

Oat

Deon Stuthman and Roger Caspers



Proper selection of oat varieties requires consideration of the anticipated growing conditions, the pests that might be encountered in a specific production situation, the purpose for growing the crop and its eventual usage. Specific growing situations will dictate the priority and emphasis given to each trait included in the tables. Crown rust usually is the most important disease; this certainly was true in 2005 and 2006, primarily in southern Minnesota. However, in 2007 there was little crown rust in the state because the weather in mid-2007 was not favorable for rust infection in spite of ample inoculum and many varieties in production being susceptible.

A detailed interpretation of our crown rust data follows. Because of changes in rust races in 2005 and 2006, many of the varieties currently grown are now susceptible to crown rust. In the disease data table, the crown rust rating is a combination of the quantity of pustules and their relative size. The scores range from susceptible to moderately resistant. Three varieties, Stallion, Beach and Souris, are less likely to suffer severe damage than the other seven varieties in the table.

Treated seed should be used for smut-susceptible varieties, and those with BYDV (red leaf) susceptibility (score of 5.5 or higher) should be chosen carefully.

Earlier varieties may perform relatively better in more southerly parts of the state; later varieties usually have an advantage in the north. Taller varieties generally tend to produce more forage and/or straw. Lodging can be site-specific; varieties with lodging scores above 2.3 should be chosen cautiously if your soil is highly fertile. Groat percent is an important consideration for grain production, perhaps equal to grain yield, whether the crop is intended for food or feed. This year we have added the calculated trait groat yield, a combination of bushels per acre and groat percent.

Descriptions of oat varieties covered by the U.S. Plant Variety Protection Act include a PVP designation. When PVP is followed by the notation (94), seed of that variety may not be sold by a grower, not even to a relative or neighbor, without the expressed permission of the variety's developer/owner. If the PVP designation is followed by (pending), consider the variety as having **PVP (94)** protection.

General-Purpose Varieties

Many of these varieties have been tested three years or more; they usually are not grown for a specific special purpose.

Baker—Medium maturity, fair yield, medium height, fair lodging resistance, average test weight, fair groat percentage. Ivory-white seed. Moderately susceptible to crown rust, resistant to smut. Tolerant to red leaf. Selected at Iowa AES. Released in 2006.

Beach—Late maturity, high yield, taller, medium lodging resistance, above average test weight and groat percentage. Resistant to crown rust and smut, susceptible to red leaf. Ivory-white seed. Selected at N.D. AES. Released in 2006. **PVP (94)**

Esker—Medium maturity, yield and height, fair lodging resistance, test weight and groat percentage. Yellow seed. Susceptible to crown rust, resistant to smut, tolerant to red leaf. Selected at Wis. AES. Released in 2003. Foundation seed available to certified seed producers only under a license/fee collection agreement. **PVP (94)**

Oat traits, 2005-2007.

Variety	Days After Planting To Heading	Height, Inches	Lodging, 1 = Erect 5 = Flat	Test Weight, Lb/Bu	Groat %	Groat Yield, Bu/Acre
Winona	58.0	32	2.4	40.5	70.4	63.4
Kame	59.1	32	1.6	38.6	70.1	74.9
Spurs ²	59.7	32	1.8	41.4	69.2	75.7
Excel ¹	60.0	33	1.8	39.7	67.1	75.1
Esker	60.1	33	2.1	39.7	69.9	73.6
Baker	61.8	34	2.2	40.7	68.8	71.1
Souris ¹	62.6	33	1.9	40.7	72.0	76.1
Stallion	63.9	38	2.5	41.3	70.0	79.4
Beach ²	64.1	39	2.0	42.2	70.9	78.0
Morton	64.1	38	1.6	40.9	69.0	72.4
Average	61.3	34	2.0	40.6	69.7	74.0

¹One-year data adjusted for 3 years.

²Two-year data adjusted for 3 years.

Oat yield, percent of mean, by location, 2005-2007.

Variety	Rosemount	Waseca	Lamberton	Morris	Crookston	Average of 5 locations
Stallion	110	110	108	110	99	107
Excel ¹	102	106	114	110	98	106
Beach ²	96	106	101	111	104	104
Spurs ²	104	102	105	104	100	103
Kame	102	102	97	97	105	101
Souris ¹	101	98	98	95	106	100
Esker	98	98	97	95	107	99
Morton	99	106	100	93	98	99
Baker	95	95	98	95	102	97
Winona	93	78	81	90	81	85
Location mean (bu/acre)	95	89	103	119	125	106
LSD 0.05 (% of mean)	6.2	9.4	8.0	8.2	7.2	3.5

¹ One-year data adjusted for 3 years.

² Two-year data adjusted for 3 years.

Excel—Medium maturity, high yield and medium height, good lodging resistance, fair test weight and groat percentage. Yellow seed. Moderately susceptible to crown rust, susceptible to smut, good tolerance to red leaf. Selected at Purdue AES. Released in 2007. Foundation seed available to certified seed producers only under a license/fee collection agreement. **PVP (94)**

HiFi—Late maturity, high yield, tall, good lodging resistance, high test weight, medium groat percentage. White seed. Resistance to crown rust, moderately susceptible to smut, some tolerance to red leaf. Selected at N.D. AES. Released in 2001. **PVP (94)**

Kame—Early maturity, medium yield, short, very good lodging resistance, poor test weight, good groat percentage. Yellow seed. Susceptible to crown rust, moder-

ately susceptible to smut, some tolerance to red leaf. Selected at Wis. AES. Released in 2004. Foundation seed available to certified seed producers only under a license/fee collection agreement. **PVP (94)**

Moraine—Medium maturity and yield, short, fair lodging resistance, good test weight, high groat percentage. Yellow seed. Susceptible to crown rust, resistant to smut, some tolerance to red leaf. Selected at Wis. AES. Released in 2001. Foundation seed available to certified seed producers only under a license/fee collection agreement. **PVP (94)**

Morton—Late maturity, medium yield, tall, very good lodging resistance, high test weight, fair groat percentage. Ivory seed. Susceptible to crown rust, resistant to smut, good tolerance to red leaf. Selected at N.D. AES. Released in 2001. **PVP (94)**

Reeves—Early maturity, fair yield, medium height, poor lodging resistance, high test weight and groat percentage. Ivory seed. Some resistance to crown rust, moderately susceptible to smut, susceptible to red leaf. Selected at S.D. AES. Released in 2002.

Richard—Early-medium maturity, medium yield, tall, good lodging resistance, high test weight, medium groat percentage. Yellow seed. Susceptible to crown rust, resistant to smut, some tolerance to red leaf. Selected at Minn. AES. Released in 2000. **PVP (94)**

Riser—Early maturity, lower yield, short, fair lodging resistance, high test weight and groat percentage. Yellow seed. Resistant to crown rust and smut, susceptible to red leaf. Selected at S.D. AES. Released in 1998.

Sesqui—Late maturity, lower yield, average height, fair lodging resistance, fair test weight, poor groat percentage. Yellow seed. Susceptible

Disease data in a single year, 2007.

Variety	Crown Amount ¹	Rust (Buckthorn Nurs) Reaction Type ²	Smut Score ³	BYDV Score ⁴
Baker	30	MS	R	4.0
Beach	5	MR	MR	6.0
Esker	50	S	R	3.5
Excel	20	MS	S	3.0
Kame	45	S	MS	4.0
Morton	30	S	R	4.0
Souris	10	MS	R	5.5
Spurs	40	MS	S	5.5
Stallion	5	MR	S	5.0
Winona	50	MS	R	6.0

¹ Relative proportion of rust spores that will achieve a successful infection.

² R = resistant, MR = moderately resistant, MS = moderately susceptible and S = susceptible.

³ Artificially inoculated, R = resistant, MR = moderately resistant, MS = moderately susceptible and S = susceptible.

⁴ Barley Yellow Dwarf Virus score from Urbana, Ill with 1 = no symptoms and 9 = dead.

Oat yield, (percent of mean) off-station locations, 2007 only.

Variety	Stephen	Roseau
Baker	104	108
Beach	113	81
Esker	115	91
Excel	110	111
Kame	100	113
Morton	92	106
Souris	104	95
Spurs	98	111
Stallion	69	89
Winona	92	95
Location mean (bu/acre)	72	118
LSD 0.05 (%)	16.8	14.6

to crown rust, resistant to smut, good tolerance to red leaf. Selected at Minn. AES. Released in 2001.

Souris—Medium-late maturity, medium yield, height, lodging resistance and test weight, very good groat percentage. Ivory-white seed. Moderately susceptible to crown rust. Resistant to smut and susceptible to red leaf. Selected at North Dakota AES. Released in 2006.

Spurs—Early-medium maturity, good yield, short with good lodging resistance. Good test weight, average groat percentage. Ivory-white seed. Susceptible to crown rust, smut, and red leaf. Released by Ill. AES in 2005. **PVP (94)**

Stallion—Late maturity, high yield, tall with fair lodging resistance. Good test weight and groat percentage. White seed. Good resistance to crown rust, susceptible to smut, some tolerance to red leaf. Released by S.D. AES in 2006. **PVP (94)**

Wabasha—Medium maturity and height; lower yield, fair lodging resistance and test weight, high groat percentage. White seed. Susceptible to crown rust, resistant to smut and tolerant to red leaf. Selected at Minn. AES. Released in 2001.

Winona—Early, low yield, short, fair lodging resistance, average test weight, good groat percentage. Yellow seed. Susceptible to crown rust, resistant to smut and susceptible to red leaf. Selected at Minn. AES. Released in 2005.

Special-Purpose Variety

This variety has also been tested three years or more, and has special attributes that differentiate it from general-purpose varieties or is intended for a specific end use.

Buff—Hulless. Medium maturity, good yield for hulless variety. Medium height, good lodging resistance, very high test weight. Susceptible to crown rust, resistant to smut, susceptible to red leaf. Selected at S.D. AES. Released in 2002.

Test Plot Research

Test plot establishment and management were supervised by Tom Hoverstad, George Nelson, Steve Quiring and John Weirsma.

Oat	
Planting Rate and Date	
Bushel Weight, Pounds.....	32
Seeds/Pound.....	16,200
Planting Rate, Pounds/Acre.....	80
Planting Rate, Seeds/Sq. Ft.....	28
Planting Date.....	Early Spring