

MINNESOTA VARIETAL TRIALS RESULTS

MP108-2003 January 2003

Alfalfa, Barley, Birdsfoot Trefoil, Bromegrass,
Canola, Cicer Milkvetch, Corn Grain, Corn Silage,
Kura Clover, Oat, Orchardgrass, Red Clover,
Reed Canarygrass, Soybean, Tall Fescue, Timothy,
Spring Wheat, Winter Wheat and Wildrice



Minnesota
Agricultural
Experiment
Station

UNIVERSITY OF MINNESOTA

2003

JANUARY							FEBRUARY							MARCH						
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12	13	14	15	16	17	18	9	10	11	12	13	14	15	9	10	11	12	13	14	15
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OCTOBER							NOVEMBER							DECEMBER						
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The information in this miscellaneous publication of the Minnesota Agricultural Experiment Station (MAES) is presented under authority granted by the Hatch Act of 1887 to conduct performance trials on farm crops and interpret data to the public.

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Data in this publication are preliminary. An up-to-date version of this report is

maintained on the MAES web site at www.maes.umn.edu Electronic versions of some reports of past years on these and other crops can also be found there.

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Minnesota Crop Improvement Association

Founded in 1903, the Association Observes its Centennial

In 1903 Willet Martin Hays set out to address a serious problem. Hays, the Minnesota Agricultural Experiment Station's (MAES) first plant breeder, had a vision of what improved field crop varieties could do for Minnesota farmers. Shortly after arriving in Minnesota in 1888 from Chicago, where he was associate editor of *Prairie Farmer* magazine, he began establishing test plots and plant selection and breeding programs.

Far ahead of his time – Gregor Mendel's laws of inheritance had been published in an obscure journal and were yet virtually unknown – Hays recognized the individual plant as the unit for improvement and set about selecting and increasing the outstanding individuals. From his work came Minnesota 25 or Primost, the first pure-line flax variety developed in the United States, Minnesota 169 Blue Stem wheat, Minnesota 105 barley, Minnesota 281 and 295 oats, Minnesota No. 13 corn, which moved U.S. corn production 50 miles further north and is found in the genetic material of many hybrid varieties today, and the introduction of winterhardy Grimm alfalfa, a forage crop of inestimable value.

In 1891 Hays issued a certificate with seed of Pillsbury Fife wheat, Minnesota No. 163 Fife wheat and Minnesota No. 169 Blue Stem wheat distributed to farmers, testifying that the seed was purchased from the MAES. These farmers, who were asked to report on performance of the crop, could use the certificate as proof of origin when offering seed for sale. Hays used this certification system for several years for corn, oat, grass and barley seed, but discontinued it when he found that varietal purity was not maintained.

In 1903 he decided to organize seed growers to address the problem of maintaining varietal purity in field crop varieties developed and released by the MAES. With Coates P. Bull, a former student now a fellow faculty member, Hays wrote Minnesota seed growers inviting them to meet at the State Fair September 2. There the Minnesota Field Crop Breeders Association (MFCBA) was formed, with Hays as its secretary. Seed growers involved at the start included B.L. Jenks, Stillwater; L.B. Basset, Rushmore; Fred Meier, Sleepy Eye, T.W. Eastman, Crookston; J.E. Northrup, Minneapolis; E.G. Enestvedt, Sacred Heart; and A.J. McGuire, Grand Rapids.

The relationship formalized between Minnesota farmer-seed growers and the MAES with the organization of MFCBA – the name was changed to Minnesota Crop Improvement Association (MCIA) in 1913 – has endured through a century. Nurtured by MAES faculty and staff, assisted by special grants from the state legislature from 1913 to 1970, and strongly supported by its seed-grower members, once exceeding 3,000, MCIA has been of incalculable value in improving the value and quality of Minnesota field crops. As the association rounds out its first century it seems fitting to acknowledge those from the Experiment Station faculty and the farmer-seedsmen who played prominent roles in its development and service.

Coates Bull filled the secretary position when Willet Hays left at the close of 1904 to serve as U.S. assistant secretary of agriculture, serving as *de facto* manager of the association until 1919, when he left to join a seed company in Worthington. Bull returned to St. Paul in 1921, where he served out his working career in charge of the weed control division of the Minnesota Department of Agriculture and, until 1936 as an MCIA director. Bull, with Manly Champlin of South Dakota, in 1919 laid the groundwork for forming the International Crop

Improvement Association, today known as AOSCA – Association of Official Seed Certifying Agencies.

Andrew Boss, a former student of Willet Hays and deeply involved with him in the introduction of Minnesota No. 13 corn and Grimm alfalfa, became head of the University's new Division of Agronomy and Farm Management in 1910 and later vice director of the experiment station. Boss in 1919 proposed the system of inspection and certification that, with timely modifications, has been used more than 80 years. From 1927 to 1933 he was MCIA's secretary.

August D. Haedecke was in charge of MCIA's seed certification and seedstocks increase program from 1922 to 1935 and secretary from 1922 to 1925. Carl Borgeson succeeded Haedecke as manager of foundation seedstocks; he continued in that role until Jan. 1, 1968, when the foundation seed function was transferred to MCIA from the MAES.

Ralph Crim, Minnesota's first Extension agronomist, was secretary in 1926 and from 1934 until his retirement in 1953. In effect, Crim managed MCIA from 1926 until 1944, when the association was able to hire its first full-time employee, Ward Marshall, who then served as manager.

Other members of the University faculty who served MCIA as secretary included T.E. Odland, 1920-21, Carl Borgeson, 1953-55; Rodney Briggs, 1956-58; Harley Otto, 1959-1975; and Lawrence (Larry) H. Smith, 1976-1996. Following the death of Ward Marshall in 1975, Otto managed the association until his retirement Jan. 31, 1995. His successor, Gary Beil, was the association's first manager to come from outside the MAES faculty, and William (Bill) Wendlandt, a Garden City seed producer who succeeded Smith as secretary in 1996, was the first secretary elected from outside the station faculty.

Early farmer-seedsmen who served as presidents of the association from 1903 through 1954 were O.C. Thompson, Farmington; Arthur Cooper, St. Cloud; C.W. Glotfelter, Waterville; C.L. Blanchar, Sherburne; C.E. Brown, Elk River; Henry C. Lau, Tracy; John W. Evans, Montevideo; Emil Wagner, Ada; Herman F. Skyberg, Fisher; Henry Lietschuh Sleepy Eye; and Charles V. Simpson, Waterville. Glotfelter and Skyberg went on to serve as Regents of the University of Minnesota.

Those who served from 1955 through 1991 as presidents, and from 1992, when the title was changed, through 2002 as chairmen, are: Frank Mitchell, Canby; R.H. Backstrom, Warren; B.L. Aarestad, Halstad; Robert Thiel, Wendell; Richard Wigley, Lake Crystal; Jack Cashman, Owatonna; Harold Olson, Milan; John Friedrichs, Foxhome; Bruce Hammes, Stephen; Larry Stevens, Amboy; Michael Haarstad, Fergus Falls; Howard Dahlager, Sacred Heart; Merlyn Petermann, Hawley; Mike Willette, Delavan; Dean Wright, West Concord; Steve Dahl, Roseau; John Lundquist, Wheaton; Greg Kiecker, Hector; Ken Schuster, Argyle; Sherwood Peterson, Baker; Richard Magnusson, Roseau; and Myron Behm, Atwater.

Willet Hays gave Minnesota early prominence in field crop improvement. Those we have noted as MCIA leaders, all who have served as its directors and employees, and all of its seed-grower members from 1903 through 2002 have played a vital role in the improvement of Minnesota agriculture.

Minnesota VARIETAL TRIALS RESULTS

Successful crop production depends on selecting varieties best adapted to a specific area. To provide comparative information the Minnesota Agricultural Experiment Station compares varieties in trial plots at St. Paul, Becker, Crookston, Grand Rapids, Lamberton, Morris, Rosemount, St. Paul and Waseca, and on farmers' fields. Crop varieties are grown in replicated plots at each location and factors affecting yield and other characteristics are as nearly the same for all varieties at each location as is possible.

Some crops and crop varieties included in previous editions of *Minnesota Varietal Trials Results* are not included in the 2002 performance trials. Questions about them can be addressed to the logical individual listed under the "Authors and Researchers" heading on page 7.

Variety Classifications

Varieties of barley, oat, hard red spring wheat and winter wheat are classified into groups under "General Purpose Varieties," "Special-Purpose Varieties" and "Varieties Not Adequately Tested" headings.

General-Purpose Varieties designates varieties that have been adequately tested three years or more and generally are not grown for a specific special purpose.

Special-Purpose Varieties designates adequately tested varieties that have specific attributes that differentiate them from general-purpose varieties or are intended for a specific end use.

Varieties Not Adequately Tested designates varieties that may be new or were previously tested but have not been evaluated over the past three consecutive years.

Seed of varieties in all these groups may be eligible for certification. Use of certified seed is suggested, but certification in itself does not imply recommendation. Registered and certified seed of most

varieties described in this report can be purchased from seed dealers or growers in the Minnesota Crop Improvement Association listing beginning on page 85.

Interpreting the Tables

The LSD (least significant difference) figures beneath yield columns in tables are statistical measures of variability within trials. The LSD is used to determine whether the difference between two yields is due to a genetic difference in the varieties or to other causes, such as environmental variability.

If the yield differences between two varieties equals or exceeds the LSD value for the yield column the higher yielding variety probably was superior in yield.

If the difference is less than the LSD the yield difference probably was due to environmental factors. An "NS" notation in a column indicates no significant difference for that characteristic.

These varietal trials are not designed for crop (species) comparisons; the crops are grown on different fields or with different management. The data should be used only to compare varieties within a table.

The relative maturities of varieties are variously indicated in the tables as date of maturity, date of heading or blooming, days to maturity, heading or blooming, or moisture percentage at harvest.

Rate and Date of Planting

This information is given for each crop; in all cases the planting rate is based on normal seedbeds and normal size, good quality seed. The seeding rate used can vary greatly, depending on seed cost, desired stand, expected mortality, ability to emerge, seed weight, seed germination, seedbed condition, depth of planting and planting equipment. The bushel weight given is generally accepted in the United States.

Financial Support

The Minnesota Agricultural Experiment Station acknowledges with deep appreciation the continued generous financial support of the Minnesota Approved Seed Conditioners and Marketing Association and the former oat and soybean grower members of the Minnesota Seed Producers and Promotion Association, which for many years marketed public varieties under the MPS Seed brand. Their contributions make possible the free distribution of this report.

Other Assistance

The Experiment Station appreciates the assistance of the following organizations in the distribution of the 2003 edition of *Minnesota Varietal Trials Results*:

Minnesota Barley Growers Association and Minnesota Barley Council

Minnesota Corn Growers Association and Minnesota Corn Research and Promotion Council

Minnesota Forage and Grassland Council

Minnesota Soybean Growers Association and Minnesota Soybean Research and Promotion Council

Minnesota Association of Wheat Growers and Minnesota Wheat Council

The Minnesota Crop Improvement Association is especially helpful through its overall coordination of the publication and distribution of this report.

A consolidated chart of planting rates and dates is on page 95.

Plant Variety Protection

PVP Barley, oat and wheat varieties covered by the U.S. Plant Variety Protection Act are identified by the PVP symbol. When the symbol is followed by (94) seed of that variety may not be sold by a producer, not even to a relative or neighbor, without express permission of the variety's developer/owner. When the symbol is followed by (pending) the variety should be considered as having PVP (94) protection.

Abbreviations

For the sake of economy in variety descriptions and some other listings, the abbreviation "AES" is generally used for agricultural experiment station.

Authors and Researchers

Authors of the crops section are:

Alfalfa: P.R. Peterson, C.C. Sheaffer, D.A. Schriver, D. Swanson, J. Larson.

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Canola: P.M. Porter, D.G. LeGare, K.B. Andol.

Corn Grain: T.R. Hoverstad, G. Rosenthal, D.R. Hicks, G.A. Nelson, S.R. Quiring.

Corn Silage: C.C. Sheaffer, D.R. Swanson, T.R. Hoverstad, J.L. Halgerson, P.R. Peterson, M.D. Bickell, W. Halfinan, D.C. Martens, F.B. Breitbach, L.M. Behnken.

Oat: D.D. Stuthman, R.A. Caspers, R.P. Halstead.

Soybean: J.H. Orf, L.L. Hardman, P.J. Schaus, J.E. Kurle, S.L. Naeve.

Wheat: J.A. Anderson, G.L. Linkert, R.G. Fuentes, J.J. Wiersma.

Wildrice: R. A. Porter.



Locations of University of Minnesota Research and Outreach Centers.

Information on the reaction of crop varieties to specific pathogens was obtained mainly by R. Dill-Macky and K. Evans, Department of Plant Pathology; D.V. McVey and J. Kolmer, USDA-ARS Cereal Disease Laboratory, Gary Hareland, USDA-ARS Wheat Quality Laboratory, Fargo; and F. Kolb, University of Illinois - Urbana.

Plotwork supervisors included A. Elakkad, T.R. Hoverstad, D. LeGare, R.D. Mathison, G.A. Nelson, S. Quiring and J.V. Wiersma.

Publication Supervisor: Leland L. Hardman.

Photography: David L. Hansen

Overall Coordination: Beverly R. Durgan and the Minnesota Crop Improvement Association.



FORAGE CROPS



ALFALFA

Alfalfa Data Sources, Selection

Successful alfalfa production depends on selecting the best varieties for a particular farm. Varieties have been compared for yield in trial plots on Minnesota Agricultural Experiment Station fields: yearly at Rosemount, and alternate years at the other locations. The trials are conducted using recommended fertility and pest control practices to optimize yield and persistence.

Test results from new and previous seedings of varieties currently available in Minnesota are published as accumulated performance years averaged as a percent of check varieties. Test locations are representative of the risk of winter injury in specific regions of Minnesota – southeast: Rosemount and Plainview/Potsdam (formerly Waseca, then Lewiston 1996-1998), southwest: Lamberton, west-central: Morris and Stearns County (St. Martin or Melrose since 1998), northwest: Crookston (to 1995) and northeast: Grand Rapids (see locations of alfalfa trials map). Varieties of alfalfa are tested for winter survival index (WSI) and forage quality at selected experiment stations of the Universities of Minnesota and Wisconsin-Madison.

Early each fall alfalfa developers and marketers who have provided current contact addresses are asked to declare

which varieties approved for seed certification will be marketed in Minnesota for the next seeding year. The varieties and suppliers reported in those responses are listed in disease resistance tables, pages 16-19. Seed source locations, telephone numbers and websites are on pages 20-21. Varieties seeded in past or present Minnesota yield trials are included on pages 10-13; those with winter survival or forage quality performance data are listed on pages 13-14.

Winterhardiness and Winter Survival Index

Severe winters make winterhardiness a primary consideration in variety selection for most areas of Minnesota. The greatest winterhardiness is needed in the west central and northwest Minnesota area (see winter injury potential map). Because of the high frequency of severe winters in this area, only varieties with at least very good winter survival should be selected. The east-central and southeast areas also experience severe winters frequently. The southwest area seldom experiences severe winter injury because of dry soils, high soil potassium levels and neutral soil pH. The northeast area seldom experiences severe winter injury because of dependable snow cover.

Winterhardiness of varieties is extremely difficult to determine because winter injury can occur as a result of many different weather events that cause varied responses in alfalfa plants of differing ages. A standardized test, the North American Alfalfa Improvement Conference (NAAIC) Winter Survival Test, measures the survival of a variety after a severe winter. Tests conducted annually at four locations (Arlington and Lancaster, Wis. and Rosemount and Morris, Minn.) are the basis for the winter survival index (WSI) on page 14.

The WSI for each tested variety was averaged over all test locations to provide a robust estimate of winterhardiness and

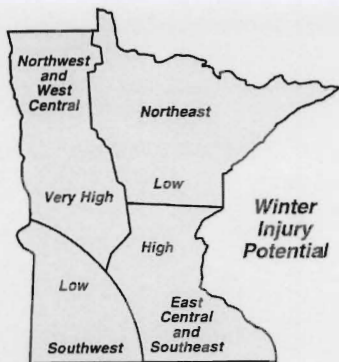
is presented beside yield data in on pages 10-13. Varieties are rated from superior (1) to adequate (4) in winter survivability. Vernal, a traditional winterhardy variety is rated very good. Varieties rated adequate in winter survivability are expected to be injured the most after a severe winter. All varieties tested to date have rated above adequate. If a variety does not have a WSI, (company has not entered variety in Winter Survival trial) the fall dormancy index is the next best indicator of winterhardiness: (1 = very winterhardy; 2 = winterhardy; 3 and 4 = moderately winterhardy).

Fall Dormancy

Fall dormancy ratings are shown with ranked yield data on pages 10-13 and included in disease resistance tables on pages 16-19, which list varieties alphabetically. Fall dormancy ratings describe the relative amount of fall growth of alfalfa varieties. Very fall-dormant varieties have little fall growth and are slow to recover after cutting. Fall-dormant varieties are adaptable to all areas of the state. Moderately fall-dormant varieties produce good fall growth, are characterized by rapid recovery after harvest, and usually reach 1/10 bloom several days earlier than more dormant varieties. Although increased fall dormancy has traditionally been associated with greater winter survival, the WSI is now considered a better predictor of winter survival.



Locations of Alfalfa Trials.



Forage Yield

Yields of alfalfa varieties currently tested and/or reported by respondents as currently marketed in Minnesota are shown on pages 10-13. Yields are expressed as a percentage of check varieties, for example, 113 means the variety had 13 percent greater yield than the check varieties. Varieties are ranked according to their average performance in *harvest years after the seeding year* across ALL locations in which they have been tested; first by the average of year-1 and year-2 yields, then by year-3 yield, then by year-1 yield. Variety performance also is aggregated regionally as SE (southeast): Rosemount+Plainview; WC (west-central): Morris+Stearns County; SW (southwest): Lamberton, and NE (northeast): Grand Rapids.

Greatest confidence should be placed in data that include three or more tests for a particular variety. Each seeding at any location is considered a "test." Each yield number in the table has been formatted to reveal how many tests it represents. **Bold** type yield data indicates that the variety has been in three or more tests, regular type indicates two tests, and *italic* type indicates only one test.

Varietal differences in yield tend to increase with stand age. Thus, to choose a variety for short-term stands, use the ALL-location yield for years 1+2. For long-term stands, choose varieties based on their performance through year 3.

Forage Quality

While maturity is the greatest determinant of forage quality or feeding value of alfalfa, varieties also differ. ANAAC-Standardized Forage Quality Test has

been performed at Arlington, Wis., and Rosemount, Minn., since 1995. Relative forage quality of alfalfa varieties tested in Minnesota and Wisconsin from 1996 to 2000 and in 2001 is shown on page 15. Data are expressed as milk per ton of forage, milk per acre and relative forage quality.

Milk per ton is calculated based on MILK2000 and combines crude protein, neutral detergent fiber (NDF), and NDF digestibility to predict milk production per ton of forage DM. In MILK2000, the intake of energy from forage for a 1,350-pound milking cow consuming a 30% NDF diet is calculated, and the cow's maintenance energy requirement is then subtracted from energy intake to provide an estimate of energy available from forage for conversion to milk. Forage DM yield multiplied by the milk produced per ton of forage DM provides an estimate of the milk produced per acre and combines yield and quality into a single term. For a technical discussion of NDFD and MILK2000 see: www.uwex.edu/ces/forage/pubs/milk2000.htm

Relative forage quality (RFQ) is a new index with similar mean and range as RFV that includes NDF digestibility in estimates of DMI and TDN to calculate RFQ. For a technical discussion of RFQ see: www.uwex.edu/ces/forage/pubs/rfq.htm

In the seeding year, varieties are evaluated on one or two cuts taken in July and/or late August. Production year evaluation (first year after seeding only) is done by analyzing each of three cuttings taken at late bud to 1/10-bloom stages of maturity.

Disease Resistance

Alfalfa root and crown diseases occur in most Minnesota soils. The most important diseases are bacterial wilt, Phytophthora root rot, Fusarium wilt, anthracnose, Verticillium wilt and Aphanomyces root rot. Plant resistance is available for all six diseases. The variety resistance ratings for each disease are presented on pages 16-19. While moderate resistance (MR) to a disease will provide protection to a variety under most conditions, either resistance (R) or high

resistance (HR) is required for protection under severe disease conditions.

Winter injury can be the result of a combination of injury from cold temperatures and from root and crown diseases. Under some conditions disease resistances can compensate for lesser levels of cold tolerance. While all varieties can benefit from improved disease resistance, it is especially important for moderately fall-dormant varieties to have at least (R) levels of disease resistance to stay productive for more than two years after the seeding year under intensive management (four cuts/season) in the east-central and southeast areas of Minnesota.

Bacterial Wilt – This disease is prevalent in most areas of the state. Wilt-susceptible varieties are poor risks and should not be grown. They generally show losses in stand by the end of the second year after seeding. In some cases where infection is severe, stand losses are often observed by the end of the first year after seeding. Stand reductions after winter are often due to a combination of wilt damage and winter injury.

Phytophthora Root Rot – This fungal disease is a major concern on poorly drained soils, especially in the east-central and southeast area of the state. It can cause stand losses of seedlings, and can contribute to lower productivity in older stands if the soil remains wet for a week or more.

Fusarium Wilt – The fungus that causes Fusarium wilt is present in most soils. It contributes to stand decline mainly in combination with other disease organisms. Consequently, resistance to Fusarium wilts in addition to resistance to both bacterial wilt and Phytophthora root rot contributes to longer stand life.

Anthracnose – This fungus disease was first found in Minnesota in 1978 and has become more prevalent each year, but only in the east central and southeast area. It infects stems and crowns and kills susceptible plants. Because anthracnose is favored by hot, moist conditions, it is most often seen in southeast Minnesota.

Verticillium Wilt – This potentially destructive fungus disease was first found in several eastern Minnesota fields in 1981. It has usually been found in 2- or 3-year-old fields, and its spread in the state has been slow. Planting resistant varieties will help provide insurance for long-life stands. Varieties having at least a low level of resistance are indicated on pages 16-19.

Aphanomyces Root Rot – This disease is associated with very slowly drained soils and is easily confused with Phytophthora root rot. It stunts and kills seedlings as well as causing a chronic root disease in established plants. Few cases of this disease have been identified in Minnesota. Consider planting a variety with Aphanomyces resistance if Phytophthora-root-rot-resistant varieties fail to persist.

Blends

Many companies sell blends, a mixture of two or more varieties, at a reduced price from named varieties. Blends may perform as well as the best varieties, or may do very poorly. Since blends may have been derived in various ways, their performance depends on the skill and integrity of the seed company. Disease resistance, winter survival and other characteristics may change within a blend from lot to lot or year to year. Using *certified* seed of adapted, high-yielding varieties best assures trueness to name.

The web version of this report is on the Minn. Agricultural Experiment Station website:

www.maes.umn.edu/pubs.html

The full version of the yield table, which

shows the number of tests and regional year-1 data, is posted at the University of Minnesota-Agronomy FORAGES website:

www.agro.agri.umn.edu/forages

Alfalfa Planting Rate and Date

Bushel Weight, Pounds	60
Seeds/Pound.....	220,000
Planting Rate, Pounds/Acre	
Alone	11
With Grass.....	7
Planting Rate, Seeds Sq.Ft.	
Alone	55
With grass	35
Planting Date	Early Spring, Late Summer

Alfalfa yield (percent of checks), winter survival index (WSI) and fall dormancy (FD) ratings at ALL and regional sites.⁵ (Bold type yield numbers represent 3 or more tests¹, regular type: 2 tests, *Italic* type: only 1 test.)

Variety, ranked by Year 1 + Year 2 Average, Year 3, Year 1	WSI ²	FD ⁴	Average Yield for Years 1, 1+2, 3 After Seeding Year										
			ALL ³			SE ³		WC ³		SW ³		NE ³	
			Yr 1	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3
Checks, Ton/Ac 15%mc Hay			5.90	5.78	5.43	6.33	6.00	5.61	5.41	6.14	5.52	4.22	4.06
Webfoot Supreme	–	4	<i>118</i>	<i>120</i>	–	<i>120</i>	–	–	–	–	–	–	–
Lightning II	–	4	<i>108</i>	<i>120</i>	–	<i>120</i>	–	–	–	–	–	–	–
WL 319HQ	1.8	3	<i>115</i>	<i>119</i>	–	<i>119</i>	–	–	–	–	–	–	–
Ascend	–	5	<i>112</i>	<i>119</i>	–	<i>121</i>	–	–	–	–	–	–	–
DK134	2.8	3	115	<i>116</i>	–	<i>123</i>	–	–	–	–	–	<i>106</i>	–
Phabulous	–	4	108	<i>115</i>	–	<i>115</i>	–	–	–	–	–	–	–
Prairie Max	–	3	<i>112</i>	<i>114</i>	–	<i>115</i>	–	–	–	–	–	–	–
Baralta 42 IQ	2.3	4	<i>112</i>	<i>113</i>	–	<i>113</i>	–	–	–	–	–	–	–
Multiplier 3 –TMF	2.8	3	111	<i>113</i>	–	<i>117</i>	–	–	–	<i>104</i>	<i>101</i>	<i>113</i>	–
HybriForce-400	2.8	4	112	<i>112</i>	<i>112</i>	<i>111</i>	<i>112</i>	–	–	–	–	–	–
Laser	–	4	111	112	<i>102</i>	<i>115</i>	<i>102</i>	<i>117</i>	–	<i>103</i>	–	–	–
Trophy	–	4	<i>109</i>	<i>112</i>	–	<i>113</i>	–	–	–	–	–	–	–
Persist	–	4	110	111	<i>118</i>	<i>110</i>	<i>120</i>	<i>116</i>	<i>116</i>	<i>105</i>	–	–	–
GoldLeaf	3.1	3	112	<i>111</i>	<i>113</i>	<i>112</i>	<i>113</i>	–	–	–	–	–	–
Abundance	3.4	4	111	<i>111</i>	<i>107</i>	<i>111</i>	<i>107</i>	–	–	–	–	–	–
Monument II	–	4	114	<i>111</i>	–	<i>115</i>	–	–	–	–	–	<i>109</i>	–
Paragon BR	3.0	3	<i>111</i>	<i>110</i>	<i>116</i>	<i>118</i>	<i>116</i>	–	–	–	–	–	–
Magnum III	–	4	110	110	116	109	<i>104</i>	<i>106</i>	<i>106</i>	<i>116</i>	<i>132</i>	<i>104</i>	<i>108</i>
Alliant	3.0	4	111	110	<i>113</i>	<i>111</i>	<i>113</i>	–	–	–	–	<i>115</i>	–

¹ Each seeding in any location counts as one "Test." Test data from experimental seed is retained as data from tests on commercial seed are sufficient to replace it.

² Winter Survival Index: 1 = superior, 2 = very good, 3 = good, 4 = adequate, 5 = low 6 = none. WSI is from joint Minnesota-Wisconsin 1996-2002 trials

(Page 14 is 2002 WSI data only). ³ Locations: SE (southeast), Rosemount+Plainview; WC (west-central), Morris+Stearns County; SW (southwest), Lamberton; NE (northeast), Grand Rapids. ⁴ Fall dormancy and pest resistance ratings from Alfalfa Council report (www.alfalfa.org/falldormancy/html) or provided by a diesel-

oper, with dormancy based on fall growth in mid-October after cutting first week of September: 11 = tallest (tend to be least winterhardy), 1 = shortest. ⁵ The full version of this table, with number of tests, regional and year 1 and 2 data, is posted at the UM-Agronomy FORAGES website: www.agro.agri.umn.edu/forages

*Variety used as check in some or all tests.

Alfalfa yield (percent of checks), winter survival index (WSI) and fall dormancy (FD) ratings at ALL and regional sites (continued).⁵ (**Bold** type yield numbers represent 3 or more tests¹, regular type: 2 tests, *Italic* type: only 1 test.)

Variety, ranked by Year 1 + Year 2 Average, Year 3, Year 1	WSI ²	FD ⁴	Average Yield for Years 1, 1+2, 3 After Seeding Year										
			ALL ³			SE ³		WC ³		SW ³		NE ³	
			Yr 1	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3
9326	—	3	110	110	108	112	<i>98</i>	115	119	101	102	—	—
Stampede	—	3	109	110	<i>104</i>	110	<i>104</i>	—	—	—	—	—	—
MagnaGraze	—	3	111	110	<i>101</i>	110	<i>101</i>	—	—	—	—	—	—
Magnum III-Wet	—	3	110	110	101	110	101	<i>111</i>	—	—	—	—	—
AmeriStand 403T	2.1	4	104	<i>110</i>	—	<i>112</i>	—	—	—	—	—	—	—
Perfect	—	4	109	<i>109</i>	<i>128</i>	—	—	<i>112</i>	<i>128</i>	—	—	—	—
Radiant	—	4	<i>108</i>	<i>109</i>	<i>117</i>	<i>109</i>	<i>117</i>	—	—	—	—	—	—
Monument	—	3	106	109	116	109	<i>118</i>	<i>111</i>	<i>128</i>	—	—	<i>110</i>	<i>102</i>
Root 66	2.1	4	105	<i>109</i>	<i>109</i>	<i>109</i>	<i>109</i>	—	—	—	—	—	—
BigHorn	3.1	4	108	109	108	106	99	<i>114</i>	<i>125</i>	—	—	—	—
Pointer	—	4	109	109	106	112	<i>104</i>	<i>110</i>	<i>113</i>	<i>100</i>	<i>102</i>	—	—
Supreme	—	3	109	<i>109</i>	<i>104</i>	<i>107</i>	<i>104</i>	—	—	—	—	—	—
Magnum IV	—	4	108	109	104	108	104	<i>114</i>	—	<i>107</i>	—	—	—
Somerset	2.5	3	105	109	103	109	103	—	—	—	—	—	—
Rebound 4.2	2.4	4	108	108	112	<i>110</i>	<i>100</i>	111	117	103	113	—	—
Vitro	2.6	3	108	108	112	<i>114</i>	<i>118</i>	105	110	—	—	—	—
WinterGold	2.6	4	109	108	111	<i>108</i>	<i>99</i>	108	116	—	—	—	—
Spirit	—	3	105	108	110	<i>112</i>	—	<i>108</i>	<i>103</i>	<i>106</i>	<i>117</i>	—	—
631	—	4	108	108	109	108	109	115	<i>108</i>	101	<i>109</i>	—	—
Jade II	—	4	108	108	108	<i>107</i>	<i>108</i>	—	—	<i>109</i>	<i>109</i>	—	—
Prolific	3.1	3	109	<i>108</i>	<i>107</i>	<i>108</i>	<i>107</i>	—	—	—	—	—	—
Surpass	—	3	109	108	107	109	<i>107</i>	<i>106</i>	<i>104</i>	—	—	<i>108</i>	<i>110</i>
Target II Plus	—	3	109	108	107	109	106	<i>106</i>	<i>109</i>	—	—	—	—
Geneva	2.7	4	107	108	107	108	106	<i>104</i>	<i>105</i>	110	110	—	—
620 -Garst	2.6	2	110	108	104	108	105	106	101	103	107	<i>118</i>	—
Forecast 3001	3.1	3	108	108	102	<i>105</i>	<i>95</i>	<i>110</i>	<i>109</i>	—	—	—	—
WL 327	—	4	105	108	101	111	<i>101</i>	<i>103</i>	<i>101</i>	—	—	—	—
Extend	2.9	4	108	108	99	108	<i>101</i>	—	—	—	—	<i>108</i>	<i>98</i>
A4230	—	4	107	<i>107</i>	<i>117</i>	<i>107</i>	<i>117</i>	—	—	—	—	—	—
Harvestar 812HY	—	4	109	<i>107</i>	<i>111</i>	<i>107</i>	<i>111</i>	—	—	—	—	—	—
Magnum V	3.0	4	103	107	110	106	106	110	112	104	114	—	—
Innovator+Z	2.3	3	105	107	109	107	103	<i>120</i>	<i>124</i>	94	105	—	—
630	—	4	105	107	108	110	112	<i>101</i>	<i>98</i>	<i>107</i>	<i>107</i>	<i>99</i>	—
Forecast 1001	2.9	4	107	107	107	<i>111</i>	<i>112</i>	<i>102</i>	<i>102</i>	—	—	—	—
AmeriStand 201+Z	2.0	2	105	107	107	108	103	108	110	103	108	—	—
AlfaStar	—	4	113	107	106	<i>104</i>	<i>110</i>	—	—	<i>108</i>	<i>102</i>	—	—
FQ 315	—	3	109	107	106	108	99	106	114	—	—	—	—
Baralfa 32 IQ	—	3	108	107	105	103	105	<i>119</i>	<i>106</i>	—	—	—	—
5454	2.7	4	107	107	105	108	105	111	111	102	99	105	102
WL 325 HQ	3.0	3	107	107	105	110	<i>121</i>	109	102	<i>95</i>	<i>102</i>	<i>110</i>	<i>96</i>
Columbia -2000	3.1	4	108	107	104	105	101	<i>110</i>	<i>110</i>	<i>109</i>	<i>112</i>	<i>105</i>	<i>93</i>
TMF 421	—	2	108	107	104	<i>103</i>	<i>94</i>	112	108	<i>108</i>	<i>106</i>	<i>100</i>	—
Voyager II	—	4	107	107	104	106	<i>101</i>	<i>108</i>	<i>105</i>	<i>109</i>	<i>105</i>	—	—
Imperial	—	3	107	107	103	107	103	<i>108</i>	<i>102</i>	—	—	—	—
FQ 314	3.0	3	106	107	103	106	100	109	106	—	—	—	—
Green Feast	2.9	2	<i>111</i>	<i>107</i>	<i>101</i>	<i>107</i>	<i>101</i>	—	—	—	—	—	—
Mariner	—	2	111	107	101	<i>105</i>	<i>104</i>	—	—	—	—	<i>111</i>	<i>98</i>
WL 324	—	3	107	107	101	<i>107</i>	<i>97</i>	108	108	—	—	<i>104</i>	<i>92</i>
Enhancer	—	4	106	106	111	107	108	—	—	<i>105</i>	<i>116</i>	—	—
Setter	—	3	106	106	111	<i>101</i>	<i>95</i>	<i>111</i>	<i>127</i>	—	—	—	—

Alfalfa yield (percent of checks), winter survival index (WSI) and fall dormancy (FD) ratings at ALL and regional sites (continued).⁵ (Bold type yield numbers represent 3 or more tests¹, regular type: 2 tests, *Italic* type: only 1 test.)

Variety, ranked by Year 1 + Year 2 Average, Year 3, Year 1	WSI ²	FD ⁴	Average Yield for Years 1, 1+2, 3 After Seeding Year										
			ALL ³			SE ³		WC ³		SW ³		NE ³	
			Yr 1	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3
Bounty	-	2	107	106	108	104	109	<i>110</i>	<i>108</i>	-	-	-	-
Dominator	-	4	107	106	<i>108</i>	108	<i>108</i>	-	-	99	-	-	-
Rustler II	-	4	108	106	107	104	105	<i>111</i>	<i>110</i>	-	-	-	-
DK140	2.8	4	106	106	105	106	107	110	106	101	101	<i>100</i>	-
9429	2.8	4	107	106	104	112	97	<i>107</i>	<i>118</i>	<i>99</i>	<i>98</i>	-	-
Magnum V-Wet	3.3	3	105	106	<i>104</i>	107	<i>104</i>	-	-	-	-	-	-
A-395	-	2	107	106	103	105	<i>101</i>	<i>106</i>	<i>101</i>	<i>107</i>	<i>107</i>	-	-
WinterStar	2.4	2	107	106	103	104	103	108	101	<i>107</i>	<i>111</i>	<i>104</i>	-
Abound	2.5	3	108	106	102	<i>107</i>	<i>95</i>	<i>103</i>	<i>106</i>	<i>100</i>	<i>106</i>	<i>113</i>	-
Evolution	-	2	107	106	100	111	<i>101</i>	<i>105</i>	<i>95</i>	-	-	<i>98</i>	<i>105</i>
Dynamic	-	2	<i>107</i>	<i>106</i>	<i>99</i>	<i>106</i>	<i>99</i>	-	-	-	-	-	-
A 30-06	1.9	3	104	105	107	<i>112</i>	<i>115</i>	-	-	<i>92</i>	<i>98</i>	-	-
Yielder	-	3	100	105	107	105	107	-	-	-	-	-	-
350	2.8	3	107	105	106	<i>109</i>	<i>99</i>	104	110	-	-	-	-
Feast+EV	2.2	3	107	105	106	105	<i>107</i>	106	105	-	-	-	-
Rainier	2.9	3	105	105	106	105	108	<i>108</i>	<i>106</i>	<i>103</i>	<i>108</i>	<i>100</i>	<i>98</i>
Mainstay	2.7	3	104	105	105	105	105	-	-	-	-	-	-
WinterKing	2.5	3	107	105	104	104	99	107	104	<i>109</i>	<i>114</i>	<i>99</i>	-
WL 232 HQ	2.8	2	106	105	104	<i>109</i>	<i>108</i>	104	102	<i>103</i>	<i>108</i>	-	-
Breakout	2.5	4	105	105	104	<i>105</i>	104	-	-	-	-	<i>104</i>	-
5312*	3.0	3	105	105	104	107	108	103	99	104	100	104	107
329 -Max	-	3	111	105	100	106	99	-	-	-	-	<i>103</i>	<i>101</i>
54V54	-	4	108	105	100	<i>112</i>	<i>107</i>	<i>100</i>	<i>96</i>	<i>96</i>	<i>96</i>	<i>110</i>	-
UltraLac	-	2	<i>105</i>	<i>105</i>	<i>94</i>	<i>105</i>	<i>94</i>	-	-	-	-	-	-
Depend+EV	-	4	108	104	114	105	<i>98</i>	-	-	-	-	-	-
53Q60	3.1	3	103	104	107	105	103	103	108	102	110	103	-
AmeriGraze 401+Z	-	4	102	104	107	101	<i>102</i>	<i>114</i>	<i>117</i>	-	-	-	-
Multi 5301	-	4	104	104	106	<i>103</i>	<i>105</i>	<i>103</i>	<i>107</i>	<i>107</i>	<i>106</i>	-	-
GH757	3.1	4	<i>103</i>	<i>104</i>	<i>106</i>	<i>104</i>	<i>106</i>	-	-	-	-	-	-
Platinum	-	4	103	<i>104</i>	106	107	<i>117</i>	-	-	<i>99</i>	<i>96</i>	-	-
6410 -Garst	2.7	4	107	104	105	110	113	<i>92</i>	<i>83</i>	<i>98</i>	<i>103</i>	-	-
Sterling	-	2	106	104	105	<i>102</i>	<i>104</i>	<i>111</i>	<i>111</i>	<i>99</i>	<i>100</i>	-	-
WetLand	-	3	105	104	105	103	102	<i>106</i>	<i>115</i>	-	-	-	-
DK127	2.9	3	105	104	104	106	107	103	103	97	<i>103</i>	<i>103</i>	<i>95</i>
DK141	3.4	4	106	<i>104</i>	103	<i>103</i>	99	109	106	107	107	-	-
645-II -Garst	-	3	109	<i>104</i>	<i>102</i>	-	-	-	-	<i>99</i>	<i>102</i>	-	-
GH766	-	3	103	104	102	106	<i>100</i>	101	102	<i>108</i>	<i>108</i>	<i>105</i>	<i>98</i>
Viking 1	3.0	2	104	104	101	107	<i>101</i>	105	<i>99</i>	<i>94</i>	<i>96</i>	<i>112</i>	<i>106</i>
Affinity+Z	-	4	102	104	<i>100</i>	<i>104</i>	<i>101</i>	-	-	-	-	<i>104</i>	<i>100</i>
Hunter	-	4	105	<i>104</i>	<i>99</i>	<i>103</i>	<i>99</i>	-	-	-	-	-	-
DK124	2.7	2	105	104	98	105	96	106	99	100	<i>99</i>	<i>105</i>	-
Milk River	-	3	107	104	97	<i>105</i>	<i>99</i>	<i>99</i>	<i>98</i>	<i>99</i>	<i>93</i>	<i>114</i>	-
Reliance	-	3	<i>100</i>	<i>103</i>	<i>120</i>	<i>103</i>	<i>120</i>	-	-	-	-	-	-
GH767	3.0	2	105	103	104	103	104	-	-	-	-	-	-
Wrangler	-	2	103	103	103	<i>102</i>	-	<i>106</i>	<i>103</i>	<i>98</i>	<i>105</i>	<i>107</i>	<i>100</i>
LegenDairy 2.0	2.8	3	105	103	101	99	<i>98</i>	<i>113</i>	<i>106</i>	-	-	-	-
Nemesis	-	3	102	103	101	<i>102</i>	<i>107</i>	<i>107</i>	<i>97</i>	<i>100</i>	<i>97</i>	-	-
Legend Gold	-	3	103	103	100	<i>107</i>	<i>99</i>	<i>102</i>	<i>102</i>	<i>95</i>	<i>101</i>	-	-
Spus	-	4	<i>105</i>	<i>103</i>	<i>99</i>	<i>103</i>	<i>99</i>	-	-	-	-	-	-
Award	3.3	4	105	103	98	103	100	<i>94</i>	<i>88</i>	<i>95</i>	<i>96</i>	<i>112</i>	<i>101</i>

Alfalfa yield (percent of checks), winter survival index (WSI) and fall dormancy (FD) ratings at ALL and regional sites (continued).⁵ (Bold type yield numbers represent 3 or more tests¹, regular type: 2 tests, *Italic* type: only 1 test.)

Variety, ranked by Year 1 + Year 2 Average, Year 3, Year 1	WSI ²	FD ⁴	Average Yield for Years 1, 1+2, 3 After Seeding Year										
			ALL ³			SE ³		WC ³		SW ³		NE ³	
			Yr 1	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3	Yr 1+2	Yr 3
Avalanche+Z	2.4	2	103	103	98	109	100	99	94	95	107	100	94
Samurai	—	3	103	103	96	103	96	—	—	—	—	—	—
Emperor	2.6	4	99	102	109	102	109	—	—	—	—	—	—
Sprint	2.6	3	99	102	104	105	100	<i>99</i>	<i>110</i>	—	—	—	—
Gold Plus	—	4	101	102	103	99	100	<i>106</i>	<i>109</i>	—	—	—	—
NetYield 500	2.9	4	<i>100</i>	<i>102</i>	<i>101</i>	<i>102</i>	<i>101</i>	—	—	—	—	—	—
53V63	—	3	105	102	96	99	97	107	95	100	98	101	—
Rhino	—	3	104	101	108	99	<i>106</i>	<i>105</i>	<i>111</i>	—	—	—	—
MP2000	2.7	3	102	101	108	<i>103</i>	<i>108</i>	<i>107</i>	<i>113</i>	94	105	—	—
GH750	—	4	106	101	102	<i>102</i>	<i>108</i>	<i>104</i>	99	93	98	—	—
205	1.6	2	103	101	102	101	103	105	102	94	100	100	102
AC Viva	—	3	100	101	102	<i>104</i>	<i>101</i>	—	—	98	104	—	—
Empire	—	2	103	101	100	99	97	105	103	95	98	102	—
Defense+EV	—	3	<i>109</i>	<i>101</i>	—	<i>101</i>	—	—	—	—	—	103	130
Iroquois	—	2	102	<i>101</i>	—	<i>101</i>	—	—	—	—	—	—	—
Oneida VR*	—	3	99	100	101	103	103	100	103	95	96	101	96
Vernal*	2.0	2	100	100	100	99	100	99	98	102	100	100	100
Mariner II	—	2	97	100	100	<i>100</i>	<i>100</i>	—	—	—	—	—	—
400 SCL	—	4	102	100	84	100	84	—	—	—	—	—	—
Spredor 3*	1.8	1	99	98	98	96	94	103	100	102	105	96	100
Banquet	—	4	101	96	96	97	<i>99</i>	—	—	—	—	95	94
Ameriguard 302+Z	—	3	93	95	95	—	—	—	—	95	95	—	—
Starbuck	—	3	119	—	—	—	—	—	—	—	—	—	—
AV 3420	—	4	115	—	—	—	—	—	—	—	—	—	—
LegenDairy YPQ	—	3	115	—	—	—	—	—	—	—	—	—	—
Arrow Head	—	2	113	—	—	—	—	—	—	—	—	—	—
6420 -Garst	—	4	109	—	—	—	—	—	—	—	—	—	—
Good as Gold II	—	4	109	—	—	—	—	—	—	—	—	—	—
Phirst	—	4	<i>109</i>	—	—	—	—	—	—	—	—	—	—
Value Plus I	2.6	4	107	—	—	—	—	—	—	—	—	—	—
8599	—	4	<i>106</i>	—	—	—	—	—	—	—	—	—	—
GH700	2.9	4	<i>106</i>	—	—	—	—	—	—	—	—	—	—
Ripin	—	4	<i>106</i>	—	—	—	—	—	—	—	—	—	—
4 Traffic	2.4	4	<i>105</i>	—	—	—	—	—	—	—	—	—	—
Multi 775	—	4	<i>104</i>	—	—	—	—	—	—	—	—	—	—
4A42-1	2.0	4	<i>101</i>	—	—	—	—	—	—	—	—	—	—
8400HT	2.5	4	<i>101</i>	—	—	—	—	—	—	—	—	—	—
DKA42-15	2.7	4	101	—	—	—	—	—	—	—	—	—	—
WL 342	—	4	101	—	—	—	—	—	—	—	—	—	—
54H35	—	4	—	—	—	—	—	—	—	—	—	—	—
54Q25	—	4	—	—	—	—	—	—	—	—	—	—	—
Ignite	—	3	—	—	—	—	—	—	—	—	—	—	—
Maximum I	—	3	—	—	—	—	—	—	—	—	—	—	—
Oneida Ultra	—	4	—	—	—	—	—	—	—	—	—	—	—

¹ Each seeding in any location counts as one "Test." Test data from experimental seed is retained as data from tests on commercial seed are sufficient to replace it.

² Winter Survival Index: 1 = superior, 2 = very good, 3 = good, 4 = adequate, 5 = low, 6 = none. WSI is from joint Minnesota-Wisconsin 1996-2002 trials

(Page 14 is 2002 WSI data only). ³ Locations: SE (southeast), Rosemount+Plainview; WC (west-central), Morris+Stearns County; SW (southwest), Lambert; NE (northeast), Grand Rapids.

⁴ Fall dormancy and pest resistance ratings from Alfalfa Council report (www.alfalfa.org/falldormancy/html) or provided by a developer, with dormancy based on fall growth in mid-October after cutting first week of September: 11 = tallest (tend to be least winterhardy), 1 = shortest.

⁵ The full version of this table, with number of tests, regional and year 1 and 2 data, is posted at the UMN-Agronomy FORAGES website: www.agr.agri.umn.edu/forages

*Variety used as check in some or all tests.

**Wisconsin and Minnesota 2002 alfalfa winter survival (WSI) test results,
planted in April 2001, rated during April 2002.**

Variety	Winter Survival Index: 1=Superior, 2=Very Good, 3=Good, 4=Adequate, 5=Low, 6=No Winter Survival				
	Arlington, Wis.	Lancaster, Wis.	Rosemount, Minn.	Morris, Minn.	Average
BEAVER (index 1 check)	0.9	1.0	1.8	1.4	1.3
ZG 0033	1.1	1.5	1.9	2.3	1.7
ZG 9830	1.3	1.7	2.3	1.9	1.8
3M55	1.8	1.9	1.8	1.6	1.8
ZG 0041	2.0	1.3	2.5	2.3	2.0
ZG 0040	1.7	2.1	2.2	2.5	2.1
VERNAL (index 2 check)	1.9	2.1	2.5	2.2	2.2
3S11	1.9	2.9	2.2	2.2	2.3
4S41	2.7	2.0	2.3	2.2	2.3
5262	2.3	2.8	2.1	2.1	2.3
4 TRAFFIC	2.6	2.2	2.5	2.4	2.4
526 (index 2 check)	2.5	2.6	2.2	2.5	2.4
AVALANCHE +Z	3.1	2.2	2.3	2.2	2.4
3S14	2.1	3.0	2.3	2.4	2.5
ZG 0034	2.9	2.7	2.5	2.1	2.5
DKA42-15	2.8	2.6	2.4	2.9	2.7
54V54	3.2	2.7	2.6	2.4	2.7
HYBRIFORCE-400	3.0	3.3	2.5	2.5	2.8
WL 325 HQ	3.5	3.3	2.5	2.6	3.0
PARAGON BR	3.6	2.9	2.9	2.7	3.0
53Q60	3.4	3.4	2.9	2.5	3.1
WL 316 (index 4 check)	-	-	3.1	3.0	3.1
DART (index 3 check)	3.8	3.3	3.2	2.9	3.3
FORTRESS (index 4 check)	3.6	3.8	2.9	3.3	3.4
ARCHER (index 5 check)	3.9	3.9	3.1	3.4	3.6
RANGER (index 3 check)	3.5	3.8	4.2	4.3	3.9
G-2852 (index 4 check)	4.2	3.9	-	-	4.0
SOUTHERN SPECIAL (index 5 chk)	4.5	4.1	4.2	4.6	4.4
CUF 101 (index 6 check)	6.0	6.0	6.0	6.0	6.0
MOAPA 69 (index 6 check)	6.0	6.0	6.0	6.0	6.0

Note: WSI values reported in Yield table, pages 10-13 are from this, or prior, Winter Survival trials, with some WSI values averaged.

Forage quality of alfalfa varieties as milk per ton and per acre (as percent of Vernal) and relative forage quality (RFQ).

Year-after-seeding harvest, 1996-2001.

Variety	Wis. ¹ and Minn. ²	
	/Ton	/Acre
205	100	107
53Q60	100	103
53V63	103	111
6410	103	105
9326	101	108
9429	102	113
A30-06	101	105
A4230	102	113
Abound	101	106
Alliant	102	110
Award	103	109
Baralfa 32IQ	103	106
Breakout	103	111
Cimarron	98	101
Cimarron VR	105	109
Columbia 2000	100	105
DK 124	104	110
DK 127	102	108
DK 134	101	105
DK 140	103	112
Extend	101	107
FQ 314	103	115
Geneva	103	112
GH 700	102	112
GH 757	100	111
GH 766	102	110
GH 767	103	110
LegenDairy YPQ	100	92
Multi 5301	102	113
Nemesis	103	117
Radiant	103	112
Rainier	101	106
Somerset	102	111
Spirit	100	114
Sprint	102	107
Spur	103	106
Starbuck	100	93
ValuePlus 1	101	105
Vernal	100	100
Vitro	101	101
WinterGold	103	115
WinterKing	104	104
WinterStar	101	108
WL 322 HQ	101	101
Check, pounds per:	Ton	Acre
Vernal	2,571	9,222
LSD .05	3	10

2002 harvest of 2001 seeding.

Variety	Wisconsin ¹			Minnesota ²		
	/Ton	/Acre	RFQ ³	/Ton	/Acre	RFQ ³
6410	104	112	145	102	115	158
LegenDairy YPQ	107	122	152	99	119	149
Starbuck	104	114	145	103	122	161
Vitro	108	114	155	103	113	160
Checks						
Cimarron	—	—	—	105	96	144
WL 322 HQ	—	—	—	100	103	153
Vernal, pounds:	2,309	15,649	137	2,387	7,476	154
LSD .05	6	6	8	11	12	16

2002 harvest of 2002 seeding.

Variety	Wisconsin			Minnesota		
	/Ton	/Acre	RFQ	/Ton	/Acre	RFQ
620 -Garst	—	—	—	105	96	144
6410	105	110	159	101	94	137
Baralfa 42 IQ	—	—	—	111	95	158
Feast+EV	104	110	157	92	98	119
Gold Leaf	—	—	—	106	108	145
Checks						
Cimarron	—	—	—	84	123	117
WL 322 HQ	—	—	—	100	100	152
Vernal, pounds:	2,544	5,815	146	2,251	3,991	133
LSD .05	3	ns	9	ns	ns	36

Bold values are not significantly different from highest value in trial.

¹ Milk/acre calculated from season average quality and yield at Arlington, Wis.

² Milk/acre calculated from season average quality and yield at Rosemount, Minn.

³ Relative forage quality is a new index with similar mean and range as RFV that includes NDF digestibility in estimates of DMI and TDN to calculate RFQ. For a technical discussion of RFQ see: www.uwex.edu/ces/forage/pubs/rfq.htm

Disease resistance and fall dormancy of alfalfa varieties marketed in Minnesota.

Variety ¹	Fall Dormancy ²	Disease Resistance Ratings ^{3,4}						Seed Source ⁵
		BW	VW	FW	An	PRR	Aph	
205	2	HR	R	HR	R	HR	R	LaCrosse Forage & Turf Seed
329 -Max	3	HR	HR	HR	HR	HR	R	Johnson Seeds
350	3	HR	HR	HR	HR	HR	HR	LaCrosse Forage & Turf Seed
4 Traffic	4	HR	HR	HR	HR	HR	HR	Kaltenberg Seed Farms
400 SCL	4	HR	HR	HR	HR	HR	HR	LaCrosse Forage & Turf Seed
4375LH	4	-	-	-	R	R	R	Mycogen Seed
4A421	4	HR	HR	HR	HR	HR	HR	Mycogen Seed
5312	3	HR	HR	HR	HR	HR	R	Pioneer Hi-Bred International
53H81	3	HR	HR	HR	HR	R	HR	Pioneer Hi-Bred International
53Q60	3	HR	R	R	HR	HR	R	Pioneer Hi-Bred International
53V63	3	HR	HR	HR	HR	HR	HR	Pioneer Hi-Bred International
5454	4	R	MR	HR	HR	HR	LR	Pioneer Hi-Bred International
54H69	4	HR	R	HR	HR	HR	R	Pioneer Hi-Bred International
54H91	4	HR	HR	R	HR	HR	R	Pioneer Hi-Bred International
54Q25	4	HR	HR	HR	HR	HR	R	Pioneer Hi-Bred International
54V46	4	R	HR	HR	HR	HR	HR	Pioneer Hi-Bred International
54V54	4	HR	HR	HR	HR	HR	MR	Pioneer Hi-Bred International
5-Star	5	R	R	HR	R	R	R	Croplan Genetics
620	2	HR	R	HR	HR	HR	R	Garst Seed
630	4	HR	MR	R	MR	R	S	Garst Seed
631	4	HR	R	HR	R	HR	MR	Garst Seed
6310	3	HR	HR	HR	HR	HR	R	Garst Seed
6325	3	HR	HR	HR	HR	HR	HR	Garst Seed
6400HT	4	HR	HR	HR	HR	HR	HR	Garst Seed
6410	4	HR	HR	HR	HR	HR	HR	Garst Seed
6420	4	HR	R	HR	R	HR	R	Garst Seed
645-II	3	HR	HR	HR	HR	HR	R	Garst Seed
8599	4	HR	HR	HR	HR	HR	R	Mallard Seed
9326	3	HR	R	HR	R	HR	R	LG Seeds
9429	4	HR	R	HR	HR	HR	HR	LG Seeds
A30-06	3	HR	HR	HR	HR	HR	HR	PGI Alfalfa, Producer's Hybrids
A-395	3	HR	R	HR	HR	HR	R	PGI Alfalfa
A4230	4	HR	HR	HR	HR	HR	HR	United Suppliers
Abound	3	HR	HR	HR	HR	HR	HR	Monsanto
Abundance	4	HR	R	HR	R	HR	R	Ziller Seed
Affinity+Z	4	HR	HR	HR	HR	HR	R	America's Alfalfa
AlfaStar	4	HR	R	HR	HR	HR	R	Kaystar Seed, Shepherd Seeds
Alliant	4	HR	R	HR	HR	HR	HR	Monsanto
AmeriGraze 401+Z	4	HR	R	HR	HR	HR	R	America's Alfalfa
AmeriGuard 302+Z	3	HR	HR	HR	HR	HR	HR	America's Alfalfa
AmeriStand 201+Z	2	HR	HR	HR	R	HR	HR	America's Alfalfa
AmeriStand 403T	4	HR	HR	HR	HR	HR	HR	America's Alfalfa
Arrowhead	2	HR	R	HR	R	HR	R	Bio Plant Research
Ascend	5	HR	HR	HR	HR	HR	HR	Kussmaul Seeds

¹ Varieties includes those marketed in Minnesota for which disease resistance ratings were provided. Varieties not seeded in a recent Minnesota yield trial are excluded from yield tables on pages 10-13. ² Fall dormancy and pest resistance ratings from Alfalfa Council report (www.alfalfa.org/falldormancy.html) or provided by a developer, with dormancy based on fall growth in mid-October after cutting first week of September: 11 = tallest (tend to be least winterhardy), 1 = shortest. ³ Diseases abbreviated as BW: bacterial wilt, PRR: Phytophthora root rot, FW: Fusarium wilt, An: anthracnose, VW: Verticillium wilt, Aph: Aphanomyces root rot. ⁴ Pest resistance rating (percent resistant plants): HR = high resistance (51+), R = resistant (31-50), MR = moderate resistance (16-30), LR = low resistance (6-15), and S = susceptible (0-5). ⁵ Seed source phone numbers and websites are listed in "Forage Seed Sources," pages 20-21. *A version of this table with additional or updated disease resistance ratings is posted at the UM-Agronomy Forages website: www.agro.agri.umn.edu/forages

Variety ¹	Fall Dormancy ²	Disease Resistance Ratings ^{3,4}						Seed Source ⁵
		BW	VW	FW	An	PRR	Aph	
Ascend 552	5	HR	HR	HR	HR	HR	HR	Kussmaul Seeds
AV3420	4	HR	R	HR	HR	HR	HR	AgVenture
Avalanche+Z	2	HR	HR	HR	HR	HR	R	America's Alfalfa
Award	4	HR	HR	HR	HR	HR	R	Monsanto
Awesome	4	HR	HR	HR	HR	HR	HR	LG Seeds
Banquet	4	HR	HR	HR	HR	HR	R	Olds Seed Solutions
Baralfa 32 IQ	3	HR	R	HR	HR	HR	HR	Barenbrug USA
Baralfa 42 IQ	4	HR	HR	HR	HR	HR	HR	Albert Lea Seed House
BigHorn	4	HR	R	HR	HR	HR	HR	Mycogen Seed
Bounty	2	HR	R	HR	HR	HR	R	PGI Alfalfa
Breakout	4	HR	R	HR	HR	HR	R	Brown Seed Farms
Champion LH2	3	HR	HR	HR	HR	HR	HR	Kaltenberg Seed Farms
Columbia 2000	4	R	R	R	LR	LR	S	Allied Seed, Kaltenberg Seed
Cyclone	3	HR	HR	HR	HR	HR	HR	Tri-State Seed & Ag
Defense+EV	3	HR	HR	HR	HR	HR	HR	Not Available
Depend+EV	4	HR	HR	HR	HR	HR	R	AgriPro brand - Garst Seed
DK124	2	HR	HR	HR	HR	HR	HR	Monsanto
DK127	3	HR	R	R	HR	HR	HR	Monsanto
DK134	3	HR	HR	HR	HR	HR	HR	Monsanto
DK140	4	HR	R	HR	HR	HR	HR	Monsanto
DK141	4	HR	HR	HR	HR	HR	HR	Not Available
DKA37-20	3	HR	HR	HR	HR	HR	R	Monsanto
DKA42-15	4	HR	HR	HR	HR	HR	HR	Monsanto
Dominator	4	HR	R	HR	HR	HR	R	AgriPro brand - Garst Seed
Dynamic	2	HR	HR	HR	HR	HR	HR	Grassland Central
Emperor	4	HR	HR	HR	HR	HR	HR	ABI Alfalfa
Empire	2	HR	R	HR	HR	HR	R	Brunner Seed Farm
Enhancer	4	HR	R	HR	R	HR	MR	Fontanelle Hybrids
EverGreen	3	HR	R	HR	HR	HR	R	Syngenta
Evolution	2	HR	R	HR	HR	HR	R	Mycogen Seed
Extend	4	HR	R	HR	HR	HR	R	Spangler Seedtech
Feast+EV	3	HR	HR	HR	R	HR	HR	AgriPro brand - Garst Seed
Forecast 1001	4	HR	R	HR	R	HR	R	Dairyland Seed
Forecast 3001	3	HR	R	HR	R	HR	R	Dairyland Seed
FQ 314	3	HR	HR	HR	HR	HR	HR	Mycogen Seed
FQ 315	3	HR	R	HR	HR	HR	HR	Mycogen Seed
FSG300LH	3	HR	HR	HR	HR	HR	HR	LaCrosse Forage & Turf Seed
Geneva	4	HR	HR	HR	HR	HR	HR	Syngenta
GH700	4	HR	HR	HR	HR	HR	HR	Golden Harvest Seed
GH750	4	HR	HR	HR	HR	HR	HR	JC Robinson Seeds/Golden Harvest
GH757	4	HR	HR	HR	HR	HR	HR	Golden Harvest Seed
GH766	3	HR	R	HR	HR	HR	R	JC Robinson Seeds/Golden Harvest
GH767	2	HR	R	HR	HR	HR	R	Golden Harvest Seed
Gold Plus	4	HR	R	HR	HR	HR	R	PGI Alfalfa, Top Farm Hybrids
GoldLeaf	3	HR	R	HR	R	HR	R	Gold Country Seed, Albert Lea Seed House
Good as Gold II	4	HR	R	HR	R	HR	MR	Bio Plant Research
GreenFeast	2	HR	HR	HR	HR	HR	HR	Olds Seed Solutions
Harvester 812HY	4	HR	R	HR	R	HR	R	Fielder's Choice Direct Seed Corn
HayGrazer	4	HR	R	HR	R	R	MR	Kaltenberg Seed Farms
HayMaker II	4	HR	R	HR	HR	HR	R	Kussmaul Seeds
Hunter	4	HR	R	HR	HR	HR	R	Ramy International
HybridForce 400	4	HR	R	HR	R	HR	MR	Dairyland Seed

Disease resistance and fall dormancy of alfalfa varieties marketed in Minnesota (continued).

Variety ¹	Fall Dormancy ²	Disease Resistance Ratings ^{3,4}						Seed Source ⁵
		BW	VW	FW	An	PRR	Aph	
HybriGreen-41	4	HR	R	HR	R	HR	R	Not Available
Ignite	3	HR	R	HR	HR	HR	HR	Jung Seed Genetics
Imperial	3	HR	R	HR	HR	HR	R	ABI Alfalfa
Innovator+Z	3	HR	HR	HR	HR	HR	R	America's Alfalfa
Iroquois	2	HR	S	MR	S	S	—	R.J Hunt Seed
Jade II	4	HR	R	HR	R	HR	MR	NC+ Hybrids
Journey 204 Hybrid	4	HR	R	HR	HR	HR	R	Fontanelle Hybrids
Laser	4	HR	R	HR	R	HR	MR	AMPAC Seed
Legend Gold	3	HR	HR	HR	HR	HR	HR	Legend Seeds
LegenDairy 2.0	3	HR	R	HR	HR	HR	R	Croplan Genetics
LegenDairy YPQ	3	HR	R	HR	HR	HR	HR	Croplan Genetics
LH 3000	3	HR	HR	HR	HR	HR	R	Jung Seed Genetics
Lightning II	4	HR	HR	HR	HR	HR	HR	Jung Seed Genetics
MagnaGraze	3	HR	R	HR	R	HR	R	Dairyland Seed
Magnum III	4	R	MR	R	MR	R	LR	Dairyland Seed
Magnum III-Wet	3	R	MR	R	MR	R	MR	Dairyland Seed
Magnum IV	4	HR	R	HR	R	HR	MR	Dairyland Seed
Magnum V	4	HR	R	HR	R	HR	MR	Dairyland Seed
Magnum V-Wet	3	HR	R	HR	R	HR	R	Dairyland Seed
Mainstay	3	HR	R	HR	HR	HR	R	AgVenture
Mariner	2	R	MR	HR	R	HR	MR	Allied Seed
Mariner II	2	HR	R	HR	R	HR	R	Allied Seed
Maximum I	3	HR	HR	HR	HR	HR	R	Johnson Seeds of Dassel
Milk River	3	HR	R	HR	HR	HR	R	R.J Hunt Seed
Monument	3	R	LR	R	—	MR	—	Geertson Seed Farm
Monument II	4	R	LR	HR	S	R	—	Geertson Seed Farm
MP2000	3	HR	R	HR	HR	HR	HR	Croplan Genetics
Multi 5301	4	R	R	HR	HR	MR	—	Geertson Seed Farm
Multi 775	4	HR	R	HR	R	R	R	Geertson Seed Farm
Multiplier 3 -TMF	3	HR	R	HR	HR	HR	HR	Mycogen Seed
Nemesis	3	R	HR	HR	HR	HR	HR	Renk Seed
NetYield 500	4	HR	R	HR	R	HR	MR	Net Seeds
Oneida Ultra	4	HR	HR	HR	R	R	—	LaCrosse Forage & Turf Seed
Oneida VR	3	R	HR	HR	MR	MR	—	Not Available
Paragon BR	3	HR	R	HR	R	HR	R	Bio Plant Research
Perfect	4	HR	HR	HR	HR	HR	HR	Grassland Central
Persist	4	HR	R	HR	MR	HR	MR	Kaltenberg Seed Farms
Phabulous	4	HR	HR	HR	HR	HR	HR	Trelay
Phirst	4	HR	R	HR	HR	HR	R	Bio Plant Research
Platinum	4	HR	HR	HR	HR	HR	HR	Not Available
Pointer	4	HR	HR	HR	HR	HR	HR	Dahlco Seeds
Prairie Max	3	HR	R	HR	HR	HR	HR	Sansgaard Seed Farms
Prolific	3	HR	R	HR	R	HR	R	Bio Plant Research
Radiant	4	HR	HR	HR	HR	HR	HR	AMPAC Seed, De Long
Rainier	3	HR	R	HR	HR	HR	HR	Syngenta
Rebound 4.2	4	HR	HR	HR	HR	HR	HR	Croplan Genetics
Reliance	3	HR	HR	HR	HR	HR	R	Allied Seed
Rhino	3	HR	R	R	R	R	R	Geertson Seed Farm
Ripin	4	HR	R	HR	R	HR	R	AMPAC Seed, DeLong Seed, Welter Seed & Honey
Root 86	4	HR	HR	HR	HR	HR	HR	Trelay
Rustler II	4	HR	HR	HR	HR	HR	R	Andrews Seed
Samurai	3	HR	R	HR	HR	HR	R	Not Available

Variety ¹	Fall Dormancy ²	Disease Resistance Ratings ^{3,4}						Seed Source ⁵
		BW	VW	FW	An	PRR	Aph	
Setter	3	HR	HR	HR	HR	HR	HR	Dahco Seeds
Somerset	3	HR	HR	HR	HR	HR	HR	Syngenta
Spirit	3	HR	R	HR	R	HR	MR	PGI Alfalfa
Spredor 3	1	HR	MR	HR	R	MR	S	Syngenta
Sprint	3	HR	R	HR	R	HR	HR	Specialty Seeds
Spur	4	HR	R	HR	HR	HR	R	Allied Seed
Stampede	3	HR	R	R	R	HR	R	Allied Seed
Starbuck	3	HR	R	HR	HR	HR	HR	Spangler Seedtech
Sterling	2	HR	R	HR	HR	HR	R	Mycogen Seed
Supreme	3	HR	HR	HR	HR	HR	HR	Kussmaul Seeds
Surpass	3	HR	R	HR	MR	R	—	Albert Lea Seed, Andrews Seed
Sustain	4	HR	R	HR	R	R	R	Kussmaul Seeds
Target II Plus	3	HR	R	HR	R	HR	MR	Producers Hybrids
TMF 421	2	HR	HR	R	HR	HR	HR	Mycogen Seed
TMF 4355LH	3	HR	R	HR	HR	HR	R	Mycogen Seed
Trophy	4	R	R	HR	R	HR	R	Not Available
UltraLac	2	HR	HR	HR	HR	HR	HR	Elk Mound Seed
Value Plus 1	4	HR	R	HR	HR	HR	R	Brown Seed Farms
Vernal	2	R	—	MR	—	—	—	Albert Lea Seed, RJ Hunt Seed
Viking 1	2	R	HR	HR	R	R	—	Syngenta
Vitro	3	HR	HR	HR	HR	HR	R	North-Gro Seeds
Voyager II	4	HR	R	HR	R	HR	MR	Bio Plant Research, Lemke Seed
Webfoot Supreme	4	R	R	R	R	R	LR	Great Lakes Hybrids
WetLand	3	R	MR	R	R	HR	MR	Bio Plant Research
WinterGold	4	HR	HR	HR	HR	R	HR	Renk Seed
WinterKing	3	HR	HR	HR	HR	HR	R	Wensman Seed
WinterStar	2	HR	HR	HR	HR	HR	R	Wensman Seed
WL 232 HQ	2	HR	HR	HR	HR	HR	HR	W-L Alfalfa, AgVenture East, Kaystar Seeds, Olds Seed Solutions, UAP Midwest
WL 319HQ	3	HR	HR	HR	HR	HR	HR	W-L Alfalfa, AgVenture East, Kaystar Seeds, Olds Seed Solutions, UAP Midwest
WL 324	3	HR	R	HR	HR	HR	HR	Olds Seed Solutions
WL 325 HQ	3	HR	R	HR	HR	HR	R	W-L Alfalfa, AgVenture East, Kaystar Seeds, Olds Seed Solutions, UAP Midwest
WL 326 GZ	4	HR	HR	HR	HR	HR	HR	W-L Alfalfa, AgVenture East, Kaystar Seeds, Olds Seed Solutions, UAP Midwest
WL 327	4	HR	R	HR	HR	HR	HR	W-L Alfalfa, AgVenture East, Kaystar Seeds, Olds Seed Solutions, UAP Midwest
WL 342	4	HR	HR	HR	HR	HR	HR	W-L Alfalfa, AgVenture East, Kaystar Seeds, Olds Seed Solutions, UAP Midwest
WL 346LH	4	HR	HR	HR	HR	HR	HR	Olds Seed Solutions
Wrangler	2	R	LR	R	LR	HR	—	Albert Lea Seed, RJ Hunt Seed
Yielder	3	HR	HR	HR	R	HR	MR	AgriPro brand - Garst Seed

¹ Varieties includes those marketed in Minnesota for which disease resistance ratings were provided. Varieties not seeded in a recent Minnesota yield trial are excluded from yield tables on pages 10-13. ² Fall dormancy and pest resistance ratings from Alfalfa Council report (www.alfalfa.org/falldormancy.html) or provided by a developer, with dormancy based on fall growth in mid-October after cutting first week of September: 11 = tallest (and to be least winterhardy), 1 = shortest. ³ Diseases abbreviated as BW: bacterial wilt, PRR: Phytophthora root rot, FW: Fusarium wilt, An: anthracnose, VW: Verticillium wilt, Aph: Aphanomyces root rot. ⁴ Pest resistance rating (percent resistant plants): HR = high resistance (51+), R = resistant (31-50), MR = moderate resistance (16-30), LR = low resistance (6-15), and S = susceptible (0-5). ⁵ Seed source phone numbers and websites are listed in "Forage Seed Sources," pages 20-21. A version of this table with additional or updated disease resistance ratings is posted at the UMF-Agronomy Forages website: www.agnr.umn.edu/forages

2003 Forage Seed Sources.

Marketer*	City	State	Phone	Web URL	Other Forages †
ABI Alfalfa, Inc.	Ames	IA	515-292-2432	www.abialfalfa.com	
Agassiz Seed & Supply	West Fargo	ND	701-282-8118	www.agassizseed.com	A, RC, RCg, BFT, SB, OG, T, TF
AgriPro brand-Garst Seed Co.	Slater	IA	800-831-6630	www.agripro.com	
AgVenture Central	Madison Lake	MN	507-243-3263		
AgVenture East	Kasson	MN	800-657-4890		
AgVenture Inc.	Kentland	IN	888-999-0859, 219-474-5557	www.agventure.com	
AgVenture West	Jeffers	MN	507-628-4929		
Albert Lea Seedhouse	Albert Lea	MN	800-352-5247, 507-373-3161	www.alseed.com	A, RC, WC, RCg, BFT, K, SB, OG, T, TF, PR
Allied Seed L.L.C.	Macon	MO	800-880-8127	www.alliedseed.com	RC, RCg, BFT, SB, OG, T, TF, PR
America's Alfalfa	Princeton	IL	800-873-2532	www.americasalfalfa.com	
AMPAC Seed Co.	Winona Lake	IN	219-268-9549	www.ampacseed.com	RC, WC, RCg, BFT, K, SB, OG, T, TF, PR, F
Andrews Seed Co.	Ontario	OR	800-240-8887		RC
Barenbrug USA	Tangent	OR	800-547-4101	www.barusa.com	
Bio Plant Research	Camp Point	IL	800-593-7708, 217-593-7707		
Brown Seed Farms	Bay City	WI	715-594-3523	www.brownseed.com	RC, AC, LC, RCg, T
Brunner Seed	Durand	WI	715-672-5887		
CEBECO International Seeds Inc.	Halsey	OR	541-369-2251	www.intlseed.com	RC, OG, T, TF, PR
CROPLAN Genetics	St. Paul	MN	800-851-8810, 651-634-8105	www.croplangenetics.com	RCg
Dahlco Seeds	Cokato	MN	320-286-5782	www.dahicoseeds.com	
Dairyland Seed Co.	West Bend	WI	800-236-0163	www.dairylandseed.com	
Elk Mound Seed	Elk Mound	WI	715-879-5556	www.elkmoundseed.com	
Fielder's Choice Direct Seed	Monticello	IN	800-321-3177, 574-583-2741x126	www.fielderschoicedirect.com	
Fontanelle Hybrids	Fontanelle	NE	402-721-1410	www.fontanelle.com	
Garst Seed Co.	Slater	IA	800-831-6630	www.garstseed.com	
Geertson Seed Farm	Adrian	OR	800-843-0390	www.geertsonseed.com	
Gold Country Seed	Hutchinson	MN	320-587-1050	www.goldcountryseed.com	
Golden Harvest Seeds	Cordova	IL	309-654-2234	www.goldenharvestseeds.com	
Grassland Central	Jordan	MN	952-492-2990		
Great Lakes Hybrids	Ovid	MI	800-257-7333, 989-834-2251	www.glh-seeds.com	
JC Robinson Seeds/Golden Harvest	Waterloo	NE	402-779-2531	www.jcrob.com	
Johnson Seeds-Dassel	Dassel	MN	320-275-2430		
Johnson Seeds-MB	Arborg	MB	204-376-5228	www.johnsonseeds.com	
Jung Seed Genetics, Inc.	Randolph	WI	800-242-1855, 920-326-5891	www.jungseedgenetics.com	RC
Kaltenberg Seed Farms	Waunakee	WI	800-383-3276, 608-849-5021	www.kaltenbergseeds.com	
KayStar Seeds	Huron	SD	605-352-8791	www.kaystarseed.com	RC, RCg, BFT, K, OG, T, TF
Kussmaul Seeds	Mt. Hope	WI	608-988-4568	www.kussmaulseeds.com	
La Crosse Forage & Turf Seed Co.	La Crosse	WI	800-329-1909, 608-783-9560		A, RC, RCg, BFT, SB, OG, T, TF, PR
Legend Seeds	De Smet	SD	605-854-3346	www.legendseeds.net	
Lemke Seeds	Mequon	WI	262-242-2647		
LG Seeds	Sauk Rapids	MN	320-248-0042		
LG Seeds	River Falls	WI	715-821-7788, 800-637-2887	www.lgseeds.com	
Mallard Seed	Plainview	MN	800-562-1768, 507-534-2300		
Monsanto	St. Louis	MO	314-694-5701	www.monsanto.com	
Mycogen Seeds	Indianapolis	IN	317-337-4007	www.mycogen.com	

*N/A: No marketer or discontinued for 2003; variety is listed to update previous report with 2002 production year data.

Marketer*	City	State	Phone	Web URL	Other Forages ¹
Mycogen Seeds	Holmen	WI	608-526-2627		
NC+ Hybrids	Lincoln	NE	800-279-7999, 402-467-2517	www.nc-plus.com	
NetSeeds Inc.	Urbandale	IA	515-331-0939	www.netseeds.com	
North-Gro Seeds Inc	Cuba City	WI	608-744-7333	www.northgro.com	
Olds Seed Solutions	Madison	WI	608-249-9291 x244, 800-356-7333	www.myseedco.com/ OldsSeedSolutions.cfm	RC, RCg, BFT, K, SB, OG, T, TF, PR, F, Br
PGI Alfalfa Inc.	Story City	IA	800-247-3967, 515-733-5274		
Pioneer Hi-Bred Int'l Inc.	Johnston	IA	515-334-6426	www.pioneer.com	
Producers Hybrids Inc.	Battle Creek	NE	888-675-3190, 402-675-2975	www.producershybrids.com	
R.J. Hunt Seed Co.	Wadena	MN	218-631-4190		A, RC, RCg, BFT, OG, T, TF, Br
Ramy International Ltd.	Mankato	MN	800-658-7269, 507-387-4091		
Renk Seed Company	Sun Prairie	WI	800-289-7365, 608-837-7351	www.renkseed.com	
Sansgaard Seed Farms	Story City	IA	800-544-8751		
Shepherd Seeds	Beloit	WI	608-363-6552	www.seedfarm.com	
Spangler Seedtech Inc	Jefferson	WI	800-284-1080, 414-674-4606	www.spanglerseed.com	
Specialty Seeds	Albany	MN	320-845-7689	www.specialtyseedsalbany.com	
Syngenta Seeds Inc.	Golden Valley	MN	763-593-7324	www.syngenta-us.com	
The DeLong Company	Clinton	WI	608-676-2255	www.delongcompany.com	RC, WC, RCg, BFT, K, SB, OG, T, TF, PR, F
Top Farm Hybrids	Cokato	MN	320-286-5516	www.top-farm.com	RC, T
Trelay Seed Co.	Livingston	WI	800-421-0397, 608-943-6363	www.trelay.com	
Tri-State Seed & Ag	Sleepy Eye	MN	800-203-8581, 507-794-3078		
Twin Cities Seeds	Edina	MN	800-545-8873, 612-545-8879		RC, WC, OG, T, TF, PR
UAP Midwest	Wall Lake	IA	712-664-2444	www.uapmidwest.com	
United Suppliers Inc.	Eldora	IA	641-858-2341	www.uniteds.com	
Welter Seed & Honey	Onslow	IA	319-485-2762		RC, WC, RCg, BFT, K, SB, OG, T, TF, PR, F
Wensman Seed Co.	Wadena	MN	218-631-2954	www.wensmanseed.com	
Werner Farm Seeds	Dundas	MN	507-645-7995		A, RC, RCg, BFT, K, OG, T
W-L Research, Inc.	Madison	WI	800-406-7662, 608-240-0630	www.wlresearch.com	
Ziller Seed Co., Inc."	Bird Island	MN	320-365-3674	www.zillersseed.com	

*N/A: No marketer or discontinued for 2003; variety is listed to update previous report with 2002 production year data.

¹ Key for sources of several other forage seeds: A – public alfalfa, RC – red clover, BFT – birdsfoot trefoil, AC – alsike clover, WC – white or ladino clover, K – kura clover, RCg – Reed canarygrass, SB – smooth bromegrass, OG – orchardgrass, T – timothy, TF – tall fescue, PR – perennial ryegrass, F – festulolium, Br – brassicas.

Check each company's website for current offerings not reported here.

CICER MILKVETCH

Cicer milkvetch is a vigorous, persistent, high-yielding perennial legume that spreads by rhizomes. Stands can persist for many years under heavy grazing and can tolerate stress well once established. It tolerates drought well and is grown extensively for grazing in the western United States. It is also very winterhardy and resistant to insects and disease, but has poor seedling vigor and may take two years to establish. It also has some unknown anti-quality components that can cause photosensitization and hair loss on some grazing ruminants. When animals become acclimated to grazing cicer milkvetch, problems lessen. More evaluation is needed before widespread use of cicer milkvetch is recommended for grazing in Minnesota.

Hi Pal, a variety developed at Minnesota AES, was selected for plant vigor and palatability under grazing. It will be on the market when adequate seedstocks are obtained.

Varietal evaluations were seeded in pure stands at three locations in 1998, 1999, 2000 and 2001 to evaluate forage yields. All locations were harvested twice each year except Rosemount was harvested three times in 2000.

Dry matter yield, in tons dry matter per acre, of cicer milkvetch varieties seeded at three locations.

Variety	Grand Rapids	Rosemount	Morris
	1999-2001	1999-2001	1999-2001
Hi Pal	3.8	4.5	4.9
Lutana	3.5	4.3	4.8
Monarch	3.4	4.3	4.7
Windsor	3.2	4.2	4.4
LSO 5%	0.5	0.2	0.5

Cicer Milkvetch Planting Rate and Date

Bushel Weight, Pounds	60
Seeds/Pound	122,000
Planting Rate, Pounds/Acre	
Alone	16
Planting Rate, Seeds/Sq.Ft.	
Alone	50
Planting Date	Early Spring or Summer

KURA CLOVER

Kura clover is a relatively low growing, spreading perennial legume. It is best used as a grazing crop because of its growth habit and plant structure. Kura clover can tolerate frequent grazing and has consistently high forage quality, resulting in high animal performance.

Kura clover can induce bloat in grazing ruminants and may be best suited for planting in mixtures with cool-season grasses such as reed canarygrass.

Kura clover is persistent once established, but has poorer seedling vigor than birdsfoot trefoil. Kura clover also requires inoculation with the proper

rhizobium to insure adequate biological nitrogen fixation. Because of its excellent persistence and spreading growth habit, Kura clover has great potential for soil cover and erosion control in agricultural and nonagricultural areas.

Summary tables include variety trials seeded in 1999 and 2002 at Rosemount. Thirty pounds of nitrogen was applied at time of seeding to assist early growth and development. The 1999 trial was harvested three times per year. The 2002 trial was harvested once on August 19 for yield after being clipped twice earlier in the year to control weeds.

Dry matter yield, in tons per acre, and vigor of kura clover varieties seeded at Rosemount.

Variety	Vigor*	Yield	
	6/6/02	2001-2	2002
Cossack	7.3	4.5	1.3
Endura	6.5	4.3	1.5
NF-93	5.3	4.6	1.6
Rhizo	4.3	4.1	1.4
LSO 5%	0.8	NS	0.2

* 1=least, 10=best vigor.

Kura Clover Planting Rate and Date

Bushel Weight, Pounds	65
Seeds/Pound	215,000
Planting Rate, Pounds/Acre	
Alone	10
In Mixtures	6
Planting Rate, Seeds/Sq.Ft.	
Alone	50
In Mixtures	30
Planting Date	Early Spring or Summer

ORCHARDGRASS

Orchardgrass is often used in hay and pasture mixes with other grasses and legumes because it establishes rapidly and recovers quickly after grazing or harvesting. Its major limitation is a lack of winterhardiness, but it can persist and remain productive in areas with reliable snow cover.

Orchardgrass varieties were established in pure stands in 1997, 1998 and 1999 at Rosemount and Grand Rapids and in 1997 at Morris.

Experimental plots were generally harvested three times per year. The Morris location was harvested only twice in 1999. Nitrogen was applied in the early

spring and after each harvest at rate of 50 pounds per acre for each application.

Orchardgrass Planting Rate and Date

Bushel Weight, Pounds	14
Seeds/Pound	653,000
Planting Rate, Pounds/Acre	
Alone	10
In Mixtures	3
Planting Rate, Seeds/Sq.Ft.	
Alone	150
In Mixtures	45
Planting Date	
Alone	Early Spring or Late Summer
In Mixtures	Use Date for Legume

Dry matter yield, in tons dry matter per acre, of orchardgrass varieties seeded at three locations.

Variety	Grand Rapids		Rosemount		Morris
	1990-1994	1999-2002	1998-2000	1999-2002	1999-2001
AC Nordic	-	3.7	-	3.4	-
Albert	-	3.9	-	-	-
Ambassador	3.5	3.6	4.4	-	2.6
Bengal	-	-	-	3.5	-
Condor	-	3.8	4.5	-	2.6
Crown	3.5	-	4.5	-	2.6
Dawn	3.6	-	-	-	-
Duke	-	3.8	4.8	3.5	3.1
Elsie	3.5	3.5	-	3.4	-
Haymate	-	3.7	4.5	-	2.7
Hawkeye	-	3.9	-	3.8	-
Justus	3.4	3.4	4.5	3.5	2.7
Megabite	-	3.7	-	3.8	-
Mammoth	-	-	-	3.7	-
Napier	3.6	-	4.3	-	2.1
Orbit	3.4	-	3.6	-	2.8
Orion	3.7	4.1	4.7	3.7	3.2
Potomac	3.5	-	4.4	3.3	2.6
Sterling	3.4	-	-	-	-
Warrior	-	-	-	3.5	-
LSD 5%	NS	0.4	0.4	0.2	0.8

"Timothy, red clover, red top grass, Alsike clover and Kentucky bluegrass are now our most useful kinds for meadows and pastures. Corn and the millets are not nearly as well appreciated by our farmers as they should be. Temporary pastures and meadows to stand for a few to several years succeed in all parts of the state, and the first four named grasses and clovers are best."

-Willet M. Hays, in the Division of Agriculture Report in Biennial Report of the Minnesota State Agricultural Experiment Station for the Biennial Period Ending December 1890

RED CLOVER

Red clover can be seeded in pure stands or with grasses for grazing, hay or silage. It is more easily established in pasture renovation than either alfalfa or birds-foot trefoil.

Historically, the winterhardy varieties of red clover have not persisted beyond two crop years in Minnesota because they are susceptible to diseases and winter kill. However, most of the improved varieties currently sold for use in Minnesota can persist for three years if there is good winter snow cover.

Experimental varietal trial plots were established at Grand Rapids in 1998 and 1999, at Morris in 1996 and 1997, and at Rosemount in 1996, 1999 and 2002. Harvest frequency is generally three times per year. The 2002 yield data from Rosemount was a single fall harvest of a spring-seeded trial. Varietal differences

for forage yield in these trials were not great, except for the variety Astred, which does not persist in Minnesota.

Dry matter yield of red clover, in tons dry matter per acre, seeded at three locations.

Variety	Grand Rapids		Rosemount			Morris		
	1999-01	2000-01	1997-98	2000	2002	1996	1997	1998
Arlington	2.9	3.0	4.1	5.2	1.7	3.2	2.0	2.9
Astred	-	-	2.8	-	-	2.5	1.8	2.7
Cinnamon	-	-	4.5	-	-	3.4	2.1	3.0
Cinnamon Plus	-	-	-	-	1.7	-	-	-
Freedom	-	3.2	-	5.5	1.8	-	-	-
Juliette	-	3.3	-	5.6	1.7	-	-	-
Marathon	3.4	3.2	4.0	5.6	1.9	3.4	1.7	2.6
Prima	3.4	3.5	-	5.3	-	-	-	-
Randolph	3.5	-	4.1	-	-	3.8	2.0	2.8
Redland III	-	-	-	-	-	3.3	1.9	2.8
Redland Graze II	-	-	-	-	2.0	-	-	-
Redstar	-	3.4	-	5.9	-	-	-	-
Scarlett	3.4	-	4.2	-	1.7	3.7	1.8	2.8
LSD 5%	0.2	0.3	0.6	0.6	0.2	NS	0.3	NS

**Red Clover
Planting Rate and Date**

Bushel Weight, Pounds65
Seeds/Pound272,000
Planting Rate, Pounds/Acre	
Alone9
In Mixtures5
Planting Rate, Seeds Sq.Ft.	
Alone50
In Mixtures30
Planting Date	
AloneEarly Spring to September 1
In MixturesUse Date for Legume

REED CANARYGRASS

Reed canarygrass is adapted throughout Minnesota for use as hay, pasture and silage. It is one of the best grass species for poorly drained soils and tolerates flooding better than other cool-season grasses.

The species utilizes nitrogen efficiently and is adapted to liquid manure application. However, seedling vigor of reed canarygrass is not as good as that of other commonly used forage grasses.

Prior to 1985, common reed canarygrass was described as being less palatable than most other grass species seeded for hay and pasture.

The most recent developments in reed canarygrass breeding have been the release of varieties low in indole alkaloid concentration. This factor dramatically improves animal performance and

palatability. Alkaloids are bitter, complex, nitrogen-containing compounds.

In grazing trials, lambs and steers gained more weight and sheep had less diarrhea on low-alkaloid varieties than on common reed canarygrass.

Hay should be harvested between the boot and early heading stage because quality declines with maturity.

Each of the available reed canarygrass varieties is winterhardy and persistent in Minnesota.

Trials were established in pure stands in 1993 at Morris, Grand Rapids and Rosemount.

Trials also were established in 1999 at Rosemount and Grand Rapids. Trials are generally harvested three times per year.

Nitrogen was applied early in the spring and after the first two harvests at a rate of 40 to 50 pounds per acre per application.

Animal performance is better when the variety grown is endophyte-free. Endophytes are fungi that invade plant tissues, reducing forage palatability and animal performance.

The wheatgrasses are valuable native forage species. They are especially suitable for growing in the northern Great Plains area of the United States.

The variety Newby is a wheatgrass x quackgrass hybrid. Wheatgrasses can produce excellent forage yields and sustained productivity under hay and pasture management systems, either in monoculture or in mixtures with alfalfa or other suitable legumes.

Recent releases of improved varieties have prompted interest in these species, especially in the drier western areas of Minnesota. Where rainfall is higher, tall fescue will outyield the wheatgrasses.

Minnesota Agricultural Experiment Station scientists initiated performance trials of tall fescue and the wheatgrasses in 1992, 1997 and 1998.

The trials were harvested three times per year, and nitrogen was applied in the early spring and after each harvest at rates of 50 pounds per acre.

Reed Canarygrass

Planting Rate and Date

Bushel Weight, Pounds	46
Seeds/Pound.....	526,000
Planting Rate, Pounds/Acre	
Alone	7
In Mixtures.....	5
Planting Rate, Seeds Sq.Ft.	
Alone	85
In Mixtures.....	60
Planting Date	
Alone	Early Spring or Late Summer
With Legumes	Use Date for Legume

Dry matter yields, in tons dry matter per acre, of reed canarygrass seeded at three locations in Minnesota.

Variety	Grand Rapids		Rosemount		Morris
	1994-1996	2002	1994-1996	2000-2002	1994-1996
Chiefton	-	4.9	-	3.7	-
Lara	-	-	3.0	-	-
Palaton	3.5	4.8	3.1	3.8	6.1
Rival	-	4.6	-	3.8	-
Vantage	3.3	5.1	3.3	3.7	5.7
Venture	3.5	5.1	3.1	3.9	5.5
LSD 5%	NS	0.4	NS	NS	NS

TALL FESCUE

Tall fescue, a bunchgrass, may be planted in mixtures with other grasses and legumes. It establishes rapidly, withstands trampling, tolerates summer drought and produces fall-season pasture when other grasses become dormant.

Tall fescue is subject to winter injury, but it may remain productive in areas with reliable snow cover.

Tall Fescue

Planting Rate and Date

Bushel Weight, Pounds	25
Seeds/Pound.....	229,000
Planting Rate, Pounds/Acre	
Alone	10
In Mixtures.....	4
Planting Rate, Seeds Sq.Ft.	
Alone	50
In Mixtures.....	20
Planting Date	
Alone	Early Spring or Summer
With Legumes	Use Date for Legume

Dry matter yields, in tons dry matter per acre, of tall fescue, wheatgrass and festuca-lolium hybrids seeded at three locations.

Variety	Grand Rapids		Rosemount		Morris
	1994-1996	1999-2001	1993-1995	1998-2000	1993-1996
Tall Fescue					
Barcel	3.0	—	5.3	—	4.5
Cajun	—	4.9	—	5.3	—
Fawn	3.3	—	4.9	—	5.0
Ky 31	3.5	4.6	5.8	—	4.7
Ky 31 endophyte-free ¹	3.3	—	5.6	5.9	4.9
Martin	3.6	4.9	5.3	4.8	4.7
Maximize	—	4.6	—	5.1	—
Mozark	3.5	4.8	5.4	5.5	4.8
Mustang	2.7	4.3	4.7	4.9	—
Seine	—	—	—	5.6	4.8
Stef	3.3	—	5.3	—	—
Festuca-Lolium Hybrids					
Kemal	—	3.8	—	3.3	—
Tandem II	—	3.8	—	3.3	—
Wheatgrasses					
Manska	2.9	—	4.0	—	4.8
Newhy	2.7	—	3.9 ²	4.2	—
Reliant	3.0	—	4.2	—	5.0
LSD 5%	0.5	0.6	0.6	0.4	NS

¹ Endophytes are fungi that invade plant tissues, reducing forage palatability and animal performance.

² Newhy main yield reported for 1993 and 1994. Winter injury was severe at Rosemount in 1994-1995, resulting in stand loss of Newhy and reducing overall varietal yield by 25%.

TIMOTHY

Timothy is adapted throughout Minnesota for use in hay and pasture mixes. When timothy is the major component in hay its stage of maturity affects both yield and quality. Harvesting timothy at early heading is the preferred time. Timothy produces the majority of its forage at the first harvest.

Varieties of timothy differ in maturity, so care should be taken in choosing those that fit the management requirements of the crop and mixture. Early varieties are best adapted to a three-cut system with alfalfa.

Varieties that are intermediate to late maturing should not be harvested more than twice during the growing season. Therefore, appropriately selected timo-

thy varieties are compatible with red clover and birdsfoot trefoil in mixtures for hay production.

Dry matter yields, in tons dry matter per acre, of timothy seeded at three locations.

Variety	Grand Rapids		Rosemount		Morris
	1994-1996	2000-2002	1993-1995	2000-2002	1993-1996
Early to intermediate maturity					
Aurora	—	3.3	—	3.3	—
Climax	3.6	3.0	3.8	3.4	4.0
Colt	—	3.3	—	3.7	—
Comtal	3.4	2.8	3.7	3.0	—
Goliath	3.4	—	3.4	—	—
Promesse	—	3.1	—	3.1	—
Timfor	3.5	—	3.8	—	—
Toro	3.7	—	3.9	—	—
Late maturity					
Heidemij	3.5	—	3.0	—	3.5
Hokusen	3.3	—	3.4	—	3.6
Motim	—	2.8	—	3.4	—
LSD 5%	0.4	0.3	0.4	0.5	NS

Varieties in the experiment station timothy trials were established in pure stands in 1992 at Rosemount and Morris and at Grand Rapids in 1993.

Trials also were established at Rosemount and Grand Rapids in 1999. Trials were harvested two or three times per year. Nitrogen was applied at all locations in the early spring and after each harvest at a rate of 40 to 50 pounds per acre.

Early maturing varieties of timothy had greater forage production than the late maturing varieties at all locations over all harvest years. Quality forage may be maintained later in the season with the later varieties. Timothy is normally less persistent than other cool-season grasses such as reed canarygrass.

Timothy Planting Rate and Date

Bushel Weight, Pounds	45
Seeds/Pound	1,234,000
Planting Rate, Pounds/Acre	
In Mixtures	3
Planting Rate, Seeds Sq.Ft.	
In Mixtures	35
Planting Date	
In Mixtures	Use Date for Legume

BIRDSFOOT TREFOIL

Birdsfoot trefoil is an excellent non-bloating pasture legume that can also be harvested for hay and silage. It grows under a wide range of soil conditions, and persists longer and performs better than other legumes under poor soil conditions such as low fertility, acidity and poor drainage. It is also persistent when grown with Kentucky bluegrass, reed canarygrass and timothy.

Performance trials of birdsfoot trefoil were established at Rosemount in 1998, 1999 and 2001 and at Grand Rapids in 1998 and 2001. The trials were harvested twice at Grand Rapids and three times at Rosemount, except in 1999 and 2001 when Rosemount was only harvested twice as well.

Roseau and Nuelin are two varieties that have increased natural tolerance to the herbicide Roundup. Steadfast, a rhizomatous birdsfoot trefoil released by the University of Missouri and USDA-ARS, was lower yielding than other varieties in the trial and may not be winterhardy enough to be grown in Minnesota.

Winterhardy varieties, such as Norcen, generally produce the highest consistent

overall yields. Norcen, released in 1983 by the agricultural experiment stations of Minnesota and six other states, has performed exceptionally well in grazing trials.

Birdsfoot Trefoil Planting Rate and Date

Bushel Weight, Pounds	65
Seeds/Pound.....	372,000
Planting Rate, Pounds/Acre	
Alone	8
In Mixtures.....	6
Planting Rate, Seeds Sq.Ft.	
Alone	70
In Mixtures.....	50
Planting Date.....	Early Spring or Summer

BROMEGRASS

Bromegrass is generally grown for hay in mixture with alfalfa, or is used as pasture in mixture with other grasses and legumes. Varieties can be classed as southern, intermediate and northern types. Varieties of the southern type may

not be higher yielding but are generally less susceptible to leaf diseases and earlier in maturity than northern types. All varieties are winterhardy. Some stand losses may occur when bromegrass is managed under three- and four-cut alfalfa harvest systems. Overgrazing also will reduce stands.

Varieties are currently being evaluated in pure stands at Minnesota experiment stations with a three-cut harvest system. Nitrogen was applied at all locations in early spring and after the first two harvests at a rate of 40 to 50 pounds per acre. Average dry matter yields were very high in 1998-99 and few differences were found among performance of the varieties. Stand losses on all entries included in the table were noted in Rosemount after the first harvest in 1999, except for the variety York.

Dry matter yield, in tons dry matter per acre, of smooth bromegrass seeded at two locations.

Variety	Rosemount	Morris
	1998-2000	1999-2001
Alpha	4.8	4.6
Badger	4.4	4.5
Bounty	4.8	4.7
Lincoln	4.5	-
York	5.2	4.7
LSD 5%	0.3	NS

Dry matter yield, in tons dry matter per acre, of birdsfoot trefoil varieties seeded at Grand Rapids and Rosemount.

Variety	Rosemount			Grand Rapids	
	1998	1999-2001	2002	1999-2001	2002
Bright	3.6	3.1	-	-	-
Dawn	4.0	3.8	4.0	4.8	3.3
Empire	4.0	-	-	4.4	-
Fergus	3.9	-	-	-	-
Georgia 1	-	3.6	-	4.6	2.9
Leo	3.9	3.1	-	-	-
Norcen	4.3	3.5	3.9	4.8	3.4
Nuelin	3.7	3.1	4.0	4.2	3.6
Pardee	-	-	3.5	-	3.0
Roseau	4.1	3.4	4.1	4.6	3.3
Steadfast	3.1	2.7	-	3.5	-
Trevig	4.1	-	4.2	-	-
Viking	3.8	3.6	4.0	4.4	3.3
Wilk	4.0	3.2	4.1	-	3.1
LSD 5%	0.5	0.3	0.4	0.5	0.3

Bromegrass Planting Rate and Date

Bushel Weight, Pounds.....	14
Seeds/Pound.....	136,000
Planting Rate, Pounds/Acre	
Alone.....	16
In Mixtures.....	5
Planting Rate, Seeds Sq.Ft.	
Alone.....	50
In Mixtures.....	15
Planting Date.....	Early Spring or Late Summer

GRAIN CROPS



BARLEY

Barley varieties are compared in replicated trials at Crookston, Morris, St. Paul, Stephen and Roseau. The data collected from these trials should be used to make comparisons only among those varieties included in the trials. Descriptions of barley varieties are listed by year of release.

Variety Selection Criteria

Most barley producers in the region grow barley for malt and therefore select one of the varieties approved by the American Malting Barley Association (AMBA). The most important industry specifications for making malting grade

are grain protein, kernel plumpness and deoxynivalenol (DON), the toxin produced by the *Fusarium Head Blight* (FHB) pathogen.

Among those approved varieties, Robust is preferred by industry, although Excel and Foster may be purchased for malt as well. In addition, three new varieties, Drummond, Lacey and Legacy, have recently been approved by AMBA and may

be purchased for malt. Industry preference for the newer varieties is uncertain.

Stander was initially approved by AMBA, but is no longer considered a malting variety.

For most producers in the region the FHB disease and the presence of DON in harvested grain are the two most important factors limiting production of malting barley. Currently the only variety with partial resistance to FHB is MNBrite, however MNBrite is not approved by AMBA as a malting variety. There are no significant differences among the current malting varieties for resistance to FHB.

General-Purpose Varieties

Drummond – Medium yield and medium maturity. Very good lodging

resistance and good kernel plumpness. Six-rowed, semi-smooth awns, long rachilla hairs, colorless aleurone. Classified as a malting variety by AMBA. Resistant to spot blotch and slightly better net blotch resistance compared to the currently grown varieties. Developed by N.D. AES from crosses involving Azure, Bumper, Hazen and Stander. Released 2000. **PVP (94)**

Legacy – High yield and medium-late maturity. Medium lodging resistance and kernel plumpness. Six-rowed, semi-smooth awns, long rachilla hairs and colorless aleurone. Classified as a malting variety by AMBA. Resistant to spot blotch and slightly better net blotch resistance compared to the currently grown varieties. Developed by Busch-Agricultural Resources Inc. (BARI) from a complex cross involving the parental varieties Bumper, Karl, Manker and Excel. Released 2000. **PVP (94)**

Lacey – High yield and medium maturity. Good lodging resistance and kernel plumpness. Six-rowed, semi-smooth awns, short rachilla hairs, colorless aleurone. Classified as a malting variety by AMBA. Resistant to spot blotch. Developed by Minn. AES from crosses involving Robust, Excel and Stander. Released 2000. **PVP (94)**

Grain yield as a percent of the mean of the varieties in trials from 2000-2002 and for 2002 alone.

Variety	Crookston		Morris		Stephen		St. Paul		Roseau	Mean	
	2002	3-Year	2002	3-Year	2002	3-Year*	2002	3-Year	3-Year*	2002	3-Year
Robust	102	99	75	88	105	98	84	92	89	91	93
Excel	98	102	111	107	102	103	111	103	—	105*	—
Stander	104	105	99	101	105	109	95	102	108	101	105
Foster	104	98	119	106	100	104	102	105	104	108	104
MNBrite	98	97	97	99	103	94	97	91	95	99	96
Lacey	94	103	109	106	96	82	111	109	104	102	104
Drummond	107	100	92	97	99	88	99	103	100	99	97
Legacy	94	94	98	97	90	102	95	95	—	94	—
LSD (0.05)	18	10	25	12	17	14	17	8	14	13	5
Mean, Bu/Acre	78	94	67	83	62	67	57	77	88	53	82

* Only two years of data, 2000-2001.

Foster – Medium yield and medium maturity. Good lodging resistance and kernel plumpness. Six-rowed, semi-smooth awns, colorless aleurone and long rachilla hairs. Classified as a malting variety by AMBA. Resistant to spot blotch. Developed by N.D. AES from crosses involving Robust, ND 5570, Glenn and Karl. Released 1995. **PVP (94)**

Excel – High yield and medium maturity. Similar to Robust in lodging resistance. Kernel plumpness lower than Robust. Six-rowed semi-smooth awn, colorless aleurone and long rachilla hairs. Classified as a malting variety by AMBA. Resistant to spot blotch. Developed by Minn. AES from crosses involving Robust, Manker and a sister line of Morex. Released 1990. **PVP**

Robust – Medium yield and medium maturity. Medium lodging resistance and good kernel plumpness. Six-rowed, semi-smooth awn, short rachilla hairs, colorless aleurone. Classified as a malting variety by AMBA. Robust is currently the six-row variety of choice by the malting and brewing industry. Resistant to spot blotch. Developed by Minn. AES from crosses involving Morex and Manker. Released 1983. **PVP**

Special-Purpose Varieties

MNBrite – Medium yield and early maturity. Medium lodging resistance and kernel plumpness. Six-rowed, semi-smooth awns, colorless aleurone. Not classified as a malting variety. Resistant to kernel discoloration and has some resistance to FHB. Resistant to spot blotch. Developed by Minn. AES. Released 1998.

Royal – Intended for use as a forage companion crop and feed grain variety. Not a malting variety. Six-rowed, semi-smooth awn, blue aleurone, semidwarf stature. Superior in forage quality (RFV) compared to taller varieties based on digestibility and intake potential; low in fiber and lignin. Similar to Robust in forage protein and forage yield at the soft dough stage. Compared to taller barley and oat varieties, it competes less

Description of barley varieties, 2000-2002.

Variety	Type	Heading*	Height, In.	Lodging	Plump, %	Protein, %
Robust	Malt	53	36	Medium	86	13.9
Excel	Malt	52	34	Medium	81	12.9
Stander	Feed	53	32	Strong	88	13.2
Foster	Malt	52	34	Strong	89	12.6
MNBrite	Feed	53	35	Medium	84	14.5
Lacey	Malt	53	33	Strong	87	13.3
Drummond	Malt	52	34	V. strong	85	13.3
Legacy	Malt	54	34	Medium	84	13.7
No. of Trials		7	9	4	7	7

* Days after planting

with underseeded forage legumes because of its short stature and superior lodging resistance. Resistant to spot blotch. Developed by the Minn. AES from crosses involving Robust, Azure and semidwarf Minn. M32. Released 1994. **PVP (94)**

Stander – High yield and late maturity. Very good lodging resistance and good kernel plumpness. Six-rowed, semi-smooth awn, short rachilla hairs, colorless aleurone, and short stature. Not

classified as a malting variety. Resistant to spot blotch. Developed by Minn. AES from crosses involving Excel, Robust and Bumper. Released 1993. **PVP**

Barley Planting Rate and Date

Bushel Weight, Pounds	48
Seeds/Pound.....	14,300
Planting Rate, Pounds/Acre	85
Planting Rate, Seeds/Sq.Ft.	28
Planting Date	Early Spring





CORN GRAIN

Companies participating in the 2002 hybrid corn grain trials.

Albert Lea Seed House (Viking Hybrids), Box 127, 1414 W. Main, Albert Lea, MN 56007

Anderson Seeds, Rt. 3, Box 94, St. Peter, MN 56082

Brown Seed Farms Inc., P.O. Box 7, Bay City, WI 54723

Dahlco Seeds, 14730 15th St. SW, Cokato, MN 55321

Dahlman Seed Co., 73504-200th St., Dassel, MN 55325

Dairyland Seed Co., Inc. (Stealth), Box 958, West Bend, WI 53095

Monsanto Co. (Dekalb), 3100 Sycamore Rd., De Kalb, IL 60115

Epley Bros. Hybrids, Inc., P.O. Box 310, Shell Rock, IA 50670

Garst Seed Co & Agripro Seeds, 2369 330th St., Box 500, Slater, IA 50244

Gold Country Seed Inc., 16506 Hwy. 15 North, P.O. Box 0604, Hutchinson, MN 55350-0604

Hyland Seeds, 2 Hyland Drive, Blenheim, ON, Canada NOP 1A0

Johnson Seeds Inc., 72700 185th St., Dassel, MN 55325

Jung Farms Inc., 341 S. High St., Randolph, WI 53956

Kaltenberg Seed Farms, Inc., P.O. Box 278, Waunakee, WI 53597

Kaystar Seed, 40329 U.S. Hwy. 14 E., P.O. Box 947, Huron, SD 57350

Kruger Seed Co., 33938 180th St., Dike, IA 50624

KSC/Challenger Seed Co., Box A, Dike, IA 50624

L.G. Seeds Inc., 4001 N. War Memorial Dr., Peoria, IL 61614

Mallard Seed Co. Inc., 311 West Broadway, Plainview MN 55964

Pfister Hybrid Corn Co., 187 N. Fayette St., El Paso, IL 61738

Pioneer Hi-Bred International, Inc., 99 Navaho Ave., Suite 101A, Mankato, MN 56001

RAGT Semences, Ave Saint Pierre - Site de Bourran, FR 12033 RODEZ Cedex 9, France

Renk Seed Co., 6800 Wilburn Rd., Sun Prairie, WI 53590

Sabre Initiatives, LLC, 2508 Trott Ave. SW, P.O. Box 386, Willmar, MN 56201

Sand Seed Service, Box 648, 4765 Hwy. 143, Marcus, IA 51035

Seeds 2000, Box 200, Breckenridge, MN 56520

Trelay, Inc., 11623 Hwy. 80, Livingston, WI 53554

United Suppliers, Inc., 30473 260th St., Box 538, Eldora IA 50627

Wensman Seed Co., Box 190, Wadena, MN 56482

The Minnesota Corn Hybrid Evaluation Program is conducted by the University of Minnesota Agricultural Experiment Station to provide unbiased information for use by corn growers when they choose hybrids to buy and grow. The program is financed in part by entry fees from private seed companies that chose to enter their hybrids for testing.

Test zones, locations and maturities are:
Southern Zone: Lamberton, Waseca, and Plainview.

Early Maturity Trial – 104 Relative Maturity (RM) and earlier hybrids.

Late Maturity Trial – 105 RM and later hybrids.

Central Zone: Morris and Rosemount.

Early Maturity Trial – 100 RM and earlier hybrids.

Late Maturity Trial – 101 RM and later hybrids.

Northern Zone: Staples and Rothsay.

Testing Procedure: Entries

Each corn seed company could enter up to six hybrids per zone. Entries in each trial were based on the Relative Maturity (RM) provided by the company. The University of Minnesota Corn Testing Committee could also choose and enter hybrids in each test. For this reason, there may be more than six hybrids for a company in a test.

Presentation of Data

Yields in tables on pages that follow are

given for individual locations along with yields and harvest moisture contents averaged across locations for 2002.

Hybrids are ranked within a maturity group by moisture content averaged across locations for 2002.

Least Significant Difference

We show LSD values with a 0.2 alpha level which means that when two hybrids differ in yield by the LSD value or more one can be 80% confident that the two hybrids differ in yield potential. The

higher yielding one is the better hybrid from the yield standpoint. If the yield difference between two hybrids is less than the LSD, the two hybrids probably do not differ significantly in yield potential.

Corn Planting Rate and Date

Bushel Weight, Pounds56
Planting Rate, Seeds/Acre33,000
Planting DateApril 15 – May 5

Individual hybrid corn trial information, 2002.

Location	Cooperators	Previous Crop	Planting Date	Harvest Dates
Lamberton	Steve Quiring	Soybean	April 30	October 23
Waseca	Tom Hoverstad	Soybean	April 26	October 23
Plainview	Fritz Brietenbach Bruce Ihrke	Soybean	May 3	October 29
Morris	George Nelson	Wheat	May 14	October 24
Rosemount	Jerry Holz	Soybean	May 2	October 22
Staples	Gregg Rosenthal George Nelson	Corn	May 20	October 23
Rothsay	Troy Larson	Wheat	May 14	October 22

Early-maturity hybrids, southern locations, 2002.

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at			Average Across Locations	
			Lamberton	Plainview	Waseca	Bu/Acre	% Moisture
97 and earlier RM hybrids							
Kruger	K-9300 RR/Bt	96	152	183	154	163	18.8
Viking	7700	95	117	179	138	145	18.9
Viking	7292	96	153	218	163	178	19.4
Dahlman	R1720	95	118	210	158	162	19.5
Sands	SOI 9962	95	171	197	179	182	19.7
Garst/AgriPro	8888	95	150	196	172	173	19.8
Monsanto / Dekalb	DKC46-28RR	96	155	217	172	181	20.0
Garst/AgriPro	8801IT	96	143	184	180	169	20.4
Kruger	K-9299A RR	96	136	212	164	171	20.4
97 and earlier RM averages:			144	199	164	169	19.6
98 to 101 RM hybrids							
Wensman	W 4314	100	125	205	172	168	19.2
Epley Bros.	E1170	100	128	227	169	175	19.7
Dairyland DST	10067Bt	99	146	198	161	169	19.8
Monsanto / Dekalb	DKC48-15	98	165	228	180	191	19.9
Dahlman	R1730Bt	100	142	205	159	169	19.9
Kruger	K-9002 Bt	98	162	236	179	192	20.0
Anderson Seeds	101YR	101	150	205	173	176	20.1
Dahlco	X-0012	101	135	206	175	172	20.3
Viking	R6206	101	127	216	178	174	20.3
US Seeds	US C1012RR	101	152	202	171	175	20.3
KSC/Challenger	K-9203	99	159	211	194	188	20.3
Anderson Seeds	6527	100	114	171	178	154	20.3
Sands	EXP 901-03	101	146	186	174	169	20.3
Renk	RK636	100	173	225	191	197	20.3
Garst/AgriPro	8715	101	183	217	186	195	20.4
Viking	Bt6177	101	139	218	177	178	20.5
Kruger	K-9203	99	149	234	188	191	20.5
Pfister	1532	98	155	188	178	174	20.7
Dahlco	2502	101	133	169	147	150	20.9
Jung	2507	101	149	204	171	174	20.9
Viking	6370	99	113	225	174	171	20.9
Garst/AgriPro	8790Bt	100	166	213	182	187	21.0
Epley Bros.	E1181	100	123	191	189	168	21.1
LG Seeds	LG 2488	100	163	190	155	169	21.2

Source/Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at			Average Across Locations	
			Lamberton	Plainview	Waseca	Bu/Acre	% Moisture
98 to 101 RM hybrids (continued)							
Kruger	K-9204 Bt	101	141	204	204	183	21.4
Monsanto / Dekalb	DKC51-43	101	183	240	198	207	21.5
Pfister	1680	99	169	203	199	190	21.6
Gold Country	20200CL	100	160	168	177	168	21.7
Wensman	W 5311Bt	101	118	207	180	168	21.8
Sabre	3990	100	130	187	188	168	21.8
Kruger	K-9304 Bt	100	152	188	191	177	22.1
High Cycle	7560Bt	100	161	241	208	203	22.1
98 to 101 RM averages:			147	206	180	178	20.7
102 to 104 RM hybrids							
Dahlman	D51-02Bt	102	165	220	187	191	20.0
Sands	SOI 100Bt	102	181	197	171	183	20.1
Sands	SOI 4024LL	102	172	213	173	186	20.2
High Cycle	7525Bt	102	156	224	182	187	20.2
Dahlman	D51-01	102	195	220	171	195	20.3
Anderson Seeds	102Y	102	152	196	192	180	20.3
Kaystar	KX-630	103	151	190	189	176	20.5
Jung	2565	103	160	255	187	201	20.6
Jung	2573	102	171	227	186	195	20.7
Renk	RK668	104	158	217	174	183	20.8
Sabre	4280	102	168	209	184	187	20.8
Dahlco	2505	104	133	159	160	151	20.8
Dahlman	D51-15	102	176	229	187	197	20.9
Anderson Seeds	5028	103	96	184	173	151	20.9
Jung	6580Bt	104	176	247	176	200	20.9
Anderson Seeds	6005	102	119	201	183	167	21.0
Sands	SOI 104Bt	104	186	226	162	191	21.1
Pioneer	36N71	102	158	233	201	197	21.1
US Seeds	US C1029Bt	102	184	218	195	199	21.2
Wensman	W5361Bt	103	190	234	187	203	21.2
Anderson Seeds	104Y	104	130	167	195	164	21.2
US Seeds	US C 1042Bt	104	187	248	194	210	21.3
Viking	5305	104	176	178	182	179	21.4
Trelay	6501	103	188	247	165	200	21.4
Dairyland Stealth	1005Bt	103	100	196	156	151	21.4
Mallard	UC-2681	103	140	221	177	179	21.4
Wensman	W 4388	104	148	210	190	183	21.6
Viking	CL6100	102	144	198	181	174	21.6
LG Seeds	LG 2512	103	145	208	170	174	21.7
Dairyland Stealth	1606	104	154	227	215	199	21.8
Dairyland Stealth	1605	103	134	210	189	178	21.8
Trelay	6200	103	149	189	182	173	21.9
Epley Bros.	E1493	103	164	227	198	197	22.0
Monsanto / Dekalb	DKC53-34RR/YG	103	197	246	191	211	22.0
Monsanto / Dekalb	DKC53-33RR	103	180	205	174	186	22.0
Sands	SOI 9041	104	154	206	172	178	22.2
Garst/AgriPro	8647	104	117	224	166	169	22.2
Kruger	K-9306 Bt	102	162	252	207	207	22.2
High Cycle	7601Bt	103	174	229	186	196	22.2
Dairyland Stealth	1607	104	155	200	149	168	22.4
Pioneer	36B08	103	141	216	178	178	22.6

Early-maturity hybrids, southern locations, 2002 (continued).

Source/ Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at			Average Across Locations	
			Lamberton	Plainview	Waseca	Bu/Acre	% Moisture
102 to 104 RM hybrids (continued)							
Kruger	K-9807	103	156	215	163	178	22.7
102 to 104 RM averages:			158	215	181	185	21.3
Southern locations, early-maturity averages:			152	210	179	180	20.9
LSD (0.20)			25	19	14	12	0.5

Late-maturity hybrids, southern locations, 2002.

Source/ Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at			Average Across Locations	
			Lamberton	Plainview	Waseca	Bu/Acre	% Moisture
Later than 104 RM hybrids							
Gold Country	1051	105	139	216	168	174	20.9
Anderson Seeds	4033	106	130	202	193	175	21.1
Anderson Seeds	4020	106	163	218	177	186	21.4
Renk	RK705RR	105	176	204	193	191	21.4
High Cycle	7625RR/Bt	105	168	224	196	196	21.5
Monsanto / Dekalb	DKC57-40RR	107	155	221	193	190	21.5
Epley Bros.	E2433	108	191	228	176	198	21.5
US Seeds	US C1052RR	105	163	219	186	189	21.6
Renk	RK772Bt	109	169	227	215	203	21.6
Pioneer	35Y55	106	136	223	186	182	21.7
Brown	6220	105	169	200	168	179	21.8
Kruger	K-9208 RR	105	174	233	183	197	21.9
Wensman	W 4418	106	184	236	204	208	21.9
Anderson Seeds	5395	105	154	213	198	189	22.0
Kaystar	KX-665	105	145	223	176	181	22.0
LG Seeds	LG 2533	105	189	231	207	209	22.0
Mallard	UC2679	105	153	183	194	177	22.2
Wensman	W 4424	106	200	209	185	198	22.3
Pfister	2420	106	167	226	200	198	22.4
US Seeds	US C1071	107	155	226	177	186	22.6
Garst/AgriPro	8590 IT	106	120	203	198	174	22.6
Wensman	W 5417Bt	107	148	141	158	149	23.2
Wensman	W 4437	109	162	227	207	199	23.3
Jung	2699	109	161	217	193	190	23.5
Epley Bros.	E2484	110	166	197	194	186	23.7
Pioneer	34H31	109	162	236	203	200	24.4
Southern locations, late maturity averages:			161	215	190	189	22.1
LSD (0.20)			17	21	15	10	0.4

Early-maturity hybrids, central locations, 2002.

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Morris	Rosemount	Bu/Acre	% Moisture
92 and earlier RM hybrids						
Dahlco	2288	85	186	171	178	18.4
Hyland Seeds	HL2307	91	137	154	145	19.2
Monsanto / Dekalb	DKC39-47RR	89	185	183	184	19.9
Kruger	K-9392 Bt	88	202	218	210	20.6
Wensman	W 5117Bt	92	209	212	211	20.7
Kruger	K-9396 Bt	92	193	175	184	21.1
92 RM and earlier averages:			185	186	185	20.0
93 to 97 RM hybrids						
Anderson Seeds	7595	95	136	198	167	19.0
Anderson Seeds	375R	95	149	181	165	19.5
Dahlco	X-1951	95	178	161	170	19.9
Monsanto / Dekalb	DKC46-26	96	208	204	206	20.3
Wensman	W 5257Bt	97	195	222	208	20.4
Johnsons	2150	95	140	164	152	20.5
Monsanto / Dekalb	DKC46-28RR	96	213	201	207	20.5
Dahlman	D45-15	93	209	207	208	20.6
Wensman	W 4212	95	210	190	200	20.7
Brown	4440	95	213	196	205	20.7
Monsanto / Dekalb	DKC44-46RRYG	94	219	224	221	20.8
Epley Bros.	E1130	95	178	156	167	20.8
Dahlco	2482	96	219	190	204	20.9
Garst/AgriPro	88011T	96	172	178	175	20.9
Hyland Seeds	HL2460	94	183	172	177	21.0
LG Seeds	LG 2442	95	166	187	176	21.0
Mallard	UC-2430	96	210	183	197	21.0
US Seeds	US C952	95	207	193	200	21.0
Jung	2432	94	207	204	206	21.1
Renk	RK552Bt	97	153	197	175	21.1
Johnsons	2165	96	165	190	178	21.1
Dahlman	D48-01	96	212	187	200	21.2
Seeds 2000	2953	95	176	194	185	21.2
Garst/AgriPro	8832Bt	95	171	182	176	21.3
Dairyland Stealth	1497	96	206	193	200	21.3
Garst/AgriPro	8888	95	188	194	191	21.4
Seeds 2000	2943Bt	94	177	165	171	21.5
Renk	RK556	96	164	195	180	21.5
Wensman	W5223Bt	97	199	214	207	21.5
Wensman	W 5212Bt	96	218	188	203	21.8
Seeds 2000	2953Bt	95	202	223	213	21.9
Kruger	K-9199 RR/Bt	96	172	146	159	21.9
Wensman	W 5181Bt	94	185	182	184	21.9
LG Seeds	LG 2474	97	152	194	173	22.0
LG Seeds	LG 2463Bt	96	204	222	213	22.0
Salbre	3555	95	191	175	183	22.0
Dahlco	2475	96	144	197	170	22.1
Kruger	K-9299A RR	96	146	188	167	22.1
93 to 97 RM averages:			185	191	188	21.1

Early-maturity hybrids, central locations, 2002 (continued).

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Morris	Rosemount	Bu/Acre	% Moisture
98 and later RM hybrids						
Johnsons	2255	100	157	184	171	20.7
Kruger	K-9002 Bt	98	208	226	217	20.8
Monsanto / Dekalb	DKC48-15	98	178	203	190	20.8
Epley Bros.	E1170	100	130	139	135	20.9
US Seeds	US C1002	100	182	189	186	21.3
Dairyland Stealth	1499	98	175	187	181	21.4
Jung	6455Bt	99	162	201	182	21.4
Renk	RK569Bt	99	159	177	168	21.5
Kaltenberg	K4919RRBt	100	189	220	204	21.5
Kruger	K-9203	99	145	202	174	21.5
Gold Country	1020RRBt	100	172	198	185	21.6
Johnsons	2255Bt	100	165	178	171	21.6
Trelay	5012	100	171	178	174	21.7
Jung	2497	98	164	166	165	21.8
Wensman	W 4314	100	142	178	160	21.9
Dahlman	R1730Bt	100	201	198	199	22.1
Renk	RK636	100	166	183	175	22.1
Anderson Seeds	6527	100	156	190	173	22.1
Epley Bros.	E1181	100	155	179	167	22.2
RAGT	PG006	98	211	179	195	22.3
Dairyland Stealth	1602	100	181	183	182	22.5
Gold Country	20200CL	100	212	153	183	22.6
Trelay	5011	100	195	182	188	22.8
Seeds 2000	2991	99	174	185	179	22.9
LG Seeds	LG 2488	100	143	181	162	23.1
Kruger	EX 303A Bt	99	190	211	201	23.2
Pioneer	37H26	99	218	216	217	23.5
Pfister	1680	99	201	202	201	23.8
Garst/AgriPro	8790Bt	100	187	223	205	23.8
Johnsons	2275	100	142	133	137	24.0
High Cycle	7510Bt	100	190	199	194	25.0
Sabre	3990	100	164	184	174	26.0
Kruger	K-9304 Bt	100	152	176	164	26.1
98 and later RM averages:			174	187	181	22.4
Central locations, early maturity averages:			180	189	185	21.6
LSD (0.20)			23	18	15	0.7

Late-maturity hybrids, central locations, 2002.

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Morris	Rosemount	Bu/Acre	% Moisture
102 and earlier RM hybrids						
Dahlco	X-0012	101	181	195	188	21.8
Anderson Seeds	101YR	101	179	203	191	21.9
Kaltenberg	K5151Bt	101	169	203	186	22.3
High Cycle	7525Bt	102	203	215	209	22.4
Mallard	RR-9610	101	162	186	174	22.5
Anderson Seeds	102Y	102	140	186	163	22.5
Dahlman	D51-02Bt	102	190	213	201	22.5
Hyland Seeds	HL2555	101	178	199	188	22.8

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Morris	Rosemount	Bu/Acre	% Moisture
102 and earlier RM hybrids (continued)						
Dahlman	D51-01	102	190	216	203	22.9
US Seeds	US C1012RR	101	164	188	176	23.1
Dairyland Stealth	1502	102	197	217	207	23.2
Garst/AgriPro	8715	101	150	200	175	23.7
Johnsons	2275Bt	102	170	172	171	23.9
Pioneer	36N71	102	192	216	204	24.3
Wensman	W 5311Bt	101	191	207	199	24.5
US Seeds	US C1029Bt	102	181	223	202	24.7
Dairyland Stealth	1503	101	171	200	186	24.7
Dahlco	2502	101	186	158	172	25.0
Anderson Seeds	6005	102	163	196	180	25.2
Johnsons	2287	102	164	185	175	25.2
Kruger	K-9204 Bt	101	194	203	198	26.2
Kruger	K-9306 Bt	102	224	245	234	26.7
Hyland Seeds	HLB330	102	126	215	171	28.1
Kruger	K-9205	101	153	184	168	29.1
102 RM and earlier averages:			176	201	188	24.1
Later than 102 RM hybrids						
Dahlco	2505	104	166	189	178	23.4
Jung	2565	103	189	225	207	23.6
Wensman	W5361Bt	103	163	229	196	23.8
Jung	6580Bt	104	214	240	227	24.7
Trelay	8501	103	186	191	188	25.0
Wensman	W 4388	104	175	177	176	25.4
High Cycle	7601Bt	103	211	218	215	25.6
US Seeds	US C1052RR	105	172	201	187	26.1
Epley Bros.	E1493	103	157	199	178	27.0
Wensman	W 4418	106	195	193	194	27.4
Wensman	W 4424	106	189	206	198	27.5
Wensman	W 5417Bt	107	168	127	148	29.2
Later than 102 RM averages:			182	200	191	25.7
Central locations, late maturity averages:			178	201	189	24.7
LSD (0.20)			18	16	12	0.8

Northern locations, 2002.

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Rothsay	Staples	Bu/Acre	% Moisture
77 and earlier RM hybrids						
Hyland Seeds	HL2063	76	121	129	125	18.2
Dahlco	2075	75	178	162	170	19.3
77 and earlier RM averages:			150	145	148	18.7
78 to 82 RM hybrids						
Monsanto / Dekalb	DKC32-59RR	82	138	184	161	17.6
Hyland Seeds	HL2256	81	159	161	160	18.0
Dairyland Stealth	1279	79	152	167	159	18.5
Hyland Seeds	HL2222	79	147	183	165	18.7
Kruger	EX 82 RR/Bt	82	173	154	164	19.3
Wensman	W 5079Bt	81	152	189	171	19.7
78 to 82 RM averages:			154	173	163	18.6

Northern locations, 2002 (continued).

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Morris	Rosemount	Bu/Acre	% Moisture
83 to 87 RM hybrids						
Monsanto / Dekalb	DKC33-08	83	139	192	165	16.9
Monsanto / Dekalb	DKC35-50RR	85	143	189	166	18.2
Dairyland Stealth	1483	83	154	179	166	18.4
Dahlman	D43-01	86	192	182	187	18.6
Renk	RK192	83	145	178	161	18.7
Anderson Seeds	83R	85	175	175	175	18.7
Hyland Seeds	HL2290	85	162	173	168	18.8
Johnsons	2121	86	171	184	178	18.9
Renk	RK232	85	182	176	179	18.9
Wensman	W 5086Bt	85	171	178	174	18.9
Dairyland Stealth	1485	85	156	176	166	19.0
Monsanto / Dekalb	DKC37-81RR	87	165	192	178	19.0
Hyland Seeds	HL2292	85	161	181	171	19.1
Kruger	EX 83 Bt	83	164	184	174	19.1
Dahlman	D42-10Bt	85	173	189	181	19.1
Pioneer	39D82	87	184	205	194	19.1
Anderson Seeds	8301	85	174	185	180	19.2
Seeds 2000	2842RRBt	85	183	197	190	19.2
Dahlco	2288	85	173	189	181	19.3
Johnsons	2120	85	140	162	151	19.4
Dahlman	R1700	86	164	175	170	19.5
US Seeds	US C871	87	133	169	151	20.6
LG Seeds	2367	85	167	170	169	20.7
Kaltenberg	K2717RRBt	86	203	160	181	21.0
Wensman	W 5088Bt	85	171	187	179	21.1
Jung	6210 RR/Bt	87	209	155	182	21.2
Seeds 2000	2871RRBt	87	186	188	187	21.6
Kruger	K-9190 RR/Bt	87	190	190	190	21.8
83 to 87 RM averages:			169	181	175	19.4
88 to 92 RM hybrids						
Mallard	UC-388	88	173	168	170	18.8
Dairyland Stealth	1592	92	179	171	175	19.6
Sabre	2789	88	198	182	190	19.9
Johnsons	2241	90	173	169	171	19.9
RAGT	PG005	89	180	190	185	20.0
Renk	RK232Bt	89	187	157	172	20.0
LG Seeds	LG 2402Bt	91	191	184	187	20.4
Dahlman	R1700Bt	88	196	170	183	20.4
Monsanto / Dekalb	DKC39-47RR	89	211	187	199	20.4
Dahlco	2289	89	187	168	177	20.5
Hyland Seeds	HL2307	91	169	193	181	20.5
Dairyland Stealth	1089Bt	90	164	179	171	20.6
Sabre	2960	89	157	167	162	20.8
Jung	6370Bt	91	192	171	181	20.8
Dahlman	D43-05	88	191	192	191	21.0
Seeds 2000	2892Bt	89	194	187	191	21.0
Wensman	W 5117Bt	92	221	216	219	21.1
RAGT	RH0155	89	212	218	215	21.3
Wensman	W 5115Bt	90	190	170	180	21.5
Johnsons	2235	90	179	193	186	21.5

Source / Brand	Hybrid	Relative Maturity	Yield, Bushels/Acre at		Average Across Locations	
			Rothsay	Staples	Bu/Acre	% Moisture
88 to 92 RM hybrids (continued)						
Seeds 2000	2944RRBt	92	190	181	186	21.9
Kruger	K-9392 Bt	88	212	213	213	22.0
Dahlman	D45-01Bt	90	204	199	201	22.0
Kruger	K-9396 Bt	92	181	181	181	22.9
Brown	3988	92	155	135	145	24.3
88 to 92 RM averages:			187	182	184	20.9
93 and later RM hybrids						
Hyland Seeds	HL2460	94	188	203	195	21.3
US Seeds	US C943RR	94	207	217	212	22.5
Jung	2432	94	196	222	209	22.6
Wensman	W 4212	95	200	226	213	22.7
Seeds 2000	2953	95	193	178	186	22.8
Wensman	W 5212Bt	96	229	218	223	22.9
Pioneer	38A25	96	232	189	210	23.0
Wensman	W 5181Bt	94	191	199	195	23.4
US Seeds	US C952	95	195	188	191	23.6
Seeds 2000	2943Bt	94	179	123	151	24.0
Kruger	K-9199 RR/Bt	96	183	162	173	25.8
93 and later RM averages:			199	193	196	23.1
Northern locations averages:			178	181	180	20.4
LSD (0.20)			14	25	14	0.8

Forage, grass, oilseed and small-grain organizations

These organizations work in many ways in support of the commodities they represent and to provide information to the public and opportunities to their members. Contact them directly for specific information about their roles and services.

Minnesota Association of Wheat Growers and Minnesota Wheat Research and Promotion Council

2600 Wheat Drive
Red Lake Falls, MN 56750
Phone: 218-253-4311
Fax: 218-253-4320
E-mail: mnwheat@gvtel.com
Web Address: www.smallgrains.org

Minnesota Approved Seed Conditioners and Marketing Association

P.O. Box 303, Argyle, MN 56713
Phone: 218-437-6638
Fax: 218-437-6392

Minnesota Canola Council

4630 Churchill St., Suite 1
St. Paul, MN 55126
Phone: 651-638-9883
Fax: 651-638-0736
E-mail: mncanola@aol.com

Minnesota Barley Growers Association and Minnesota Barley Research and Promotion Council

2601 Wheat Drive
Red Lake Falls, MN 56750
Phone: 218-253-4311
Fax: 218-253-4320
E-mail: mnbarley@gvtel.com

Minnesota Corn Growers Association and Minnesota Corn Research and Promotion Council

738 First Avenue East
Shakopee, MN 55379
Phone: 952-233-0333
Fax: 952-233-0420
E-mail: info@mncorn.org
Web Address: www.mncorn.org

Minnesota Crop Improvement Association

1900 Hendon Avenue
St. Paul, MN 55108
Phone: 612-625-7766
Fax: 612-625-3748
E-mail: beix001@tc.umn.edu
Web Address: www.mncia.org

Minnesota Forage and Grassland Council

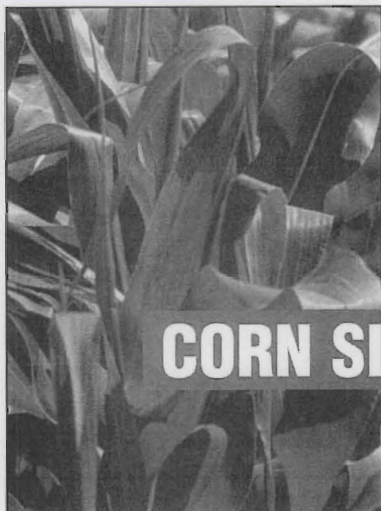
411 Borlaug Hall
1991 Buford Circle
St. Paul, MN 55108
Phone: 651-436-3930
E-mail: mfgc@tc.umn.edu
Web Address: www.umn.edu/mfgc

Minnesota Soybean Growers Association and Minnesota Soybean Research and Promotion Council

360 Pierce Avenue
Suite #110
North Mankato, MN 56003
Phone: 507-388-1635
Fax: 507-388-6751
Web Address: www.mnsoybean.org

Northern Minnesota Bluegrass Growers Association

3115+430th Avenue
Roseau, MN 56751-8413
Phone 218-463-2119



CORN SILAGE

Results for this year's Minnesota Hybrid Corn Silage Evaluation Program are presented in this bulletin. The program was initiated as a test to evaluate corn hybrids intended for use as silage. Unbiased forage yield and quality information provided by this program will be useful in education activities and in marketing corn hybrids grown for silage. The program is financed in part by entry fees from private seed companies that chose to enter hybrids for testing. New results this year include relocating the corn silage performance trials from previous research sites at Rosemount and Waseca to two regions of extensive corn silage use. Locations were chosen in each of the state's primary dairy regions of southeastern and central Minnesota. Entries increased to 30 or more hybrids tested at each test site.

Test Sites

Trials were conducted in southeastern and central Minnesota in 2002. Silage hybrids entered in each region were tested at both sites. Region locations are categorized as follows:

Southeast Dairy Region:

LaCrescent (Houston County)
Potsdam (Olmsted County)

Central Dairy Region:

St. Martin (Stearns County)
Melrose (Stearns County)

Test Procedure

Design: Research plots were established at LaCrescent, Potsdam, St. Martin and Melrose in randomized block designs with four replications. Hybrids were planted at 33,000 seeds per acre with 30-inch row spacing. Plant nutrients, manure or inorganic fertilizer were applied to maximize plant yield. Cultivation and herbicides were used to control weeds.

Harvesting: Plots were harvested and whole-plant herbage sampled for yield and forage quality at each site. The whole-plant target harvest timing was a moisture content of 65% across entries at a site. Harvest at LaCrescent, Potsdam, St. Martin and Melrose was on September 3, September 10, September 18 and September 24, respectively.

Results Provided

Relative maturity (RM), moisture content, whole-plant dry matter (DM) yield and silage yield are listed with hybrids ranked in descending order by RM followed by average moisture content. Quality concentration traits listed include crude protein (CP), neutral detergent fiber (NDF), *in vitro*

digestibility (IVD), 48-hour neutral detergent fiber digestibility (NDFD) and starch percent. Milk parameter estimates of milk per ton (Ton) and milk per acre (Acre) were calculated using a model from the spreadsheet entitled, "MILK2000" developed at the University of Wisconsin. MILK2000 approximates animal performance using pounds of milk per ton of silage and per acre of cropland for a given hybrid based on standard cow weight and milk production level (1,350-pound body weight and 90 lb/day at 3.8% fat). Values based on field calculations for hybrid moisture and DM yield; lab-determined values for CP, NDF, NDFD, starch and ash concentration; and book values for NDFCP (1.3%) and ether extract (3.2%) concentration were used for spreadsheet calculations. For MILK2000 predictions we assumed that kernel processing occurred.

Means and least significant difference (LSD) statistical figures at the 10% level of probability are shown at each location. Where the difference between two selected hybrids in a table is greater than the LSD value, nine out of ten times there is a real difference for that parameter (moisture, yield, quality concentration or milk estimate).

Companies participating in the 2002 hybrid corn silage performance trials:

Agventure, 65064 250 Ave., Kasson, MN 55944
 Dahlco Seeds, Inc., 14730 15th St. SW, Cokat6, MN 55321
 Dairyland Seed Company, Inc., P.O. Box 958, West Bend, WI 53095-0958
 Epley Brothers Hybrids Inc., 22494 Yale Avenue, P.O. Box 319, Shell Rock, IA 50670
 Garst Seed Company, S366 Lee Lane, Coon Valley, WI 54623
 Hyland Seeds, 2 Hyland Dr., Box 130, Blehnaire, Ontario, Canada N0P 1A0
 Johnson Seeds Inc., 72700 285th St., Dassel, MN 55325
 Land O' Lakes, Inc., P.O. Box 64281, St. Paul, MN 55164
 Monsanto, 3100 Sycamore Road, De Kalb, IL 60115
 Monsanto, 800 N. Lindberg Blvd., St. Louis, MO 63167
 Mycogen Seed, 9530 Zionsville Road, Indianapolis, IN 46268
 Pioneer Hi-Bred, International, Inc., 99 Navaho Ave., Suite 101A, Mankato, MN 56001
 Producers Hybrids, P.O. Box C, Eagle Creek, NE 68715
 Syngenta Seeds, 7500 Olson Memorial Hwy., Golden Valley, MN 55427
 Treley Seed Company, 11623 Hwy. 80, Livingston, WI 53554-9799

How to Use Results

Hybrids differ in dry matter and silage yield, silage quality and milk estimates at all locations. NDF is a negative indicator of forage intake and relates to better

animal performance. IVD is a laboratory test to estimate digestibility in ruminant livestock and NDFD estimates digestibility of the cell-wall fraction. IVD, NDFD and starch have a positive effect on ani-

mal performance. Starch concentration is associated with corn silage digestion because it is assumed to be 100-percent digestible. Milk per acre represents the combined impact of yield and quality.

Relative maturity (RM), moisture, silage yield and silage quality traits for corn hybrids planted at LaCrescent in 2002.

Brand	Hybrid	RM,		Yield, Ton/Acre ¹		Concentration, Percent ²					Milk Yield ³	
		Rating	Moisture, %	DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
Croplan Genetics	DS740	114	68.8	10.1	32.4	8.6	44	77	49	27	3,117	31,473
Mycogen	F697	112	73.0	9.5	35.0	8.9	45	79	52	25	3,249	30,805
Epley Bros	E5112	112	68.2	9.9	31.2	7.6	40	81	52	34	3,451	34,090
Producers Hybrids	SS110	110	67.5	11.4	34.9	8.1	47	74	45	25	2,883	32,897
Epley Bros	E 5110 S	110	66.1	10.2	30.2	7.9	42	79	51	30	3,300	33,520
Pioneer	34M95	110	65.9	11.4	33.3	7.2	46	77	49	27	3,083	34,995
Gold Country Seed	110SLS RR	110	64.8	9.6	27.3	7.1	46	78	52	25	3,185	30,651
Dekalb	DKC58-78 YG	108	67.8	10.3	32.1	7.4	45	77	49	28	3,105	32,049
Garst	8523 IT	108	66.7	10.0	30.2	8.2	41	81	54	28	3,370	33,913
Mycogen	TMF108	108	63.5	10.7	29.3	7.6	43	77	47	30	3,108	33,206
NK Brand	N59-Q9	107	67.6	9.2	28.2	7.8	41	80	50	30	3,284	29,927
Croplan Genetics	DS107 RR	107	67.2	10.4	31.7	7.8	44	78	50	27	3,152	32,748
Agventure	AV696	107	66.2	9.7	28.8	7.8	41	79	49	33	3,268	31,640
NK Brand	N58-F4	107	63.8	10.6	29.3	7.9	39	81	50	33	3,412	36,101
Producers Hybrids	EX10611	106	69.7	9.7	32.0	7.9	41	80	52	30	3,367	32,659
Dairyland	HiDF 4200	106	66.2	8.4	25.0	7.8	41	79	50	33	3,279	27,656
Garst	8590 IT	106	64.7	9.1	25.8	6.9	42	80	52	31	3,384	31,040
Hyland	HL S057	105	67.7	10.5	32.5	7.9	44	77	49	28	3,151	32,981
High Cycle	7638BT	105	67.4	10.7	32.8	8.0	42	80	52	30	3,392	36,289
Trelay	7012	105	67.1	10.4	31.7	7.9	44	77	49	29	3,156	32,738
Golden Harvest	8250	105	66.9	9.4	28.2	7.9	41	80	52	30	3,353	31,519
Agventure	AV600	105	66.2	8.6	25.4	7.9	39	80	49	36	3,389	28,903
Dahlco	2660	105	66.1	8.5	24.9	8.1	43	80	53	30	3,403	28,795
Pioneer	35R58	105	64.3	10.4	29.2	7.6	41	80	52	31	3,396	35,149
NK Brand	N48-K2	104	68.7	6.6	21.0	8.7	43	78	49	26	3,138	20,545
Pioneer	35D45	104	68.7	11.2	35.6	7.5	46	76	48	26	3,952	34,035
Hyland	HL S058	104	65.6	9.6	27.9	7.4	45	78	51	25	3,136	29,721
Trelay	6900	103	68.6	8.8	28.2	7.9	42	79	50	28	3,192	28,298
Croplan Genetics	DS103 RR	103	59.9	10.2	25.4	7.1	47	75	45	27	2,870	29,385
Dekalb	DKC51-43	101	65.3	8.7	25.1	7.4	39	80	50	35	3,389	29,470
NK Brand	N45-A6	101	63.4	9.8	26.9	7.8	40	80	51	31	3,379	33,276
Dahlco	X-0012	100	63.4	10.3	28.1	7.2	44	76	45	32	3,005	30,886
Agventure	AV495	98	64.0	9.2	25.5	7.7	42	78	49	32	3,264	29,970
Dahlco	2475	95	61.2	8.4	21.4	7.0	44	77	47	31	3,092	25,893
Means			66.2	9.7	29.0	7.8	43	78	50	29	3,228	31,389
LSD (0.10)			1.9	1.2	3.5	0.5	4	3	3	4	278	5,030

¹ DM yield is whole-plant corn yield at 100% dry matter, Silage yield is whole-plant corn yield at harvest moisture. ² Quality concentration description: All quality parameters except NDFD are expressed as a % of dry matter. NDF digestibility (NDFD) is expressed as a % of NDF. Refer to "Results Provided" text for additional information. ³ Milk estimate values calculated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to "Results Provided" for additional information.

Relative maturity (RM), moisture, silage yield and silage quality traits for corn hybrids planted at Potsdam in 2002.

Brand	Hybrid	RM,		Yield, Ton/Acre ¹		Concentration, Percent ²					Milk Yield ³	
		Rating	Moisture, %	DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
Croplan Genetics	DS740	114	68.3	9.4	29.4	8.5	49	73	45	22	2,766	25,743
Mycogen	F697	112	70.6	7.2	24.5	9.0	48	76	49	20	2,872	20,873
Epley Bros	E 5112	112	68.7	8.5	27.2	7.7	45	77	48	29	3,108	26,369
Producers Hybrids	SS110	110	68.8	8.9	28.0	7.8	53	70	43	17	2,401	21,780
Gold Country Seed	110SLS RR	110	66.7	9.9	29.6	7.8	48	74	46	22	2,801	27,526
Epley Bros	E 5110 S	110	65.9	8.6	25.1	8.4	49	73	45	19	2,632	22,800
Pioneer	34M95	110	63.4	10.1	27.6	7.2	48	73	44	26	2,811	28,360
Dekalb	DKC58-78 YG	108	66.7	8.4	24.9	7.9	42	79	49	31	3,263	27,470
Garst	8523 IT	108	65.5	9.7	27.9	8.2	41	79	50	31	3,274	31,651
Mycogen	TMF108	108	64.3	9.4	26.2	7.5	43	77	45	30	3,055	28,637
Croplan Genetics	DS107 RR	107	68.2	9.5	29.7	8.3	48	75	48	21	2,916	27,678
NK Brand	N59-Q9	107	65.7	8.6	25.1	7.4	41	78	47	34	3,205	27,522
NK Brand	N58-F4	107	63.9	10.3	28.5	7.9	42	78	47	30	3,158	32,534
Agventure	AV696	107	63.3	9.1	24.8	7.4	42	78	48	32	3,192	29,019
Producers Hybrids	EX10611	106	67.5	8.3	25.4	8.2	43	78	49	28	3,163	26,250
Dairyland	HiDF 4200	106	67.4	8.0	24.7	7.9	43	77	48	32	3,130	25,023
Garst	8590 IT	106	66.3	7.1	21.1	6.9	42	77	46	34	3,166	22,453
Hyland	HL S067	105	67.5	9.5	29.1	7.8	50	73	45	22	2,758	25,851
Golden Harvest	8250	105	67.0	7.4	22.2	8.2	43	78	49	27	3,112	23,156
High Cycle	7638BT	105	66.3	8.9	26.5	8.0	46	76	48	27	3,067	27,489
Agventure	AV600	105	66.1	8.8	25.9	7.8	39	80	49	38	3,393	29,639
Trelay	7012	105	65.3	7.5	21.4	7.2	43	77	48	32	3,159	23,596
Dahfco	2660	105	64.9	9.4	26.6	7.7	44	77	48	31	3,119	29,138
Pioneer	35R58	105	63.1	9.6	26.1	7.8	43	78	48	30	3,152	30,119
Hyland	HL S058	104	66.6	10.4	31.0	7.7	48	75	48	23	2,939	30,656
Pioneer	35D45	104	65.4	10.4	30.1	7.7	45	76	46	28	3,011	31,420
NK Brand	N48-K2	104	64.1	6.8	19.1	8.4	42	77	46	30	3,076	20,960
Croplan Genetics	DS103 RR	103	66.2	9.8	29.0	7.3	47	74	46	26	2,919	28,404
Trelay	6900	103	66.0	7.0	20.4	8.0	44	77	48	27	3,080	21,329
Dekalb	DKC51-43	101	64.0	9.1	25.3	7.5	40	78	46	33	3,215	29,146
NK Brand	N45-A6	101	63.0	9.1	24.6	7.1	42	78	48	33	3,212	29,027
Dahfco	X-0012	100	63.6	8.4	23.0	7.7	43	77	46	32	3,090	25,994
Agventure	AV495	98	63.0	8.8	23.8	7.7	42	77	46	33	3,113	27,527
Dahfco	2475	95	62.7	8.6	23.0	7.7	45	75	46	29	2,981	25,631
Means			65.7	8.8	25.8	7.8	44	76	47	28	3,038	29,787
LSD (0.10)			2.5	1.5	3.9	0.5	3	2	2	4	240	5,339

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture. ² Quality concentration description: All quality parameters except NDFD are expressed as a % of dry matter. NDF digestibility (NDFD) is expressed as a % of NDF. Refer to "Results Provided" text for additional information. ³ Milk estimate values calculated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to "Results Provided" for additional information.

Relative maturity (RM), moisture, silage yield and silage quality traits for corn hybrids planted at St. Martin in 2002.

Brand	Hybrid	RM, Rating	Moisture, %	Yield, Ton/Acre ¹		Concentration, Percent ²					Milk Yield ³	
				DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
NK	N59-Q9	107	67.5	9.8	30.2	7.0	43	77	47	29	3,075	30,267
NK	N58-F4	107	66.1	10.2	30.2	7.1	44	75	44	27	2,916	29,848
Epley Bros	E 5105 S	105	67.5	8.1	25.0	8.1	48	73	45	21	2,707	21,918
Johnson Seeds	JSC-5450	105	66.5	9.1	27.0	7.7	41	79	48	29	3,165	28,715
Dairyland	Stealth 1606	104	68.3	9.9	31.3	6.9	45	75	44	28	2,897	28,684
NK	N48-K2	104	67.3	9.1	27.9	8.1	41	78	46	31	3,146	28,714
Trelay	6900	103	70.0	8.6	28.7	7.2	47	75	46	25	2,893	24,809
Gold Country Seed	102 SLS	102	66.1	8.0	23.5	7.4	47	74	44	24	2,763	21,984
Mycogen	X3104BM	101	71.5	7.5	26.0	8.3	48	75	47	20	2,794	20,780
NK	N45-A6	101	62.7	9.9	26.6	7.3	43	77	45	30	2,978	29,497
Trelay	5600	100	67.4	7.8	24.0	7.3	46	73	43	25	2,738	21,469
Croplan Genetics	DS 100 RR	100	66.5	10.1	30.1	7.5	49	73	45	24	2,755	27,867
Hyland	HL S054	100	64.5	8.4	23.9	7.6	45	76	46	26	2,950	24,824
Johnson Seeds	JSC-5350	100	64.0	8.7	24.1	7.3	46	74	44	26	2,840	25,148
Producers Hybrids	547 RR	99	61.7	8.1	21.0	6.9	44	74	41	29	2,767	22,333
Hyland	HL S041	98	66.7	8.2	24.8	7.8	41	78	47	30	3,131	25,866
NK	N43-C4	98	63.5	7.7	21.2	7.1	42	77	45	31	3,065	23,771
Hyland	HL 2505	98	63.1	8.4	22.6	7.3	45	74	44	28	2,878	24,202
Dekalb	DKC48-83	98	62.9	8.5	22.8	7.2	43	75	43	30	2,916	25,073
Pioneer	37D03	97	61.8	9.3	24.3	6.4	45	75	44	29	2,910	27,165
Mycogen	TMF2450	96	63.4	9.4	25.6	7.4	43	76	45	29	2,989	27,902
Pioneer	38T28	96	61.1	9.8	25.4	7.3	40	77	43	33	2,995	29,403
Gold Country Seed	96 SLS RR	96	59.8	9.6	24.1	6.2	52	70	42	22	2,467	23,636
Dahlco	2475	95	62.0	8.2	21.7	7.2	45	75	44	28	2,872	23,695
Croplan Genetics	DS 94 RR	94	66.4	9.8	29.4	7.3	45	75	45	27	2,940	28,945
NK	N32-L9	94	60.4	9.3	23.5	6.9	43	77	46	32	3,018	28,102
NK	N3030Et	94	60.2	8.3	20.8	6.7	41	77	46	32	3,078	25,517
Dekalb	DKC44-46 RR/YG	94	56.6	9.3	21.7	6.5	44	75	43	30	2,781	26,049
Dahlco	X-1871	88	57.7	7.5	17.8	6.9	43	75	42	30	2,814	21,007
Dahlco	2288	85	59.9	8.1	20.1	7.4	43	75	43	30	2,832	22,802
Means			64.1	8.8	24.8	7.2	44	75	44	28	2,902	25,666
LSD (0.10)			3.1	0.9	2.2	0.7	4	3	2	4	271	4,127

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture. ² Quality concentration description: All quality parameters except NDFD are expressed as a % of dry matter. NDF digestibility (NDFD) is expressed as a % of NDF. Refer to "Results Provided" text for additional information. ³ Milk estimate values calculated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to "Results Provided" for additional information.

Relative maturity (RM), moisture, silage yield and silage quality traits for corn hybrids planted at Melrose in 2002.

Brand	Hybrid	RM, Rating	Moisture, %	Yield, Ton/Acre ¹		Concentration, Percent ²					Milk Yield ³	
				DM	Silage	CP	NDF	IVD	NDFD	Starch	Lb/Ton	Lb/Acre
NK	N58-F4	107	67.5	5.9	17.9	8.1	43	79	51	25	3,119	18,513
NK	N59-Q9	107	65.7	6.2	18.1	7.9	40	81	53	30	3,413	20,984
Epley Bros	E 5105 S	105	66.4	6.2	18.2	8.6	45	78	52	23	3,102	19,429
Johnson Seeds	JSC-5450	105	65.3	6.9	19.8	8.3	41	81	53	28	3,335	23,012
Dairyland	Stealth 1606	104	66.2	6.4	19.0	8.1	40	82	55	31	3,561	22,878
NK	N48-K2	104	65.6	4.3	12.4	8.4	40	81	52	30	3,419	14,519
Trelay	6900	103	65.3	7.1	20.6	7.9	41	81	53	29	3,359	23,818
Gold Country Seed	102 SLS	102	67.1	5.7	17.2	8.7	43	80	53	26	3,292	18,635
Mycogen	X3104BM	101	65.6	6.1	17.7	8.7	39	82	55	32	3,563	21,664
NK	N45-A6	101	59.9	6.0	15.0	7.6	37	83	54	35	3,540	21,318
Hyland	HL S054	100	68.5	5.4	17.4	9.0	45	79	54	23	3,209	17,424
Johnson Seeds	JSC-5350	100	63.3	5.6	15.3	8.3	41	79	50	30	3,275	18,250
Trelay	5600	100	62.4	6.3	16.8	7.7	40	81	50	34	3,360	21,316
Croplan Genetics	DS 100 RR	100	62.3	6.7	17.7	7.8	45	78	51	26	3,176	21,074
Producers Hybrids	547 RR	99	61.1	6.6	16.7	8.3	39	81	50	32	3,297	21,688
Hyland	HL S041	98	66.2	6.1	18.2	8.4	42	80	53	27	3,321	20,428
NK	N43-C4	98	62.5	6.2	16.4	8.0	38	81	50	33	3,394	20,928
Hyland	HL 2505	98	61.4	6.3	16.2	8.3	41	80	51	32	3,336	20,878
Dekalb	DKC48-83	98	60.6	6.8	17.2	7.5	37	82	51	35	3,449	23,261
Pioneer	37D03	97	60.4	7.3	18.4	7.7	36	82	50	37	3,469	25,260
Mycogen	TMF2450	96	62.7	8.6	23.2	8.0	42	80	51	29	3,312	28,607
Gold Country Seed	96 SLS RR	96	61.5	7.1	18.5	7.5	43	79	50	29	3,243	22,904
Pioneer	38T28	96	59.9	6.9	17.0	7.9	38	81	50	34	3,400	17,882
Dahlco	2475	95	58.6	6.7	16.0	8.1	39	80	48	35	3,254	21,689
Croplan Genetics	DS 94 RR	94	64.8	6.4	18.3	8.5	46	77	50	23	3,031	19,522
NK	N3030Bt	94	62.7	4.7	12.5	8.1	36	84	56	36	3,713	17,319
NK	N32-L9	94	58.0	6.4	14.9	8.1	35	84	53	38	3,544	22,437
Dekalb	DKC44-46 RR/YG	94	57.8	7.4	17.6	7.1	38	81	50	36	3,335	24,811
Dahlco	X-1871	88	59.4	4.6	11.4	8.0	39	80	49	33	3,250	14,976
Dahlco	2288	85	54.8	6.8	15.1	8.4	37	81	48	34	3,205	21,702
Means			62.8	6.3	17.0	8.1	40	80	51	31	3,342	20,904
LSD (0.10)			2.8	1.3	3.1	0.5	3	2	2	4	205	5,151

¹ DM yield is whole-plant corn yield at 100% dry matter; Silage yield is whole-plant corn yield at harvest moisture. ² Quality concentration description: All quality parameters except NDFD are expressed as a % of dry matter. NDF digestibility (NDFD) is expressed as a % of NDF. Refer to "Results Provided" text for additional information. ³ Milk estimate values calculated using spreadsheet MILK2000 developed at the University of Wisconsin. Refer to "Results Provided" for additional information.



OAT

Proper selection of oat varieties requires consideration of the anticipated growing conditions, the pests that might be encountered in a specific production situation and the purpose for growing the crop. Specific growing situations will dictate the priority and emphasis given to each trait included in the tables.

Generally, crown rust is the most important disease and detailed interpretation of our data follows. We divided the rust reading into columns beneath "Crown Rust" headed "Amount Infected" and "Reaction Type." The value in the Crown Rust Amount Infected column predicts the relative proportion of rust spores that achieve a successful infection. The Reaction Type value gives the size of the pustule, which indicates how the pustule is restricted by the host reaction. A small and/or restricted pustule produces fewer spores for reinfection.

Depending upon the plant growth stage at initial infection, there can be one to three cycles of reinfection during an oat-growing season. Each infection cycle is 8 to 10 days long. The final amount of rust infection depends upon both the number and size of spore-producing pustules present to cause subsequent infections. It is these later infections that really damage the plant.

Treated seed should be used for smut-susceptible varieties and those with BYDV (red leaf) susceptibility (score of 6 or higher) should be chosen carefully.

Groat percent is an important consideration for grain production, perhaps equal to grain yield, whether for food or feed. Lodging can be site-specific; varieties with lodging scores above 2.5 should be chosen cautiously if soil is highly fertile. Taller varieties may generally produce more forage and/or straw. Earlier varieties tend to perform relatively better in more southerly parts of the state while later varieties usually have an advantage in the north.

General-Purpose Varieties

AC Assiniboia – Late maturity, high yield, medium height, very good lodging resistance, high test weight and groat percentage. Almost brown seed. Good resistance to crown rust and smut and tolerance to red leaf. Selected by Cereal Research Centre, Agriculture and Agri Food Canada in Winnipeg. Released in 1995.

Belle – Late maturity, medium yield, tall, good 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 (94)**

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 the Wis. AES. Released in 1990. Foundation seed available to certified seed producers only under a license/fee collection agreement. Because of smut susceptibility, planting only treated seed is recommended. **PVP**

Ebeltoft – Late maturity, short, high yield, good lodging resistance, medium test weight and groat percentage. Ivory seed. Modest resistance to crown rust, resistant to smut, good tolerance to red leaf. Selected at N.D. AES. Released in 1999.

Gem – Medium-late maturity, high yield, medium height, good lodging resistance, medium 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 (94)**

Oat yield, percent of nursery average, off-station locations, 2002 only.

Variety	Winona ¹	Wells ¹	Average of 2 locations
Riser	76	101	89
Dane	87	104	96
Reeves	104	107	105
Moraine	96	99	97
Richard	105	86	95
Wabasha	105	89	97
Gem	117	101	109
Rodeo	112	122	117
Kirkdeer	113	113	113
Vista	85	99	92
Milton	104	99	102
Sesqui	99	123	111
Youngs	93	72	82
Leonard	100	108	104
Loyal	106	118	112
Belle	90	95	92
Ebeltoft	102	80	91
AC Assiniboia	105	85	95
Mean, Bu/Acre	71	72	72
LSD .05 (% of Mean)	18	15	12

¹ Pesticide-free organic farmer field

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, planting only treated seed is recommended. **PVP (94)**

Jud – Late maturity, high yield, very tall, poor lodging resistance, very high test weight and groat percentage. White seed. Resistant to crown rust and smut, good tolerance to red leaf. Selected at N.D. AES. Released in 1998.

NEW! Leonard – Medium-late maturity, high yield, medium height, fair lodging resistance, medium test weight and groat percentage. Yellow seed. Resistant to crown rust and smut. High tolerance to red leaf. Selected at Minn. AES. Released in 2002.

Loyal – Late maturity, high yield, tall, poor lodging resistance, medium test weight and groat percentage. Ivory seed. Modest resistance to crown rust and smut, susceptible to red leaf. Selected at S.D. AES. Released in 2000. Because of smut susceptibility, planting only treated seed is recommended.

Milton – Medium-late maturity, medium yield, medium height, good lodging resistance, medium test weight and groat percentage. Yellow seed. Modest resistance to crown rust, resistant to smut, susceptible to red leaf. Selected at Minn. AES. Released in 1994.

Richard – Early maturity, high yield, tall, good lodging resistance, high test weight and groat percentage. Yellow seed. Good resistance to crown rust and smut and good 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.

Rodeo – Medium-late maturity, high yield, very good lodging resistance, fair test weight, medium groat percentage. Yellow seed. Susceptible to crown rust and smut, tolerant to red leaf. Selected at Ill. AES. Released in 1996. Because of smut susceptibility, planting only treated seed is recommended. **PVP (94)**

Sesqui – Late maturity, high yield, medium height, good lodging resistance, high test weight, medium groat percentage. Yellow seed. Moderately resistant to crown rust, resistant to smut and good tolerance to red leaf. Selected at Minn. AES. Released in 2001.

Troy – Medium maturity, medium 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 S.D. AES. Released in 1991.

Vista – Medium maturity, high yield, tall, poor lodging resistance, high test weight and groat percentage. Yellow seed. Resistant to crown rust and smut, susceptible to red leaf. Selected at Wis. AES. Released in 1999. **PVP (pending)**

Wabasha – Medium maturity, high yield, tall, good lodging resistance, medium test weight, high groat percentage. White seed. Moderately susceptible to crown rust, resistant to smut and tolerant to red leaf. Selected at Minn. AES. Released in 2001. **PVP (pending)**

Oat yield, percent of nursery average, by location, 2000-2002.

Variety	Rosemount	Lamberton	Morris	Average of 3 locations	Waseca ¹	Crookston ²	Grand Rapids ²	Average of 6 locations
Reeves ³	113	78	73	88	97	98	98	93
Moraine	101	99	85	95	94	95	90	94
Richard	100	109	101	103	101	99	101	102
Wabasha	100	93	99	97	96	103	99	98
Gem	96	106	99	100	100	97	92	98
Rodeo	104	99	114	106	101	101	112	105
Kildeer	94	112	109	105	105	100	99	103
Vista	115	110	106	110	110	108	98	108
Milton	97	92	89	92	95	92	98	94
Morton ⁴	83	98	108	96	98	99	100	98
Sesqui	109	103	108	107	103	111	105	106
Youngs	93	91	89	91	93	87	87	90
Hi-Fi	89	106	112	102	105	103	112	105
Leonard	116	112	107	112	114	107	110	111
Loyal	99	104	104	102	97	103	107	102
Belle	95	101	87	94	95	96	92	94
Ebeltoft	99	92	103	98	95	100	102	99
AC Assiniboia	99	98	107	101	102	101	96	100
Mean, Bu/Acre	72	83	109	88	85	102	82	89
LSD .05 (% of Mean)	8	11	11	6	9	12	17	5

¹ Data from 2001 and 2002, ² Data from 2000 and 2001, ³ Data from 2001 and 2002, ⁴ Data from 2002.



Oat Trial Locations.

Youngs – Medium maturity, lower yield, tall, good lodging resistance, medium test weight and groat percentage. White seed. Some resistance to crown rust, susceptible to smut, some tolerance to red leaf. Selected at N.D. AES. Released in 1999. Because of smut susceptibility, planting only treated seed is recommended.

Special-Purpose Variety

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, resistant to smut, moderately susceptible to red leaf. Selected at N.D. AES. Released in 1994. **FVF (94)**

Varieties Not Adequately Tested

NEW! HiFi – Medium-late maturity, high yield, tall, good lodging resistance, high test weight, medium groat percentage. White seed. Good resistance to crown rust and smut, good tolerance to red leaf. Selected at N.D. AES. Released in 2001. **FVF (Pending)**

Kildeer – Medium maturity, high yield, short, good lodging resistance, medium test weight and groat percentage. Ivory seed. Moderately susceptible to crown rust, susceptible to smut and tolerant to red leaf. Selected at N.D. AES. Released in 2001. Because of smut susceptibility, planting only treated seed is recommended.

Moraine – Early maturity, medium yield, medium height, good lodging resistance, high test weight and groat percentage. Yellow seed. Resistant to crown rust and 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. **FVF (pending)**

NEW! Morton – Medium maturity, high yield, tall, good lodging resistance, high test weight, medium groat percentage. Ivory seed. Very good resistance to crown rust and smut, some tolerance to red leaf. Selected at N.D. AES. Released in 2001.

NEW! Reeves – Early maturity, medium yield, tall, fair lodging resistance, high test weight and groat percentage. Ivory seed. Resistance to crown rust, moderately susceptible to smut, some tolerance to red leaf. Selected at S.D. AES. Released in 2002.

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

Oat traits, 2000-2002; disease data 2002 only.

Variety	Days After Planting To Heading	Height, Inches	Lodging, 1 = Erect 5 = Flat	Test Weight, Lb/Bu	Groat %	Crown Rust ¹		Smut Score ³	BYDV Score ⁴
						Amount Infected	Reaction Type ²		
Reeves ⁵	58	41	2.6	39	71	30	R-MR	MS	5.0
Moraine	58	38	2.0	39	72	40	R-MR	R	5.0
Richard	60	40	2.0	38	70	35	MR-MS	R	4.5
Wabasha	60	39	2.2	38	71	10	MR	R	3.0
Gem	60	39	2.3	37	68	20	MR-MS	MR-MS	3.5
Rodeo	61	38	1.8	37	70	30	MR-MS	S	3.5
Kildeer	61	35	2.3	38	70	30	MR-MS	S	5.0
Vista	62	40	2.8	39	71	10	MR-R	R-MR	6.0
Milton	62	36	2.0	37	69	30	MR-MS	MS	7.0
Morton ⁶	62	40	2.0	39	70	Tr	MR	R	5.0
Sesqui	63	38	2.4	39	68	10	MS-S	R	4.0
Youngs	63	42	2.0	36	69	30	MS-MR	S	4.5
Hi-Fi	63	40	2.1	38	68	5	MR-MS	MR	3.0
Leonard	63	39	2.5	37	70	20	MR-MS	R	2.5
Loyal	64	43	2.9	38	68	30	MR-MS	R-MR	6.0
Belle	65	38	2.1	38	73	10	R-MR	MR-MS	4.5
Ebeltoft	65	36	2.2	37	70	10	MS-MR	R	2.5
AC Assiniboia	65	40	1.8	38	73	30	MS-MR	R	4.0
Mean	62	39	2.2	38	70				4.4

¹ 2002 data only from artificially inoculated nursery. 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 1=no symptoms and 9=dead. ⁵ 2001-2002 data only. ⁶ 2002 data only.



HARD RED SPRING WHEAT

yield and other characteristics are as nearly the same for all varieties at each location as possible. These hard red spring wheat trials are not designed for crop (species) comparisons, because the various crops are grown on different fields or with different management. The data should only be used to compare varieties within a table.

Tested hard red spring wheat varieties are listed in the order of their flowering date in the tables and year of release within variety categories. Only new varieties or those varieties with better than susceptible reaction to scab are being tested.

Variety Selection Criteria

Although all data presented should be considered when choosing wheat varieties, the scab epidemics in the hard red spring wheat growing areas of the state have demonstrated the clear need to give greater weight to selecting varieties for their tolerance to this devastating disease. Scab evaluations include *disease severity*, based on visual spread of the disease on the spike and *grain soundness*, which reflects the variety's ability to maintain plump, sound kernels. These ratings should be considered together to reduce risk of loss. The use of more than one variety to provide different days to

Spring wheat varieties are compared in trial plots at Waseca, Lamberton, Morris, Crookston, Stephen, Roseau and St. Paul. Wheat varieties are grown in replicated plots at each location. These plots are handled so that the factors affecting

Characteristics of hard red spring wheat varieties.

Variety	Days to Heading ¹	Height Inches ²	Straw Strength ³	Test Weight (Lb/Bu)		Protein (%) ⁴		Baking Quality ⁵
				2002	2-year	2002	2-year	
Forge	55.3	31.3	Strong	59.0	60.3	14.5	14.4	Medium
Ingot	55.7	34.4	M. Strong	60.4	61.3	14.9	14.9	Medium-High
Walworth	55.9	31.3	Medium	57.6	59.0	15.1	14.9	Medium-High
Briggs ²	56.0	31.1	M. Strong	59.1	—	15.2	—	—
Oxen	56.6	29.7	M. Strong	57.1	58.7	15.1	14.8	High-Medium
McKenzie	57.0	34.0	Medium	58.5	59.5	15.3	15.0	Medium
Russ	57.1	31.5	M. Strong	57.0	58.7	14.6	14.3	High-Medium
2375	57.5	30.6	Medium	58.3	59.9	14.8	14.7	Medium
Reeder	57.5	30.9	Strong	58.3	59.4	14.7	14.7	Medium-High
Parshall	57.6	33.4	Strong	60.2	61.2	15.3	15.1	High-Medium
Atsen	57.7	30.5	Strong	59.6	60.4	15.9	15.6	High
Keystone	57.7	32.0	M. Strong	59.5	60.6	14.1	14.0	Low
Hanna	58.0	33.6	M. Strong	58.8	59.6	15.3	15.1	High
Mercury	58.0	27.0	Strong	57.5	59.0	14.7	14.5	Medium
Dandy	58.1	31.7	V. Strong	59.5	60.0	14.8	14.3	Low
Knudson	58.2	29.9	M. Strong	58.9	59.9	14.8	14.6	Medium-High
NorPro	58.2	29.0	Strong	57.8	58.8	15.0	14.7	Medium-Low
HJ98	58.8	29.5	Medium	57.4	58.2	14.7	14.5	Medium-Low
Gunner	59.2	32.2	M. Strong	57.8	59.7	15.3	15.4	High-Medium
Marshall	59.8	29.2	Strong	57.1	58.6	14.1	14.0	Low
Verde	59.8	30.0	M. Strong	57.8	58.9	14.8	14.6	Low-Medium
Ivan	59.9	29.4	V. Strong	58.6	59.2	14.3	14.0	Low
Granite ²	60.8	29.0	V. Strong	60.4	—	15.6	—	—
LSD	†	1.1		1.6	1.6	0.9	0.9	
Mean	57.8	30.9		58.6	59.7	14.9	14.7	

† 2001-2002 data. ² 2002 data. ³ 1999-2002 data. ⁴ 12% moisture basis. ⁵ 1999-2001 data.

Disease reactions of hard red spring wheat varieties.

Variety	Leaf Rust ¹	Stem Rust ¹	Other Leaf Diseases ¹	Scab	
				Disease Severity ¹	Grain Soundness ²
Forge	MS	R	MS	MR-MS	2.5
Ingot	MS	R	MS	MR-MS	2.0
Walworth	MS	R	MS	MR-MS	2.5
Briggs	MR-MS	R	MR	MR-MS	2.5
Oxen	MS	R	MS	MS-S	3.0
McKenzie	R	R	MR	MR-MS	2.5
Russ	MS	R	MS	MR-MS	3.0
2375	MS	R	S	MR-MS	2.5
Reeder	MS	R	MR-R	MS	3.5
Parshall	MS	R	MR-R	MR-MS	2.0
Alsen	R	R	MR-R	MR	2.0
Keystone	MR	R	—	MR-MS	2.5
Hanna	MS	R	MR	MR	2.0
Mercury	MR-MS	R	MR	S	5.0
Dandy	MR-MS	R	MR	MS	3.5
Knudson	R	R	MR-R	MR-MS	3.0
NorPro	MR-MS	R	MR-R	MS	3.5
HJ98	MR-MS	R	MS	MS	3.0
Gunner	MS	R	MR	MR-MS	2.5
Marshall	MS	R	MS	MS	3.5
Verde	MR-MS	R	MR-R	MS	3.5
Ivan	R	R	MR-R	MS-S	4.0
Granite	MS	R	MR	—	—

¹ R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible.

² Ability to maintain plump, sound kernels under scab epidemics: 1=good, 5=poor.

heading and use of different seeding dates is highly recommended to reduce risk. Variety descriptions do not provide information on scab resistance. Table information should be used.

General Purpose Varieties

NorPro – Awned, midseason-late maturity, semidwarf. Resistant to stem rust and moderately resistant to leaf rust. Moderately resistant to other leaf diseases. High yield and low to medium test weight. Strong straw. Medium protein percent. Released by AgriPro in 1999. **PVF (94)**

Parshall – Awned, midseason maturity, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Medium yield and very high test weight. Strong straw. High protein percent. Released by N.D. AES in 1999. **PVF (94)**

Reeder – Awned, midseason maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust.

Moderately resistant to other leaf diseases. High yield and medium test weight. Strong straw. Medium protein percent. Released by N.D. AES in 1999. **PVF (94)**

HJ98 – Awned, midseason-late maturity, semidwarf. Resistant to stem rust and moderately resistant to leaf rust. Moderately susceptible to other leaf diseases. High to medium yield and low to medium test weight. Medium straw strength. Medium protein percent. Released by Minn. AES and USDA-ARS in 1998. **PVF (94)**

Ingot – Awned, early, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Medium yield and very high test weight. Moderately strong straw. Medium to high protein percent. Released by S.D. AES in 1998. **PVF (94)**

Ivan – Awned, late maturity, semidwarf. Resistant to stem rust and to leaf rust. Moderately resistant to other leaf diseases. Very high yield and medium test

weight. Very strong straw. Low to medium protein percent. Released by AgriPro in 1998. **PVF (94)**

Forge – Awned, very early, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Low to medium yield and high test weight. Strong straw. Medium protein percent. Released by S.D. AES in 1997. **PVF (94)**

Mercury – Awned, midseason maturity, semidwarf. Resistant to stem rust. Moderately resistant to moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Very high yield and medium test weight. Strong straw. Medium protein percent. Released by NorthStar Genetics in 1997.

Gunner – Awned, midseason-late maturity, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Low yield and medium test weight. Moderately strong straw. High protein percent. Released by AgriPro in 1996. **PVF (94)**

Oxen – Awned, early-midseason, semidwarf. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Very high yield and low to medium test weight. Moderately strong straw. Medium protein percent. Released by S.D. AES in 1996. **PVF (94)**

Russ – Awned, early-midseason maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Medium yield and low to medium test weight. Moderately strong straw. Medium to low protein percent. Released by S.D. AES in 1995. **PVF (94)**

Verde – Awned, late maturity, semidwarf. Resistant to stem rust and moderately resistant to leaf rust. Moderately resistant to other leaf diseases. High to medium yield and medium test weight. Moderately strong straw. Medium protein percent. Released by Minn. AES and USDA-ARS in 1995. **PVF (94)**

2375 – Awned, midseason maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Susceptible to other leaf diseases. Medium yield and medium test weight. Medium straw strength. Tolerant to loose smut. Moderately susceptible to shattering. Medium protein percent. Released by Pioneer Hi-Bred in 1988. Sold by N.D. State University Research Foundation 1990. **PVP (94)**

Marshall – Awned, late maturity, semi-dwarf. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Low to medium yield and test weight. Strong straw. Low to medium protein percent. Released by Minn. AES and USDA-ARS in 1982. **PVP**

Walworth – Awned, early maturity, medium height. Resistant to stem rust and moderately susceptible to leaf rust. Moderately susceptible to other leaf diseases. Very high yield and medium test weight. Medium straw strength. Medium protein percent. Released by S.D. AES in 2001. **PVP (94)**

Alsen – Awned, midseason maturity, medium height. Resistant to stem rust and leaf rust. Moderately resistant to other leaf diseases. High to medium yield and high test weight. Strong straw. High protein percent. Released by N.D. AES in 2000. **PVP (94)**

Dandy – Awned, midseason-late maturity, medium height. Resistant to stem rust and moderately resistant to leaf rust. Moderately resistant to other leaf diseases. Very high yield and high to medium test weight. Very strong straw. Medium to low protein percent. Released by NorthStar Genetics in 1999. **PVP (94)**

McKenzie – Awned, early-midseason maturity, tall. Resistant to stem rust and leaf rust. Moderately resistant to other leaf diseases. Medium yield and medium test weight. Medium straw strength. Medium to high protein percent. Developed by AgPro/Saskatchewan Wheat Pool in 1997. Marketed by Croplan Genetics.

Grain yield (percent of the mean) of hard red spring wheat varieties in Minnesota, northern locations.

Variety	Crookston			Roseau ¹	Stephen		
	2002	2-year ²	3-year	2-year ²	2002	2-year ²	3-year
Forge	86	89	94	88	78	87	89
Ingot	96	97	97	95	81	89	92
Walworth	105	107	105	–	105	109	106
Briggs	111	–	–	–	99	–	–
Oxen	96	100	101	105	98	101	102
McKenzie	105	98	96	–	124	115	106
Russ	92	96	95	102	94	99	106
2375	90	98	97	104	96	104	102
Reeder	101	107	106	111	97	102	100
Parshall	104	101	98	103	82	91	93
Alsen	105	100	94	–	108	109	105
Keystone	94	94	–	–	109	109	–
Hanna	99	96	–	–	97	106	–
Mercury	111	113	112	116	120	110	108
Dandy	106	108	107	–	97	99	98
Knudson	105	104	–	–	102	99	–
NorPro	91	96	99	104	102	95	100
HJ98	100	96	96	99	107	101	112
Gunner	68	80	79	91	79	84	91
Marshall	73	79	86	104	93	93	97
Verde	97	102	104	94	110	106	104
Ivan	103	105	105	113	119	110	105
Granite	85	–	–	–	90	–	–
LSD	10	8	6	13	16	16	11
Mean, Bu/Acre	63.7	66.7	67.7	57.0	45.8	39.3	42.1

¹ Roseau 2002 was flooded. ² 2-year data are 2000 and 2001.

Varieties Not Adequately Tested

Hanna – Awned, midseason maturity, tall. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Low to medium yield and medium test weight. Moderately strong straw. Medium to high protein percent. Released by AgriPro in 2001. **PVP (94)**

Keystone – Awned, midseason maturity, medium height. Resistant to stem rust and moderately resistant to leaf rust. Medium yield and high test weight. Moderately strong straw. Low protein percent. Released by Western Plant Breeders in 2001. **PVP (94)**

Knudson – Awned, midseason-late maturity, semi-dwarf. Resistant to stem rust and to leaf rust. Moderately resistant to other leaf diseases. High yield and medium test weight. Moderately strong straw. Medium protein percent. Released by AgriPro in 2001. **PVP (94)**

Granite – Awned, late maturity, semi-dwarf. Resistant to stem rust and moderately susceptible to leaf rust. Moderately resistant to other leaf diseases. Medium yield and high test weight. Very strong straw. High protein. Developed by Western Plant Breeders in 2002. **PVP (94)**

Briggs – Awned, early maturity, medium height. Resistant to stem rust and moderately resistant to leaf rust. Moderately resistant to other leaf diseases. High yield and high test weight. Moderately strong straw. High protein percent. Developed by S.D. AES in 2002. **PVP (pending)**

rain yield (percent of the mean) of hard red spring wheat varieties in Minnesota, southern locations.

Variety	Lamberton			Morris			St. Paul			Waseca		
	2002	2-year	3-year	2002	2-year	3-year	2002	2-year	3-year	2002	2-year	3-year
Arge	75	94	94	92	86	88	98	99	96	85	100	102
Got	90	100	100	105	101	102	104	92	87	87	92	95
Alworth	101	101	109	95	104	106	107	108	108	120	111	120
Biggs	102	-	-	106	-	-	97	-	-	96	-	-
Ken	101	107	109	104	106	104	119	117	116	125	117	115
McKenzie	59	73	81	93	100	98	82	80	80	89	88	93
Jess	99	102	103	98	111	111	98	98	98	100	105	102
75	78	91	90	98	103	101	87	95	93	79	94	95
Reder	96	105	108	105	111	106	109	106	106	106	104	101
Marshall	78	91	92	91	96	95	93	87	87	103	93	94
Sen	89	98	104	85	80	89	92	96	94	80	91	98
Ystone	90	101	-	107	101	-	80	85	-	99	96	-
Anna	74	82	-	83	89	-	84	83	-	75	88	-
Mercury	111	114	104	98	99	102	111	118	118	98	103	111
Andy	125	114	111	108	104	106	120	111	108	90	95	95
Rudson	113	108	-	110	102	-	99	107	-	108	105	-
OrPro	110	111	114	108	116	107	110	118	112	99	105	99
J98	113	108	101	94	100	104	102	104	103	92	106	98
Jinner	77	94	86	80	85	87	75	77	74	68	86	76
Marshall	67	88	86	98	101	95	104	104	105	66	92	81
Arde	94	90	94	92	105	103	94	99	102	99	100	104
San	108	104	108	101	110	100	90	97	100	87	99	96
Ranite	105	-	-	103	-	-	114	-	-	76	-	-
SD	16	12	9	14	11	8	12	13	10	19	14	11
Mean, Bu/A	35.0	51.2	54.5	48.8	52.1	65.0	67.8	65.6	61.5	33.8	47.0	41.7

rain yield (percent of the mean) of hard red spring wheat varieties in Minnesota.

Variety	State			North ¹			South			On-Farm		
	2002	2-year	3-year	2002	2-year	3-year	2002	2-year	3-year	2002	2-year	3-year
Arge	87	93	93	83	91	91	90	95	94	-	-	-
Got	95	96	96	90	96	95	98	96	96	92	96	97
Alworth	105	106	107	105	107	103	105	106	110	107	107	-
Biggs	102	-	-	106	-	-	100	-	-	109	-	-
Ken	107	108	107	97	101	102	113	112	111	109	108	105
McKenzie	93	91	91	113	101	97	82	85	88	-	-	-
Jess	97	100	102	93	95	99	99	104	104	98	98	98
75	89	97	97	92	100	100	87	96	95	97	99	99
Reder	103	107	105	100	107	105	105	106	105	103	103	103
Marshall	93	94	94	95	99	98	91	91	92	92	93	93
Sen	94	96	97	106	103	98	87	92	96	105	100	96
Ystone	95	96	-	100	98	-	92	95	-	-	-	-
Anna	87	90	-	98	97	-	80	85	-	85	-	-
Mercury	109	111	110	115	113	111	105	109	109	113	109	109
Andy	108	106	106	102	105	105	112	107	106	108	106	104
Rudson	105	105	-	104	103	-	106	106	-	123	-	-
OrPro	103	107	105	96	96	100	108	113	109	99	102	105
J98	101	101	101	103	95	101	100	104	102	103	99	104
Jinner	74	85	82	72	84	85	75	85	81	78	86	86
Marshall	86	93	93	81	87	93	89	97	93	86	91	96
Arde	97	99	101	102	99	101	94	99	101	110	102	102
San	101	104	103	110	107	107	96	102	101	107	103	106
Ranite	97	-	-	87	-	-	102	-	-	98	-	-
SD	6	5	4	8	8	6	8	6	5	12	8	6
Mean, Bu/Acre	49.1	53.0	55.3	54.7	53.9	55.8	46.4	54.0	57.7	46	-	-

North 2002 includes Crookston and Stephen, 2-year includes 2001 and 2002 Crookston and Stephen, plus 2001 Roseau; 3-year includes 2000, 2001, and 2002 Crookston and Stephen, and 2000 and 2001 Roseau.

Hard Red Spring Wheat Planting Rate and Date.

Calculating and seeding the appropriate amount of seed is an important first step towards maximizing yield. The seeding rate is a function of the number of kernels per pound of seed, the percent germination of the lot, the expected stand loss as a function of the quality of seedbed, and the desired stand. In Minnesota, an average optimum stand for hard red spring wheat when planted early is between 28 to 30 plants per square foot or approximately 1.25 million plants per acre. This number should increase by 1 to 2 plants per square foot for every week planting is delayed past the early, optimum seeding date. Expected stand loss even under good seedbed conditions is between 10 to 20% and will increase with a poor seedbed or improper seed placement due to poor depth control.

The general formula for calculating a seeding rate is:

$$\text{Seeding Rate (Pounds/Acre)} = \frac{\text{Desired stand (Plants/Acre)} \times (1 + \text{Expected Stand Loss})}{(\text{Seeds/Pound} \times \text{Percentage Germination})}$$

Calculate the seeding rate for every single seed lot and calibrate the drill accordingly.

Example: Early variety.

Desired Stand, (Plants/Acre)	Expected Stand Loss	Seeds per Pound	Percentage Germination	Seeding Rate, (Lb/Acre)
1.25 million	0.20	14,000	0.95	113

WINTER WHEAT

Winter wheat varieties are compared in trial plots at Lamberton, Morris, Roseau and St. Paul. Wheat 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. These winter wheat trials are not designed for crop (species) comparisons, because the various crops are grown on different fields or with different management. The data should only be used to compare varieties within a table.

Variety Selection Criteria

Varieties are listed in order of heading. The varieties tested differ in their winterhardiness and this characteristic should receive attention when choosing varieties. Cultural practices have a major effect on winter survival of all winter wheat varieties. Planting into a firm seedbed with at least some stubble remaining to retain snow cover can reduce winterkill.

Varieties

Culver – Awned, early maturity, semidwarf. Moderate winterhardiness. Moderately strong straw. Resistant to stem rust and moderately susceptible to leaf rust. Medium test weight and protein. Released by Neb. AES and USDA-ARS 1998. **PVP (94)**

Ransom – Awned, medium-late maturity, medium height. Moderately high winterhardiness. Medium straw strength. Moderately resistant to stem rust and to leaf rust. Medium-low test weight and protein. Released by N.D. AES 1998. **PVP (94)**

Crimson – Awned, red-chaffed, medium maturity, medium height. Moderate winterhardiness. Moderately strong straw. Moderately resistant to stem rust and susceptible to leaf rust. Moderate resistance to Septoria tritici blotch. High test weight and medium protein. Released by S.D. AES 1997. **PVP (94)**

Harding – Awned, medium maturity, medium height. Moderate winterhardiness. Medium straw strength. Moderately resistant to stem rust and to leaf rust. Medium to high test weight and protein. Released by S.D. AES 1997. **PVP (pending)**

Tandem – Awned, early maturity, medium height. Moderate winterhardiness. Medium straw strength. Moderately resistant to stem rust and susceptible to leaf rust. High test weight and medium to high protein. Released by S.D. AES 1997. **PVP (94)**

Windstar – Awned, early-medium maturity, semidwarf. Moderate winterhardiness. Strong straw. Moderately resistant to stem rust and to leaf rust. Medium test weight and protein. Released by Neb. AES and USDA-ARS 1996. **PVP (94)**

Elkhorn – Awned, medium-late maturity, tall. High winterhardiness. Medium straw strength. Resistant to stem rust and moderately resistant to leaf rust. Medium test weight and high to medium protein. Released by N.D. AES 1995. **PVP (94)**

Arapahoe – Awned, early maturity, medium height. Moderate winterhardiness. Moderately strong straw. Resistant to stem rust and moderately resistant to leaf rust. Medium test weight and protein. Released by Neb. AES and USDA-ARS 1988. **PVP (94)**

Seward – Awned, medium-late maturity, tall. Moderately high winterhardiness. Medium straw strength. Moderately resistant to stem rust and susceptible to leaf rust. Low to medium test weight and low protein. Released by N.D. AES 1987.

Roughrider – Awned, medium-late maturity, tall. Very high winterhardiness. Medium straw strength. Resistant to stem rust and susceptible to leaf rust. Medium test weight and medium to high protein. Released by N.D. AES 1975.

Varieties Not Adequately Tested

Wahoo – Awned, early, semidwarf. Moderate winterhardiness. Moderately strong straw. Resistant to stem rust and susceptible to leaf rust. Low test weight and protein. Released by Neb. AES 2001. **PVP (94)**

Millennium – Awned, early-medium maturity, medium height. Moderate winterhardiness. Strong straw. Resistant to stem rust and moderately resistant to leaf rust. Medium test weight and protein. Released by Neb. AES and USDA-ARS 1999. **PVP (94)**

uplains – Awned, medium maturity, short-semidwarf. Moderate winterhardness. Strong straw. Moderately resistant to stem rust and to leaf rust. Medium test weight and protein. White grain color. Released by USDA-ARS and the Nebraska, South Dakota, and Wyoming Agricultural Experiment Stations 1999.
VP (94)

Winter Wheat Planting Rate and Date

Bushel Weight (Pounds).....	60
Seeds/Pound.....	14,500
Pounds Rate/Acre	75+
Seeds / Square Foot.....	25
Planting Date	Aug. 20 - Sept. 20

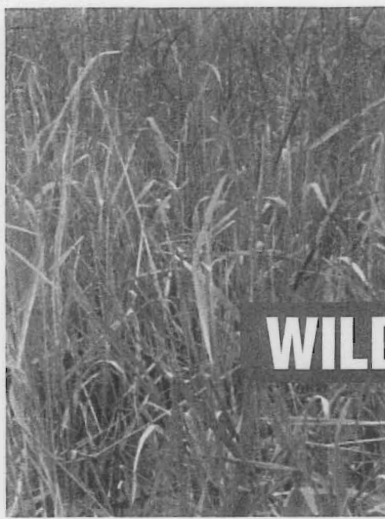
growth characteristics of winter wheat varieties.

Variety	Heading, Days From Jan 1	Height, Inches	Winter-Hardiness ¹	Lodging Rating	Test Weight, Pounds/Bushel		Protein % at 12% Moisture		Rust Resistance ²	
					2002	2-year	2002	2-year	Leaf	Stem
Julver	163	35.3	M	M. Strong	56.3	57.8	13.3	13.2	MS	R
Lahoo	163	35.0	M	M. Strong	55.3	57.2	13.1	12.4	S	R
Landem	164	36.7	M	Medium	58.2	59.6	13.9	13.9	S	MR
Lapahoe	164	37.1	M	M. Strong	56.5	58.2	13.7	13.0	MR	MR
Lindstar	164	36.3	M	Strong	57.8	58.8	13.2	13.2	MR-MS	MR
Limson	165	36.3	M	M. Strong	59.0	60.4	13.5	13.4	S	MR
Lillenius	165	35.1	M	Strong	56.8	58.9	13.4	13.1	MR	R
Larding	165	36.1	M	Medium	59.0	59.9	13.9	13.4	MR	MR
Luplains ³	166	31.2	M	Strong	57.7	59.5	14.0	12.9	MR	MR
Loughrider	166	39.2	VH	Medium	57.5	58.7	13.9	13.5	S	R
Lerry ⁴	167	37.1	–	M. Strong	58.0	–	13.9	–	MR	R
Lansom	167	36.6	MH	Medium	55.9	57.6	13.1	12.2	MR	MR
Leward	167	40.0	MH	Medium	56.7	58.4	13.1	12.2	S	MR
Llkhorn	168	41.7	H	Medium	57.4	58.9	14.2	13.2	MR	R
Mean	165	36.8			57.4	58.8	13.6	13.0		
SD	1	1.8			2	1	1	1		

Winterhardness rating is a relative ranking that includes data from North Dakota, Nebraska and South Dakota: VH=very high, H=high, MH=moderately high, M=moderate. ² R=resistant, MR=moderately resistant, MS=moderately susceptible, S=susceptible. ³ White seeded. ⁴ 2002 data.

Yield (percent of the mean) of winter wheat varieties.

Variety	Lamberton		Morris		Roseau		St. Paul			State			
	2002	2002	00-02	2001	2-year	3-year	2002	2-year	3-year	2002	2-year	3-year	4-year
Julver	98	91	95	112	102	103	76	97	101	90	100	100	104
Lahoo	88	83	–	106	–	–	70	92	–	81	93	–	–
Landem	105	116	109	110	104	109	102	91	95	109	104	103	104
Lapahoe	110	104	106	101	103	109	71	92	95	98	101	102	105
Lindstar	117	103	107	105	101	105	138	133	127	116	116	113	114
Limson	80	87	90	107	104	102	91	94	92	86	93	93	95
Lillenius	115	107	109	120	102	–	101	103	111	108	110	109	–
Larding	107	93	103	97	103	102	123	110	108	105	102	104	104
Luplains	94	94	99	96	83	–	115	114	119	99	101	101	–
Loughrider	78	91	92	91	94	94	91	81	80	86	85	87	88
Lerry	115	130	–	–	–	–	155	–	–	131	–	–	–
Lansom	128	122	114	99	103	102	114	104	104	122	112	110	110
Leward	102	102	98	94	108	104	116	106	101	106	101	101	103
Llkhorn	84	101	96	83	91	92	119	102	95	100	94	92	93
SD	39	28	22	18	20	18	28	25	22	21	20	22	14
Mean, Bu/Acre	50.0	63.7	61.6	81.9	68.6	58.7	38.2	51.6	53.9	50.7	60.0	59.1	56.9



WILDRICE

shattering than K2, especially retaining more seed when harvest is delayed. Released 1992 by Minn. AES.

GIB-C9 - High yielding, tall, medium-late maturing. Average shattering resistance. Seed is short, similar in length to Itasca and Petrowske Bottlebrush. Panicle type is mixed, including a noticeable percentage of bottlebrush panicles, depending on continuing selection intensity for the trait. Proprietary variety owned by Gunvalson Brothers and Pine Lake Wild Rice.

Itasca - High yielding, tall, medium-late maturing. Superior resistance to seed shattering and fungal brown spot (FBS) disease. Very lodging resistant. Yield is about 50 percent higher than Petrowske Purple and Franklin. Shattering loss is about one-third less than Franklin or Petrowske Purple. Significantly more FBS resistant than Franklin. Taller than Franklin by 3 inches and Petrowske Purple by 4 inches. Slightly later maturing than Petrowske Purple. Flowers 2 to 3 days after Petrowske Purple or Franklin. Average seed length is somewhat short, similar to Petrowske Purple and shorter than Franklin by 1/64 inch. Panicle type is mixed, including a noticeable percentage of bottlebrush panicles, but declining from 50-percent frequency

without continued selection for the trait. Released 2002 exclusively to Minnesota growers by the Minnesota Cultivated Wild Rice Council.

K2 - Medium height, early to medium maturity and medium to high yield. Developed by Kosbau Brothers in 1972.

Petrowske Purple - Moderately high fungal brown spot disease resistance and yield. High shattering resistance and lodging resistance. Consists of heterogeneous panicle types, most of which have some degree of purple at full flowering. Medium plant height. Medium-late maturity, flowering several days to a week after K2 and Franklin. Seeds shorter in length than most older varieties. Released 2000 by Minn. AES under a licensing agreement.

Cultivated wildrice is grown on about 20,000 acres in Minnesota. Though some wildrice fields are still planted with shattering types most growers use varieties with nonshattering tendencies.

Because of likelihood of preharvest losses due to high winds, storms, blackbird damage and killing frost before varietal maturity, growers should favor varieties of early to medium maturity. For flexibility in harvesting, plant varieties resistant to shattering, disease and lodging.

Varieties

Franklin - Medium height, medium to early maturity. More resistant to

Wildrice Planting Rate and Date

Bushel Weight, Pounds	25
Seeds/Pound.....	7,900
Planting Rate, Pounds/Acre	50
Planting Rate, Seeds Sq. Ft.	9
Planting Date	Late Fall

Yield, shattering, lodging and fungal brown spot (FBS) ratings for wildrice varieties.

Variety	Kelliher / Waskish				Clearbrook / Gully			Altkin				1998-2002 Average			
	Yield, Lb/Acre ¹	Shattering, Percent ²	Lodging, Score ³	FBS, Score ⁴	Yield, Lb/Acre ¹	Lodging, Score ³	FBS, Score ⁴	Yield, Lb/Acre	Shattering, Percent ²	Lodging, Score ³	FBS, Score ⁴	Yield, Lb/Acre ¹	Shattering, Percent ²	Lodging, Score ³	FBS, Score ⁴
Franklin	1,255	23	2.7	4.8	1,870	3.5	3.9	1,096	20	2.1	4.7	1,270	22	2.4	4.6
GIB-C9	1,703	25	2.1	4.1	2,795	3.7	4.7	1,214	38	2.0	4.4	1,661	28	2.2	4.3
Itasca	1,793	17	1.3	3.2	3,450	2.2	3.3	1,774	12	1.1	4.0	1,971	16	1.4	3.5
K2	1,371	20	1.9	4.4	1,801	3.0	4.5	1,095	21	2.0	4.8	1,327	20	2.0	4.6
Petrowske Purple	1,378	22	1.7	3.7	1,974	2.5	3.5	1,033	26	1.5	4.2	1,329	23	1.7	3.8
LSD 5%	197	4	0.4	0.6	613	0.9	0.9	217	7	0.3	0.7	146	3	0.3	0.4
Years	98-99-00-01-02	98-99-01	98-99-01-02	98-99-00-01-02	00	98	98-00	00-01-02		99-00-01-02	99-00-01-02				

¹ Adjusted to 40% moisture. ² Expressed as a percentage of shattered seed plus grain yield per unit area. ³ Using a 1-5 scale where 1=stems completely erect, 3=stems averaging 45° angle, 5=stems prostrate. ⁴ Fungal Brown Spot rating using a 1-9 scale where 1=no significant disease lesions and 9=completely susceptible (dead).

Minnesota Approved Seed Conditioners and Marketing Association

Member plants of this association are identified by the symbol at the right. In addition to being approved for conditioning certified seed by the Minnesota Crop Improvement Association (MCIA) they voluntarily maintain membership in the Minnesota Approved Seed Conditioners and Marketing Association to promote professionalism in seed conditioning and distribution.



Minnesota Agricultural Experiment Station and in enhancing the quality of seed planted in the state. They are designed specifically for the proper conditioning of seed, are properly built and equipped and meet specific seed-handling standards. The plants are inspected at least annually by MCIA to assure that they are properly equipped and that all requirements for approved plant status are maintained.

Seed conditioning plants identified by the symbol of the Minnesota Approved Seed Conditioners and Marketing Association and listed below are a sound choice for quality seed conditioning services.

For more than a century approved seed plants have played a significant role in distributing seed of varieties developed by the

Blams Seed	Wendell	218-458-2151	Marvin's	Warroad	218-386-1333
Bert Lea Seed House	Albert Lea	507-373-3161	Meyer's Seed	Elgin	507-876-2482
Bjell Seed Farm	Blooming Prairie	507-583-7581	Mid-Valley Grain Cooperative	Crookston	218-281-2881
Bickman Seeds	Herman	320-677-2231	Nietfeld Farm	Melrose	320-987-3442
Bjorn Seed Company	Atwater	320-974-3003	Petermann Seeds	Hawley	218-483-3302
Bryer Seed Farm	Kent	218-643-5126	Red River Marketing Company	Elbow Lake	218-685-6100
Bloomquist Farms	Drayton, N.D.	218-455-3863	Rivard's Quality Seeds	Argyle	218-437-6638
Borg Seed Farms	Cokato	320-286-2222	Ron Petersen Seeds	Lake Bronson	218-754-4631
Birsch Seed Company	Mahnomen	218-935-2772	Ross Seed Company	Fisher	218-891-2211
Bjornstran Seed Company	Crookston	218-281-7840	Rossbach Lakeside Seeds	Hanska	507-794-7698
Bjorkle C Seeds	Gary	218-356-8214	Sawvell's Seed	Clements	507-692-2240
Bearwater Valley Seeds	Gully	218-268-4171	Spronk & Sons Seed Farm	Edgerton	507-442-5334
Benton Ag Service	Clinton	320-325-5203	Storden Seed & Chemical Service	Storden	507-445-3217
Borning Seed & Supply	Austin	507-433-9002	Swenson Seed Farm	Brooks	218-796-5285
Bahlco Seeds	Cokato	320-286-5982	Thiel Seed Service	Wendell	218-458-2415
Bammann Seed Farms	Plato	320-864-3004	Tobolt Seed	Moorhead	218-287-2904
Bjornstedt Brothers	Sacred Heart	320-765-2728	Watsonwan Farm Service	Kiester	507-294-3697
Bjork Seed Farm	Murdock	320-875-4341	Weinlader Seed Company	Drayton, N.D.	701-454-6427
Bjorners Cooperative Assn.	Jackson	507-847-4160	Werner Farm Seeds	Dundas	507-645-7995
Bjorker Seeds	Elysian	507-267-4328	Wigen Seed Farm	Litchfield	320-693-8182
Bjorker Seed Farm	Morris	320-795-2468	Willette Seed Farm	Delavan	507-854-3595
Bjorkstritt Farms	Roseau	218-463-1193	Zabel Seeds	Plainview	507-534-2487
Bjorkrud Seed Plant	Rochsay	218-493-4275	Ziller Seed Company	Bird Island	320-365-3674
Bjorkstrand Seeds	Moorhead	218-585-4621	Zimmerman Seeds	Racine	507-378-2077
Bjorkman Seed Plant	Boyd	320-855-2582			
Bjorksen Seed Company	Stephen	218-478-3397			
Bjork, Inc. (Johnson Seed Farm)	Sacred Heart	320-765-2225			
Bjork Seed Farm	Foxhome	218-739-3366			
Bjork B. Grain	Lake Bronson	218-754-4200			
Bjork Seed Farm	Borup	218-494-3330			
Bjork's Seed Farm	Benson	320-843-2857			

OILSEED CROPS



CANOLA

Canola (*Brassica napus* and *B. rapa*) is a crop developed from oilseed rape by Canadian plant breeders; the first canola variety was licensed in 1974. Canola is used for edible oil extraction and protein feed meal. Canola oil is considered one of the highest quality edible oils available. Considerable acreage of spring canola is grown in Canada. Minnesota acreage increased from about 8,000 acres in 1990 to more than 200,000 acres in 1998.

The oil in canola seed contains less than 2 percent erucic acid, compared with 20 to 40 percent found in oilseed rape. The canola meal remaining after oil extraction contains less than 0.1 percent glucosinolates (sulfur-containing compounds) compared with about 1 percent in rapeseed meal. Consequently, canola is also

Canola Planting Rate and Date

Bushel Weight (Pounds).....	50
Seeds/Pound.....	80,000 to 160,000
Planting Rate, Pounds/Acre.....	3 to 7
Planting Rate, Seeds/Square Foot....	6 to 9
Planting Date	Early Spring

referred to as "double low" or "00" rapeseed. High levels of erucic acid in oilseed rape are hazardous to human health, and high levels of glucosinolates are detrimental in livestock feeds.

The canola varieties described here are all spring-sown *Brassica napus* types. Fall-planted winter-type canola varieties were evaluated by University of Minnesota researchers over 10 years ago with limited success. Newer winter-type canola varieties planted in the fall of 2001 at Thief River Falls did not survive the winter. Another trial with winter-type canola varieties was seeded at multiple seeding dates in the fall of 2002 near St. Hilaire for 2003 harvest.

Information Sources

The Minnesota Canola Council is a good source for information on canola. The Canola Council can be contacted by mail (4630 Churchill St., Suite 1, St. Paul, MN 55126), phone (651-638-9883) or fax (651-638-0756).

A complete and newly revised Canola Growers Manual on canola production will be available in early 2003 from the Canola Council of

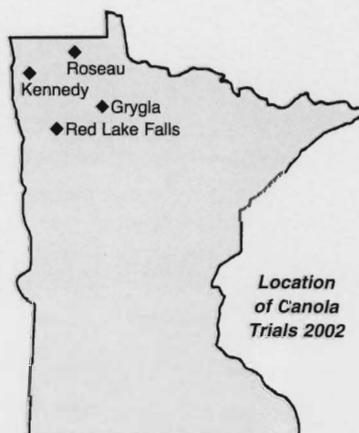
Canada, 400-167 Lombard Ave, Winnipeg, Manitoba, Canada R3B 0T6 (phone 204-982-2100, internet www.canola-council.org). It contains detailed information on canola production practices and costs \$68.00 (U.S.). The Canola Grower's Manual is also available for viewing online at www.canola-council.org. Please keep in mind when using this manual that not all pesticides used in Canada are legal in the United States. Always confirm the clearance of a pesticide with your local dealer or county extension educator. Another management tool is a CD-ROM called the "Canola Growers Decision Support System" available from the Canola Council of Canada for \$250.00 (U.S.).

Test Sites

Non-Roundup Ready and Roundup Ready variety trials were conducted at four sites in 2002. The Red Lake Falls testing site was on the Monte Casavan farm, the Roseau site was on the Braaten Farms, the Grygla site was on the Todd Stanley farm, and the Kennedy test site was on the Rob and Tim Rynning farm. Severe flooding in Roseau County destroyed the entire site at Braaten Farms. Heavy rains throughout the summer

Canola Variety Name Changes

Old Name or Experimental Number	New Variety Name
Bumper	SP Bucky
D5099RR	BlazeRR
InVigor 2373	InVigor 4746
LiBred 4.99	LiBred 499RR
LiBred 799RR	HyCLASS 799 RR
S8071	HyLite 289 C.L
SW D5113	SW 1888
SW-P 9828000	SP Admirable



sulted in damage to numerous plots at Red Lake Falls, Grygla and Kennedy, making some data unreliable and thus discarded from those areas. The Red Lake Falls site was hit by heavy hailstorms twice, once at planting on June 25 and secondly between combining dates on August

26. The later maturing varieties at the Red Lake Falls site were not harvested for yield due to excessive hail damage.

Local Support

Cenex-Harvest States of Kennedy provided sponsorship for the Kennedy site. Farmer's Union Oil of

Grygla provided support for the Grygla site.

Field Day Assistance

County extension educators Nathan L. Johnson, Hans J. Kandel, Curtis W. Nyegaard, Bill Craig and Howard A. Person provided field day assistance.

Wheat seed sources for 2003 planting, keyed to "Variety Information" column in seed yield table, page 56.

Developers

- 1 Advanta Seeds, Unit 3, 75 Scurfield Blvd., Winnipeg, MB, Canada R3Y 1P6
- 2 Agriprogress, P.O. Box 2499, Morden, MB, Canada R6M 1C2
- 3 Bayer Crop Science, 203-407 Downey Rd., Saskatoon, SK, Canada S7N 4L8

-
- 4 DSV/Brett-Young Seeds, Box 99, St. Norbert, P.O., Winnipeg, MB, Canada R3V 1L5
 - 5 Monsanto, 3100 Sycamore Rd., De Kalb, IL 60115, 815-758-9323
 - 6 Pioneer Hi-Bred International, Inc., 7200 NW 62nd Ave., Johnston, IA 50131
 - 7 Saskatchewan Wheat Pool/AgPro, 201-407 Downey Rd., Saskatoon, SK, Canada S7N 4L8

-
- 8 Svalof Weibull Ltd., 2-411 Downey Rd., Saskatoon, SK, Canada S7N 4L8
 - 9 University of Alberta/Agricore, P.O. Box 2700, Station "M", Calgary, AB, Canada T2P 2P5
 - 10 Not Available

Marketers

- 1 Bayer Crop Science, 203-407 Downey Rd., Saskatoon, SK, Canada S7N 4L8, 701-775-2700
- 2 Canterra Seeds Ltd., 14-62 Scurfield Blvd, Winnipeg, MB, Canada R3Y 1M5, 204-988-9751
- 3 Croplan Genetics, P.O. Box 1291, Minot, ND 59702, 701-852-3556
- 4 Integra Seed Ltd., P.O. Box 40, Bozeman, MT 59771, 406-582-8375

-
- 5 Interstate Seed Company, 1215 Parkway, West Fargo, ND 58078, 800-437-4120
 - 6 Monsanto, 3100 Sycamore Rd., De Kalb, IL 60115, 815-758-9323
 - 7 Pioneer Hi-Bred International, Inc., 7200 NW 62nd Ave., Johnston, IA 50131, 701-298-6894
 - 8 Proseed, 705 E. Brewster, Harvey, ND 58341, 701-324-4177

-
- 9 Seeds 2000, Box 200, Breckenridge, MN 56520, 218-643-2410
 - 10 Van Seeds, Box 295, Bottineau, ND 58318, 888-325-7162
 - 11 Not Available

Seed yield of Roundup Ready canola (*Brassica napus*) varieties (lb/acre at 8% moisture) at Kennedy, Grygla and Red Lake Falls, in 2002

Variety information includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing, page 55, and these supplemental codes: H = Hybrid,

Op = Open Pollinated, Syn = Synthetic, SP = Specialty Oil.

*Average yields were analyzed using three replicates from each site.

**Varieties without data at Red Lake Falls were hail damaged. The other plots were harvested before the August 26 hailstorm.

Blackleg resistance rating provided by seed companies: R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible, NA = No Available.

Variety	Variety Information	Blackleg Resistance	Average*		Red Lake Falls**	Average,* All Sites
			Kennedy	Grygla		
45A55	D6,M7,Op	R	1,501	1,750	1,633	1,585
45H21	D6,M7,H	R	1,581	2,100	1,876	1,773
BlazeRR	D8,M4,H	MR	1,429	1,655	1,539	1,708
Canterra 1812	D2,M2,Syn	MR	1,436	1,565	1,521	1,312
Crosby	D10,M3,Op	MR	1,596	1,759	1,677	-
Dakota	D9,M5,Op	R	1,197	1,379	1,331	1,034
DKL223	D1,M6,H	MS	1,597	1,848	1,766	1,548
DKL34-55	D5,M6,Op	MR	1,323	1,441	1,402	1,570
DKL35-85	D5,M6,Op	R	1,583	1,674	1,647	-
HyCLASS 2061	D2,M3,H	MR	1,690	1,843	1,766	1,473
HyCLASS 767 SW	D10,M3,Syn	MR	1,611	1,888	1,756	1,449
HyCLASS 799 RR	D4,M3,Syn	MR	1,277	1,647	1,444	1,571
HyCLASS 905	D10,M3,H	R	1,871	1,886	1,892	2,027
Hyola 357 Magnum	D1,M5,H	MR	1,560	1,892	1,764	1,700
Hyola 357 RR	D1,M5,H	MS	1,483	1,652	1,561	1,761
Libred 499RR	D4,M10,H	R	1,308	1,516	1,453	1,429
Libred 612RR	D4,M10,Op	R	1,300	1,352	1,349	1,491
Minot	D2,M3,Op	MR	1,484	1,722	1,604	-
NR00-1301	D7,M11,Op	R	1,390	1,396	1,407	1,462
NR00-4026	D7,M11,Op,SP	R	1,461	1,602	1,542	1,347
RaideRR	D8,M4,Op	MR	1,196	1,246	1,272	-
Razor	D8,M8,Syn	MR	1,419	1,838	1,662	1,430
Roughrider	D2,M8,Op	MR	1,403	1,387	1,420	-
RR Hyb 2013	D2,M8,H	R	1,595	1,993	1,845	1,852
RR Hyb 2066	D2,M8,H	MR	1,453	1,847	1,693	1,580
RuleRR	D8,M4,Syn	MR	1,255	1,798	1,595	1,785
SP Admirable	D8,M11,Syn	MR	1,371	1,813	1,602	1,269
SP Banner	D7,M11,Op	R	1,395	1,441	1,437	1,615
SP Bucky	D7,M11,Op	R	1,569	1,425	1,509	-
SW 1898	D8,M11,H	MR	1,467	1,706	1,606	1,719
SW Badger	D8,M9,H,Syn	MR	1,412	1,631	1,533	1,322
SW D5177 RR	D8,M5,Op	NA	1,170	1,586	1,405	1,205
SW Gladiator	D8,M5,Syn	MR	1,416	1,930	1,716	1,758
SW Peak	D8,M6,Syn	MS	1,368	1,944	1,661	1,735
Mean			1,446	1,680	1,585	1,588
LSD (0.05)			197	323	216	258
C.V.			9.7	13.6	11.9	10.1

Yield characteristics and oil content of Roundup Ready canola varieties grown near Kennedy, seeded May 25, 2002.

† data were analyzed using four replicates.

Variety	Yield,* Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to				Lodging, 1 = Erect 9 = Flat
			95% Canopy Closure	Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	Height, Inches	
As55	1,501	43.6	36	41	77	29	2.0
H21	1,581	44.2	34	39	78	29	2.8
zeRR	1,429	40.3	35	41	82	37	1.0
nterra 1812	1,436	41.2	33	41	82	37	1.0
osby	1,596	42.9	35	41	83	33	2.0
ota	1,197	43.0	36	40	76	26	1.8
L223	1,597	42.7	35	39	77	24	1.8
L34-55	1,323	44.5	35	41	80	33	1.0
L35-85	1,583	41.9	34	41	83	35	2.3
CLASS 2061	1,690	41.7	33	40	81	36	1.5
CLASS 767 SW	1,611	42.8	34	41	80	36	1.5
CLASS 799 RR	1,277	39.1	36	41	81	37	1.0
CLASS 905	1,871	43.0	33	42	83	41	1.0
ola 357 Magnum	1,560	44.6	34	39	78	27	1.5
ola 357 RR	1,483	43.6	32	39	79	25	1.8
red 499RR	1,308	40.9	36	41	81	33	1.0
red 612RR	1,300	42.6	35	41	81	35	2.0
not	1,484	42.9	34	40	81	30	2.3
00-1301	1,390	45.2	35	42	81	33	1.8
00-4026	1,461	43.8	35	42	81	36	1.8
ideRR	1,196	43.6	35	42	82	36	1.0
zor	1,419	42.2	34	40	80	29	1.8
ughrider	1,403	48.1	35	41	81	34	1.8
Hyb 2013	1,595	44.3	34	42	80	38	1.3
Hyb 2066	1,453	44.2	35	41	79	31	2.3
leRR	1,255	43.4	34	40	79	33	1.8
' Admirable	1,371	41.4	36	41	82	34	1.0
' Banner	1,395	46.1	35	41	80	33	2.8
' Bucky	1,569	45.9	33	40	80	28	3.5
v 1898	1,467	45.4	35	41	80	33	2.0
v Badger	1,412	41.4	34	41	81	35	1.3
v D5177 RR	1,170	43.5	36	42	78	28	3.3
v Gladiator	1,416	41.9	34	40	80	34	2.3
v Peak	1,368	44.2	35	40	80	33	1.8
ean	1,446	43.2	34	41	80	33	1.8
iD (0.05)	197	2.18	1.6	0.7	1.5	3.4	0.89
V.	9.7	3.1	3.4	1.2	1.4	7.5	35.9

Growth characteristics and oil content of Roundup Ready canola varieties grown near Grygla, seeded May 24, 2002.

*All data were analyzed using three replicates.

Variety	Yield,* Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		Height, Inches	Lodging, 1 = Erect 9 = Flat	Aster Yellows, % Infection
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme			
45A55	1,750	42.6	48	90	36	3.0	33
45H21	2,100	44.9	47	90	34	3.3	15
BlazeRR	1,655	41.0	48	92	39	2.3	30
Canterra 1812	1,565	41.6	49	92	38	2.0	20
Crosby	1,759	44.1	50	90	38	3.5	33
Dakota	1,379	41.9	46	85	27	3.3	18
DKL223	1,848	42.9	46	86	33	3.3	20
DKL34-55	1,441	43.2	48	91	35	2.0	23
DKL35-85	1,674	41.3	48	91	34	3.5	20
HyCLASS 2061	1,843	42.7	48	92	41	1.8	28
HyCLASS 767 SW	1,888	42.9	48	92	41	3.5	20
HyCLASS 799 RR	1,647	40.7	49	93	37	1.8	20
HyCLASS 905	1,886	44.6	49	92	41	1.5	28
Hyola 357 Magnum	1,892	41.7	45	90	32	2.8	28
Hyola 357 RR	1,652	42.0	46	89	30	3.3	20
LiBred 499RR	1,516	42.7	49	92	38	1.3	23
LiBred 612RR	1,352	42.7	48	91	35	2.8	20
Minot	1,722	40.8	48	91	34	3.3	20
NR00-1301	1,396	42.5	48	91	36	3.0	25
NR00-4026	1,602	41.4	49	92	34	4.0	18
RaideRR	1,246	40.5	49	91	43	2.3	30
Razor	1,838	42.0	47	90	36	3.3	23
Roughrider	1,387	44.5	49	91	38	3.0	18
RR Hyb 2013	1,993	44.9	48	90	40	1.8	30
RR Hyb 2066	1,847	45.1	47	89	36	3.0	20
RuleRR	1,798	43.6	46	88	36	2.5	23
SP Admirable	1,813	41.5	48	92	40	2.5	25
SP Banner	1,441	43.5	48	90	35	3.0	15
SP Bucky	1,425	44.1	47	90	32	3.5	33
SW 1898	1,706	42.1	48	92	37	2.0	25
SW Badger	1,631	40.4	48	91	42	2.3	25
SW D5177 RR	1,566	43.1	48	89	31	3.3	20
SW Gladiator	1,930	42.2	48	90	36	2.3	18
SW Peak	1,944	42.0	48	91	36	2.5	28
Mean	1,680	42.6	48	90	36	2.7	23
LSD (0.05)	373	2.17	1.1	2.0	4.2	0.90	19.8
C.V.	13.6	3.1	1.7	1.5	8.3	23.7	38.1

Growth characteristics and oil content of Roundup Ready canola varieties grown near Red Lake Falls, seeded May 20, 2002.

Note: This site was severely hailed upon on June 25 (35 days after planting) and again on August 26 after the first combining date.

Yield and oil were analyzed using three replicates.

Plots labeled "Hailed" were too damaged to take yield. The other plots were harvested before the August 26 hailstorm.

Variety	Yield,* Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		Height, Inches
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	
A55	1,585	43.1	48	85	25
H21	1,773	45.0	45	82	27
IZE RR	1,708	43.4	46	85	26
Interra 1812	1,312	42.8	47	86	31
Osby	Hailed**	-	51	90	27
Kota	1,034	41.6	47	83	18
L223	1,548	42.4	45	82	22
L34-55	1,570	44.6	47	84	26
L35-85	Hailed	-	48	88	29
CLASS 2061	1,473	43.6	47	83	26
CLASS 767 SW	1,449	42.7	47	85	28
CLASS 799 RR	1,671	42.5	47	85	31
CLASS 905	2,027	44.5	47	84	31
Cola 357 Magnum	1,700	42.6	46	85	24
Cola 357 RR	1,761	43.3	46	84	23
Red 499RR	1,429	41.8	47	84	28
Red 612RR	1,491	44.0	47	85	27
Not	Hailed	-	48	89	26
00-1301	1,462	45.1	47	85	26
00-4026	1,347	42.6	48	85	25
ideRR	Hailed	-	48	87	29
zor	1,430	40.9	46	86	28
ughrider	Hailed	-	48	88	25
Hyb 2013	1,852	45.6	47	82	30
Hyb 2066	1,580	44.7	46	83	25
ileRR	1,785	43.9	46	84	29
Admirable	1,269	42.7	47	86	28
Banner	1,615	47.4	46	83	25
Bucky	Hailed	-	47	88	23
V 1898	1,719	43.5	47	85	27
V Badger	1,322	40.9	47	87	30
V D5177 RR	1,205	42.1	46	83	21
V Gladiator	1,758	43.5	45	83	28
V Peak	1,735	43.7	46	83	28
ean	1,558	43.4	47	85	26
SD (0.05)	258	2.14	0.9	2.4	4.0
V.	10.1	3.0	1.4	2.0	10.7

Seed yield of Non-Roundup Ready canola (*Brassica napus*) varieties (lb/acre at 8% moisture) at Kennedy, Grygla and Red Lake Falls in 2002

Variety information includes Source Codes: (D# = Developer; M# = Marketer) keyed to listing, page 55, and these supplemental codes: H = Hybrid,

SP = Specialty Oil, OP = Open Pollinated, Syn = Synthetic, LL = Liberty Link, C = Clearfield (Raptor tolerant).

*Average yields were analyzed using three replicates from each site.

**Varieties without data at Red Lake Falls were hail damaged. The other plots were harvested before the August 26 hailstorm.

Blackleg Resistance rating provided by seed companies: R = Resistant, MR = Moderately Resistant, MS = Moderately Susceptible, S = Susceptible, NA = Not Available.

Variety	Variety Information	Blackleg Resistance	Average*		Average,*		
			Kennedy	Grygla	Kennedy, Grygla	Red Lake Falls**	All Sites
46A76	D6,M7,Op,C	R	909	1,169	1,039	-	-
46H02	D6,M7,H	R	1,377	1,791	1,584	1,259	1,476
Canterra 1604	D2,M2,Op,C	R	922	1,625	1,273	-	-
Canterra 1670	D2,M2,Op,C	R	970	1,298	1,134	-	-
Hyb 9387	D2,M8,H	MR	1,117	1,524	1,321	1,368	1,337
HyCLASS 601	D4,M3,H	R	1,169	1,403	1,286	-	-
HyLite 289 CL	D1,M5,Op,C	MR	981	1,305	1,143	1,138	1,141
Hyola 330	D1,M5,H	MS	1,072	1,497	1,285	1,303	1,291
Hyola 401	D1,M5,H	S	1,271	1,376	1,324	-	-
InVigor 2573	D3,M1,H,LL	R	1,366	1,813	1,590	1,611	1,597
InVigor 2663	D3,M1,H,LL	R	1,338	1,760	1,549	-	-
InVigor 2733	D3,M1,H,LL	MR	1,343	1,816	1,580	1,454	1,538
InVigor 4746	D3,M1,H,LL	MS	1,276	1,501	1,388	1,498	1,425
KAB 36	D2,M3,Op,C	R	1,298	1,495	1,396	-	-
LiBred 2393LL	D4,M10,Op	MS	862	1,069	965	-	-
N000-0488	D7,M11,Op,C	R	1,140	1,304	1,222	-	-
Mean			1,138	1,443	1,317	1,376	1,401
LSD (0.05)			227	276	175	305	151
C.V.			12.0	11.5	11.5	12.7	11.2

Growth characteristics and oil content of Non-Roundup Ready canola varieties grown near Kennedy, seeded May 25, 2002.

*Yield and oil data were analyzed using three replicates.

Variety	Yield,* Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to			Height, Inches	Lodging, 1 = Erect 9 = Flat
			95% Canopy Closure	Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme		
46A76	909	41.8	34	43	82	32	1.0
46H02	1,377	45.6	35	40	79	30	2.0
Canterra 1604	922	42.8	35	42	82	31	1.0
Canterra 1670	970	43.0	34	40	80	30	1.3
Hyb 9387	1,117	41.7	34	40	81	32	1.0
HyCLASS 601	1,169	40.8	34	41	82	36	1.0
HyLite 289 CL	981	45.7	34	42	78	30	2.5
Hyola 330	1,072	43.5	34	38	74	23	1.3
Hyola 401	1,271	41.9	34	39	78	23	1.3
InVigor 2573	1,366	42.7	36	41	79	32	1.8
InVigor 2663	1,338	43.8	35	42	78	33	1.3
InVigor 2733	1,343	43.5	33	39	76	28	1.8
InVigor 4746	1,276	46.8	34	41	80	31	2.0
KAB 36	1,298	43.2	34	41	80	31	2.0
LiBred 2393LL	862	40.6	37	48	82	33	1.0
N000-0488	1,140	44.5	35	40	79	30	1.8
Mean	1,138	43.1	34	41	79	30	1.5
LSD (0.05)	227	1.66	1.6	1.0	2.0	3.2	0.70
C.V.	12.0	2.3	3.3	1.8	1.8	7.6	33.2

Yield characteristics and oil content of Non-Roundup Ready canola varieties grown near Grygla, seeded May 24, 2002.

All data were analyzed using three replicates.

Variety	Yield,* Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to			Lodging, 1 = Erect 9 = Flat	Aster Yellows, % Infection
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	Height, Inches		
A76	1,169	41.2	50	92	39	2.0	23
H02	1,791	46.2	47	86	35	2.7	17
Anterra 1604	1,625	42.9	50	93	37	3.0	20
Anterra 1670	1,298	41.0	49	92	41	4.0	23
Bob 9387	1,524	43.5	48	92	39	2.3	20
CLASS 601	1,403	43.5	49	93	41	2.0	23
Lite 289 CL	1,305	44.0	51	91	34	4.3	17
Omega 330	1,497	44.4	46	88	27	3.7	37
Omega 401	1,376	41.7	47	92	32	2.3	37
Proigor 2573	1,813	42.9	49	90	40	3.0	27
Proigor 2663	1,760	44.2	50	92	39	2.7	20
Proigor 2733	1,816	43.6	44	86	31	3.0	23
Proigor 4746	1,501	42.8	50	92	35	3.3	17
B 36	1,495	42.6	50	91	35	3.0	20
Prored 2393LL	1,069	41.3	50	93	39	1.7	27
00-0488	1,304	42.5	47	90	36	3.3	27
Mean	1,443	42.8	49	91	36	2.9	24
SD (0.05)	276	2.76	2.6	3.8	4.9	0.80	11.9
CV	11.5	3.9	3.2	2.4	8.2	16.5	30.2

Yield characteristics and oil content of Non-Roundup Ready canola varieties grown near Red Lake Falls, seeded May 20, 2002.

Note: This site was severely hailed upon on June 25 (35 days after planting) and again on August 26 after the first combining date.

Yield and oil were analyzed using three replicates.

*Plots labeled "Hailed" were too damaged to take yield. The other plots were harvested before the August 26 hailstorm.

Variety	Yield,* Lb/Acre at 8% Moisture	Oil, % of Seed Weight at 0% Moisture	Days After Planting to		
			Beginning Bloom	Maturity: 30% Seed Color Change on Main Raceme	Height, Inches
A76	Hailed**	—	51	89	29
H02	1,259	45.4	47	85	25
Anterra 1604	Hailed	—	49	89	27
Anterra 1670	Hailed	—	49	88	25
Bob 9387	1,368	42.2	48	87	30
CLASS 601	Hailed	—	49	88	28
Lite 289 CL	1,138	41.9	47	83	20
Omega 330	1,303	42.8	45	83	20
Omega 401	Hailed	—	45	86	23
Proigor 2573	1,611	43.6	47	85	28
Proigor 2663	Hailed	—	46	85	28
Proigor 2733	1,454	43.8	44	84	22
Proigor 4746	1,498	44.5	46	84	23
B 36	Hailed	—	47	87	25
Prored 2393LL	Hailed	—	53	90	33
00-0488	Hailed	—	48	86	24
Mean	1,558	43.4	47	85	26
SD (0.05)	258	2.14	0.9	2.4	4.0
CV	10.1	3.0	1.4	2.0	10.7



SOYBEAN

Minnesota Agricultural Experiment Station scientists annually conduct tests of adapted public and private soybean varieties. Companies are charged a fee for each variety they enter, which partially cover the costs of conducting the test. A stipulation of the testing program is that the company is marketing the variety or intends to begin marketing it in the next growing season.

Tables on pages 65-67 present data from the regular public and private variety tests conducted annually at various locations within the northern, central and southern production zones. The map (lower right) shows test locations and zone boundaries. All of these tests were planted between May 10 and June 10 at planting rates of 160,000 plants/acre. Herbicides were used as necessary for good weed control. Row spacings were 30 inches at Becker and Fairmont and 10 inches at other locations. Plot combines were used to harvest the yield from all plots.

Tables on page 68 show results of the very early (northern Minnesota) and southeastern Minnesota public variety tests. These locations were added to provide data for environments not represented by other locations. Roseau and Grand Rapids were not harvested in 2002.

Tables on pages 68-75 provide results from specific tests of available Roundup Ready® varieties adapted to the northern, central and southern production zones. Planting was accomplished as described above, except that the only herbicide used was Roundup® at labeled rates.

The table on page 76 provides results from performance tests of soybean cyst-nematode-resistant varieties at "infested" field sites near Lamberton, Waseca, and Blue Earth and "non-infested" field sites near Lamberton, Potsdam and Waseca. Planting

techniques were the same as for the regular performance tests.

Tables on pages 77-80 provide performance and characteristics data from special-use soybean variety tests. These tests were conducted to provide reliable data for growers who are interested in producing these types of soybeans, which are typically grown under contract.

The table on page 81 provides important variety characteristics of publicly developed varieties entered in the 2002 tests.

Tables on pages 81-83 provide results from the special white mold (*Sclerotinia*) evaluations at Staples, Morris, Rosemount and Waseca.

To better understand and use the data provided in these tables, please read the following additional information very carefully:

Relative Maturity and Calendar Dates of Maturity

Soybeans respond to changing day length, so the actual calendar date of maturity achievement is affected by latitude. Each variety has a narrow range of north-south adaptation. Soybean yield and quality are assured if a variety arrives at physiological maturity before a season-ending freeze occurs. This date is determined visually by noting the actual date when 95 percent of the pods show their genetically programmed mature color. These dates for 2002 are provided in the tables. Harvest dates are typically 7 to 14 days later, depending upon drying conditions.

Relative maturity ratings are also provided for each variety. These ratings consist of a number for the maturity group designation (000, 00, 0, 1, 2) followed by a decimal and another number, ranging from 0-9, which indicates a ranking within each maturity group. For example the variety MN0902 is indicated as 0.3,

making it an early group 0 variety, while MN0901, with a 0.9 rating, is the latest. These values for public varieties are developed after observing them for several years in many locations. Relative maturity ratings for private varieties in these tables, provided by their owners, were developed in a similar manner.

Yield

Because maturity is a very important attribute, varieties are arranged in the tables in order of their actual 2002 calendar date of maturity and not yield performance.

Later-maturing varieties can usually be expected to have higher yields than earlier-maturing types. If you wish to compare yields correctly, compare only between varieties with similar calendar dates of maturity, usually within 3 to 5 days. More-reliable comparisons can be made using variety yields from several consecutive years. All yield determinations were made from replicated tests harvested with a plot combine.

Yield information is presented as a percent of the mean of the test, with the actual mean value given at the bottom of each table. Values over 100 indicate the variety had a yield greater than the mean; values less than 100 have a yield less than the mean.

LSD values associated with data in these tables are measures of variability within the trials. The LSD values are given on the percent of mean data, not the actual yields. If a yield difference between two varieties within a single column exceeds this LSD value you can assume that the



ate temperatures occur during soybean flowering. Planting less-susceptible varieties in wider row spacings or at lower populations is the most effective method of reducing white mold severity. Accurate ratings for soybean variety resistance to white mold are difficult to obtain because both infection and disease development are dependent on weather conditions. Because of this variability, a variety's performance can change significantly among locations and years depending on the interaction of plant development, precipitation, relative humidity and temperature. White mold severity also tends to be greater if lodging occurs. Growers concerned about variety performance in the presence of white mold should select varieties that show consistently less white mold during several years of testing.

In 2002, white mold variety trials were planted at Ada, Staples, Morris, Rosemount, Lambertton, and Waseca. The plots at Ada were lost due to flooding and no white mold developed at Lambertton. Only low levels of white mold developed at the remaining five locations. Yield information was not available from Waseca.

Brown Stem Rot

Brown stem rot (BSR) is a fungal disease that can cause yield losses in certain situations. The disease occurs most frequently when soybeans follow soybeans but can occur where soybeans are planted every-other year. Resistant varieties, or longer rotations assist in the management of this disease. Freeborn, IA1006 and IA2008R are available public varieties with resistance to BSR. Anderson 2063RR, GL1903RR, GL2200RR, Latham 297RR, Latham 367RR, Latham 547RRN, Latham EX318RR, Mustang M-0883 and Mustang M211RR are the privately developed varieties reported to be resistant to BSR. Latham 140, Latham 290, Latham 507RR, Latham Ex388RRN and Latham EX468RR are privately developed varieties reported to be moderately resistant to BSR.

Some information refers to "tolerance" or "field resistance." Reliable tests for tolerance or field resistance have not yet been developed.

Privately developed varieties.

Contact addresses and brand names for privately developed varieties entered in these tests are:

Advantage Soybean Seed (Advantage), 17303 Highway 22, Good Thunder, MN 56037
AgriPro Seeds (AP), 2369 330th St., Box 500, Slater, IA 50244
Albert Lea Seed House (Viking), P.O. Box 127, 1414 W. Main, Albert Lea, MN 56007
Anderson Seeds (Anderson), RR 3 Box 94, St. Peter, MN 56082
Crow's Hybrid Corn Co. (Crow's), Box 306, Milford, IL 60953
Dahlco Seeds (Dahlco), 14730 15th St. S.W., Cokato, MN 55321
Dahlman Seeds (Dahlman), 73504 200th St., Dassel, MN 55325
Dairyland Seed Co., Inc. (Dairyland), P.O. Box 150, 209 Main St., Gilbert, IA 50105
Dennis Ewing Farm Seed (Yield King), 6131 North Fork Road, Ames, IA 50010
Excel Brand (Excel Brand), 116E. State, Camp Point, IL 62320
Farm Advantage (Farm Advantage), 1275 Hwy 69, Belmond, IA 50421
Gold Country Seed, Inc. (GCS), 16506 Hwy. 15 N., P.O. Box 604, Hutchinson, MN 55350
Golden Harvest (Golden Harvest), P.O. Box A, Waterloo, NE 68069
Great Lakes Hybrids, Inc. (Great Lakes), 9915 W. M-21, Ovid, MI 48866
Helena (Helena), Collierville, TN
Hyland Seeds (Hyland), Box 130, 2 Hyland Drive, Blenheim, ON, Canada NOP 1A0
Jung Seed Genetics (Jung), 341 S. High St., Randolph, WI 53956
Kaltenberg Seeds (Kaltenberg), 5506 State Hwy. 19, Waunakee, WI 53597
Kruger Seed Company (Kruger), Highway 20 East, Box A, Dike, IA 50624
KSC/Challenger (KSC/Challenger), Box A, Dike, IA 50624
Latham Brothers Farm (Latham), 131 180th St., Alexander, IA 50420
Latham Seed Company (Latham), 131 180th St., Alexander, IA 50420
Legend Seeds (Legend), P.O. Box 241, De Smet, SD 57231
LG Seeds (LG), 710 N. Main St., Suite 201, River Falls, WI 54022
Mallard Seed Co. (Mallard), P.O. Box 637, Plainview, MN 55964
Maple Leaf Foods (MLF), 3080 Yonge St., Suite 2000, Toronto, ON, Canada M4N 3N1
Midwest Seed Genetics (MW Genetics), P.O. Box 518, Carroll, IA 51401
Monsanto Global Seed Group (Dekalb), 3100 Sycamore Road, De Kalb, IL 60115
Mustang Seed (Mustang), Box 466, Madison, SD 57042
NorthStar Genetics (NS), Box 40, Wanamingo, MN 55983
Pioneer Hi-Bred International, Inc. (Pioneer), 921 Darien Dr., Madison WI 53717
Profiseed, Inc. (Profiseed), 1691 Highway 65, Hampton, IA 50441
Prairie Brand Research (PBR), 15 X Ave., Story City, IA 50248
Prairie Brand Seed Company (Prairie Brand), 15 X Ave., Story City, IA 50248
Quality Seed Co. (Quality Seed), 307 3rd Street, Alice, ND 58031
Renk Seed Co. (Renk), 6800 Wilburn Rd., Sun Prairie, WI 53590
Sabre Initiatives LLC (Sabre), 2508 Trott Ave. S.W., P.O. Box 386, Willmar, MN 56201
Sand Seed Service, Inc. (Sands), P.O. Box 648, Marcus, IA 51035
Sansgaard Seed Farms, Inc. (Sansgaard), 15 X Avenue, Story City, IA 50248
Seeds 2000 (Seeds 2000), P.O. Box 200, Breckenridge, MN 56520
Sodak Genetics (Sodak Genetics), Box 2207A, SDSU, Brookings, SD 57007
Stine Seed Co. (Stine), 2225 Laredo Trail, Adel, IA 50003
Stine Seed Farm (Stine), 2225 Laredo Trail, Adel, IA 50003
Syngenta Seeds (NK Brand), 3701 W 49th St., Suite 206, Sioux Falls, SD 57106
Thompson Agronomics, Inc. (Thompson), 40321 130th Avenue, Leland, IA 50453
Thompson Seeds, Inc. (Thompson), 40321 130th Ave., Leland, IA 50453
Thunder Seed (Thunder) 3008 210th St. N., Hawley, MN 56549
Top Farm Hybrids (Top Farm), P.O. Box 850, Cokato, MN 55321
Trelay Seeds (High Cycle), 11623 State Road 80, Livingston, WI 53544
UAP Seed (Dyna-Gro), P.O. Box 10, Wall Lake, IA, 51466
United Suppliers Inc. (U.S. Seeds) 30473 260th St., P.O. Box 538, Eldora, IA 50627
Wensman Seed Company (Wensman), P.O. Box 190, Wadena, MN 56482
Ziller Seed Co., Inc. (Ziller), 76374 380th St., Bird Island, MN 55310

Special-Use Varieties

There is growing interest in producing soybeans with special characteristics important to manufacturers of specialty food products. Soybean scientists previously developed some of these special-use varieties, which were general releases, but more recently varieties have been leased under exclusive or nonexclusive licenses to specific companies who then contract with growers for production. For further information contact MNCIA web site www.mncia@tc.umn.edu or telephone number 612-625-7766.

The most recent data available on the performance and characteristics of several of these special use varieties is on pages 77-80. If you are interested in further information about these varieties, contact the owner/developer or exclusive marketing company.

Publicly Developed Varieties

Important characteristics of the publicly developed varieties entered in 2002 tests are presented on page 81.

Soybean Planting Rate and Date

Bushel Weight, Pounds	60
Seeds/Pound.....	2,800
Planting Rate, Pounds/Acre	56
Planting Rate, Seeds/Ft. of Row	
7-inch rows.....	2
10-inch rows.....	3
20-inch rows.....	6
22-inch rows.....	7
30-inch rows.....	9
Planting Date.....	May 10 to June 10

Performance and characteristics of public and private soybean varieties, northern zone; Crookston, Moorhead and Shelly, 2000-2002.

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
McCall	Minn. AES	9-15	81	86	84	100	97	00.7	S	2.7
IA07	Pioneer	9-16	94	99	100	99	104	00.7	S	2.7
Im	N.D. AES	9-17	97	101	96	99	98	00.7	S	2.3
Macier	Minn. AES	9-21	95	90	82	99	101	00.8	Rps6	2.7
Mail	N.D. AES	9-22	103	105	100	104	96	0.0	Rps1	3.7
Midland	Gold Country	9-23	-	107	109	100	100	0.3	Rps1	4.3
MO-K6	NK Brand	9-23	-	-	98	102	99	0.0	Rps1	4.3
Nelson	Hyland Seeds	9-23	-	-	94	97	104	00.6	S	2.7
N0201	Minn. AES	9-23	102	93	90	107	95	0.2	Rps1	2.3
Palsh	N.D. AES	9-24	-	101	95	98	102	0.2	Rps6	2.7
N0302	Minn. AES	9-25	105	97	97	101	100	0.3	Rps1k	3.0
N0301	Minn. AES	9-26	107	103	102	98	104	0.3	Rps1	2.7
IB43	Pioneer	9-26	110	104	99	96	102	0.4	Rps1c	2.0
Irms	N.D. AES	9-27	-	101	104	98	104	0.2	Rps6	4.0
0555	Kruger	9-30	-	-	118	100	102	0.3	S	3.0
0333	Mustang	9-30	-	-	113	98	100	0.3	S	4.0
Imbert	Minn. AES	10-1	108	102	104	98	101	0.7	Rps1	2.7
0991	Kruger	10-4	-	-	108	104	95	0.7	S	3.7
ST0810	Dairyland	10-4	-	110	106	98	104	0.8	Rps1k	5.0
3-098	Prairie Brand	10-3	-	-	105	102	96	0.9	S	2.7
0777	Kruger	10-5	-	-	109	103	98	0.5	S	3.0
Mean		9-25	39.3 bu/a	41.8 bu/a	41.7 bu/a	36.8 %	19.4 %			
SD 20%			5%	7%	12%					

**Performance and characteristics of public and private soybean varieties, central zone;
Becker, Morris and Rosemount, 2000-2002.**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
MN0302	Minn. AES	9-12	-	89	89	98	102	0.3	Rps1k	2.3
Barnes	N.D. AES	9-12	88	88	87	99	106	0.2	Rps6	3.0
X3203	Gold Country	9-13	-	-	99	100	99	0.4	Rps1c	3.7
MN0301	Minn. AES	9-13	89	89	89	95	104	0.3	Rps1	3.0
91B01	Pioneer	9-14	98	96	94	94	105	1.0	Rps1k	4.3
M-0883	Mustang	9-15	-	-	105	101	97	0.8	S	3.7
K-0707	KSC/Challenger	9-16	-	108	105	102	97	0.5	S	3.0
Lambert	Minn. AES	9-16	99	99	99	101	100	0.7	Rps1	2.7
ADV0900	Advantage	9-17	-	-	95	104	97	0.9	Rps1k	2.7
MN0902CN	Minn. AES	9-17	92	93	93	103	96	0.9	S	3.7
Surge	Minn. & S.D. AES	9-17	101	101	92	103	100	0.9	Rps1	3.7
MN0901	Minn. AES	9-17	94	90	89	97	102	0.9	Rps1	4.0
MN1006CN	Minn. AES	9-18	-	-	91	99	102	1.0	Rps1	3.3
Sargent	N.D. AES	9-19	-	95	95	101	103	1.0	Rps6	3.7
ADV1010	Advantage	9-19	-	95	93	98	101	1.0	Rps1k	2.7
K-1222	KSC/Challenger	9-20	-	-	109	96	104	1.0	S	4.3
MN1302	Minn. AES	9-20	-	102	99	95	103	1.3	Rps1k	2.7
Kato	Minn. AES	9-20	93	88	89	109	93	1.3	Rps1	2.3
91B53	Pioneer	9-22	108	108	105	103	97	1.6	S	4.3
EX3161	Thompson	9-22	-	-	103	101	99	1.6	Rps1k	4.0
MN1401	Minn. AES	9-22	96	93	92	103	97	1.4	Rps1	2.7
140 Brand	Latham	9-23	109	107	106	101	99	1.4	S	4.0
FA1545	Farm Advantage	9-24	-	-	111	102	98	1.4	Rps1c	2.7
K-1666	Kruger	9-24	-	-	109	101	99	1.4	S	2.7
K-1313	KSC/Challenger	9-25	-	116	109	101	99	1.1	S	3.0
PB-146	Prairie Brand	9-25	110	109	107	101	99	1.5	S	3.3
K-1919	Kruger	9-26	118	118	114	101	99	1.7	S	4.0
Parker	Minn. AES	9-26	106	104	95	101	101	1.5	Rps1	4.7
Freeborn	Minn. AES	9-26	98	97	94	104	98	1.6	Rps1	3.0
EX3151	Thompson	9-27	-	-	117	103	97	1.5	S	4.0
K-1828	KSC/Challenger	9-27	-	-	105	98	101	1.6	S	3.3
PB-178	Prairie Brand	9-28	-	117	116	102	99	1.7	S	4.7
K-1996	Kruger	9-28	-	-	105	99	102	1.7	Rps1	4.7
K-2121	Kruger	9-29	-	-	108	98	99	1.9	S	4.3
Mean		9-26	54.2 bu/acre	53.3 bu/acre	62.7 bu/acre	36.5%	19.5%			
LSD 20%			3%	7%	7%					

Performance and characteristics of public and private soybean varieties, southern zone; Airmont, Lambertton and Waseca, 2000-2002.

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
V1301	Minn. AES	9-19	89	85	82	106	97	1.3	Rps1	3.3
V1401	Minn. AES	9-20	93	90	87	104	99	1.4	Rps1	3.0
V1302	Minn. AES	9-22	-	91	92	96	101	1.3	Rps1k	2.7
1219cyst	Gold Country	9-23	-	-	107	99	102	1.9	Rps1k	3.3
B92	Pioneer	9-23	-	95	93	97	105	1.9	Rps1k	4.7
æborn	Minn. AES	9-23	88	88	77	103	99	1.6	Rps1	3.0
1666	KSC/Challenger	9-24	-	-	111	100	101	1.4	S	3.3
0 Brand	Latham	9-25	-	-	105	100	101	1.7	S	3.3
3201	Thompson Seeds	9-26	108	107	115	95	101	2.0	S	4.0
8-N5	NK Brand	9-26	-	-	100	102	99	1.8	S	3.3
1006	Iowa AES	9-26	99	95	100	99	101	1.6	S	3.3
2050	Viking	9-26	-	99	97	99	101	2.0	S	4.3
3 Hime	Maple Leaf Foods	9-26	-	-	82	114	88	2.1	S	3.3
2100	Kruger	9-27	-	-	103	97	104	1.9	S	4.3
1176	Sands	9-27	-	-	103	100	102	1.7	S	3.3
2050	Iowa AES	9-27	104	99	97	96	102	2.1	S	4.0
46	Farm Advantage	9-28	-	-	116	101	101	1.8	S	4.0
11202	Sands	9-28	-	107	114	95	99	2.0	S	3.7
3192	Thompson Seeds	9-28	-	-	108	101	99	1.9	S	3.7
72	Garst/AgriPro	9-28	-	104	104	104	99	2.0	S	3.3
1943	Kruger	9-28	-	107	103	104	101	1.7	S	3.7
1991	KSC/Challenger	9-28	-	-	101	103	99	1.7	S	3.3
-1173	Mustang	9-28	-	-	101	100	102	1.7	S	3.0
11666	Advantage	9-28	-	-	98	102	100	1.5	S	4.0
1ker	Minn. AES	9-28	102	100	98	102	99	1.5	Rps1	4.7
V1801	Minn. AES	9-28	102	99	97	103	101	1.8	Rps1c	3.0
1-178	Prairie Brand	9-28	-	103	96	100	102	1.7	S	3.3
1rddy	Minn. AES	9-28	90	89	87	102	98	2.0	Rps1	3.0
1-280	Latham	9-29	-	-	109	103	101	1.7	S	3.3
1996	Kruger	9-29	-	-	97	97	102	1.7	Rps1	4.3
2021	Iowa AES	9-29	99	101	95	92	106	2.1	Rps1k	4.0
3222	Thompson Seeds	9-30	112	113	118	100	98	2.2	S	3.7
1187	Sands	9-30	-	111	110	96	106	1.8	Rps1	3.0
LF 128	Maple Leaf Foods	9-30	-	-	108	100	104	1.7	S	3.3
-2243	Mustang	9-30	-	-	104	97	102	2.4	S	3.7
2303	KSC/Challenger	9-30	-	-	102	96	101	2.1	S	4.3
77	Viking	9-30	-	103	101	102	98	2.0	S	2.7
2 Brand	Latham	9-30	106	104	101	102	98	1.9	S	3.3
99	Viking	9-30	105	106	97	103	96	2.1	S	3.7
22	Viking	9-30	-	-	90	100	99	2.0	Rps1c	3.3
3182	Thompson Seeds	10-1	-	-	112	96	104	1.8	Rps1	4.0
0 Brand	Latham	10-1	-	107	111	101	100	2.1	S	3.7
2111	KSC/Challenger	10-1	-	-	104	99	99	1.9	S	4.3
1-230	Prairie Brand	10-1	104	100	103	97	98	2.3	Rps1	4.0
44	Farm Advantage	10-2	-	-	111	99	99	2.2	Rps1	4.3
1-202	PBR	10-2	-	104	109	99	98	2.0	S	4.0
1-217	Prairie Brand	10-2	102	101	100	99	99	2.1	S	3.3
2008R	Iowa AES	10-2	99	95	98	98	98	2.1	Rps1k	4.0
2052	Iowa AES	10-2	98	95	94	102	101	2.3	Rps1	3.3
2525+	Kruger	10-3	-	102	99	103	105	1.3	S	3.3
mean		9-28	55.5 bu/acre	59.7 bu/acre	59.1 bu/acre	35.8%	19.1%			
SD 20%			5%	7%	8%					

**Performance and characteristics of very early maturing soybean varieties;
Grand Rapids, Kennedy and Roseau, 2000-2002.**

Variety	Maturity Rating	Yield, Percent of Mean			Percent of Mean		Phytophthora Gene	Chlorosis Score
		2000-2002	2001-2002	2002	Protein	Oil		
McCall	00.7	99	92	91	99	99	S	3.7
Jim	00.8	113	113	116	97	99	S	3.4
Agassiz	0.0	93	93	111	101	99	Rps1	3.3
Traill	0.0	93	95	93	101	97	S	2.9
Mean		34.2 bu/acre	37.3 bu/acre	39.2 bu/acre	33.4%	17.7%		
LSD 20%		6%	11%	13%				

Performance and characteristics of public soybean varieties, southeastern Minn., 1999-2002.

Variety	Maturity Rating	Yield, Percent of Mean			Percent of Mean		Phytophthora Gene	Chlorosis Score
		2000-2002	2001-2002	2002	Protein	Oil		
Lambert	0.7	96	102	91	96	102	Rps1	2.7
MN1302	1.3	-	-	104	93	98	Rps1k	3.0
Kato	1.3	96	101	93	109	92	Rps1	3.3
MN1301	1.3	85	84	80	101	102	Rps1	3.3
MN1401	1.4	98	105	98	99	99	Rps1	3.0
91B53	1.5	-	-	108	102	102	S	4.3
Parker	1.5	100	105	102	104	98	Rps1	3.7
IA1006	1.6	102	107	97	101	96	S	3.3
Freeborn	1.6	95	102	89	99	98	Rps1	3.0
MN1801	1.8	102	108	101	101	102	Rps1c	3.0
A1900	1.9	90	96	95	92	113	Rps1k	4.0
IA1008	2.0	87	89	105	100	96	S	4.0
IA2050	2.1	106	112	106	101	97	S	4.3
IA2021	2.1	100	107	105	97	104	Rps1k	3.7
IA2052	2.3	104	113	115	102	99	Rps1	3.3
Sturdy	2.0	105	114	112	102	98	Rps1	3.0
Mean		41.2 bu/acre	40.0 bu/acre	43.1 bu/acre	36.5%	17.7%		
LSD 20%		6%	11%	13%				

**Performance and characteristics of Roundup Ready soybean varieties, northern zone;
Crookston and Shelly, 2000-2002.**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
0053RR	Gold Country	9-20	-	-	95	102	101	00.9	S	2.7
90B11	Pioneer	9-20	-	96	94	98	99	0.1	S	2.0
YK-009RR	Yield King	9-21	-	-	101	99	101	00.7	Rps1k	2.7
RR Ramsey	Hyland Seeds	9-21	-	-	99	102	101	00.5	S	3.0
DG X403RR	Dyna Gro	9-23	-	-	100	100	100	00.9	Rps1k	2.3
RR Raven	Hyland Seeds	9-23	-	-	98	99	102	00.8	S	3.0
W 2025RR	Wensman	9-23	-	92	98	96	103	0.2	S	2.3
YK-008RR	Yield King	9-23	-	-	83	102	98	00.7	S	3.0
3202RR	Gold Country	9-24	-	-	99	98	103	0.2	S	2.7
AG-0201	Asgrow	9-24	-	-	97	96	102	0.2	Rps1	2.7
2021RR	Seeds 2000	9-24	-	-	96	97	102	0.2	S	2.7
PB-0201RR	Savsgard	9-24	-	-	94	98	103	0.2	Rps1	3.7
DG 3024RR	Dyna Gro	9-24	-	-	93	99	102	0.2	Rps1	2.7
YK-023RR	Yield King	9-25	-	-	98	99	102	0.0	Rps1k	2.7
2200	Thunder	9-25	-	-	95	101	99	00.9	S	2.7

**Performance and characteristics of Roundup Ready soybean varieties, northern zone;
Rockston and Shelly, 2000-2002 (continued).**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
236-4	Stine	9-25	-	-	94	99	102	0.2	S	2.7
2033RR	Wensman	9-25	-	-	92	100	101	0.3	Rps1	3.0
6002RR	TopFarm	9-25	-	-	89	101	101	00.0	S	2.7
B51	Pioneer	9-26	-	-	111	99	102	0.5	Rps1c	2.7
-023RR	Mustang	9-26	-	-	107	98	103	0.2	S	2.0
-0091RR	PBR	9-26	-	-	102	100	101	00.9	Rps1k	3.7
-0232RR	Sansgaard	9-26	-	-	102	99	102	0.2	Rps1k	2.0
-0799RR	Prairie Brand	9-27	-	-	108	101	99	0.5	Rps1k	2.3
J40RR	KSC/Challenger	9-27	-	-	103	102	99	0.1	S	5.0
-0352RR	Prairie Brand	9-27	-	-	99	98	99	0.3	Rps1k	2.3
-021RR	Yield King	9-27	-	-	98	101	98	00.8	S	2.7
-0081RR	Sansgaard	9-27	-	-	94	101	99	00.7	S	3.0
B74	Pioneer	9-28	-	-	111	96	102	0.7	Rps1c	2.3
551RR	LG Seeds	9-28	-	-	109	99	101	0.5	Rps1k	2.7
B03-51	Dekalb	9-28	101	105	105	99	101	0.3	Rps1	3.7
Rugged	Hyland Seeds	9-28	93	94	97	98	103	0.3	S	3.0
2-G2	NK Brand	9-28	-	-	89	97	102	0.2	Rps1	4.0
G-0555RR	Quality Seed	9-29	-	-	116	97	101	0.2	Rps1	4.3
J1RR	Legend Seeds	9-29	-	-	114	100	100	0.0	S	2.7
42RR	TopFarm	9-29	-	-	102	101	101	0.3	S	3.0
J1RR	Legend Seeds	9-29	-	-	97	99	102	0.0	S	4.0
-0532RR	PBR	9-30	-	-	122	101	98	0.5	S	4.0
-0432RR	PBR	9-30	-	-	111	98	102	0.4	S	2.7
2054RR	Wensman	9-30	-	104	108	101	100	0.5	Rps1k	2.3
R-030/RR	Dairyland	9-30	-	102	105	103	96	0.3	S	4.3
2050RR	Wensman	9-30	100	103	105	99	99	0.5	Rps1k	3.7
053RR	Mustang	10-1	-	-	116	99	98	0.5	S	3.3
J51RR	KSC/Challenger *	10-1	-	110	114	101	101	0.1	S	4.0
J61RR	KSC/Challenger	10-1	-	-	86	104	97	0.3	Rps1	2.7
T0811/RR	Dairyland	10-2	-	-	122	102	99	0.5	S	4.3
J60RR	Kruger	10-2	-	-	120	102	97	0.3	S	3.0
J3	Thunder	10-2	-	-	103	99	100	0.3	Rps1k	3.0
-0452RR	Sansgaard	10-3	-	-	108	97	103	0.4	Rps1c	4.0
46RR	Excel Brand	10-3	-	-	104	100	98	0.4	S	3.7
-0321RR	Prairie Brand	10-3	-	92	102	98	103	0.3	Rps1k	4.3
R-040/RR	Dairyland	10-4	-	-	111	103	97	0.4	S	4.7
R-075/RR	Dairyland	10-4	102	101	108	100	100	0.7	S	2.3
30RR	Excel Brand	10-4	-	-	108	100	101	0.8	S	3.0
051RR	Mustang	10-4	-	106	102	101	100	0.5	S	3.7
-0561RR	PBR	10-4	-	-	100	102	101	0.5	S	4.0
G-0636RR	Quality Seed	10-4	-	-	95	103	96	0.3	Rps1	2.7
-0094RR	Prairie Brand	10-4	-	-	93	99	98	00.9	Rps1k	3.7
177-1RR	Kruger	10-5	98	99	98	102	102	0.6	Rps1k	2.3
177RR	Kruger	10-6	106	110	108	101	99	0.7	S	3.3
180-1RR	KSC/Challenger	10-6	-	97	95	100	97	0.7	Rps1	4.0
346-4	Stine	10-6	-	-	90	102	97	0.7	S	2.7
170RR	Kruger	10-7	-	-	94	104	102	0.6	S	2.3
10RR	Excel Brand	10-7	-	-	67	99	95	1.2	S	4.0
Mean		9-28	43.0 bu/acre	43.4 bu/acre	48.5 bu/acre	36.7%	19.6%			
CV 20%			6%	9%	10%					

**Performance and characteristics of Roundup Ready soybean varieties, central zone;
Becker, Rosemount and Morris, 2000-2002.**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
0517RR	Northstar	9-13	-	-	105	99	97	0.5	S	3.7
098RR	Sabre	9-13	-	-	101	99	100	0.9	S	4.0
0707RR	Garst/AgriPro	9-13	-	-	95	97	99	0.7	Rps1k	3.0
9083	Dahlco	9-13	-	-	83	101	97	0.8	Rps1k	2.7
RR Rally	Hyland Seeds	9-13	83	83	83	99	97	0.7	Rps1k	2.3
C9093RR	LG Seeds	9-14	-	98	98	99	100	0.9	S	4.7
DG X425RR	Dyna Gro	9-14	-	-	97	93	101	0.9	S	3.3
PB-0932RR	Prairie Brand	9-14	-	-	94	93	101	0.9	Rps1c	2.7
RR Randell	Hyland Seeds	9-14	-	-	93	97	99	0.8	Rps1k	4.0
PB-0920RR	PBR	9-14	-	-	93	98	100	0.9	S	4.7
3205RR	Gold Country	9-14	-	-	91	98	99	0.5	Rps1k	2.3
RS071RR	Renk	9-14	-	85	87	99	98	0.7	Rps1k	3.0
DG 3094RR	Dyna Gro	9-15	-	-	104	97	99	0.9	Rps1	2.7
DKB06-51	Dekalb	9-15	94	96	97	96	103	0.6	Rps1k	3.3
PB-0810RR	Prairie Brand	9-15	-	94	93	94	101	0.8	Rps1k	3.0
GR0804	Midwest	9-15	-	-	89	97	99	0.8	Rps1k	3.7
6072RR	Top Farm	9-15	-	-	88	98	100	0.7	Rps1k	2.7
EX-078RR	Latham	9-16	-	-	103	101	96	1.2	S	3.0
US S0909RR	US Seeds	9-16	97	101	99	101	97	0.9	S	4.3
PB-0940RR	Sansgaard	9-16	-	-	98	96	99	0.9	Rps1	2.7
2109RR	Thunder	9-16	-	98	97	99	96	0.9	Rps1	3.0
K-090RR	KSC/Challenger	9-16	-	-	96	101	97	0.7	S	3.3
2108RR	Thunder	9-16	-	94	95	97	100	0.8	Rps1k	2.7
PB-0812RR	Sansgaard	9-17	-	-	106	99	98	0.8	S	2.0
M-092RR	Mustang	9-17	-	-	102	101	96	0.9	S	3.7
W 2093RR	Wensman	9-17	-	-	101	100	96	0.9	S	3.0
RR 1011	Mallard	9-17	100	99	98	99	95	1.0	Rps1c	4.0
RR Ranger	Hyland	9-17	-	-	97	98	100	1.0	S	4.0
W 2081RR	Wensman	9-17	-	-	94	98	98	0.8	Rps1	2.3
BT 7090R	Ziller	9-17	-	96	94	98	98	0.9	Rps1	2.3
SD1081RR	Sodak Genetics	9-17	-	-	90	99	98	0.8	Rps1	2.0
K-070RR	Kruger	9-18	-	-	103	101	97	0.6	S	4.0
RS101RR	Renk	9-18	-	100	103	99	98	1.0	Rps1c	3.3
PB-0812-1RR	Prairie Brand	9-18	-	-	101	101	97	1.2	S	2.7
W 2131RR	Wensman	9-18	-	102	101	100	98	1.3	Rps1k	4.3
PB-1241RR	Sansgaard	9-18	-	-	100	100	99	1.2	Rps1k	3.7
2312RR	Thunder	9-18	-	-	99	103	97	1.2	S	3.7
AG0801	Asgrow	9-18	98	99	97	98	98	0.8	Rps1k	2.3
6102RR	Top Farm	9-18	-	-	97	97	98	0.9	Rps1	3.0
2110RR	Gold Country	9-18	-	94	97	99	96	1.0	Rps1c	4.7
SOI 1200RR	Sands	9-18	102	100	96	96	100	1.3	Rps1k	3.7
XR12C94	Garst/AgriPro	9-18	-	-	94	96	96	1.1	S	3.3
RS141RR	Renk	9-18	-	97	94	96	99	1.4	Rps1k	3.7
121RR	Sabre	9-18	-	-	94	98	99	1.2	Rps1k	4.0
91B03	Pioneer	9-18	-	-	92	101	100	1.0	Rps1k	2.7
090RR	Sabre	9-18	-	-	92	99	97	0.9	Rps1k	3.0
SD1091RR	Sodak Genetics	9-18	-	98	92	104	97	0.9	Rps1	2.0
913	Helena	9-18	-	-	88	98	97	0.9	Rps1	2.7
K-121RR	KSC/Challenger	9-19	-	-	108	100	102	1.0	Rps1k	4.7
BT 7106R	Ziller	9-19	100	103	105	99	96	1.0	Rps1c	3.0

Performance and characteristics of Roundup Ready soybean varieties, central zone; ecker, Rosemount and Morris, 2000-2002 (continued).

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
AV1283R	Advantage	9-19	-	-	91	103	97	1.2	S	4.0
B52	Pioneer	9-20	104	107	107	98	101	1.5	Rps1k	4.0
3082RR	Dyna Gro	9-20	-	-	106	100	98	0.8	S	3.7
08RR	Thunder	9-20	-	-	95	99	100	0.8	S	2.3
7095	Thompson	9-20	-	-	90	98	100	0.9	S	4.0
p. 41514RR	Ziller	9-21	-	-	106	99	97	1.4	S	2.0
1401	Asgrow	9-21	-	-	103	96	103	1.4	Rps1k	2.3
0852RR	PBR	9-21	-	-	98	97	102	0.8	Rps1k	3.0
2077RR	Wensman	9-21	-	-	95	101	97	0.7	S	3.3
155+RR	Kruger	9-22	-	-	110	100	97	1.2	S	3.0
1452RR	Prairie Brand	9-22	-	-	105	99	99	1.4	S	2.7
31RR	High Cycle	9-22	-	-	104	97	97	1.3	S	4.3
7101	Thompson	9-22	-	-	103	99	95	1.0	Rps1c	3.7
06RR	Garst/AgriPro	9-22	-	-	101	100	94	1.4	S	4.7
1552RR	PBR	9-22	-	-	101	97	98	1.5	S	3.7
10RR	Seeds 2000	9-22	-	91	86	101	98	1.1	Rps1k	2.0
166RR	Kruger	9-23	-	-	110	99	98	1.3	S	2.3
X409RR	Dyna Gro	9-23	-	-	110	98	97	1.5	S	2.3
410RR	LG Seeds	9-23	-	-	107	101	98	1.4	S	3.0
R-130/RR	Dairyland	9-23	105	106	106	99	95	1.3	S	4.7
1400RR	Great Lakes	9-23	-	-	106	100	96	1.4	S	2.7
4132	ProfiSeed	9-23	-	-	106	99	98	1.3	S	3.3
3155	Thompson	9-23	-	-	106	104	94	1.5	S	3.7
346-4	Stine	9-23	-	-	104	99	99	1.3	S	3.7
1502RR	Great Lakes	9-23	-	-	100	98	97	1.5	S	3.3
P121	Crow's	9-23	-	-	94	99	95	1.2	S	3.0
191RR	Yield King	9-24	-	-	118	98	99	1.8	Rps1k	3.0
12	Helena	9-24	-	-	113	105	94	1.5	S	3.0
153RR	Mustang	9-24	-	-	110	97	98	1.5	S	3.0
53	Farm Advantage	9-24	-	108	109	104	94	1.4	S	3.0
4153	ProfiSeed	9-24	-	-	108	97	98	1.5	S	3.0
7122	Thompson	9-24	-	-	106	98	99	1.0	S	4.0
1511	Mallard	9-24	-	-	105	105	93	1.5	S	3.7
1131RR	Dahco	9-24	-	101	104	104	96	1.3	Rps1k	4.0
S1403RR	US Seeds	9-24	-	-	101	99	97	1.4	S	3.7
148RR	Latham	9-24	-	-	100	100	98	1.4	S	2.7
123RR	Mustang	9-24	-	-	98	99	95	1.2	S	3.7
08RR	Anderson Seeds	9-25	-	109	109	104	96	1.5	S	2.3
586-4	Stine	9-25	-	-	104	99	97	1.5	S	3.0
193RR	Kruger	9-25	-	-	102	101	96	1.7	S	2.7
151-1RR	Yield King	9-25	-	-	102	105	92	1.3	S	4.3
1632RR	Sansgaard	9-25	-	-	99	102	98	1.5	Rps1k	3.7
04RR	Garst/AgriPro	9-25	-	-	92	101	96	1.3	Rps1k	3.0
191+RR	KSC/Challenger	9-26	-	-	117	95	103	1.7	S	3.7
1174RR	Sands	9-26	-	112	108	96	97	1.5	Rps1c	2.0
161RR	Kallenberg	9-26	-	-	107	99	96	1.6	Rps1c	2.7
159RR	Renk	9-26	112	108	106	95	99	1.5	Rps1c	3.0
T-1226/RR	Dairyland	9-26	-	-	99	102	97	1.5	Rps1k	5.0
53RR	Excel Brand	9-26	-	-	99	102	98	1.5	Rps1k	3.0
2150RR	Dahco	9-27	-	-	110	98	97	1.5	S	3.3

**Performance and characteristics of Roundup Ready soybean varieties, central zone;
Becker, Rosemount and Morris, 2000-2002 (continued).**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
M-163RR	Mustang	9-27	-	-	110	102	96	1.6	S	4.3
SOI 1730RR	Sands	9-27	-	-	110	99	99	1.5	Rps1k	2.7
BT7150R	Ziller	9-27	110	108	108	98	96	1.5	Rps1c	2.7
YK-199RR	Yield King	9-27	-	-	107	102	98	1.7	S	3.3
S1613-4	Stine	9-27	-	-	106	102	96	1.6	S	3.7
DSR-181/RR	Dairyland	9-27	-	107	103	100	99	1.8	S	3.7
YK-200RR	Yield King	9-27	-	-	103	100	99	1.8	S	5.0
SOI 1743RR	Sands	9-27	-	-	101	104	94	1.5	S	4.7
DSR-184/RR	Dairyland	9-27	-	-	99	99	100	1.8	Rps1k	3.3
PB-1620RR	PBR	9-28	-	-	110	97	97	1.6	Rps1c	3.3
8193RR	Excel Brand	9-28	-	-	107	102	97	1.9	Rps1k	3.7
7174	Farm Advantage	9-28	-	-	107	102	97	1.5	Rps1k	4.3
2173RR	High Cycle	9-28	-	-	106	101	98	1.7	S	3.3
8172RR	Excel Brand	9-28	-	-	103	100	99	1.7	Rps1k	3.0
9160RR	Dahlco	9-28	-	-	101	97	97	1.5	Rps1c	3.3
6016RR	Gold Country	9-28	-	101	101	99	95	1.4	Rps1c	2.7
K-199RR/STS	KSC/Challenger	9-29	-	-	111	99	97	1.5	Rps1k	3.0
Mean		9-21	52.6 bu/acre	50.8 bu/acre	62.1 bu/acre	36/9%	20.0%			
LSD 20%			8%	10%	10%					

**Performance and characteristics of Roundup Ready soybean varieties, southern zone;
Fairmont, Lambertson and Waseca, 2000-2002.**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
AG1602	Asgrow	9-16	-	98	95	94	102	1.6	Rps1k	3.7
S15-B1	NK Brand	9-17	-	-	91	102	96	1.5	Rps1	3.0
AG1401	Asgrow	9-17	-	-	89	96	104	1.4	Rps1k	2.7
W 2145RR	Wensman	9-18	-	-	99	100	100	1.4	S	2.3
2131RR	High Cycle	9-18	-	-	98	100	97	1.3	S	3.7
91B64	Pioneer	9-18	96	97	95	97	102	1.6	Rps1c	3.0
1406RR	Garst/AgriPro	9-18	-	-	93	100	98	1.4	S	3.7
1512	Helena	9-19	-	-	101	104	96	1.5	S	2.3
W 2153RR	Wensman	9-19	-	-	90	104	96	1.5	S	3.3
RS199RR	Renk	9-20	-	-	106	95	104	1.9	Rps1k	4.3
W 2162RR	Wensman	9-20	-	-	96	98	99	1.6	S	2.3
S1586-4	Stine	9-21	-	-	95	100	98	1.5	S	1.7
AG2001	Asgrow	9-21	93	90	85	100	102	2.0	Rps1k	3.6
DKB15-51	Dekalb	9-22	-	-	102	99	98	1.5	S	2.7
AG1902	Asgrow	9-23	-	-	96	97	103	1.9	Rps1k	3.7
2173RR	High Cycle	9-24	-	-	101	102	101	1.7	S	4.3
140RR	Sabre	9-24	-	-	100	97	98	1.4	Rps1c	3.7
US S1703RR	US Seeds	9-24	-	-	99	101	102	1.7	S	2.7
C1630R	Crow's	9-24	-	-	98	97	98	1.6	Rps1c	2.7
2063RR	Anderson Seeds	9-24	97	97	97	103	101	2.0	S	3.3
PB-1821RR	PBR	9-24	-	-	96	97	102	1.8	S	3.0
YK-199RR	Yield King	9-24	-	-	93	100	101	1.7	S	4.0
T-7181RR	Thompson	9-24	-	-	92	102	98	1.8	S	4.7
EX-318RR	Latham	9-24	-	-	91	96	103	1.8	S	3.3
T-7166RR	Thompson	9-25	-	-	105	102	99	1.6	Rps1k	4.7

**Performance and characteristics of Roundup Ready soybean varieties, southern zone;
Fairmont, Lambertton and Waseca, 2000-2002 (continued).**

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
S19-V2	NK Brand	9-25	—	102	104	101	98	1.9	Rps1	4.0
PB-1932RR	PBR	9-25	—	—	102	104	99	2.0	S	3.7
W 2186RR	Wensman	9-25	—	—	99	101	101	1.8	Rps1k	4.3
6318RR	Gold Country	9-25	—	—	99	95	105	1.8	S	4.7
2212n	Helena	9-25	—	—	98	104	103	2.0	Rps1	4.3
PS4172	ProfiSeed	9-25	—	97	97	103	98	1.8	Rps1k	3.7
X-2180RR	Dahlco	9-25	—	—	95	99	101	1.8	S	2.7
DG 3183RR	Dyna Gro	9-25	—	—	95	97	105	1.8	S	3.3
GL2109RR	Great Lakes	9-25	—	96	94	101	104	2.1	Rps1c	4.3
297RR Brand	Latham	9-25	—	—	94	102	101	1.8	Rps1k	4.0
BT7150R	Ziller	9-25	97	93	94	96	97	1.5	Rps1c	2.3
RS172RR	Renk	9-25	—	—	92	102	99	1.7	Rps1k	4.0
2000RR	Viking	9-25	99	97	90	101	101	2.0	S	3.0
E3182RR	Top Farm	9-25	—	—	90	96	104	1.7	S	4.3
GR1710	Midwest	9-25	—	—	88	96	98	1.7	Rps1c	3.0
507RR Brand	Latham	9-26	—	—	107	103	98	2.2	S	4.0
GL1903RR	Great Lakes	9-26	—	101	103	103	98	1.9	Rps1k	3.0
K-193RR	KSC/Challenger	9-26	—	—	103	103	97	1.7	S	3.7
K-191RR	Kruger	9-26	—	105	102	98	101	2.8	Rps1k	3.7
BT7211R	Ziller	9-26	102	101	102	99	99	2.1	S	4.0
1122RR	Gold Country	9-26	102	102	102	100	99	2.2	S	4.7
1221RR	Gold Country	9-26	—	102	101	102	99	1.9	Rps1k	4.0
GL2200RR	Great Lakes	9-26	—	—	100	103	98	2.2	S	3.3
1719RR	Anderson Seeds	9-26	—	101	99	100	101	1.7	Rps1k	4.3
92B13	Pioneer	9-26	—	—	99	98	98	2.1	Rps1k	3.0
1813	Helena	9-26	—	—	98	102	99	1.8	Rps1k	3.7
GL1709RR	Great Lakes	9-26	—	97	97	101	99	1.7	S	3.0
S1613-4	Stine	9-26	—	—	96	104	98	1.6	S	3.7
C2142RR	LG Seeds	9-26	—	—	95	102	97	2.1	Rps1c	3.3
DSR-199/RR	Dairyland	9-26	—	98	94	100	99	1.9	Rps1k	3.3
1773	Viking	9-26	—	—	93	99	102	1.7	Rps1k	3.3
AG2103	Asgrow	9-26	—	—	90	103	98	2.1	Rps1k	3.7
367RR Brand	Latham	9-27	—	—	112	101	98	1.9	Rps1k	3.0
2018RR	Garst/AgriPro	9-27	—	104	110	99	98	2.0	Rps1k	4.0
X-1210RR	Dahlco	9-27	—	—	105	101	98	2.1	S	3.0
KB211RR	Kaltenberg	9-27	—	—	105	103	98	2.1	S	3.3
K-191+RR	KSC/Challenger	9-27	—	—	104	95	103	1.7	S	3.7
K-199+RR	KSC/Challenger	9-27	—	—	104	103	98	1.6	Rps1k	3.7
92B38	Pioneer	9-27	—	105	104	101	98	2.3	S	3.0
T-7225RR	Thompson	9-27	—	—	104	104	98	2.2	S	3.7
6223RR	Top Farm	9-27	—	—	104	99	102	2.2	Rps1k	3.7
DSR-228/RR	Dairyland	9-27	106	103	103	103	99	2.3	S	3.3
ADV1910R	Advantage	9-27	—	—	102	101	101	1.9	Rps1k	2.3
PB-1921RR	Prairie Brand	9-27	—	—	102	100	99	1.9	Rps1k	3.0
C1911RR	LG Seeds	9-27	—	—	101	103	98	1.9	Rps1k	2.3
SOI 1940RR	Sands	9-27	—	—	100	103	98	1.9	Rps1k	2.7
X-1180RRC	Dahlco	9-27	—	—	99	100	102	1.8	S	3.0
PB-2117RR	Sansgaard	9-27	—	—	98	103	99	2.2	S	3.3
181CNR	Anderson Seeds	9-27	—	—	97	101	98	1.8	S	2.7
8235RR	Excel Brand	9-27	—	—	97	103	97	2.3	S	2.7

Performance and characteristics of Roundup Ready soybean varieties, southern zone; Fairmont, Lamberton and Waseca, 2000-2002 (continued).

Brand or Variety	Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
AG2105	Asgrow	9-27	-	-	97	99	99	2.1	Rps1k	2.7
7194N	Farm Advantage	9-27	-	-	97	104	103	1.9	Rps1c	4.0
AG2302	Asgrow	9-27	103	99	96	102	98	2.3	Rps1k	2.7
PS4202	ProfiSeed	9-27	-	-	95	103	99	2.0	Rps1k	2.7
210RR	Sabre	9-27	-	-	95	102	96	2.1	S	2.7
Exp.62921R	Ziller	9-27	-	-	95	100	100	2.1	S	4.0
6202RR	Top Farm	9-27	97	96	94	102	98	1.9	S	4.0
PB-1981RR-1	Sansgaard	9-27	-	-	93	102	98	1.9	Rps1k	2.3
PB-1981RR	PBR	9-28	-	-	111	104	97	2.0	Rps1k	3.0
ADV2135R	Advantage	9-28	-	106	108	97	102	2.1	Rps1k	3.0
RRX2214	Mallard	9-28	-	-	107	97	102	2.2	Rps1k	3.7
PS4215	ProfiSeed	9-28	-	-	107	98	101	2.1	Rps1k	3.7
X-1211RR	Dahlco	9-28	-	-	106	98	101	2.1	S	3.0
PS4192	ProfiSeed	9-28	-	103	104	95	104	1.6	S	3.0
SOI 2363RR	Sands	9-28	-	-	104	104	99	2.3	S	3.7
2157RR	Viking	9-28	-	-	102	94	103	2.1	Rps1k	2.0
BT7193R	Ziller	9-28	-	-	102	102	100	1.9	S	3.3
418RR Brand	Latham	9-28	-	-	101	104	97	1.9	S	4.0
SOI 2143RR	Sands	9-28	-	-	101	97	101	2.1	Rps1k	3.3
2201RR	High Cycle	9-28	-	100	101	103	97	2.0	S	3.3
AG2402	Asgrow	9-28	-	99	100	99	102	2.4	Rps1k	3.3
PB-2131RR	Prairie Brand	9-28	-	101	99	101	101	2.1	Rps1k	3.0
DG 3223RR	Dyna Gro	9-28	-	100	99	101	99	2.2	S	4.3
8200RR	Excel Brand	9-28	-	102	98	102	98	2.1	S	3.7
T-7242RR	Thompson	9-28	-	-	97	101	97	2.4	Rps1k	3.7
RS240RR	Renk	9-28	98	96	95	104	97	2.4	S	3.7
YK-200RR	Yield King	9-28	-	-	92	99	102	1.8	S	5.0
US S2101RR	US Seeds	9-28	-	96	91	102	100	2.1	S	3.7
M-211RR	Mustang	9-28	-	95	89	101	102	2.1	S	3.7
T-7205RR	Thompson	9-29	-	-	114	97	101	2.0	Rps1k	2.3
PB-2141RR	Prairie Brand	9-29	-	111	113	98	102	2.1	Rps1k	3.3
2133	Helena	9-29	-	-	112	99	101	2.1	S	2.7
K-202+RR	KSC/Challenger	9-29	-	-	112	97	101	2.0	Rps1k	3.7
S24-K4	NK Brand	9-29	110	109	112	100	100	2.2	Rps1	4.0
K-262-2RR	Kruger	9-29	-	107	107	101	102	2.0	Rps1k	3.3
497RR Brand	Latham	9-29	-	-	107	99	100	2.2	Rps1k	3.3
GR2037	Midwest	9-29	-	-	107	98	100	2.0	S	2.7
DG 3200RR	Dyna Gro	9-29	-	-	107	97	101	2.0	S	3.0
C2130R	Crow's	9-29	-	-	105	97	101	2.1	S	3.3
EX-468RR	Latham	9-29	-	-	105	100	99	2.1	S	2.7
DG 3218RR	Dyna Gro	9-29	-	-	105	102	99	2.0	S	3.7
M-203RR	Mustang	9-29	-	-	104	96	104	2.0	S	3.3
PB-2352RR	PBR	9-29	-	-	103	98	100	2.2	Rps1k	2.7
K-211RR	Kruger	9-29	-	-	102	98	101	1.9	S	2.7
457RR Brand	Latham	9-29	-	102	102	101	98	2.3	S	4.7
RR2111	Mallard	9-29	-	-	102	102	102	2.1	Rps1k	3.0
RS212RR	Renk	9-29	-	-	102	98	99	2.1	Rps1k	3.0
DSR-221/RR	Dairyland	9-29	-	104	101	102	100	2.2	S	3.3
DKB23-51	Dekalb	9-29	99	100	101	100	99	2.3	Rps1	4.3
S2133-4	Stine	9-29	-	-	101	99	97	1.9	Rps1k	4.0

Performance and characteristics of Roundup Ready soybean varieties, southern zone; Fairmont, Lambertson and Waseca, 2000-2002 (continued).

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean			Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score
			2000-2002	2001-2002	2002	Protein	Oil			
2332RR	Garst/AgriPro	9-29	—	100	98	102	98	2.3	S	3.3
92B47	Pioneer	9-29	—	—	98	106	95	2.4	Rps1k	3.0
7212	Farm Advantage	9-29	—	—	98	97	100	2.1	Rps1k	3.0
RR X2012	Mallard	9-29	—	—	97	97	101	2.0	S	2.3
M-201RR	Mustang	9-29	—	105	96	97	101	2.0	Rps1k	3.3
7192	Farm Advantage	9-30	—	—	113	97	102	1.9	S	3.3
YK-233RR	Yield King	9-30	—	—	111	98	103	1.9	Rps1k	3.7
2111RR	Anderson Seeds	9-30	—	—	108	98	101	2.0	S	2.3
T-7232RR	Thompson	9-30	—	—	108	99	99	2.3	Rps1k	2.3
T-7214RR	Thompson	9-30	—	—	108	99	99	2.1	S	3.0
PB-2232RR	Sansgaard	9-30	—	—	107	102	99	2.2	Rps1k	5.0
PB-2421RR	Sansgaard	9-30	—	—	107	100	100	2.4	Rps1k	4.3
S2103-4	Stine	9-30	—	—	106	97	102	2.2	Rps1k	3.0
K-232RR	Kruger	9-30	—	—	104	98	101	2.0	Rps1k	2.7
SOI 2141RR	Sands	9-30	—	—	104	99	101	2.1	S	3.0
S2123-4	Stine	9-30	—	—	104	100	99	2.2	Rps1k	4.0
S1918-4	Stine	9-30	—	—	103	97	101	1.8	S	3.3
DKB22-51	Dekalb	9-30	—	—	100	97	102	2.2	S	3.3
YK-201RR	Yield King	9-30	—	—	100	101	98	1.8	S	3.3
E3211RR	Top Farm	9-30	—	—	96	96	101	2.2	Rps1k	3.0
PB-2112RR	Prairie Brand	10-1	—	—	109	98	101	2.1	S	3.0
T-7252RR	Thompson	10-1	—	—	104	102	96	2.5	S	3.0
M-243RR	Mustang	10-1	—	—	102	95	104	2.4	Rps1k	2.7
8254RR	Excel Brand	10-1	—	—	99	102	100	2.5	S	3.7
DSR-251/RR	Dairyland	10-2	—	—	94	102	98	2.5	S	3.0
Mean		9-27	57.7 bu/acre	59.5 bu/acre	58.4 bu/acre	35.7%	20.0%			
LSD 20%			5%	7%	8%					

Performance and characteristics of soybean-cyst-nematode-infested (Lamberton, Madelia and Waseca) and non-infested (Fairmont, Lamberton and Waseca) sites, 2000-2002.

Variety	Brand or Originator	Maturity Date	Yield, Percent of Mean						Percent of Mean		Maturity Rating	Phytophthora Gene	Chlorosis Score	SCN Rating
			Infested Sites			Non-Infested Sites			Protein	Oil				
			00-02	01-02	2002	00-02	01-02	2002						
91B42	Pioneer	9-18	-	-	108	-	-	94	97	102	1.4	Rps1k+Rps6	3.0	MR
X-1140RRC	Dahlo	9-18	-	-	92	-	-	89	102	94	1.4	Rps1c	3.3	MR
DKB17-51	Dekalb	9-21	-	-	103	-	-	97	98	102	1.7	S	4.3	MR
SOI 198N	Sands	9-22	-	109	88	-	99	105	96	101	1.9	Rps1k	3.3	S
XC18N44	Garst/AgriPro	9-22	-	-	84	-	-	103	101	97	1.8	Rps1k	3.7	MS
X6219cyst	Gold Country	9-23	-	96	84	-	112	100	97	98	1.9	Rps1k	2.3	S
SOI 212N	Sands	9-24	-	-	111	-	-	90	101	102	2.1	Rps1	3.0	MS
S18-N5	NK Brand	9-24	-	-	111	-	-	114	102	98	1.8	S	3.7	MR
K-2220+SCN	Kruger	9-24	115	107	109	100	105	100	102	100	2.0	Rps1	4.7	MR
2181CN	Viking	9-25	-	-	104	-	-	101	101	98	2.1	Rps1	3.3	MR
SOI 2221NRR	Sands	9-26	-	-	113	-	-	101	101	105	2.2	Rps1c	4.3	MS
K-2012SCN	KSC/Challenger	9-27	-	-	106	-	-	88	104	99	1.9	S	4.0	MR
92B12	Pioneer	9-27	-	97	105	-	100	104	95	102	2.1	Rps1k	3.3	R
92B14	Pioneer	9-27	-	-	100	-	-	97	98	99	2.1	S	2.7	MR
PB-1911NRR	PBR	9-27	-	96	99	-	93	89	104	96	1.9	Rps1k	2.3	MR
XR20N20	Garst/AgriPro	9-27	-	-	98	-	-	98	101	105	2.0	Rps1c	4.7	MR
Parker	Minn. AES	9-27	-	-	77	-	-	103	101	100	1.5	Rps1	3.7	S
PB-210N	Prairie Brand	9-28	118	114	117	102	107	93	103	96	2.1	Rps1	3.3	MS
T-3183CN	Thompson	9-28	-	-	115	-	-	91	103	97	1.8	Rps1c	2.7	MR
PB-2092NRR	Prairie Brand	9-28	-	-	113	-	-	98	101	97	2.0	S	3.3	MR
2121NRR	Gold Country	9-28	-	105	113	-	117	101	102	103	2.1	Rps1c	3.7	MR
T-7227CR	Thompson	9-28	-	-	112	-	-	103	101	103	2.2	Rps1c	3.7	MR
EX-388RRN	Latham	9-28	-	-	111	-	-	99	101	104	1.9	Rps1c	4.0	MR
547RRN Br.	Latham	9-28	-	109	106	-	94	96	101	104	2.2	Rps1c	4.0	MR
AG2201	Asgrow	9-28	-	-	106	-	-	103	101	101	2.2	S	3.3	MR
S1962-4	Stine	9-28	-	-	105	-	-	94	101	106	1.9	Rps1c	3.7	MR
PB-1992NRR	Prairie Brand	9-28	-	-	103	-	-	94	103	103	1.9	Rps1c	4.0	MR
SOI 2042NRR	Sands	9-28	-	-	100	-	-	100	99	104	2.0	Rps1c	5.0	MS
2108CNRR	Viking	9-28	-	-	99	-	-	96	99	99	2.1	S	4.0	MR
DSR-191/RR	Dairyland	9-28	-	-	93	-	-	94	99	98	1.9	S	4.3	MR
DKB20-51	Dekalb	9-28	-	95	92	-	93	93	101	97	2.0	S	3.3	S
AG1902	Asgrow	9-28	-	-	83	-	-	95	96	101	1.9	Rps1k	4.3	MR
IA2021	Iowa AES	9-28	-	-	69	-	-	108	92	103	2.1	Rps1k	4.5	S
K-202RR/SCN	KSC/Challenger	9-29	-	104	110	-	92	101	99	103	1.9	Rps1c	4.7	MR
K-221RR/SCN	Kruger	9-29	-	-	109	-	-	90	100	98	1.9	S	4.0	MR
M-193NRR	Mustang	9-29	-	-	109	-	-	87	100	103	1.9	Rps1c	4.0	MS
K-242RR/SCN	Kruger	9-29	-	-	103	-	-	98	99	105	2.2	Rps1c	4.3	MR
S2342-4	Stine	9-29	-	-	103	-	-	90	99	104	2.3	Rps1c	4.3	MR
US S2003RR	US Seeds	9-29	-	-	102	-	-	101	102	104	2.0	Rps1k	4.0	MR
K-193RR	KSC/Challenger	9-29	-	-	99	-	-	98	99	99	1.7	S	3.3	MS
DG 3199NRR	Dyna Gro	9-29	-	-	91	-	-	103	102	102	1.9	Rps1c	4.0	MR
X-1180RRC	Dahlo	9-29	-	-	83	-	-	95	101	98	1.8	S	2.7	MS
T-7211CR	Thompson	9-30	-	-	111	-	-	89	101	98	2.1	S	3.7	MR
K2323SCN	Kruger	9-30	-	-	104	-	-	105	100	97	2.1	Rps1c	3.3	MS
PB-2392NRR	Prairie Brand	9-30	-	-	101	-	-	95	100	100	2.3	Rps1c	4.0	MR
K-233RR	KSC/Challenger	9-30	-	-	99	-	-	102	99	97	2.1	S	3.0	MS
181CNR	Anderson Seed	9-30	-	-	93	-	-	98	98	100	1.8	S	3.0	MS
6218NRR	Gold Country	9-30	88	82	87	98	105	96	101	97	1.8	S	2.3	S
DG 3218RR	Dyna Gro	10-2	-	-	100	-	-	106	101	96	2.1	Rps1k	3.3	MS
T-7246CR	Thompson	10-4	-	-	101	-	-	105	98	97	2.4	Rps1c	3.3	MR
Mean		9-28	39.0*	35.3*	35.1*	56.1*	52.2*	56.0*	36.4%	20.0%				
LSD 20%			5%	6%	16%	3%	4%	7%						

*Bushels/acre

**Performance of special-use soybean varieties, northern zone;
Crockston, Moorhead and Shelly, 2000-2002.**

Variety	Releasing Institution	Maturity Date	Yield, Percent of Mean			Percent of Mean	
			2000-2002	2001-2002	2002	Protein	Oil
Jim	N.D. AES	9-20	-	121	110	100	98
UM3	Minn. AES	9-20	91	86	87	102	98
MN0203SP	Minn. AES	9-21	95	99	86	108	93
MN0201	Minn. AES	9-23	-	-	109	106	98
Norpro	N.D. AES	9-23	-	-	106	100	105
Agassiz	Minn. AES	9-23	98	90	105	99	104
Nornatto	N.D. AES	9-23	-	-	99	96	101
MN0204SP	Minn. AES	9-23	-	96	88	97	98
Walsh	N.D. AES	9-24	-	-	110	97	106
MN0205SP	Minn. AES	9-24	-	107	97	102	98
MN0202SP	N.D. AES	9-24	97	92	95	97	99
Vannonatto	N.D. AES	9-25	-	-	90	102	99
MN0302	Minn. AES	9-26	103	97	123	99	105
MN0303SP	Minn. AES	9-26	99	93	100	101	98
Nannonatto	N.D. AES	9-28	110	112	90	99	98
Mean		9-23	29.3 bu/acre	31.9 bu/acre	32.2 bu/acre	36.9%	18.5%
LSD 20%			7%	8%	8%		

**Performance of special-use soybean varieties, central zone;
Becker, Morris and Rosemount, 2000-2002.**

Variety	Releasing Institution	Maturity Date	Yield, Percent of Mean			Percent of Mean	
			2000-2002	2001-2002	2002	Protein	Oil
MN0302	Minn. AES	9-9	-	-	107	94	106
MN0301	Minn. AES	9-10	104	96	104	88	111
Minnatto	Minn. AES	9-10	95	93	95	95	98
Danatto	N.D. AES	9-10	80	75	71	89	105
Proto	Minn. AES	9-11	95	88	103	102	94
MN0601SP	Minn. AES	9-12	95	89	88	111	88
Lambert	Minn. AES	9-13	115	104	104	92	109
Toyopro	Minn. AES	9-14	107	100	108	107	93
MN1303SP	Minn. AES	9-15	103	97	98	111	85
Surge	Minn. & S.D. AES	9-16	128	120	109	96	107
MN1306SP	Minn. AES	9-18	-	-	90	92	101
Kato	Minn. AES	9-19	118	109	107	102	102
MN1101SP	Minn. AES	9-20	-	-	106	102	98
MN1305SP	Minn. AES	9-22	-	-	108	99	102
Parker	Minn. AES	9-23	126	120	112	95	107
Mean		9-15	39.6 bu/acre	42.3 bu/acre	44.2 bu/acre	39.1%	17.8%
LSD 20%			5%	7%	9%		

**Characteristics of special-use soybean varieties, northern zone;
Crookston, Moorhead and Shelly, 2000-2002.**

Variety	Releasing Institution	Maturity Rating	Special Characteristics	Hilum Color	Phytophthora Gene	Chlorosis Score	Seeds/Lb
Jim	N.D. AES	00.8	General Purpose	Buff	S	3.0	2,495
UM3	Minn. AES	00.9	Small Seed	Yellow	Rps1	3.7	6,135
MN0203SP	Minn. AES	0.2	Small Seed	Yellow	Rps1	3.7	5,101
MN0201	Minn. AES	0.2	General Purpose	Yellow	Rps1	3.0	3,575
Norpro	N.D. AES	0.4	Tofu	Yellow	S	3.7	2,609
Agassiz	Minn. AES	0.0	General Purpose	Yellow	Rps1	2.3	2,910
Nornatto	N.D. AES	0.2	Small Seed	Yellow	-	2.7	4,054
MN0204SP	Minn. AES	0.2	Small Seed	Yellow	Rps1	3.3	5,470
Walsh	N.D. AES	0.2	General Purpose	Yellow	Rps6	3.0	2,719
MN0205SP	Minn. AES	0.2	Small Seed	Yellow	Rps1	3.0	4,882
MN0202SP	N.D. AES	0.2	Small Seed	Yellow	Rps1	3.0	5,218
Nannonatto	N.D. AES	0.3	Small Seed	Yellow	-	3.3	5,101
MN0302	Minn. AES	0.3	General Purpose	Buff	Rps1k	3.0	2,910
MN0303SP	Minn. AES	0.3	Small Seed	Yellow	Rps1	3.3	5,101
Dannatto	N.D. AES	0.4	Small Seed	Yellow	S	2.7	4,540

**Characteristics of special-use soybean varieties, central zone;
Becker, Morris and Rosemount, 2000-2002.**

Variety	Releasing Institution	Maturity Rating	Special Characteristics	Hilum Color	Phytophthora Gene	Chlorosis Score	Seeds/Lb
MN0302	Minn. AES	0.3	General Purpose	Buff	Rps1k	3.0	2,857
MN0301	Minn. AES	0.3	General Purpose	Yellow	Rps1	3.3	2,831
Minnatto	Minn. AES	0.9	Small Seed	Yellow	Rps1	2.7	5,148
Dannatto	N.D. AES	0.4	Small Seed	Yellow	S	4.3	4,530
Proto	Minn. AES	0.5	Higher Protein	Yellow	S	4.3	2,603
MN06D1SP	Minn. AES	0.6	Higher Protein	Buff	Rps1c	4.0	3,624
Lambert	Minn. AES	0.7	General Purpose	Buff	Rps1	3.0	2,745
Toyopro	Minn. AES	0.9	Higher Protein	Yellow	S	4.0	2,796
MN1303SP	Minn. AES	1.3	Higher Protein	Yellow	S	3.7	2,680
Surge	Minn. & S.D. AES	0.9	General Purpose	Imp. Black	Rps1	2.7	2,254
MN1306SP	Minn. AES	1.3	Small Seed	Yellow	Rps1	2.3	6,380
Kato	Minn. AES	1.3	Large Seed, Higher Protein	Black	Rps1	3.3	2,056
MN1101SP	Minn. AES	1.1	Large Seed, Higher Protein	Yellow	Rps1	3.7	1,841
MN1305SP	Minn. AES	1.3	Large Seed, Higher Protein	Yellow	Rps1	3.3	1,796
Parker	Minn. AES	1.5	General Purpose	Buff	Rps1	4.0	2,422

**Performance of special-use soybean varieties, southern zone;
Lamberton and Waseca, 2000-2002.**

Variety	Releasing Institution	Maturity Date	Yield, Percent of Mean			Percent of Mean	
			2000-2002	2001-2002	2002	Protein	Oil
MN1901SP	Minn. AES	9-10	98	98	86	109	89
MN1101SP	Minn. AES	9-14	99	97	90	107	95
MN1404SP	Minn. AES	9-14	90	89	83	105	97
MN1306SP	Minn. AES	9-16	93	97	87	99	96
MN1502SP	Minn. AES	9-18	101	101	101	100	103
MN1601SP	Minn. AES	9-18	96	98	94	102	102
MN1603SP	Minn. AES	9-20	96	94	98	99	102
MN1302	Minn. AES	9-21	-	-	117	90	107
MN1403SP	Minn. AES	9-21	112	111	112	99	103
MN1602SP	Minn. AES	9-21	101	99	95	105	101
MN1501SP	Minn. AES	9-22	83	86	96	100	92
MN2001SP	Minn. AES	9-23	112	113	112	106	98
Parker	Minn. AES	9-24	117	118	114	93	110
Vinton 81	Iowa AES	9-24	-	-	98	102	102
IA2050	Iowa AES	9-25	-	-	137	92	108
Mean		9-19	43.5 bu/acre	42.0 bu/acre	40.0 bu/acre	37.6%	18.0%
LSD 20%			4%	5%	7%		

**Performance of special-use Iowa-developed soybean varieties, southern zone;
Lamberton and Waseca, 2000-2002.**

Variety	Releasing Institution	Maturity Date	Yield, Percent of Mean			Percent of Mean	
			2000-2002	2001-2002	2002	Protein	Oil
IA1007	Iowa AES	9-22	94	92	86	97	104
HP204	Iowa AES	9-23	-	-	109	101	100
IA2025	Iowa AES	9-24	94	94	93	104	102
Parker	Minn. AES	9-25	112	112	112	96	107
IA1005	Iowa AES	9-25	113	111	111	98	101
IA1009	Iowa AES	9-25	113	111	109	94	106
IA2017	Iowa AES	9-25	104	107	104	99	101
IA2042	Iowa AES	9-25	101	100	99	100	100
IA2012	Iowa AES	9-25	99	97	91	97	101
IA2050	Iowa AES	9-26	-	-	126	92	106
IA1008	Iowa AES	9-26	116	112	111	94	103
IA2027	Iowa AES	9-26	96	98	99	99	107
Vinton 81	Iowa AES	9-26	93	91	89	102	100
IA2023	Iowa AES	9-26	84	83	79	103	90
IA2034	Iowa AES	9-27	109	109	116	101	99
IA2028	Iowa AES	9-27	96	96	98	97	105
IA2024	Iowa AES	9-27	86	87	88	103	91
IA2011	Iowa AES	9-28	101	103	105	97	105
IA2033	Iowa AES	9-28	99	99	98	102	101
IA2029	Iowa AES	9-28	89	88	89	100	103
IA2041	Iowa AES	9-29	109	110	115	106	98
IA2040	Iowa AES	9-29	110	111	113	100	98
IA2032	Iowa AES	9-29	100	101	106	100	104
IA2020	Iowa AES	9-29	98	100	102	101	103
IA2030	Iowa AES	9-29	96	96	97	99	101
IA2035	Iowa AES	9-29	88	90	92	105	89
IA2016	Iowa AES	9-30	103	104	111	99	103
Mean		9-26	45.8 bu/acre	46.7 bu/acre	45.0 bu/acre	37.9%	18.2%
LSD 20%			4%	4%	7%		

**Characteristics of special-use soybean varieties, southern zone;
Lamberton and Waseca, 2000-2002.**

Variety	Releasing Institution	Maturity Rating	Special Characteristics	Hilum Color	Phytophthora Gene	Chlorosis Score	Seeds/Lb
MN1901SP	Minn. AES	1.3	Higher Protein	Yellow	S	3.7	2,849
MN1101SP	Minn. AES	1.1	Large Seed, Higher Protein	Yellow	Rps1	3.3	2,232
MN1404SP	Minn. AES	1.4	Large Seed, Higher Protein	Yellow	Rps1	3.7	2,004
MN1306SP	Minn. AES	1.3	Small Seed	Yellow	Rps1	4.0	5,961
MN1502SP	Minn. AES	1.5	Large Seed, Higher Protein	Yellow	Rps1	3.3	2,232
MN1601SP	Minn. AES	1.6	Large Seed, Higher Protein	Yellow	Rps1c	4.3	2,078
MN1603SP	Minn. AES	1.6	Large Seed	Yellow	Rps1	3.7	1,672
MN1302	Minn. AES	1.3	General Purpose	Yellow	Rps1k	3.3	2,559
MN1403SP	Minn. AES	1.4	Large Seed, Higher Protein	Yellow	Rps1	3.3	2,288
MN1602SP	Minn. AES	1.6	Large Seed, Higher Protein	Yellow	Rps1	3.0	1,841
MN1501SP	Minn. AES	1.5	Small Seed	Buff	S	4.0	5,961
MN2001SP	Minn. AES	2.0	Large Seed, Higher Protein	Yellow	Rps1	2.7	2,050
Parker	Minn. AES	1.5	General Purpose	Buff	Rps1	3.7	2,618
Vinton 81	Iowa AES	2.0	Large Seed, Higher Protein	Yellow	Rps1c	4.0	2,078
IA2050	Iowa AES	2.1	General Purpose	Black	S	4.3	2,745

**Characteristics of special-use Iowa-developed soybean varieties, southern zone;
Lamberton and Waseca, 2000-2002.**

Variety	Releasing Institution	Maturity Rating	Special Characteristics	Hilum Color	Phytophthora Gene	Chlorosis Score	Seeds/Lb
IA1007	Iowa AES	1.9	Large Seed	Yellow	S	3.0	1,763
HP204	Iowa AES	2.0	Large Seed, Higher Protein	Yellow	S	3.7	2,137
IA2025	Iowa AES	2.4	Lipoxygenase Free	Yellow	S	3.7	2,127
Parker	Minn. AES	1.5	General Purpose	Buff	Rps1	4.0	2,531
IA1005	Iowa AES	1.9	Large Seed, Higher Protein	Yellow	S	3.0	2,422
IA1009	Iowa AES	1.9	General Purpose	Yellow	S	4.7	3,168
IA2017	Iowa AES	2.2	Large Seed, Higher Protein	Yellow	S	5.0	2,232
IA2042	Iowa AES	2.1	Large Seed, Higher Protein	Yellow	S	4.7	2,078
IA2012	Iowa AES	2.2	Large Seed	Yellow	S	3.3	1,791
IA2050	Iowa AES	2.1	General Purpose	Black	S	4.0	2,779
IA1008	Iowa AES	2.0	General Purpose	Yellow	S	4.0	2,762
IA2027	Iowa AES	2.4	Lipoxygenase Free	Yellow	S	3.7	2,127
Vinton 81	Iowa AES	2.0	Large Seed, Higher Protein	Yellow	Rps1c	3.0	2,022
IA2023	Iowa AES	2.4	Small Seed	Yellow	S	3.7	5,808
IA2034	Iowa AES	2.5	Large Seed, Higher Protein	Yellow	S	3.3	2,299
IA2028	Iowa AES	2.4	Lipoxygenase Free	Yellow	Rps1	3.0	2,117
IA2024	Iowa AES	2.5	Small Seed	Yellow	S	3.3	6,292
IA2011	Iowa AES	2.2	Lacks Lipoxygenase 2	Yellow	S	2.0	2,232
IA2033	Iowa AES	2.4	Lipoxygenase Free	Yellow	S	4.0	2,078
IA2029	Iowa AES	2.4	Lipoxygenase Free	Yellow	S	3.7	2,041
IA2041	Iowa AES	2.1	Large Seed, Higher Protein	Yellow	S	3.3	2,335
IA2040	Iowa AES	2.4	Large Seed, Higher Protein	Yellow	S	3.7	1,653
IA2032	Iowa AES	2.5	Lipoxygenase Free	Yellow	S	4.6	1,987
IA2020	Iowa AES	2.3	Large Seed, Higher Protein	Yellow	S	4.3	1,961
IA2030	Iowa AES	2.3	Lipoxygenase Free	Yellow	S	3.7	2,022
IA2035	Iowa AES	2.4	Small Seed	Yellow	S	3.0	6,205
IA2016	Iowa AES	2.2	Large Seed, Higher Protein	Yellow	S	4.0	2,078

Characteristics of publicly developed soybean varieties entered in 2002 tests.

Variety	Releasing Institution	Maturity Rating	Phytophthora Gene	BSR Reaction	SCN Reaction	Chlorosis Score
McCall	Minn. AES	00.7	S	S	S	3.7
Jim	N.D. AES	00.8	S	S	S	3.4
Glacier	Minn. AES	00.8	Rps6	S	S	3.3
Agassiz	Minn. AES	0.0	Rps1	S	S	3.3
Traill	N.D. AES	0.0	S	S	S	2.9
Walsh	N.D. AES	0.2	Rps6	S	S	3.0
Barnes	N.D. AES	0.2	Rps6	S	S	4.0
MN0201	Minn. AES	0.2	Rps1	R	S	2.3
MN0301	Minn. AES	0.3	Rps1	S	S	3.3
MN0302	Minn. AES	0.3	Rps1k	S	S	3.0
Lambert	Minn. AES	0.7	Rps1	S	S	3.0
MN0901	Minn. AES	0.9	Rps1	S	S	3.7
MN0902CN	Minn. AES	0.9	Rps1	R	R	3.4
Surge	S.D. + Minn. AES	0.9	Rps1	S	S	3.7
Sargent	N.D. AES	1.0	Rps6	S	S	3.4
MN1301	Minn. AES	1.3	Rps1c	S	S	3.3
Kato	Minn. AES	1.3	Rps1	S	S	3.3
MN1302	Minn. AES	1.3	Rps1k	R	S	3.0
MN1401	Minn. AES	1.4	Rps1	S	S	3.0
Parker	Minn. AES	1.5	Rps1	S	S	3.7
Freeborn	Minn. AES	1.6	Rps1	R	R	3.0
IA1006	Iowa AES	1.6	S	R	S	3.3
MN1801	Minn. AES	1.8	Rps1c	S	S	3.0
Sturdy	Minn. AES	2.0	Rps1	S	S	3.0
IA1008	Iowa AES	2.0	S	S	R	4.0
IA2008R	Iowa AES	2.1	Rps1k	R	S	3.4
IA2021	Iowa AES	2.1	Rps1k	S	S	3.7
IA2050	Iowa AES	2.1	S	S	S	4.3
IA2052	Iowa AES	2.3	S	R	S	3.3

Performance of public and private soybean varieties ranked in order of susceptibility to white mold infection, Staples, 2002.

Variety	Brand or Originator	Maturity Rating	White Mold Incidence (%)	Yield Bu/Acre	Lodging 1-5 scale
S02-G2	NK Brand	0.2	0.0	54.3	0.8
AG0201	Asgrow	0.2	0.0	49.0	2.0
90A07	Pioneer	00.7	0.0	47.0	3.0
DKB03-51	Dekalb	0.3	0.0	45.7	2.3
Jim	Minn. AES	00.7	0.0	42.3	4.3
Agassiz	Minn. AES	0	0.3	49.3	3.8
MN0901	Minn. AES	0.9	0.6	48.9	5.0
MN0301	Minn. AES	0.3	1.4	46.5	4.3
MN0302	Minn. AES	0.3	1.5	47.5	3.3
MN0201	Minn. AES	0.2	1.8	43.4	3.5
LSD 5%			NS	NS	1.7

**Performance of public and private soybean varieties ranked
in order of susceptibility to white mold infection, Morris, 2002.**

Variety	Brand or Originator	Maturity Rating	White Mold Incidence (%)	Yield Bu/Acre	Lodging 1-5 scale
MN1301	Minn. AES	1.3	0.0	38.2	1.3
3205RR	Gold Country	0.5	0.3	47.6	1.8
MN0901	Minn. AES	0.9	0.6	46.2	3.0
91B52	Pioneer	1.5	1.0	56.1	1.8
91B53	Pioneer	1.6	1.0	55.5	1.3
Lambert	Minn. AES	0.7	1.0	39.2	3.0
AG1401	Asgrow	1.4	1.1	54.6	2.5
91B64	Pioneer	1.6	1.1	54.3	3.0
MN1401	Minn. AES	1.4	1.4	45.4	3.0
S10-T1	NK Brand	1.0	1.4	49.9	1.0
S08R4	NK Brand	0.8	1.8	55.3	1.8
Minnatto	Minn. AES	0.9	1.8	37.5	3.5
EX-148RR	Latham	1.4	2.0	59.5	1.5
MN0902 CN	Minn. AES	0.9	3.1	46.0	3.5
6112RR	Gold Country	1.2	3.3	53.6	1.8
MN1302	Minn. AES	1.3	3.4	51.5	3.5
Kato	Minn. AES	1.3	3.8	50.1	2.5
DKB15-51	Dekalb	1.5	4.1	63.9	1.3
Freeborn	Minn. AES	1.6	4.6	44.3	2.5
S15-B1	NK Brand	1.5	4.8	52.1	2.8
MN1801	Minn. AES	1.8	5.3	53.7	2.8
DSR-130/RR	Dairyland	1.3	12.4	49.5	2.8
LSD 5%			5.3	13.9	1.2

**Performance of public and private soybean varieties ranked
in order of susceptibility to white mold infection, Rosemount, 2002.**

Variety	Brand or Originator	Maturity Rating	White Mold Incidence (%)	Yield Bu/Acre	Lodging 1-5 scale
S15-B1	NK Brand	1.5	2.7	37.3	1.3
91B53	Pioneer	1.6	3.3	47.5	1.3
91B64	Pioneer	1.6	4.0	38.7	1.5
AG1401	Asgrow	1.4	4.0	36.0	1.3
DKB15-51	Dekalb	1.5	5.3	39.1	1.3
S08R4	NK Brand	0.8	7.3	42.8	2.0
6112RR	Gold Country	1.2	7.3	38.6	2.0
S10-T1	NK Brand	1.0	8.0	39.9	3.0
EX-148RR	Latham	1.4	9.0	35.0	2.0
3205RR	Gold Country	0.5	10.0	37.8	3.0
DSR130/RR	Dairyland	1.3	11.3	35.9	2.3
91B52	Pioneer	1.5	11.3	34.5	1.0
LSD 5%			NS	5.5	NS

**Performance of public and private soybean varieties ranked
in order of susceptibility to white mold infection, Waseca, 2002.**

Variety	Brand or Originator	Maturity Rating	White Mold Incidence (%)	Lodging 1-5 scale
SOI 1200RR	Sands	1.3	0.0	0.0
418RR Brand	Latham	1.4	0.0	0.0
6138RR	Gold Country	1.8	0.0	0.0
91B64	Pioneer	1.6	0.0	0.5
91B92	Pioneer	1.9	0.0	0.0
DKB22-51	Dekalb	2.2	0.0	0.8
DSR199/RR	Dairyland	1.9	0.0	0.0
DSR221/RR	Dairyland	2.2	0.0	0.3
GR2037	Midwest	2.0	0.0	0.0
S18-NS	NK Brand	1.8	0.0	0.5
S20-25	NK Brand	2.0	0.0	0.0
92B13	Pioneer	2.1	0.3	0.0
AG2001	Asgrow	2.0	0.3	1.5
SOI 1940RR	Sands	1.9	0.3	0.8
DG 3218RR	Dyna Gro	2.1	0.5	0.0
IA1006	Iowa AES	1.6	0.5	0.8
IA2021	Iowa AES	2.1	0.5	1.0
GR2255	Midwest	2.2	0.5	0.5
AG2105	Asgrow	2.1	1.3	0.0
S19-V2	NK Brand	1.9	1.8	0.0
BSR-101	Iowa AES	1.9	2.0	1.3
Vinton 81	Iowa AES	2.0	2.0	4.0
AG1902	Asgrow	1.9	6.5	2.8
IA2036	Iowa AES	2.1	13.3	3.8
LSD 5%			2.6	1.2

Minnesota Crop Improvement Association

Serving Minnesota Agriculture Since 1903

Minnesota Crop Improvement Association (MCIA) is a nonprofit association whose primary mission is to improve the productivity, profitability and competitive position of its members. It is governed by a board of directors and operates on fees charged for services. The Minnesota Department of Agriculture recognizes MCIA as the state's official seed-certification agency and official noxious-weed-free forage and mulch certifying agency.

Several more specialized seed quality-assurance programs have been introduced that assure the quality of seed products not eligible for statutory seed certifying programs, including the third-party verification of the presence of various genetically modified traits.

MCIA also is the foundation seed organization in Minnesota, with responsibility to maintain and increase parent stocks of varieties developed at the Minnesota Agricultural Experiment Station (MAES). The association also provides similar kinds of services to several private seed companies who require small parent-seed increases of varieties prior to engaging in large commercial increases.

MCIA has provided foundation seed services to the MAES for more than 30 years. The association's role in the delivery of new varieties to Minnesota agriculture was expanded in 2000 to include responsibility as the exclusive

licensing agent for varieties developed at the MAES that are licensed to private entities.

Identity Preserved (IP) programs provide third-party verification that certain valuable genetic traits are present at the level necessary to add significant value to the end product. These programs also are capable of certifying that grain entering the food chain is free of specific genetic contamination within accepted tolerances.

Organic certification is MCIA's most recent program offering. The Minnesota Department of Agriculture approved the association for producer and processor organic certification in 2001, and accreditation in the U.S. Department of Agriculture's National Organic Program (NOP) was granted in April 2002.

Sources of Registered and Certified Seed

The listing of Minnesota Crop Improvement Association member-growers with certified seed for sale in 2003 that follows is provided as a service to prospective seed buyers. It is not to be construed as an offer for sale by the grower and is not to be considered as public advertising or as the posting of public notice in any manner. Growers who wish to promote and sell seed in Minnesota must comply with all current state regulations governing seed sales.

Notice to Seed Buyers

Should you suspect misrepresentation, mislabeling or violation of regulations under which certified seed classes are produced and marketed, contact MCIA at 800-510-6242.

While MCIA cannot assume financial responsibility for the performance of seed purchased from sources listed, or for disagreements over sales that may arise from this list, any complaint about certified seed received by MCIA will be investigated.

Should a claim over seed performance involving MCIA arise, it must be addressed as provided in Minnesota Department of Agriculture Rules for Arbitration of Seed Performance Disputes.

The seller of certified seed must supply seed representative of the samples submitted to, and approved for certification by, MCIA. Seed purchasers should insist on certification being complete, with certified seed tags attached to bags or a bulk sale certificate furnished with bulk seedlots.



Growers with Certified and Registered seed for sale in 2003. Please contact growers directly for information on seed quantity and price.

Listing lines show county, grower, town, phone number and class of seed, R for Registered, C for Certified.

BARLEY

Conlon

Marshall Philipp, D. Joe, Goodridge 218-681-5574 R C
 Norman Nepstad, Leland, Hendrum 218-861-6288 C

Excel

Roseau Howell Farms, Badger 218-528-3612 C

Kewaunee

Blue Earth Prairie Gold Seeds, LLC
 (Attn. M. Ramy), Mankato 507-387-4091 C

Lacey

Clay Brakke, Glenn, Moorhead 218-585-4214 C
 Clay Olek, Vernard, Felton 218-494-3440 C
 Clay Wetterlin, Jerry & Aaron, Glyndon 218-494-3339 C
 Douglas Sward Seed Farm, Nelson 320-762-0143 C
 Freeborn Albert Lea Seed House, Inc., Albert Lea 507-373-3161 R C
 Grant Adams Seed, Wendell 218-458-2151 C
 Grant Lacey Ridge Farm Co. %Brian Lacey, Wendell 218-458-2595 R C
 Kittson Bloomquist Farms, Inc., Drayton 218-455-3863 C
 Kittson Johnson Farms, Inc., Lloyd, Karlstad 218-436-2817 R
 Kittson Petersen, Ronald L., Lake Bronson 218-754-4631 C
 Kittson Sedenquist Farms, Inc., Kennedy 218-674-4218 R
 Kittson Stewart, H. Shane, St. Vincent 218-379-3282 C
 Kittson Stewart, Hilson L., St. Vincent 218-379-3282 C
 Le Sueur Stangler Farm Seed, Dick, Kilkenny 507-595-2883 C
 Mahanomen Pazdernik Farms, Inc., Waubun 218-473-2232 R
 Marshall Anderson, Travis, Argyle 218-437-8107 C
 Marshall Beaudry, Jeffrey, Argyle 218-437-8560 C
 Marshall Bring, Sharon, Strandquist 218-874-3713 C
 Marshall Dufault, Aime, Argyle 218-437-8453 C
 Marshall Farmers Elevator Company, Alvarado 218-965-4812 R C
 Marshall Green, Carl M., Strandquist 218-597-2861 C
 Marshall Gryskiewicz, Donald & Jeff, Argyle 218-437-8164 R
 Marshall Jensen Farms, Stephen 218-478-3398 R C
 Marshall KJ - KJ Farms, Argyle 218-437-8221 C
 Marshall Kowalski, James, Stephen 218-478-3899 R C
 Marshall Peterson, Maynard, Stephen 218-478-3859 R C
 Marshall Riopelle, Earl & Brent, Argyle 218-437-8291 R
 Marshall Riopelle, Larry, Argyle 218-437-8247 R
 Marshall Robertson Brothers, Argyle 218-437-6411 R
 Marshall Stusynski, David, Strandquist 218-436-2717 C
 Meeker Dahlman Seed Co., Dassel 320-275-2527 C
 Meeker Wigen Seed Farm, Litchfield 320-693-8182 C
 Norman Circle C Seeds, Gary 218-356-8214 C
 Norman Malmc, Cecil, Shelly 218-886-8488 R
 Otter Tail Brenden, Bruce L., Rothsay 218-867-2410 C
 Out of state Anderson, Gerald D, Grand Forks 701-775-8766 R C
 Pennington Engelstad Farms of
 Rocksbury, Thief River Falls 218-681-1000 R
 Pennington Scholin Farms, Thief River Falls 218-964-5268 R C
 Pipestone Spronk, Art & Sons Seed Farm, Edgerton 507-442-5334 R C
 Polk Bergman Farms, James, Oslo 218-965-4913 C
 Polk Brule, David A., Crookston 218-281-2944 C
 Polk Capistran, Kevin, Crookston 218-281-5705 C
 Polk Clementson, Jon, Erskine 218-687-2345 R
 Polk Fosston Co-op Seed House, Fosston 218-435-6222 C
 Polk Larson Farms, Inc., Ralph, East Grand Forks 218-773-1463 R
 Polk Perry Farms, Inc. (Charles), Crookston 218-281-4114 C
 Polk Pulkrabek Farms, Inc. Gary, Angus 218-745-5891 R
 Polk Thorson Farm, Inc., J. O., East Grand Forks 218-893-2285 R C
 Red Lake DeRosier, Jaime, Red Lake Falls 218-253-2861 C
 Rice Werner Farm Seeds, Dundas 507-645-7995 C
 Stearns Klassen, Ralph, Belgrade 320-243-3277 C
 Todd Faust, Kevin, Long Prairie 320-732-3361 C

Todd Sweeney Seed Farm, Inc., Bertha 218-924-2921 C

Legacy

Marshall Double A Farms, Viking 218-523-4245 R
 Wilkin Friederichs Farm, Foxhome 218-643-2363 R

MNBrite

Pipestone Spronk, Art & Sons Seed Farm, Edgerton 507-442-5334 R

Robust

Carlton Korhonen, Art, Kettle River 218-273-4931 C
 Clay Olek, Bradley, Moorhead 218-494-3440 C
 Douglas Sward Seed Farm, Nelson 320-762-0143 R C
 Freeborn Albert Lea Seed House, Inc., Albert Lea 507-373-3161 R C
 Grant Adams Seed, Wendell 218-458-2151 R C
 Marshall Anderson, Harvey O. & Luther H., Stephen 218-455-3305 R
 Marshall Double A Farms, Viking 218-523-4245 C
 Marshall Gryskiewicz, Donald & Jeff, Argyle 218-437-8164 R
 Marshall Peterson, Maynard, Stephen 218-478-3859 R
 Marshall Stusynski, David, Strandquist 218-436-2717 C
 Meeker Peterson, Melvin, Atwater 320-877-7585 C
 Meeker Peterson, Russell M., Grove City 320-877-7793 C
 Murray Blankers, Jerry, Lake Wilson 507-879-3103 C
 Otter Tail Dittmann, Lyle E., New York Mills 218-385-2392 C
 Pennington Trontvet, Daniel, Thief River Falls 218-681-4028 C
 Polk Brekken Farm Partnership
 (Robin & Karen), Crookston 218-926-5655 C
 Polk Brule, David A., Crookston 218-281-2944 C
 Polk Gullekson, Ray, Brent & Brian, Beltrami 218-926-5737 C
 Polk Mat - Co., Inc., Fosston 218-435-6667 C
 Polk Novak, James, Angus 218-745-5048 C
 Polk Pulkrabek Farms, Inc. Gary, Angus 218-745-5891 R
 Polk Thorson, Jason J., East Grand Forks 218-893-2285 C
 Polk Thorson, Osmund and Chad,
 East Grand Forks 218-893-2285 C
 Red Lake Payment, Darrell, Red Lake Falls 218-253-2254 C
 Todd Faust, Kevin, Long Prairie 320-732-3361 C
 Wilkin Haugrud Seed Plant, Rothsay 218-493-4275 R C
 Wilkin Knapp Seed Farm, Inc., Foxhome 218-739-3366 C

Royal

Freeborn Albert Lea Seed House, Inc., Albert Lea 507-373-3161 C
 Rice Werner Farm Seeds, Dundas 507-645-7995 C
 Wabasha Zabel Seeds, Plainview 507-534-2487 R C

Stander

Pipestone Spronk, Art & Sons Seed Farm, Edgerton 507-442-5334 R C

BEANS

Maverick Pinto

Grant Kapphahn, John M., Elbow Lake 218-685-4604 C
 Pennington Scholin Farms, Thief River Falls 218-964-5268 C

Red Hawk Dark Red Kidney

Grant Kapphahn, John M., Elbow Lake 218-685-4604 C

BIG BLUESTEM

Bison

Roseau Baumgartner Farms, Inc., Roseau 218-463-1332 C
 Roseau Erickson, Douglas, Roseau 218-463-3535 C

Bonilla

Cottonwood Iverson, Glen, Lambertson 507-445-3388 C

BIRDSFOOT TREFOIL

Norcen

Lake of the Woods Pieper, Danny, Williams 218-783-4352 C

Listing lines show county, grower, town, phone number and class of seed, R for Registered, C for Certified.

CHICKLING VETCH

AC Greenfix

Red Lake Juneau, Dan, Red Lake Falls 218-698-4222 C

CORN

E500-B Hybrid

Renville Enestvedt Bros., Sacred Heart 320-765-2728 C

E560-B Hybrid

Renville Enestvedt Bros., Sacred Heart 320-765-2728 C

E600-B Hybrid

Renville Enestvedt Bros., Sacred Heart 320-765-2728 C

E670A Hybrid

Renville Enestvedt Bros., Sacred Heart 320-765-2728 C

E680RR Hybrid

Renville Enestvedt Bros., Sacred Heart 320-765-2728 C

E695RR Hybrid

Renville Enestvedt Bros., Sacred Heart 320-765-2728 C

FLAX

York

Kittson Bloomquist Farms, Inc., Drayton 218-455-3863 R

INDIANGRASS

Tomahawk

Roseau Baumgartner Farms, Inc., Roseau 218-463-1332 C

Roseau Carlson, Dean A., Roseau 218-425-7763 C

KENTUCKY BLUEGRASS

Minnfine

Roseau Habstritt Farms, Inc., Roseau 218-463-1193 C

Park

Lake of the Woods Pieper Farms, Jerry, Williams 218-783-6610 C

Lake of the Woods Pieper, Robert, Williams 218-783-4352 C

Lake of the Woods Swanson, Leslie, Williams 218-463-2702 C

Roseau Dahl, Stephen Ray, Roseau 218-463-1569 C

Roseau Eastman, Bob, Roseau 218-463-1621 C

Roseau Eastwood Estates/R&G Trucking (Hetteen, Rick), Roseau 218-424-7509 C

Roseau Evergreen Farms, Inc. (Johnson, Thomas), Roseau 218-425-7432 C

Roseau Goos Farms, Inc., Roseau 218-424-7748 C

Roseau Grahn Farms, % Mike Grahn, Roseau 218-463-1765 C

Roseau Habstritt Farms, Inc., Roseau 218-463-1193 R C

Roseau Hagen, L & L Farms, Inc., Badger 218-528-3523 C

Roseau Hagen, William, Warroad 218-386-1400 C

Roseau Magnusson Farms, Roseau 218-463-2374 C

Roseau Magnusson, Ardell, Roseau 218-463-1647 C

Roseau Marvin's, Warroad 218-386-1333 C

Roseau Millner Farms, Gene Millner, Roseau 218-463-2164 C

Roseau Northern Minnesota Bluegrass, Roseau 218-463-3888 R C

Roseau Olafson, Mark, Roseau 218-463-3958 C

Roseau Santl Farms (Ken Santl), Roseau 218-463-2686 C

Roseau Slater, Gary, Roseau 218-463-1064 C

OATS

Buff Hulless

Freeborn Albert Lea Seed House, Inc., Albert Lea 507-373-3161 R

Meeker Wigen Seed Farm, Litchfield 320-693-8182 R

Swift Falk Seed Farm, Murdock 320-875-4341 R

Dane

Houston Troendle Farms, Spring Grove 507-724-2211 C

Olmsted Meyer's Seeds, Inc., Elgin 507-876-2482 C

Redwood Sawvell's Seed, Inc., Clements 507-692-2240 C

Wright Tarning Seeds, Inc., Cokato 320-286-2168 C

Ebeltoft

Clay Tobolt Seed, Moorhead 218-287-2904 C

Clay Agri-Tel, Inc. (Carrol Duerr), Moorhead 218-287-5510 C

Clay Brakke, Glenn, Moorhead 218-585-4214 C

Marshall Newfolden Co-op Elevator Assn., Newfolden 218-874-7465 C

Otter Tail Dittmann, Lyle E., New York Mills 218-385-2392 C

Otter Tail Peeters, John, Menahga 218-385-2609 C

Polk Fosston Co-op Seed House, Fosston 218-435-6222 C

Todd Sweeney Seed Farm, Inc., Bertha 218-924-2921 C

Yellow Medicine Weber Farms, Robert & Sandra, Granite Falls 320-564-2435 C

Gem

Brown Cunningham Seed Farms, Sleepy Eye 507-794-7323 C

Kandiyohi Behm Seed Company, Atwater 320-974-3003 C

Le Sueur Stangler Farm Seed, Dick, Kilkenny 507-595-2883 C

McLeod Thalmann Seeds Inc., Plato 320-238-2185 C

Meeker Johnson Seeds of Dassel, Inc., Dassel 320-275-2430 C

Meeker Wigen Seed Farm, Litchfield 320-693-8182 C

Mower Grass & Sons Seed Service, Le Roy 507-324-5820 C

Olmsted Meyer's Seeds, Inc., Elgin 507-876-2482 C

Redwood Sawvell's Seed, Inc., Clements 507-692-2240 C

Rice Werner Farm Seeds, Dundas 507-645-7995 C

Stearns Nietfield Farm, Inc., Melrose 320-987-3442 C

Swift Falk Seed Farm, Murdock 320-875-4341 C

Todd Perish Farms, Inc., Browerville 320-594-6586 C

Wabasha Dill Company, LLC (Valerie Ahlers), Wabasha 651-565-2611 C

Wabasha Zabel Seeds, Plainview 507-534-2487 C

Wright Tarning Seeds, Inc., Cokato 320-286-2168 C

Jerry

Blue Earth Prairie Gold Seeds, LLC (Attn. M. Ramy), Mankato 507-387-4091 R C

Clay Tobolt Seed, Moorhead 218-287-2904 R

Clearwater Holm, DuWayne, Shevlin 218-785-2786 C

Cottonwood Bondhus, Barry N., Storden 507-445-3227 C

Freeborn Albert Lea Seed House, Inc., Albert Lea 507-373-3161 C

Marshall Newfolden Co-op Elevator Assn., Newfolden 218-874-7465 C

Meeker Johnson Seeds of Dassel, Inc., Dassel 320-275-2430 C

Mower Grass & Sons Seed Service, Le Roy 507-324-5820 C

Norman Gilbertson, Kenneth, Ada 218-784-7774 C

Otter Tail Dittmann, Lyle E., New York Mills 218-385-2392 C

Polk Fosston Co-op Seed House, Fosston 218-435-6222 C

Swift Falk Seed Farm, Murdock 320-875-4341 R C

Wright Tarning Seeds, Inc., Cokato 320-286-2168 C

Jim

Freeborn Albert Lea Seed House, Inc., Albert Lea 507-373-3161 R C

Meeker Johnson Seeds of Dassel, Inc., Dassel 320-275-2430 R C

Killdeer

Becker Eagle View Organic - Ballard, Curtis R., Ogema 218-983-3749 C

Marshall Newfolden Co-op Elevator Assn., Newfolden 218-874-7465 C

Marshall Stusynski, David, Strandquist 218-436-2717 C

Polk Fosston Co-op Seed House, Fosston 218-435-6222 C

Leonard

Kandiyohi Loge, Alan, Willmar 320-235-4178 R

Lac qui Parle Hermanson Seed Plant, Boyd 320-855-2582 R

Lincoln Lincoln County Feed & Seed, Ivanhoe 507-694-1243 R

Lyon Olson, Jonathan, Cottonwood 507-423-6340 R

Meeker Johnson Seeds of Dassel, Inc., Dassel 320-275-2430 R

Otter Tail Brenden, Bruce L., Rothsay 218-867-2410 R

Redwood Sawvell's Seed, Inc., Clements 507-692-2240 R

Renville JSE, Inc. (Johnson Seed Farm), Sacred Heart 320-765-2225 R

Swift Falk Seed Farm, Murdock 320-875-4341 R

Loyal

Otter Tail Miller, Donald, Henning 218-583-2451 C

Listing lines show county, grower, town, phone number and class of seed, R for Registered, C for Certified.

Milton					Wabasha					
Todd	Schwanke, Lloyd, Grey Eagle	320-285-5417	C	Dill Company, LLC (Valerie Ahlers), Wabasha	651-565-2611	C				
Moraine					Wabasha					
Brown	Cunningham Seed Farms, Sleepy Eye	507-794-7323	C	Zabel Seeds, Plainview	507-534-2487	C				
Rice	Werner Farm Seeds, Dundas	507-645-7995	C	Sasqui						
Wabasha	Zabel Seeds, Plainview	507-534-2487	C	Brown	Rosbach Lakeside Seeds, Inc., Hanska	507-794-7698	C			
Paul					Carlton	Korhonen, Art, Kettle River	218-273-4931	C		
Meeker	Wigen Seed Farm, Litchfield	320-693-8182	C	Douglas	Sward Seed Farm, Nelson	320-762-0143	C			
Yellow Medicine	Weber Farms, Robert & Sandra, Granite Falls	320-564-2435	C	Faribault	Willette Seed Farm, Inc., Delavan	507-894-3595	C			
Reeves					Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R	C	
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R	Kandiyohi	Behm Seed Company, Atwater	320-974-3003	R	C		
Lac qui Parle	Harwick, Kenneth, Madison	320-752-4455	R	Kandiyohi	Loge, Alan, Willmar	320-235-4178	C			
Meeker	Johnson Seeds of Dassel, Inc., Dassel	320-275-2430	R	Le Sueur	Haas Seed Farm, Le Sueur	507-665-3683	R	C		
Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	R	Le Sueur	Stangler Farm Seed, Dick, Kilkenny	507-595-2883	R	C		
Norman	Chisholm, Mark M., Gary	218-356-8507	R	Lincoln	Lincoln County Feed & Seed, Ivanhoe	507-694-1243	C			
Olmsted	Meyer's Seeds, Inc., Elgin	507-876-2482	R	Lyon	Cenex Harvest States Co-op Elev, M. Pieske, Marshall	507-532-3246	C			
Pipestone	Spronk, Art & Sons Seed Farm, Edgerton	507-442-5334	R	Lyon	Tholen Seeds, Tracy	507-629-3505	C			
Rice	Werner Farm Seeds, Dundas	507-645-7995	R	McLeod	Rusch, Dale, Hutchinson	320-587-5721	C			
Wabasha	Zabel Seeds, Plainview	507-534-2487	R	Meeker	Johnson Seeds of Dassel, Inc., Dassel	320-275-2430	R	C		
Richard					Meeker	Wigen Seed Farm, Litchfield	320-693-8182	C		
Blue Earth	Prairie Gold Seeds, LLC (Attn. M. Ramy), Mankato	507-387-4091	C	Mower	Zimmerman Seeds, Racine	507-378-2077	C			
Carlton	Korhonen, Art, Kettle River	218-273-4931	C	Nicollet	Sjogren Seed Farm, Lafayette	507-228-8141	C			
Douglas	Sward Seed Farm, Nelson	320-762-0143	C	Pipestone	Spronk, Art & Sons Seed Farm, Edgerton	507-442-5334	R			
Douglas	Thompson Farms, Kensington	320-965-2486	C	Rice	Werner Farm Seeds, Dundas	507-645-7995	R	C		
Faribault	Willette Seed Farm, Inc., Delavan	507-894-3595	C	Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C			
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R	Todd	Schwanke, Lloyd, Grey Eagle	320-285-5417	C			
Freeborn	Angell Seed Farm, John Angell, Blooming Prairie	507-583-7581	C	Wright	Terning Seeds, Inc., Cokato	320-286-2168	C			
Kandiyohi	Loge, Alan, Willmar	320-235-4178	C	Troy						
Le Sueur	Haas Seed Farm, Le Sueur	507-665-3683	C	Clay	Bradic, Glenn, Moorhead	218-585-4214	C			
Le Sueur	Stangler Farm Seed, Dick, Kilkenny	507-595-2883	C	Marshall	Newfolden Co-op Elevator Assn., Newfolden	218-874-7465	C			
McLeod	Thalmann Seeds Inc., Plato	320-238-2185	C	Otter Tail	Dittmann, Lyle E., New York Mills	218-385-2392	C			
Meeker	Johnson Seeds of Dassel, Inc., Dassel	320-275-2430	C	Polk	Fosston Co-op Seed House, Fosston	218-435-6222	C			
Meeker	Peterson, Melvin, Atwater	320-877-7585	R	Todd	Schwanke, Lloyd, Grey Eagle	320-285-5417	C			
Meeker	Wigen Seed Farm, Litchfield	320-693-8182	C	Vista						
Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	C	Faribault	Willette Seed Farm, Inc., Delavan	507-894-3595	C			
Mower	Zimmerman Seeds, Racine	507-378-2077	R	Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C			
Nicollet	Anderson & Sons, St. Peter	507-246-5032	C	Le Sueur	Stangler Farm Seed, Dick, Kilkenny	507-595-2883	C			
Norman	Malm, Cecil, Shelly	218-886-8488	R	Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	C			
Olmsted	Meyer's Seeds, Inc., Elgin	507-876-2482	R	Mower	Zimmerman Seeds, Racine	507-378-2077	C			
Pine	Cabak, Daniel C., Hinckley	320-384-7377	C	Olmsted	Meyer's Seeds, Inc., Elgin	507-876-2482	C			
Pipestone	Spronk, Art & Sons Seed Farm, Edgerton	507-442-5334	R	Rice	Werner Farm Seeds, Dundas	507-645-7995	C			
Polk	Fosston Co-op Seed House, Fosston	218-435-6222	C	Wabasha	Zabel Seeds, Plainview	507-534-2487	C			
Redwood	Sawwell's Seed, Inc., Clements	507-692-2240	C	Wabasha						
Renville	Kiecker, Greg, Hector	507-426-8167	R	Becker	Eagle View Organic - Ballard, Curtis R., Ogema	218-983-3749	C			
Rice	Salaba, Larry, Faribault	507-334-2603	C	Blue Earth	Prairie Gold Seeds, LLC (Attn. M. Ramy), Mankato	507-387-4091	C			
Rice	Werner Farm Seeds, Dundas	507-645-7995	C	Douglas	Sward Seed Farm, Nelson	320-762-0143	R			
Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C	Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R	C		
Stearns	Jokeland Farms, Joel & Kathy Ebnert, Holdingford	320-746-2147	C	Kandiyohi	Behm Seed Company, Atwater	320-974-3003	C			
Stearns	Klassen, Ralph, Welgrade	320-243-3277	C	Kandiyohi	Loge, Alan, Willmar	320-235-4178	C			
Stearns	Niefeld Farm, Inc., Melrose	320-987-3442	C	Lake of the Woods	Helmstetter Farm, Roosevelt	218-442-7285	R			
Stearns	Niefeld Farm, Inc., Melrose	320-987-3442	R	Lyon	Blomme, Bill, Marshall	507-532-4092	R	C		
Swift	Talk Seed Farm, Murdock	320-875-4843	R	McLeod	Rusch, Dale, Hutchinson	320-587-5721	C			
Swift	Lee's Seed Farm, Benson	320-843-2857	C	Meeker	Johnson Seeds of Dassel, Inc., Dassel	320-275-2430	C			
Todd	Sweeney Seed Farm, Inc., Bertha	218-924-2921	C	Meeker	Miller Seed Farm, Dassel	320-275-2463	R	C		
Wabasha	Dill Company, LLC (Valerie Ahlers), Wabasha	651-565-2611	C	Meeker	Smith, Steven, Darwin	320-693-4769	C			
Wabasha	Zabel Seeds, Plainview	507-534-2487	C	Meeker	Wigen Seed Farm, Litchfield	320-693-8182	C			
Wadena	Sorgent, Richard R. (Sorgent Bros), Staples	218-445-5356	C	Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	C			
Wright	Terning Seeds, Inc., Cokato	320-286-2168	C	Norman	Chisholm, Mark M., Gary	218-356-8507	R	C		
Riser					Otter Tail	Peters, John, Menasha	218-385-2609	C		
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C	Pipestone	Spronk, Art & Sons Seed Farm, Edgerton	507-442-5334	R	C		
Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	C	Polk	Fosston Co-op Seed House, Fosston	218-435-6222	C			
Olmsted	Meyer's Seeds, Inc., Elgin	507-876-2482	C	Red Lake	Svenson Seed Farm, Brooks	218-796-5286	C			
					Rice	Salaba, Larry, Faribault	507-334-2603	C		
					Roseau	Thompson, Dale, Badger	218-528-3552	C		

Listing lines show county, grower, town, phone number and class of seed, R for Registered, C for Certified.

Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C
Swift	Falk Seed Farm, Murdock	320-875-4341	R C
Todd	Buchholz Farms	320-285-5401	C
Todd	Faust, Kevin	320-732-3361	C
Wabasha	Dill Company, LLC (Valerie Ahlers)	651-565-2611	C
Yellow Medicine	Antony, David N.	507-223-7144	R

RYE

Rymin

Meeker	Wigen Seed Farm, Litchfield	320-693-8182	R C
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SOYBEANS

Barnes

Marshall	Gryskiewicz, Donald & Jeff, Argyle	218-437-8164	C
Polk	Balstad, Scott, Fosston	218-435-6311	C
Polk	Vig Farms Inc., Fosston	218-435-1316	C

Corsoy 79

Faribault	Willette Seed Farm, Inc., Delavan	507-854-3595	R C
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Emerson

Marshall	Jensen Farms, Stephen	218-478-3398	R
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Evans

Becker	Hein Farms, Inc., Audubon	218-439-6621	C
Douglas	Sward Seed Farm, Nelson	320-762-0143	C

HP204

Blue Earth	Prairie Gold Seeds, LLC (Attn. M. Ramy), Mankato	507-387-4091	C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R C
Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	R C
Out of State	Shear, Inc. (Danny Shear), Bristow	641-775-3231	R
Out of State	Pattison Bros, Inc., Fayette	563-425-3365	R C

Hardin 91

Meeker	Smith, Steven, Darwin	320-693-6769	C
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IA1006

Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C
Kandiyohi	Loge, Alan, Willmar	320-235-4178	C
Renville	Ernstvedt Bros., Sacred Heart	320-765-2728	R
Rice	Werner Farm Seeds, Dundas	507-645-7995	C
Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C

IA1007

Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C
Olmsted	Alliance Company of Minnesota, Kasson	507-634-6060	C
Steele	SunRich, Hope	507-451-3316	R

IA1008

Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R C
Jackson	Brunk Bros., Gene or William, Brewster	507-842-5471	C

IA2008R

Faribault	Willette Seed Farm, Inc., Delavan	507-854-3595	R C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R C
Le Sueur	Birr Brothers, Mark & Gene, Kasota	507-931-2218	R
Mower	Zimmerman Seed, Racine		C

IA2017

Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R
Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	R

IA2020

Olmsted	Alliance Company of Minnesota, Kasson	507-634-6060	C
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IA2021

Le Sueur	Haas Seed Farm, Le Sueur	507-665-3683	C
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IA2042

Steele	SunRich, Hope	507-451-3316	R
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IA2050

Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C
Wabasha	Zabel Seeds, Plainview	507-334-2487	R C

IA2053

Faribault	Willette Seed Farm, Inc., Delavan	507-854-3595	C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R C
Mower	Grass & Sons Seed Service, Le Roy	507-324-5820	C

IA3006

Steele	SunRich, Hope	507-451-3316	R
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Jim

Carlton	Korhonen, Art, Kettle River	218-273-4931	C
Kittson	Petersen, Ronald L., Lake Bronson	218-754-4631	C
Marshall	Anderson, Joel, Alvarado	218-965-6503	R
Marshall	KJ - KJ Farms, Argyle	218-437-8221	C
Marshall	Kowalski, James, Stephen	218-478-3899	C
Marshall	Peterson, Maynard, Stephen	218-478-3859	R
Marshall	Riopelle, Larry, Argyle	218-437-8247	R
Polk	Fosston Co-op Seed House, Fosston	218-435-6222	C
Polk	Johnstad, David, Beltrami	218-926-5663	C
Polk	Kovar, Frank & Duane, East Grand Forks	218-773-9238	C
Polk	Larson Farms, Jerry Larson, Climax	218-857-3345	C
Polk	Mat - Co., Inc., Fosston	218-435-6667	C
Polk	Novak, James, Angus	218-745-5048	C
Polk	Peterson, D.W., Inc., Warren	218-745-4507	R C
Red Lake	Swenson Seed Farm, Brooks	218-796-5285	C

Kato

Swift	Falk Seed Farm, Murdock	320-875-4341	R C
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Lambert

Douglas	Sward Seed Farm, Nelson	320-762-0143	C
Douglas	Thompson Farms, Kensington	320-965-2486	C
Le Sueur	Haas Seed Farm, Le Sueur	507-665-3683	C
Swift	Falk Seed Farm, Murdock	320-875-4341	R C

MN0201

Clay	Brakke, Glenn, Moorhead	218-585-4214	C
Clay	Heartland Seeds, Moorhead	218-585-4621	C
Marshall	Efta, Joe, Argyle	218-437-6457	R
Marshall	Gryskiewicz, Donald & Jeff, Argyle	218-437-8164	R
Marshall	Jensen Farms, Stephen	218-478-3398	C
Marshall	Kowalski, James, Stephen	218-478-3899	R
Marshall	Peterson, Maynard, Stephen	218-478-3859	C
Pennington	Scholin Farms, Thief River Falls	218-964-5268	R
Polk	Ostenaar, Sidney & DeWayne, McIntosh	218-563-7395	R
Polk	Peterson, D.W., Inc., Warren	218-745-4507	R C
Polk	Vig Farms Inc., Fosston	218-435-1316	C
Red Lake	DeRosier, Jaime, Red Lake Falls	218-253-2861	C
Red Lake	Swenson Seed Farm, Brooks	218-796-5285	R C

MN0301

Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C
Marshall	Efta, Joe, Argyle	218-437-6457	C
Marshall	Peterson, Maynard, Stephen	218-478-3859	C

MN0302

Clay	Fuglie, Duane, Ulen	218-596-8528	C
Clay	Hastings, Joseph, Felton	218-494-3935	C
Clay	Zimmerman, Wayne, Ulen	218-596-8628	R
Mahnomen	Pazdernik Farms, Inc., Waubun	218-473-2232	R
Marshall	Gryskiewicz, Donald & Jeff, Argyle	218-437-8164	R
Marshall	Kruger Bros. Farms, Inc., Warren	218-437-8435	R
Marshall	Nybladh, Alvin, Stephen	218-478-3345	C
Marshall	Peterson Farms of Warren, D.L., Inc., Warren	218-745-4077	C
Marshall	Peterson, Maynard, Stephen	218-478-3859	C
Norman	Chisholm, Michael, Gary	218-356-8507	R C
Norman	Malm, Cecil, Shelly	218-886-8488	R
Otter Tail	Brenden, Bruce L., Rothsay	218-867-2410	C
Polk	Balstad, Scott, Fosston	218-435-6311	C
Polk	Bauer Farms, Erskine	218-687-5356	C
Polk	Clementson, Jon, Erskine	218-687-2345	R C
Polk	Larson, Ray H., Inc., Angus	218-745-5923	C

Listing lines show county, grower, town, phone number and class of seed, R for Registered, C for Certified.

Polk	Ostenaar, Sidney & DeWayne, McIntosh	218-563-7395	R	Polk	Bauer Farms, Erskine	218-687-5356	C
Polk	Peterson, D.W., Inc., Warren	218-745-4507	R	Polk	Clementson, Jon, Erskine	218-687-2345	C
Wilkin	Haugrud Seed Plant, Rothsay	218-493-4275	R C	Polk	Fosston Co-op Seed House, Fosston	218-435-6222	C
Wilkin	Torkelson, Dennis & Brent, Foxhome	218-736-4607	C	Polk	Frisk, Dean, Crookston	218-281-1281	C
MN1301				Polk	Kovar, Frank & Duane, East Grand Forks	218-773-9238	C
Big Stone	Clinton Ag Service, Inc., Clinton	320-325-5203	C	Polk	Mat - Co., Inc., Fosston	218-435-6667	R C
Renville	Kiecker, Greg, Hector	507-426-8167	C	Polk	Ostenaar, Sidney & DeWayne, McIntosh	218-563-7395	C
Swift	Falk Seed Farm, Murdock	320-875-4341	C	Polk	Peterson, D.W., Inc., Warren	218-745-4507	C
MN1302				Polk	Vig Farms Inc., Fosston	218-435-1316	C
Dodge	Koss, William, Dodge Center	507-374-6786	C	Red Lake	Johnson, Jeremiah O., Oklee	218-796-4532	C
Jackson	Brunk Bros., Gene or William, Brewster	507-842-5471	C	Red Lake	Swenson Seed Farm, Brooks	218-796-5285	R C
Kandiyohi	Loge, Alan, Willmar	320-235-4178	C	Turner			
Traverse	Rinke, David, Wheaton	320-563-4864	R	Brown	Rosbach Lakeside Seeds, Inc., Hanska	507-794-7698	C
Yellow Medicine	Rosetter, Richard D., Granite Falls	320-564-3620	R	Jackson	Brunk Bros., Gene or William, Brewster	507-842-5471	C
MN1401				Vinton 81			
Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C	Blue Earth	Prairie Gold Seeds, LLC (Attn. M. Remy), Mankato	507-387-4091	R C
MN1801				Cottonwood	Bondhus, Barry N., Storden	507-445-3227	R C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C	Cottonwood	Imker, Brent, Lamberton	507-752-7697	R C
Kandiyohi	Loge, Alan, Willmar	320-235-4178	C	Faribault	Willette Seed Farm, Inc., Delavan	507-854-3595	R C
Lac qui Parle	Buer's Seeds, Canby	507-223-5100	R	Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R C
Lac qui Parle	Kemen, Robert & Sons, Madison	320-769-4413	C	Iyon	Olson, Jonathan, Cottonwood	507-423-6340	R C
Le Sueur	Haas Seed Farm, Le Sueur	507-665-3683	C	Mower	Grass & Sons Seed Service, LeRoy	507-324-5820	C
Lincoln	Jerzak, John, Ivanhoe	507-694-1834	C	Out of state	Shear, Inc. (Danny Shear), Bristow	641-775-3231	R
Meeker	Wigen Seed Farm, Litchfield	320-693-8182	C	Out of state	Pattison Bros, Inc., Fayette	563-425-3365	R C
Nicollet	Anderson & Sons, St. Peter	507-246-5032	C	Redwood	Sawvell's Seed, Inc., Clements	507-692-2240	R C
Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C	Swift	Hughes Trading Co., Danvers	320-567-2283	C
Nannonatto				Walsh			
Out of State	SK Food International, Fargo	701-356-4106	R	Marshall	Double A Farms, Viking	218-523-4245	C
Nornatto				Marshall	Gryskiewicz, Donald & Jeff, Argyle	218-437-8164	C
Clay	Heartland Seeds, Moorhead	218-585-4621	R	Out of state	Anderson, Gerald D., Grand Forks	701-775-8766	C
Out of State	SK Food International, Fargo	701-356-4106	R	Polk	Bakstad, Scott, Fosston	218-435-6311	C
Norpro				Polk	Peterson, D.W., Inc., Warren	218-745-4507	R C
Mahoonen	Pazdernik Farms, Inc., Waubun	218-473-2232	C	Red Lake	Johnson, Jeremiah O., Oklee	218-796-4532	C
Out of State	SK Food International, Fargo	701-356-4106	C	Red Lake	Whalen, Greg, Oklee	218-796-5379	C
Polk	Todahl, Jim & Pat, Fertile	218-945-6426	C	Roseau	Kukowski, Jim, Strathcona	218-781-2478	R
Polk	Wilder, Inc., Crookston	218-281-2893	R	TIMOTHY			
OAC Atwood				Clair			
Polk	Peterson, D.W., Inc., Warren	218-745-4507	C	Marshall	Bukowski Farms, Middle River	218-422-3485	C
Sturdy				Marshall	Hagen Farm of Gatzke, Inc., Gatzke	218-459-3494	R C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	R C	Marshall	Klamar Farms, Gatzke	218-459-3388	R C
Lac qui Parle	Buer's Seeds, Canby	507-223-5100	R	Roseau	Marvin's, Warroad	218-386-1333	C
Lac qui Parle	Kemen, Robert & Sons, Madison	320-769-4413	R	Climax			
Le Sueur	Birr Brothers, Mark & Gene, Kasota	507-931-2218	R	Koochiching	Beckie Farms, Inc., Birchdale	218-634-2738	C
Surge				Lake of the Woods	Fadness, Alton, Baucette	218-634-2867	C
Clay	Heartland Seeds, Moorhead	218-585-4621	C	Lake of the Woods	Pieper, Robert, Williams	218-783-4352	C
Dodge	Koss, William, Dodge Center	507-374-6786	C	Marshall	Cwikla, Kenneth & Sybil, Middle River	218-222-3375	C
Douglas	Sward Seed Farm, Nelson	320-762-0143	C	Marshall	Nelson, Roger, Middle River	218-222-3780	C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161	C	Marshall	Peterson, Monty, Middle River	218-222-3371	C
Grant	Drotak, Adolph, Herman	320-677-2395	R	Roseau	Didrikson, Gerald, Badger	218-528-3388	C
Kandiyohi	Loge, Alan, Willmar	320-235-4178	C	Roseau	Johnson, Quentin L., Badger	218-528-3228	C
Lac qui Parle	Kemen, Robert & Sons, Madison	320-769-4413	R	Roseau	Vatnsdal, David, Roseau	218-465-3239	C
Renville	Enestvedt Bros., Sacred Heart	320-765-2728	R	WHEAT			
Toyoopro				2375			
Ramsey	Northland Seed Corporation, St. Paul	651-221-0855	C	Lincoln	Jerzak, John, Ivanhoe	507-694-1834	C
Trail				Lincoln	Popowski, John, Ivanhoe	507-694-3593	C
Marshall	Anderson, Travis, Argyle	218-437-8107	C	Roseau	Cenex Harvest States Grain Elevator (Greenbush), Greenbush	218-782-2711	C
Marshall	Double A Farms, Viking	218-523-4245	C	Roseau	Kukowski, Jim, Strathcona	218-781-2478	C
Marshall	KJ - KJ Farms, Argyle	218-437-8221	C	Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C
Marshall	Kuzniek, Kenneth J., Argyle	218-437-8203	R	Wright	Terning Seeds, Inc., Colton	320-286-2108	C
Marshall	Nelson Farm, Doyle, Goodridge	218-681-6972	C				
Pennington	Trentvet, Daniel, Thief River Falls	218-681-4028	C				

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A99ar

Lake of the Woods	Krohn, Jerry, Williams	218-783-3321	R	C
Wright	Terning Seeds, Inc., Cokato	320-286-2168		C
Alsen				
Becker	Hein Farms, Inc., Audubon	218-439-6621		C
Big Stone	Schwagerl, Jerome, Beardsley	320-265-6228		C
Clay	Evert Farms Ltd Partnership, Sabin	218-789-7651	R	C
Clay	Heartland Seeds, Moorhead	218-585-4621		C
Clay	Petermann Seeds, Inc., Hawley	218-483-3302	R	C
Clay	Thompson, Richard, Barnesville	218-789-7208		C
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161		C
Kittson	Bloomquist Farms, Inc., Drayton	218-455-3863		C
Kittson	Johnson Farms, Inc., Lloyd, Karlstad	218-436-2817		C
Kittson	Klein, David, Scott & Kevin, Hallock	218-843-2451		C
Kittson	Nelson, Merle L., Drayton	218-455-3508		C
Kittson	Petersen, Ronald L., Lake Bronson	218-754-4631		C
Lake of the Woods	Helmstetter Farm, Roosevelt	218-442-7285	R	C
Lincoln	Jerzak, Jerome, Ivanhoe	507-694-1582		C
Lyon	Olson, Jonathan, Cottonwood	507-423-6340		C
Mahnomen	McNamee, Daniel, Mahnomen	218-935-2391		R
Mahnomen	Pazdernik Farms, Inc., Waubun	218-473-2232		C
Mahnomen	Swiers, Duane & Sheila, Bejou	218-935-5176		C
Marshall	Double A Farms, Viking	218-523-4245		C
Marshall	Green, Carl M., Strandquist	218-597-2861		C
Marshall	Gryskiewicz, Donald & Jeff, Argyle	218-437-8164		R
Marshall	Holte, Steven, Grygla	218-294-6537		C
Marshall	Jensen Farms, Stephen	218-478-3398	R	C
Marshall	Kowalski, James, Stephen	218-478-3899		R
Marshall	Nelson Farm, Doyle, Goodridge	218-681-6972		R
Marshall	Peterson, Maynard, Stephen	218-478-3859	R	C
Marshall	Riopelle, Larry, Argyle	218-437-8247		R
Marshall	Rivard's Quality Seeds, Inc., Argyle	218-437-6638		R
Marshall	Yutrenka, Don and Mark, Argyle	218-437-8428		C
Meeker	Dahlman Seed Co., Dassel	320-275-2527		C
ND-Cass	Nyquist, Mark, Fargo	218-232-4228		C
Norman	Chisholm, Keith P., Gary	218-356-8674		C
Norman	Circle C Seeds, Gary	218-356-8214		C
Norman	Kveno, Harry, Gary	218-356-8278		R
Norman	Peppel Bros. Donald & Dennis, Borup	218-582-3242		C
Pennington	Schofin Farms, Thief River Falls	218-964-5268		C
Polk	Balstad, Scott, Fosston	218-435-6311		C
Polk	Brekken Farm Partnership (Robin & Karen), Crookston	218-926-5655		C
Polk	Brule, David A., Crookston	218-281-2944		C
Polk	Brule, Todd, Crookston	218-281-3148		C
Polk	Gasper, Michael, Crookston	218-281-6318		C
Polk	Peterson, D.W., Inc., Warren	218-745-4507	R	C
Polk	Pulkrabek Farms, Inc. Gary, Angus	218-745-5891		R
Polk	Sonstelic, Gordon & Gary, Winger	218-938-4189		C
Polk	Stroble, D & K, Angus	218-745-4473		C
Polk	Wilder, Inc., Crookston	218-281-2893		C
Red Lake	Swenson Seed Farm, Brooks	218-796-5285	R	C
Redwood	Sawvell's Seed, Inc., Clements	507-692-2240		C
Renville	JSE Inc. (Johnson Seed Farm), Sacred Heart	320-765-2225		C
Roseau	Cenex Harvest States Salol Elevator (Greenbush), Greenbush	218-782-2111		C
Roseau	K & L Farms (Kraig Lee), Wannaska	218-425-7719		C
Roseau	Kukowski, Jim, Strathcona	218-781-2478	R	C
Wilkin	Friederichs Farm, Foxhome	218-643-2363		R
Wilkin	Haugrud Seed Plant, Rothsay	218-493-4275	R	C
Wilkin	Nelson, Bradley, Wolverton	218-995-2299		C
Wilkin	Nordick, J & R, Rothsay	218-867-2605		C
Wilkin	Torkelson, Dennis & Brent, Foxhome	218-736-4607		C
Wright	Terning Seeds, Inc., Cokato	320-286-2168		C

Briggs

Big Stone	Clinton Ag Service, Inc., Clinton	320-325-5203		R
Clay	Lee Seed Farm, Borup	218-494-3330		R
Clay	Ness, Larry & Matt, Moorhead	218-585-4179		R
Clay	Olsgaard, Inc., Harold, Moorhead	218-585-4535		R
Clay	Pearson, Karol G., Georgetown	218-861-6668		R
Clay	Petermann Seeds, Inc., Hawley	218-483-3302		R
Clay	Tande, Harmen, Moorhead	218-287-1977		R
Clay	Tobolt Seed, Moorhead	218-287-2904		R
Freeborn	Albert Lea Seed House, Inc., Albert Lea	507-373-3161		R
Grant	Backman Seeds, Inc., Herman	320-677-2231		R
Grant	Kappahn, John M., Elbow Lake	218-685-4604		R
Grant	Red River Marketing Co., Elbow Lake	218-685-6100		R
Grant	Thiel Seed Service, Wendell	218-458-2415		R
Kittson	Bloomquist Farms, Inc., Drayton	218-455-3863		R
Kittson	Carlson, James A., Hallock	218-843-3483		R
Kittson	Jensen, A. Gay Farms Co., Drayton	701-454-6294		R
Kittson	Nelson, Merle L., Drayton	218-455-3508		R
Kittson	Olsonawski, Jerry, Hallock	218-379-3235		R
Kittson	Osowski, Terry, Hallock	218-843-3371		R
Kittson	Petersen, Ronald L., Lake Bronson	218-754-4631		R
Kittson	Sedenquist Farms, Inc., Kennedy	218-674-4218		R
Kittson	Weinlaeder Seed Company, Drayton	701-454-6427		R
Lac qui Parle	Buer, Reid, Canby	507-223-7946		R
Lac qui Parle	Hermanson Seed Plant, Boyd	320-855-2582		R
Lake of the Woods	Helmstetter Farm, Roosevelt	218-442-7285		R
Lincoln	Jerzak, Jerome, Ivanhoe	507-694-1582		R
Mahnomen	Pazdernik Farms, Inc., Waubun	218-473-2232		R
Marshall	Backstrom Farms, Inc., Warren	218-745-5113		R
Marshall	Baird Farms, Inc., Warren	218-745-5330		R
Marshall	Jensen Farms, Stephen	218-478-3398		R
Marshall	Riopelle, Earl & Brent, Argyle	218-437-8291		R
Marshall	Rivard Farms, G.A., Argyle	218-437-6638		R
Marshall	Yutrenka, Don and Mark, Argyle	218-437-8428		R
Norman	Brandt, Robert, Ada	218-784-4093		R
Norman	Brandt, Robert Jr., Ada	218-784-4093		R
Norman	Chisholm, Keith P., Gary	218-356-8674		R
Pennington	Engelstad Farms of Rocksbury, Thief River Falls	218-681-1000		R
Polk	Anderson Farms, Inc., J D, East Grand Forks	218-773-2280		R
Polk	Balstad, Scott, Fosston	218-435-6311		R
Polk	Capistran Seed Company, Crookston	218-281-7840		R
Polk	Capistran, Kevin, Crookston	218-281-5705		R
Polk	Larson Farms, Inc., Ralph, East Grand Forks	218-773-1463		R
Polk	Larson, Ray H., Inc., Angus	218-745-5923		R
Polk	Peterson, D.W., Inc., Warren	218-745-4507		R
Polk	Peterson, Douglas, East Grand Forks	218-773-9120		R
Polk	Ross Seed Co., Fisher	218-891-2211		R
Polk	Thorson Farm, Inc., J. O., East Grand Forks	218-893-2285		R
Polk	Vig Farms Inc., Fosston	218-435-1316		R
Red Lake	Hinrichs, Roger, Red Lake Falls	218-253-2295		R
Redwood	Sawvell's Seed, Inc., Clements	507-692-2240		R
Renville	JSE Inc. (Johnson Seed Farm), Sacred Heart	320-765-2225		R
Roseau	Kukowski, Jim, Strathcona	218-781-2478		R
Swift	Busse Seeds, Appleton	320-394-2315		R
Swift	Falk Seed Farm, Murdock	320-875-4341		R
Traverse	Triple E Farms, Inc. (Petersen, Alan), Wheaton	320-563-4239		R
Wilkin	Beyer Seed Farm, Kent	218-643-5126		R
Wilkin	Friederichs Farm, Foxhome	218-643-2363		R
Wilkin	Haugrud Seed Plant, Rothsay	218-493-4275		R
Wilkin	Knapp Seed Farm, Inc., Foxhome	218-739-3366		R
Wilkin	Kruse & Tischer Farms, Breckenridge	218-643-1100		R
Wilkin	Larson Farms/Eldon, Rothsay	218-867-2674		R
Wilkin	Nelson, Bradley, Wolverston	218-995-2299		R
Wilkin	Torkelson, Dennis & Brent, Foxhome	218-736-4607		R

Listing lines show county, grower, town, phone number and class of seed, R for Registered, C for Certified.


Marshall	Kowalski, James, Stephen	218-478-3899	R	Roseau	Kukowski, Jim, Strathcona	218-781-2478	R
Marshall	Kuznia, Kenneth J., Argyle	218-437-8203	R	Reeder			
Marshall	Peterson, Maynard, Stephen	218-478-3859	R C	Big Stone	Clinton Ag Service, Inc., Clinton	320-325-5203	C
McLeod	Thalmann Seeds Inc., Plato	320-238-2185	C	Clay	Brakke, Glenn, Moorhead	218-585-4214	C
Meeker	Anderson Seeds, Dassel	320-286-2700	R C	Clay	Heartland Seeds, Moorhead	218-585-4621	C
Meeker	Johnson Seeds of Dassel, Inc., Dassel	320-275-2430	C	Kittson	Bloomquist Farms, Inc., Drayton	218-455-3863	C
Meeker	Miller Seed Farm, Dassel	320-275-2463	R C	Kittson	Petersen, Ronald L., Lake Bronson	218-754-4631	C
Meeker	Wigen Seed Farm, Litchfield	320-693-8182	C	Kittson	Sedenquist Farms, Inc., Kennedy	218-674-4218	R
ND-Cass	Nyquist, Mark, Fargo	218-232-4228	C	Kittson	Wiese, Inc., Kenneth A., Humboldt	218-379-3120	C
Norman	Brandt, Robert, Ada	218-784-4093	C	Lake of the Woods	Helmstetter Farm, Roosevelt	218-442-7285	R
Norman	Chisholm, Keith P., Gary	218-356-8674	C	Marshall	Baird Farms, Inc., Warren	218-745-5330	C
Norman	Gilbertson, Kenneth, Ada	218-784-7774	C	Marshall	Beaudry, Jeffrey, Argyle	218-437-8560	C
Norman	Hanson, Corey M., Gary	218-356-8678	C	Marshall	Bring, Sharon, Strandquist	218-874-3713	C
Norman	Jacobson, Corey, Ada	218-784-3040	C	Marshall	Double A Farms, Viking	218-523-4245	C
Otter Tail	Walkup, John, Campbell	218-739-2580	C	Marshall	Green, Carl M., Strandquist	218-597-2861	C
Polk	Balstad, Scott, Fosston	218-435-6311	C	Marshall	Jensen Farms, Stephen	218-478-3398	R C
Polk	Bauer Farms, Erskine	218-687-5356	C	Marshall	McGlynn, Neil, Stephen	218-478-2777	C
Polk	Clementson, Jon, Erskine	218-687-2345	C	Marshall	Peterson, John C., Stephen	218-478-3555	C
Polk	Fosston Co-op Seed House, Fosston	218-435-6222	R	Marshall	Riopelle, Larry, Argyle	218-437-8247	R
Polk	Mat - Co., Inc., Fosston	218-435-6667	R C	Marshall	Robertson Brothers, Argyle	218-437-6411	R
Polk	Peterson, D.W., Inc., Warren	218-745-4507	R C	Marshall	Widner, Neil, Stephen	218-478-3616	C
Polk	Sonsteli, Gordon & Gary, Winger	218-938-4189	C	Marshall	Yutrsenka, Don and Mark, Argyle	218-437-8428	C
Polk	Vig Farms Inc., Fosston	218-435-1316	C	Norman	Black, Roger, Bejou	218-945-3550	C
Red Lake	Swenson Seed Farm, Brooks	218-796-5285	R C	Norman	Chisholm, Keith P., Gary	218-356-8674	R C
Red Lake	Vatthauer Farm, Red Lake Falls	218-253-2490	C	Norman	Chisholm, Michael, Gary	218-356-8507	R
Redwood	Sawvell's Seed, Inc., Clements	507-692-2240	C	Pennington	Asp, Kenneth, Thief River Falls	218-681-3272	C
Renville	Enestvedt Bros., Sacred Heart	320-765-2728	C	Pennington	Engelstad Farms of Rocksbury, Thief River Falls	218-681-1000	R
Renville	Kiecker, Greg, Hector	507-426-8167	R C	Pennington	Mehrkens, Kyle, Thief River Falls	218-681-4611	C
Roseau	Cenex Harvest States			Pennington	Scholm Farms, Thief River Falls	218-964-5268	R C
	Salol Elevator (Greenbush), Greenbush	218-782-2111	R C	Pennington	Swanson, Curtis W., Thief River Falls	218-964-5619	C
Scott	Hauer Farms, Inc., Shakopee	952-445-5489	C	Polk	Brule, David A., Crookston	218-281-2944	C
Stevens	Haberer Seed Farm, Morris	320-795-2468	C	Polk	Caillier, Daniel, Crookston	218-281-2840	C
Stevens	Sperr, Duane & Rollie, Donnelly	320-246-3496	C	Polk	Christian Farms, Stuart & Dwight, Fertile	218-945-6021	C
Swift	Busse Seeds, Appleton	320-394-2315	R C	Polk	Hanson, Paul M., Crookston	218-281-5898	C
Swift	Falk Seed Farm, Murdock	320-875-4341	R C	Polk	Kovar, Frank & Duane, East Grand Forks	218-773-9238	C
Swift	Lee's Seed Farm, Benson	320-843-2857	C	Polk	Larson, Ray H., Inc., Angus	218-745-5923	C
Traverse	Lundquist Seed, Inc., Wheaton	320-563-8622	C	Polk	Peterson, D.W., Inc., Warren	218-745-4507	R C
Wilkin	Beyer Seed Farm, Kent	218-643-5126	R C	Polk	Peterson, Douglas, East Grand Forks	218-773-9120	R C
Wilkin	Friederichs Farm, Foxhome	218-643-2363	R C	Polk	Stroble, D & K, Angus	218-745-4473	C
Wilkin	Haugrud Seed Plant, Rothsay	218-493-4275	R C	Polk	Vig Farms Inc., Fosston	218-435-1316	C
Wilkin	Klindt, Neal, Campbell	218-630-5511	C	Red Lake	Hinrichs, Roger, Red Lake Falls	218-253-2295	C
Wilkin	Knapp Seed Farm, Inc., Foxhome	218-739-3366	C	Red Lake	Johnson, Jeremiah O., Oklee	218-796-4532	C
Wilkin	Nordick, J & R, Rothsay	218-867-2605	C	Red Lake	Swenson Seed Farm, Brooks	218-796-5285	R C
Wilkin	Steenblock Farms, Dale, Campbell	218-630-5500	C	Roseau	Cenex Harvest States		
Wright	Dahlco Seeds, Inc., Cokato	320-286-5982	C		Salol Elevator (Greenbush), Greenbush	218-782-2111	C
Wright	Hopkins, Joseph, Buffalo	763-682-1868	C	Roseau	K & L Farms (Kraig Lee), Wannaska	218-425-7719	C
Wright	Terning Seeds, Inc., Cokato	320-286-2168	C	Roseau	Kilen, Jerel, Greenbush	218-781-2883	C
Parshall				Roseau	Kukowski, Jim, Strathcona	218-781-2478	R C
Clay	Fuglie, Duane, Ulen	218-596-8528	C	Todd	Spwency Seed Farm, Inc., Bertha	218-924-2921	C
Clay	Hastings, Joseph, Felton	218-494-3935	C	Wilkin	Knapp Seed Farm, Inc., Foxhome	218-739-3366	C
Clay	Pritchard, Daniel, Ulen	218-596-8759	C	Russ			
Clay	West Central Ag Service, Ulen	218-596-8821	C	Otter Tail	Brenden, Bruce L., Rothsay	218-867-2410	R
Clay	Zimmerman, Wayne, Ulen	218-596-8628	C	Polk	Peterson, D.W., Inc., Warren	218-745-4507	C
Kittson	Petersen, Ronald L., Lake Bronson	218-754-4631	C	Verde			
Kittson	Weinlaeder Seed Company, Drayton	701-454-6427	C	Polk	Bergman Farms, James, Olso	218-965-4913	C
Kittson	Younggren, Dan, Hallock	218-843-3318	R	Walworth			
Mahnomen	Spaeth, Douglas M., Mahnomen	218-935-5830	R	Big Stone	Clinton Ag Service, Inc., Clinton	320-325-5203	R C
Marshall	Riopelle, Larry, Argyle	218-437-8247	R	Big Stone	Jahnke Farms, Johnson	320-748-7687	R C
Polk	Balstad, Scott, Fosston	218-435-6311	C	Big Stone	Nelson, James A., Ortonville	320-839-3419	C
Polk	H & J Farms, Inc., Warren	218-745-5018	R	Clay	Agri-Tel, Inc. (Carrol Duerr), Moorhead	218-287-5519	C
Polk	Peterson, D.W., Inc., Warren	218-745-4507	C	Clay	Beedy Farms, Inc., Moorhead	218-236-8082	C
Polk	Stroble, D & K, Angus	218-745-4473	C	Clay	Heartland Seeds, Moorhead	218-585-4621	C
Polk	Thorson Farm, Inc., J. O., East Grand Forks	218-893-2285	C	Clay	Iverson, Dwight, Hitterdal	218-962-3219	C
Red Lake	Swenson Seed Farm, Brooks	218-796-5285	R C	Clay	Janssen, Jerry, Barnesville	218-493-4451	C
Red Lake	Vatthauer Farm, Red Lake Falls	218-253-2490	R	Clay	Kragnes, David, Felton	218-236-0857	C
Roseau	Cenex Harvest States						
	Salol Elevator (Greenbush), Greenbush	218-782-2111	R C				

Planting Rate and Date

Rates are based on seed of normal size and good quality and normal seedbed. Actual rates used will vary widely, depending on seed cost, desired stand, expected mortality, emerging ability, seed weight, seed germination, seedbed condition, depth of planting and planting equipment.

Crop	Bushel Weight (Pounds) ¹	Seeds/Pound (Number)	Rate/Acre (Pounds)	Rate (Seeds)	Planting Date
Barley	48	14,300	85	28/sq. ft.	Early spring
Corn	56	-	-	33,000/acre	April 15/May 5
Fieldbean					
Black turtle soup	60	2,300	45	105,000/acre	May 20/June 15
Great northern	60	1,000	100	90,000/acre	May 20/June 15
Kidney	60	900	90-115	90,000/acre	May 20/June 15
Navy	60	2,500	42	105,000/acre	May 20/June 15
Navy, rows 6 to 14 in.	60		60	150,000/acre	May 20/June 15
Pinto	60	1,300	80	90,000/acre	May 20/June 15
Small red	60	1,400	75	100,000/acre	May 20/June 15
Small white	60	3,000	35	105,000/acre	May 20/June 15
Flax	56	88,000	42	85/sq. ft.	April 15/May 15
Forage grasses, perennial					
Bromegrass alone	14	136,000	16	50/sq. ft.	Early spring or late summer
Bromegrass in mixtures			5	15/sq. ft.	Use date for legumes
Orchardgrass, alone	14	653,000	10	150/sq. ft.	Early spring or late summer
Orchardgrass, in mixtures			3	45/sq. ft.	Use date for legumes
Reed canarygrass alone	46	526,000	7	85/sq. ft.	Early spring or late summer
Reed canarygrass, in mixtures			5	60/sq. ft.	Use date for legumes
Tall fescue, alone	25	229,000	10	50/sq. ft.	Early spring or summer
Tall fescue, in mixtures			4	20/sq. ft.	Use date for legumes
Timothy in mixtures	45	1,234,000	3	85/sq. ft.	Use date for legumes
Forage legumes, perennial					
Alfalfa alone	60	220,000	11	55/sq. ft.	Early spring, late summer
Alfalfa with grass			7	35/sq. ft.	Early spring, late summer
Alesike clover in mixtures	60	653,000	2	30/sq. ft.	Early spring to August 10
Birdsfoot trefoil alone	60	372,000	8	70/sq. ft.	Early spring or summer
Birdsfoot trefoil in mixtures			6	50/sq. ft.	Early spring or summer
Cicer milkvetch	60	122,000	16	50/sq. ft.	Early spring or summer
Ladino clover in mixtures	60	784,000	1	18/sq. ft.	Early spring to August 10
Red clover alone	65	272,000	9	50/sq. ft.	Early spring to September 1
Red clover with grass			5	30/sq. ft.	Use date for legumes
Oat	32	16,200	80	28/sq. ft.	Early spring
Rye	56	18,200	60	25/sq. ft.	September 1
Sorghum, rows 18 to 40 in.	56	15,000	10	150,000/acre	May 20 to June 5 for grain
Sorghum, rows 6 to 14 in.			15	5/sq. ft.	
Soybean, 7-in. rows	60	2,800	56	2/ft. of row	May 1 to May 10
10-in. rows				3/ft. of row	
20-in. rows				6/ft. of row	
22-in. rows				7/ft. of row	
30-in. rows				9/ft. of row	
Sunflower, mono/seed	24	4,300	4	17,000/acre	May 1-June 15
Sunflower, oilseed	27	7,700	3	23,000/acre	May 1-June 15
Wheat, durum	60	12,700	90	25/sq. ft.	Early spring
Wheat, hard red spring ²		14,000	113	28/sq. ft.	Early spring
Wheat, hard red winter		14,500	75+	25/sq. ft.	August 20/September 20
Other crops					
Annual canarygrass	50	58,000	38	46/sq. ft.	Early spring
Buckwheat	48	14,900	50	17/sq. ft.	June 15/July 20
Canola, <i>B. napus</i>	50	80,000 to 180,000	3 to 7	5 to 9	Early spring
Crambe	22	65,000	15	23/sq. ft.	Late April/early May
Fieldpea	80	2,300	180	9/sq. ft.	Early spring
Fieldpea with 1½ to 2 bu. oat			70	4/sq. ft.	Early spring
Fababean, medium size	60	1,300	180	5/sq. ft.	Early spring
Fababean, with 2 bu. oat			60	2/sq. ft.	Early spring
Lentil, small	60	15,800	55	26/sq. ft.	Early spring
Millet, foxtail	48	218,000	15	75/sq. ft.	June 15/July 15
Millet, proso	56	65,000	20	30/sq. ft.	June 15/July 15
Sudangrass, rows 6 to 14 in.	40	44,000	10	25/sq. ft.	May 20/June 10
Sudangrass, rows 18 to 40 in.			28	20/sq. ft.	May 20/June 10
Sweetclover	60	240,000	10	55/sq. ft.	Early spring
Wildrice (wet)	25	7,900	33	8/sq. ft.	Late fall

¹ U.S. legal bushel weight or, if not established, the weight most widely accepted. ² See page 50 for best way to calculate hard red spring wheat planting rate.



On the Internet at: www.maes.umn.edu

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