

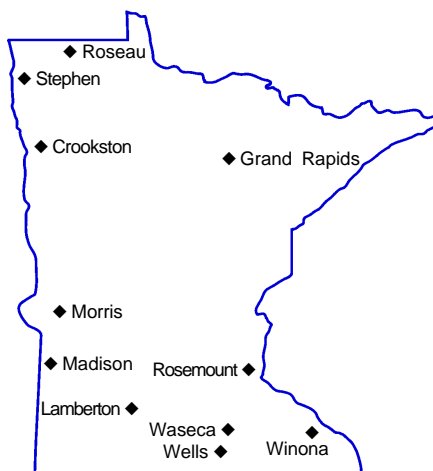
OAT

VARIETY TRIALS

Minnesota Agricultural Experiment Station — University of Minnesota
December 1998

This is a report on results of oat variety tests conducted by the Minnesota Agricultural Experiment Station. It was prepared by Deon D. Stuthman, agronomist (612-625-3709; <stuth001@tc.umn.edu>) and Roger A. Caspers, research plot coordinator (612-625-1994; <caspe005@tc.umn.edu>), Agronomy and Plant Genetics, University of Minnesota, St. Paul, MN 55108, and Richard P. Halstead (612-625-1994; <halst@tc.umn.edu>).

Successful oat production depends to a considerable extent on selecting the best varieties for a particular farm. For that reason, varieties are compared in trial plots on Minnesota Agricultural Experiment Station fields at Rosemount, Waseca, Lamberton, Morris, Crookston and Grand Rapids, and on fields of cooperating farmers. Important old varieties and new varieties are grown in replicated plots at each location. These plots are handled so that the factors affecting yield and other characteristics are as nearly the same for all varieties at each location as is possible.



Locations where oat trials were conducted for this report.

Crown Rust Caution

Crown rust infection has dramatically increased in Minnesota oat fields since 1990, and at least five new races have been identified in recent years. As a result, varieties previously reported to have good crown rust resistance are now known to be vulnerable. Varieties with little or no rust resistance should be grown with caution.

Variety Classifications

The oat varieties evaluated are classed into groups under the headings “recommended,” “not adequately tested,” “special purpose,” “other,” etc. Variety descriptions are arranged alphabetically within groups.

Classifications of oat varieties as “recommended,” “other” and “special purpose” are determined each year by the Experiment Station Crop Variety Review Committee. A variety is

usually not eligible for the “recommended” group unless it has been better than other varieties in important characteristics in three years of testing.

Varieties from other public experiment stations, but not sufficiently evaluated here, are listed as “not adequately tested.” Available information is presented for these varieties, but no conclusions are drawn regarding their suitability for Minnesota conditions. Listings in an “other varieties” category are usually inferior in one or more characteristics, as demonstrated in comparative tests.

Seed Sources

Seed of tested and other oat varieties may be eligible for certification, and the use of certified seed is suggested. However, certification does not imply recommendation. Table 4 lists possible barley seed sources included in the *Minnesota Registered and Certified Seed Directory for 1999 Planting* (available without charge from the Minnesota Crop Improvement Association, 1900 Hendon Avenue, St. Paul, MN 55108; 612-625-7766 or 800-510-6242).

Interpreting the Tables

The relative maturities of varieties are indicated in the tables as date of heading, measured as days after planting.

The LSD (Least Significance Difference) values associated with the data in table 1 are measures of variability within the trials. If a yield difference between two varieties within a single column exceeds the LSD value at the bottom, you can assume that the higher yielding variety was truly better yielding.

A 5 percent level of significance is used in the table. This means that yield differences exceeding the stated LSD value are real 95 percent of the time. If the difference is less than the LSD, greater attention should be given to other traits which are also important in making your variety choices.

Plant Variety Protection Act

Varieties covered by the U.S. Plant Variety Protection Act are identified by the symbol **PVP**. When the symbol is followed by “(94)” the seed of the variety may *not* be sold by a producer, not even to a relative or neighbor, without the express permission of the variety’s developer/owner.

Variety Recommendation Groups

Recommended Varieties

Belle — Late maturity, high yield, tall, fair lodging resistance, high test weight and very high groat percentage, yellow seed. Resistant to crown rust and smut, some tolerance to red leaf. Selected at Wis. AES. Released in 1995. Foundation seed available to certified seed producers only under a license/fee collection agreement. **PVP** (pending).

Gem — Medium-late maturity, high yield, medium height, good lodging resistance, high test weight and groat percentage, yellow seed. Resistant to crown rust and smut, good tolerance to red leaf. Selected at Wis. AES. Released in 1995. Foundation Seed available to Certified Seed producers only under a license/fee collection agreement. **PVP** (pending).

Milton — Medium-late maturity, high yield, medium height, good lodging resistance, medium test weight and groat percentage, yellow seed. Small resistance to crown rust, resistant to smut, susceptible to red leaf. Selected at the Minn. AES. Released in 1994. **PVP**

Jerry — Medium maturity, medium yield, tall, good lodging resistance, very high test weight, high groat percentage, ivory seed. Moderately susceptible to crown rust, susceptible to smut, tolerant to red leaf. Selected at N.D. AES. Released in 1994. Because of smut susceptibility, plant-ing only treated seed is recommended. **PVP**

Special-Purpose Varieties

Pal — Forage establishment only. Medium-late maturity, low grain yield, very short, good lodging resistance, low test weight, medium groat percentage, yellow seed. Moderately susceptible to crown rust, susceptible to red leaf, resistant to smut. Selected at the Minn. AES. Released in 1994 as a special-purpose forage oat variety. Pal has good forage yield with high levels of crude protein and good relative feed value, although no forage data are provided in this publication.

Paul — Hulless. Medium-late maturity, high yield for hulless cultivar, tall, very good lodging resistance; hulless, so very high test weight. Moderately susceptible to crown rust and red leaf. Resistant to smut. Selected at N.D. AES. Released in 1994. **PVP** (94).

Varieties Not Adequately Tested

Blaze — Medium maturity, high yield, medium height, good lodging resistance, very high test weight and groat percentage. Ivory seed. Susceptible to rust and smut, very tolerant to red leaf. Selected at Ill. AES. Released in 1997. Because of smut susceptibility, planting only treated seed is recommended.

Chaps — Medium maturity, high yield, good lodging resistance, high test weight and groat percentage. Yellow seed. Susceptible to crown rust and smut, tolerant to red leaf. Selected at Ill. AES. Released in 1997. Because of smut susceptibility, planting only treated seed is recommended.

Riser — Early maturity, lower yield, short, fair lodging resistance. High test weight and groat percentage, yellow seed. Selected at S.D. AES. Released 1998. **PVP** (pending)

Jud — Late maturity, high yield, very tall, poor lodging resistance. Very high test weight and groat percentage, white seed. Selected at N.D. AES. Released in 1998. **PVP** (pending)

Other Oat Varieties

Dane — Early maturity, lower yield, short, good lodging resistance, fair test weight, high groat percentage, yellow seed. Moderately resistant to crown rust and smut, susceptible to red leaf. Selected at Wis. AES. Released in 1990. Foundation Seed available to Certified Seed producers only under a license/fee collection agreement. **PVP**

Don — Early maturity, medium yield, short, fair lodging resistance, medium test weight and groat percentage, low protein percentage, white seed. Susceptible to crown rust and red leaf, some resistance to smut. Selected at Ill. AES. Released 1985.

Ida — Late maturity, medium yield and height, good lodging resistance, fair test weight and groat percentage. Ivory seed. Susceptible to rust, moderately susceptible to smut and tolerant to red leaf. Selected at Mich. AES. Released 1997.

Jim — Early maturity, lower yield, short, good lodging resistance, high test weight and groat percentage, yellow seed. Small resistance to crown rust, resistant to smut, good tolerance to red leaf. Selected at Minn. AES. Released 1996. **PVP** (pending)

Premier — Medium maturity, yield and height, good lodging resistance, medium test weight, groat percentage and protein percentage, yellow seed. Susceptible to crown rust, resistant to smut, some tolerance to red leaf. Selected at Minn. AES from a cross between Noble and an unreleased Wisconsin line. Released 1990. **PVP**

Rodeo — Medium-late maturity, high yield, good lodging resistance, fair test weight, high groat percentage, yellow seed. Susceptible to crown rust and smut, tolerant to red leaf. Selected at Ill. AES. Released 1996. Because of smut susceptibility, planting only treated seed is recommended.

Starter — Early maturity, lower yield, short, fair lodging resistance, medium test weight and groat percentage, medium protein percentage, yellow seed. Susceptible to crown rust and red leaf, resistant to smut. Selected at Minn. AES from a cross of Noble and a Pal derivative. Released 1986. Well suited for companion cropping. **PVP**

Troy — Medium maturity, high yield, tall, poor lodging resistance, low test weight, medium groat percentage, white seed. Moderately susceptible to crown rust, resistant to smut and good tolerance to red leaf. Selected at the S. D. AES. Released 1991.

Whitestone — Late maturity, high yield, medium height, fair lodging resistance, high test weight and groat percentage, white seed. Resistant to crown rust and smut, some tolerance to red leaf. Selected at N.D. AES. Released 1994. Because of smut susceptibility, planting only treated seed is recommended. **PVP** (pending)

Acknowledgements, Permissions and Caveats

Information on oat variety reactions to specific pathogens was provided by Ruth Dill-Macky, Department of Plant Pathology; to smut by Kurt Leonard; to crown rust by Gerald Ochocki, USDA-ARS Cereal Rust Lab; and to BYDV by Fred Kolb, University of Illinois, Urbana. Field work at various sites was supervised by Steven Quiring, Gregory Cuomo, John Wiersma, and Russell Mathison.

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Table 1 — Oat yield, bushels/acre by location, 1996-1998.

Chaps data is for 1998 only. Blaze data is for 1997 and 1998 only. Paul data is for 1996 and 1998 only.

Variety	Rosemount	Waseca	Lamberton	Morris	Crookston	Grand Rapids	Average
Riser*	59	69	48	79	91	79	71
Dane	69	64	54	94	93	102	79
Jim	70	68	57	80	99	84	76
Chaps**	86	84	89	106	97	131	99
Jerry	84	89	72	100	97	120	94
Blaze**	90	84	76	95	120	135	100
Gem	85	88	94	103	111	115	99
Rodeo	84	87	90	98	117	117	99
Ida	82	77	80	80	112	102	89
Milton	81	88	72	97	120	119	96
Jud*	94	93	100	66	101	122	96
Belle	81	84	81	93	123	108	95
Whitestone	88	83	88	89	124	117	98
Paul***	42	53	66	69	80	61	62
Average	78	79	76	89	106	108	90
LSD 5%	8	5	9	14	13	16	5

Table 2 — Oat traits, in maturity order, 1998 only.

Lodging score: 1 = Erect; 5 = Flat.

Crown rust rating: R = Resistant; MR = Moderately Resistant; MS = Moderately Susceptible; S = Susceptible.

BYDV = barley yellow dwarf virus (also known as Red Leaf) score: 1 = No Symptoms; 9 = Dead.

Variety	Heading Date Days After Planting	Height, Inches	Lodging	Test Weight (lb/bushel)	Groat %	Smut Infection %	Crown Rust Rating	BYDV
Riser	52	32	2.6	39	76	1	R	7.0
Dane	53	34	2.6	37	75	30	S	8.0
Jim	55	34	1.9	38	75	0	S	5.5
Chaps	57	37	2.1	38	75	50	S	5.5
Jerry	58	38	2.4	41	74	50	MS	6.0
Blaze	59	36	3.0	38	74	50	MS	3.5
Gem	59	36	2.6	38	74	30	MR	4.2
Rodeo	59	36	2.2	37	73	40	S	4.5
Ida	60	38	2.6	36	73	50	S	4.0
Milton	60	35	2.1	38	74	12	S	6.5
Jud	63	42	3.4	41	75	1	MS	4.0
Belle	63	36	2.6	39	76	10	MR	7.0
Whitestone	63	36	2.9	37	72	40	MS	6.5
Paul	64	40	2.6	42	96	0	MR	5.0
Average	59	36	2.5	38	76	—	—	—

Table 3 — Oat yield bushels per acre at off-station locations, 1998 data only.

Winona, Wells and Madison are pesticide-free fields.

Variety	Roseau	Stephen	Winona	Wells	Madison	Average
Riser	99	91	43	49	56	68
Dane	95	125	51	51	29	70
Jim	90	112	69	81	47	80
Chaps	115	137	79	79	62	94
Jerry	105	123	42	69	57	79
Blaze	103	165	79	86	48	96
Gem	129	147	78	72	25	90
Rodeo	138	161	91	88	41	104
Ida	109	167	85	73	38	94
Milton	102	126	67	80	31	81
Jud	118	155	82	51	35	88
Belle	111	150	69	67	35	87
Whitestone	101	164	72	64	58	92
Paul	91	108	58	59	32	70
Average	108	138	69	69	43	85

Table 4 — Potential 1999 oat seed sources known to the Minnesota Crop Improvement Association.

The listing of registered / certified sources is not to be construed as an offer for sale by grower, nor is it to be considered as public advertising or as a posting of public notice in any manner. Fields of registered / certified growers have, however, been sampled, tested and inspected by the MCIA. Contact the MCIA for further information, caveats, and considerations.

Registered / certified seed (R = Registered; C = Certified)

Belle	Brown	Rossbach Lakeside Seeds, Inc.	Hanska	507-794-7698	C
	Dodge	Wright Seed Service	West Concord	507-527-2737	C
	Douglas	Thompson Farms	Kensington	320-965-2486	C
	Faribault	Willette Seed Farm, Inc.	Delavan	507-854-3595	C
	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	C
	Goodhue	Tri, Robert R.	Zumbrota	507-732-7153	C
	Kandiyohi	Behm Seed Company	Atwater	320-974-3003	C
	Le Sueur	Cannon Valley Cooperative	Le Center	507-357-6841	C
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	C
	Lincoln	Buhl, Don	Tyler	507-247-3838	C
	Meeker	Johnson Seeds of Dassel, Inc.	Dassel	320-275-2430	C
	Meeker	Wigen Seed Farm	Litchfield	320-693-8182	C
	Mower	Zimmerman Seeds	Racine	507-378-2077	C
	Olmsted	Meyer's Seeds, Inc.	Elgin	507-876-2482	C
	Otter Tail	Crop Production Services	Perham	218-346-2355	C
	Otter Tail	Peeters, John	Menahga	218-385-2609	C
	Polk	Sundrud Farms, O.	Fosston	218-435-6915	C
	Redwood	Sawwell's Seed, Inc.	Clements	507-692-2240	C
	Rice	Werner Farm Seeds	Dundas	507-645-7995	C
	Stearns	Middendorf Seed Farm	Sauk Centre	320-352-6053	C
Swift	Falk Seed Farm	Murdock	320-875-4341	C	
Wabasha	Zabel Seeds	Plainview	507-534-2487	C	
Wright	Hopkins, Joseph	Buffalo	612-682-1868	C	
Wright	Terning Seeds, Inc.	Cokato	320-286-2168	C	
Dane	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	C
	Goodhue	Tri, Robert R.	Zumbrota	507-732-7153	C
	Houston	Troendle Farms	Spring Grove	507-724-2211	C
	Kandiyohi	Behm Seed Company	Atwater	320-974-3003	C
	Kandiyohi	Bredeson Seed Farm	Willmar	320-235-7315	C
	Kandiyohi	Loge, Alan	Willmar	320-235-4178	C

Table 4 (continued) — Potential 1999 oat seed sources known to the Minnesota Crop Improvement Association.

Dane	Le Sueur	Cannon Valley Cooperative	Le Center	507-357-6841	C
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	C
	Meeker	Johnson Seeds of Dassel, Inc.	Dassel	320-275-2430	C
	Meeker	Wigen Seed Farm	Litchfield	320-693-8182	C
	Mower	Corning Seed & Supply Inc.	Austin	507-433-9002	C
	Mower	Grass & Sons Seed Service	Leroy	507-324-5820	C
	Nicollet	Anderson & Sons	St. Peter	507-246-5032	C
	Olmsted	Meyer's Seeds, Inc.	Elgin	507-876-2482	C
	Otter Tail	Peeters, John	Menahga	218-385-2609	C
	Pipestone	Spronk, Art & Sons Seed Farm	Edgerton	507-442-5334	C
	Redwood	Sawvell's Seed, Inc.	Clements	507-692-2240	C
	Scott	Hauer Farms, Inc.	Shakopee	612-445-7554	C
	Stearns	Krippner, Joe	Kimball	320-685-8256	C
	Stearns	Middendorf Seed Farm	Sauk Centre	320-352-6053	C
	Stearns	Schoenborn, Dave	Melrose	320-987-3415	C
	Swift	Falk Seed Farm	Murdock	320-875-4341	C
	Wabasha	Dill Company, John M. Evers	Wabasha	651-565-2611	C
	Wabasha	Zabel Seeds	Plainview	507-534-2487	C
	Wright	Dahlco Seeds, Inc.	Cokato	320-286-5982	C
	Don	Faribault	Watowan Farm Service	Kiester	507-294-3697
Gem	Brown	Cunningham Seed Farms	Sleepy Eye	507-794-7323	C
	Dodge	Wright Seed Service	West Concord	507-527-2737	C
	Douglas	Thompson Farms	Kensington	320-965-2486	C
	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	C
	Kandiyohi	Behm Seed Company	Atwater	320-974-3003	C
	Kandiyohi	Loge, Alan	Willmar	320-235-4178	C
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	C
	Lincoln	Jerzak, William W.	Ivanhoe	507-694-1736	C
	Lyon	Tholen Seeds	Tracy	507-629-3505	C
	Meeker	Johnson Seeds of Dassel, Inc.	Dassel	320-275-2430	C
	Meeker	Smith, Steven	Darwin	320-693-6769	C
	Meeker	Wigen Seed Farm	Litchfield	320-693-8182	C
	Mower	Corning Seed & Supply Inc.	Austin	507-433-9002	C
	Mower	Grass & Sons Seed Service	Leroy	507-324-5820	C
	Mower	Zimmerman Seeds	Racine	507-378-2077	C
	Norman	Kveno, Harry	Gary	218-356-8278	C
	Olmsted	Meyer's Seeds, Inc.	Elgin	507-876-2482	C
	Otter Tail	Huwe, Janice	New York Mills	218-385-3865	C
	Otter Tail	Piekarski, Jonathan C.	Fergus Falls	218-739-2908	C
	Pipestone	Spronk, Art & Sons Seed Farm	Edgerton	507-442-5334	C
	Redwood	Sawvell's Seed, Inc.	Clements	507-692-2240	C
	Renville	Hanson Seeds	Fairfax	507-426-7320	C
	Renville	Kiecker Seed Company	Hector	507-426-8167	C
	Stearns	Klaphake, Maurice	Melrose	320-256-3151	C
	Stearns	Middendorf Seed Farm	Sauk Centre	320-352-6053	C
	Stearns	Nietfeld Farm, Inc.	Melrose	320-987-3442	C
	Swift	Falk Seed Farm	Murdock	320-875-4341	C
	Todd	Buchholz Farms	Grey Eagle	320-285-5401	C
	Todd	Schwanke, Lloyd	Grey Eagle	320-285-5417	C
	Wabasha	Zabel Seeds	Plainview	507-534-2487	C
Wright	Dahlco Seeds, Inc.	Cokato	320-286-5982	C	
Wright	Terning Seeds, Inc.	Cokato	320-286-2168	C	
Jerry	Brown	Cunningham Seed Farms	Sleepy Eye	507-794-7323	R
	Chippewa	Milan Farmers Elevator	Milan	320-734-4435	C
	Clearwater	Fredrickson Farms, Donald	Bagley	218-694-2732	C
	Clearwater	Godtland, John	Gonvick	218-487-5672	C
	Clearwater	Holm, DuWayne	Shevlin	218-785-2786	C
	Dakota	May, Jr., William	Farmington	612-463-8541	C
	Faribault	Watowan Farm Service	Kiester	507-294-3697	C
	Faribault	Willette Seed Farm, Inc.	Delavan	507-854-3595	C
	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	RC

Table 4 (continued) — Potential 1999 oat seed sources known to the Minnesota Crop Improvement Association.

Jerry	Freeborn	Angell Seed Farm	Blooming Prairie	507-583-7581	R
	Goodhue	Ag Partners Co-op	Goodhue	651-923-4496	C
	Goodhue	Tri, Robert R.	Zumbrota	507-732-7153	R
	Kandiyohi	Behm Seed Company	Atwater	320-974-3003	RC
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	RC
	Le Sueur	Haas Seed Farm	Le Sueur	507-665-3683	C
	Lincoln	Popowski, John	Ivanhoe	507-694-1593	C
	Mahnomen	Seeger, John	Mahnomen	218-935-5705	C
	Marshall	Newfolden Co-op Elev. Assn.	Newfolden	218-874-7465	C
	McLeod	Dammann Seed Farms	Plato	320-864-3004	C
	Meeker	Johnson Seeds of Dassel, Inc.	Dassel	320-275-2430	C
	Mower	Corning Seed & Supply Inc.	Austin	507-433-9002	C
	Mower	Grass & Sons Seed Service	Leroy	507-324-5820	RC
	Mower	Zimmerman Seeds	Racine	507-378-2077	C
	Nobles	Spieker, William	Kenneth	507-472-8406	C
	Olmsted	Meyer's Seeds, Inc.	Elgin	507-876-2482	C
	Otter Tail	Crop Production Services	Perham	218-346-2355	C
	Otter Tail	Double C Seeds	Henning	218-583-2584	C
	Otter Tail	Kunza, Ted	Perham	218-346-3926	C
	Pine	Cabak, Daniel C.	Hinckley	320-384-7377	C
	Pipestone	Nielsen, Virgil	Lake Benton	507-658-3517	C
	Pipestone	Spronk, Art & Sons Seed Farm	Edgerton	507-442-5334	RC
	Polk	Capistran Seed Company	Crookston	218-281-7840	C
	Polk	Fosston Co-op Seed House	Fosston	218-435-6222	RC
	Polk	Pulkrabek Farms, Inc. Gary	Angus	218-745-5891	R
	Red Lake	Swenson Seed Farm	Brooks	218-796-5285	R
	Redwood	Sawwell's Seed, Inc.	Clements	507-692-2240	C
	Rice	Salaba, Larry	Faribault	507-334-2603	C
	Rice	Werner Farm Seeds	Dundas	507-645-7995	C
	Stearns	Kane, Tom	Sauk Centre	320-352-5373	C
	Stearns	Middendorf Seed Farm	Sauk Centre	320-352-6053	C
	Stearns	Schoenborn, Dave	Melrose	320-987-3415	C
Swift	Falk Seed Farm	Murdock	320-875-4341	RC	
Wabasha	Dill Company, John M. Evers	Wabasha	651-565-2611	C	
Wabasha	Zabel Seeds	Plainview	507-534-2487	C	
Washington	Wagner, W.V.	Hastings	651-437-5718	C	
Washington	Welander, Arthur	Stillwater	651-439-2598	C	
Wright	Dahlco Seeds, Inc.	Cokato	320-286-5982	C	
Wright	Terning Seeds, Inc.	Cokato	320-286-2168	C	
Jim	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	RC
	Goodhue	Ag Partners Co-op	Goodhue	651-923-4496	C
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	RC
	Meeker	Johnson Seeds of Dassel, Inc.	Dassel	320-275-2430	RC
	Mower	Grass & Sons Seed Service	Leroy	507-324-5820	R
	Otter Tail	Peeters, John	Menahga	218-385-2609	C
	Polk	Gunvalson & Imlle	Gonvick	218-268-4415	C
	Red Lake	Braaten, Edward E	Red Lake Falls	218-253-2293	C
	Renville	Kiecker Seed Company	Hector	507-426-8167	C
	Scott	Hauer Farms, Inc.	Shakopee	612-445-7554	C
	Todd	Faust, Kevin	Long Prairie	320-732-3361	C
	Wabasha	Dill Company, John M. Evers	Wabasha	651-565-2611	C
	Wright	Terning Seeds, Inc.	Cokato	320-286-2168	C
Milton	Carlton	Korhonen, Art	Kettle River	218-273-4931	C
	Faribault	Willette Seed Farm, Inc.	Delavan	507-854-3595	C
	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	RC
	Kandiyohi	Behm Seed Company	Atwater	320-974-3003	RC
	Kandiyohi	Bredeson Seed Farm	Willmar	320-235-7315	C
	Kandiyohi	Loge, Alan	Willmar	320-235-4178	C
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	RC
	Meeker	Anderson Seeds	Dassel	320-286-2700	C
	Meeker	Johnson Seeds of Dassel, Inc.	Dassel	320-275-2430	C

Table 4 (continued) — Potential 1999 oat seed sources known to the Minnesota Crop Improvement Association.

Milton	Meeker	Smith, Steven	Darwin	320-693-6769	C
	Meeker	Wigen Seed Farm	Litchfield	320-693-8182	RC
	Norman	Malme, Cecil	Shelly	218-886-8488	R
	Otter Tail	Crop Production Services	Perham	218-346-2355	C
	Pine	Cabak, Daniel C.	Hinckley	320-384-7377	C
	Renville	Hanson Seeds	Fairfax	507-426-7320	C
	Scott	Hauer Farms, Inc.	Shakopee	612-445-7554	C
	Stearns	Klaphake, Maurice	Melrose	320-256-3151	C
	Stearns	Krippner, Joe	Kimball	320-685-8256	C
	Stearns	Middendorf Seed Farm	Sauk Centre	320-352-6053	C
	Stearns	Nietfeld Farm, Inc.	Melrose	320-987-3442	C
	Todd	Faust, Kevin	Long Prairie	320-732-3361	C
	Todd	Schwanke, Lloyd	Grey Eagle	320-285-5417	RC
	Wabasha	Dill Company, John M. Evers	Wabasha	651-565-2611	C
	Wright	Dahlco Seeds, Inc.	Cokato	320-286-5982	C
Ogle	Faribault	Watowan Farm Service	Kiester	507-294-3697	C
Premier	Faribault	Watowan Farm Service	Kiester	507-294-3697	C
Riser	Clay	Anderson, Lynn	Moorhead	218-287-1765	R
	Dodge	Wright Seed Service	West Concord	507-527-2737	R
	Douglas	Sward Seed Farm	Nelson	320-762-0143	R
	Faribault	Willette Seed Farm, Inc.	Delavan	507-854-3595	R
	Freeborn	Albert Lea Seed House, Inc.	Albert Lea	507-373-3161	R
	Goodhue	Stenlund, Arne H. & Son	Goodhue	651-923-4107	R
	Goodhue	Stenlund, Neal	Goodhue	651-923-4379	R
	Kandiyohi	Behm Seed Company	Atwater	320-974-3003	R
	Lac qui Parle	Harwick, Harlien & Kenneth	Dawson	320-752-4455	R
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	R
	Lincoln	Lincoln County Feed & Seed	Ivanhoe	507-694-1243	R
	Norman	Chisholm, Mark M.	Gary	218-356-8507	R
	Olmsted	Meyer's Seeds, Inc.	Elgin	507-876-2482	R
	Redwood	Sawvell, Ronald	Clements	507-692-2240	R
	Stearns	Nietfeld Farm, Inc.	Melrose	320-987-3442	R
	Swift	Falk Seed Farm	Murdock	320-875-4341	R
	Traverse	Johnson, Robert & Richard	Wheaton	320-563-4490	R
	Wabasha	Zabel Seeds	Plainview	507-534-2487	R
Rodney	Hubbard	Kruft, Frank	Park Rapids	218-732-4909	RC
Troy	Carlton	Korhonen, Art	Kettle River	218-273-4931	C
	Clay	Tobolt Seed	Moorhead	218-287-2904	R
	Clearwater	Fredrickson Farms, Donald	Bagley	218-694-2732	C
	Faribault	Watowan Farm Service	Kiester	507-294-3697	C
	Kandiyohi	Loge, Alan	Willmar	320-235-4178	C
	Le Sueur	Dick Stangler Farm Seed	Kilkenny	507-595-2883	RC
	Le Sueur	Haas Seed Farm	Le Sueur	507-665-3683	C
	Lyon	Blomme, Bill	Marshall	507-532-6092	C
	Marshall	Newfolden Co-op Elev. Assn.	Newfolden	218-874-7465	C
	Meeker	Wigen Seed Farm	Litchfield	320-693-8182	C
	Norman	Chisholm, Michael	Gary	218-356-8507	R
	Norman	Chisholm, Tim	Gary	218-356-8507	C
	Otter Tail	Crop Production Services	Perham	218-346-2355	C
	Otter Tail	Miller, Donald	Henning	218-583-2451	RC
	Polk	Fosston Co-op Seed House	Fosston	218-435-6222	R
	Scott	Hauer Farms, Inc.	Shakopee	612-445-7554	C
	Stearns	Middendorf Seed Farm	Sauk Centre	320-352-6053	C
	Swift	Nelson Seed Company	Benson	320-843-3610	C
	Todd	Muellner, Ralph A.	Grey Eagle	320-285-8282	C
Todd	Schwanke, Lloyd	Grey Eagle	320-285-5417	RC	
Whitestone	Polk	Tilden Farms, Inc.	Mentor	218-637-8186	C

Oat Planting Rate and Date

Rate is based on normal seedbeds and on normal size, good quality seed. Rate used can vary greatly depending on seed cost, desired stand, expected mortality, emerging ability, seed weight, seed germination, seedbed condition, depth of planting and planting equipment. Weight given is the most widely accepted in the U.S.

Bushel Weight (pounds)	Seeds/pound (number)	Rate/acre (pounds)	Rate (seeds)	Planting Date
32	16,200	80	28/square foot	Early spring