41	1.5
Noble	53.9	38.7		47.2	30.9	12.0	41	3.0
Ogle	<b>84.5 **</b>	<b>69.1 **</b>		<b>71.9 **</b>	33.3	11.5	42	0.5
Ogle (II Foundation)	<b>81.8 *</b>				33.4	11.8	43	0.8
Otee	60.1	52.8		54.3	33.3	11.8	40	0.3
Pd7869D1-5-3-1	71.9	51.4			32.6	11.7	40	1.3
Porter	52.3	53.8		57.8	31.2	12.9	42	1.3
Proat	43.0	45.5		45.5	28.9	12.4	40	4.3
SD820045	61.1	48.1			33.5	12.6	41	4.3
Starter	70.8	48.2		50.6	33.3	12.0	40	3.5
Webster	62.3	55.6		54.4	31.1	11.8	41	2.0
WIX5229-1	<b>76.7 *</b>				31.3	12.3	38	3.8
Average	65.9	53.7		54.4	32.6	11.9	40	2.1
LSD (p=0.05)	12	10.4		10.0	1.6	0.8	1	1.6
CV%	13	19.6		21.7	3.4	4.9	3	51.8

<sup>1</sup> Yields are based on 32 pound per bushel test weight adjusted to 13.0 percent moisture content. Novelty not harvested for grain yield in 1988.

<sup>2</sup> Lodging scores of 0 to 9 represent none to total lodging, respectively.

\*\* Indicates highest yielding oat variety within a column.

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

Table 7. Performance of spring oats tested at Spickard, Missouri during 1990. Varieties are listed alphabetically.

Variety	Grain Yield <sup>1</sup>				Test Weight	Grain Moisture	Plant Height	Lodging <sup>2</sup>
	90	89-90	88-90	87-90				
	----- bushels/acre -----				- lb/bu -	- % -	- inches -	
B605X Multiline	58.4				28.0	15.0	40	2.1
Bates	62.6		49.7	57.7	31.9	14.4	39	2.8
D226X Multiline	42.6				28.0	15.1	37	3.1
Dane	70.9				28.3	14.6	38	1.7
Don	52.7		45.2	43.4	29.5	14.8	37	2.9
Don (IL Foundation)	52.4				28.8	15.1	36	2.1
Grundy	18.6		27.5	41.5	26.3	16.3	36	0.9
Hamilton	45.5				28.2	14.9	37	1.9
Hazel	61.7		45.6	49.1	31.5	14.3	40	2.3
Hazel (IL Foundation)	56.9				30.3	14.8	37	5.4
Horicon	58.9		48.0		29.0	15.3	39	2.1
IAX933-11-2	48.0				27.7	14.9	40	4.7
IL81-1882	58.4				29.3	14.3	39	3.9
IL82-2070	63.2				30.6	14.3	38	4.1
IL83-8037-1	61.0				28.4	14.4	36	3.4
Larry	54.1		44.6	47.0	29.2	14.8	36	4.9
MO07399	54.3				31.1	15.0	36	2.4
MO07929	62.6		51.6	55.4	29.3	14.0	39	3.7
MO07941	71.5		<b>59.0 *</b>	<b>66.5 *</b>	32.6	15.0	34	2.2
MO08054	72.2		<b>57.3 *</b>		30.4	14.6	40	3.3
MO08139	70.4		<b>58.8 *</b>		30.0	14.7	39	4.0
MO08236	<b>74.4 *</b>				33.1	14.7	37	4.5
MO08291	57.0				30.7	14.7	37	3.5
MO08368	<b>76.9 *</b>				33.3	14.4	34	2.2
ND810104	58.6				27.5	15.6	38	0.3
Noble	52.0		41.9	49.8	28.2	15.1	40	2.5
Ogle	<b>74.0 *</b>		<b>62.3 **</b>	<b>69.6 **</b>	30.7	14.5	39	2.4
Ogle (IL Foundation)	<b>79.3 **</b>				30.8	14.3	41	2.8
Otee	42.4		41.1	44.3	29.7	14.9	38	1.9
Pd7869D1-5-3-1	59.5				29.4	14.6	38	3.4
Porter	62.3		53.4	56.0	28.3	14.7	39	1.6
Proat	30.0		30.8	37.8	27.3	15.0	37	1.2
SD820045	59.2				30.0	14.7	41	3.1
Starter	54.9		44.7	47.1	28.1	14.5	39	5.5
Webster	44.6		38.2	40.7	28.0	14.6	38	1.7
WIX5229-1	64.9				28.5	15.1	37	5.2
Average	58.0		47.0	50.4	29.5	14.8	38	2.9
LSD (p=0.05)	6.5		10.0	9.7	1.4	0.7	3	1.2
CV%	8.1		20.1	21.8	3.5	3.6	5	29.5

<sup>1</sup> Yields are based on 32 pound per bushel test weight adjusted to 13.0 percent moisture content. Spickard not harvested for grain yield in 1989.

<sup>2</sup> Lodging scores of 0 to 9 represent none to total lodging, respectively.

**\*** Indicates highest yielding oat variety within a column.

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