

Wheat, Hard Red Spring Jim Anderson, Jochum Wiersma, Gary Linkert, Catherine Springer and Susan Reynolds



Spring wheat varieties are compared in trial plots at Waseca, Lamberton, Morris, Crookston, Stephen, Roseau and St. Paul, where they 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 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 tables in the order of their flowering date.

Variety Selection Criteria

While grain yield is an important economic trait, return per acre also is affected by grain quality. Fusarium Head Blight (FHB), or scab, is an important consideration because it can reduce grain quality and yield dramatically.

The foliar disease rating, which represents the total complex of leaf diseases other than leaf and stripe rust, includes the Septoria complex, tan spot, powdery mildew, and bacterial blight. Although varieties may

differ for their response to each of those diseases, the rating does not differentiate among them.

Consequently, the rating should be used as a general indication and

only for varietal selection in areas where these diseases have been a problem or if the previous crop was wheat or barley.

Table 1. Origin and agronomic characteristics of hard red spring wheat varieties in Minnesota in single-year and multiple-year comparisons (2005-2007).

Variety	Origin ¹	PVP Status	Days to Heading ²	Height inches ²	Straw strength ³
Rush	2006 WestBred	PVP (94)	53	29	Very Strong
Ulen	2005 MN	PVP (94)	53	32	Medium
Kelby	2006 AgriPro	PVP (94)	53	28	Strong
Briggs	2002 SDSU	PVP (94)	53	32	Medium
Trooper	2004 WestBred	PVP (94)	53	29	Very Strong
Samson	2007 WestBred	PVP (pend)	53	29	—
Traverse	2006 SDSU	PVP (94)	54	34	Medium
Banton	2004 Trigen	PVP (94)	54	32	Strong
Glenn	2005 NDSU	PVP (94)	54	34	Strong
Oklee	2003 MN	PVP (94)	54	31	Medium
Granger	2004 SDSU	PVP (94)	54	35	Medium
Oxen	1996 SDSU	PVP (94)	54	31	Medium Strong
Norwell	2006 Thunder Seed	PVP (pend)	54	34	—
Steele-ND	2004 NDSU	PVP (94)	55	33	Medium
Freyr	2004 AgriPro	PVP (94)	55	32	Medium
Howard	2006 NDSU	PVP (94)	55	32	Medium
Kuntz	2007 AgriPro	PVP (94)	55	29	—
Alsen	2000 NDSU	PVP (94)	55	32	Strong
Knudson	2001 AgriPro	PVP (94)	55	30	Medium Strong
FBC-Dylan	2006 NPSAS/FBC	none	55	31	Medium
Ada	2006 MN	PVP (94)	55	31	Medium Strong
Blade	2007 WestBred	PVP (pend)	55	31	—
RB07	2007 MN	PVP (pend)	55	30	Medium Strong
Bigg Red	2004 WestBred	PVP (94)	55	34	Medium
Faller	2007 NDSU	PVP (pend)	56	32	Medium Strong
Hat Trick	2007 Trigen	PVP (pend)	56	30	Strong
Cromwell	2007 Thunder Seed	PVP (pend)	57	31	—
Granite	2002 WestBred	PVP (94)	57	29	Very Strong
Fireball	2006 N. Star G.	PVP (94)	57	29	Strong
Marshall	1982 MN	none	58	30	Strong
Vantage	2007 WestBred	PVP (pend)	58	29	Very Strong
Hot Shot	2007 N. Star G.	PVP (pend)	58	30	—
Polaris	2003 N. Star G.	PVP (94)	61	31	Very Strong
Bakker Gold	2006 N. Star G.	PVP (94)	61	31	Very Strong
Mean			55.4	31.1	

¹ Abbreviations: MN = Minnesota Agricultural Experiment Station; NPSAS/FBC = Northern Plains Sustainable Agriculture Society/Farmer Breeder Club; N. Star G. = North Star Genetics; NDSU = North Dakota State University Research Foundation; SDSU = South Dakota Agricultural Experiment Station; Trigen = Trigen Seed Services LLC.

² 2007 data.

³ 2005-2007 data.

Control of leaf diseases with fungicides may be warranted, even for varieties with an above-average rating. Disease ratings are now on a 1-9 scale where 1 = most resistant and 9 = most susceptible. Rating differences of 2 or more should be considered significant.

Variety selection for 2007 continues to be a balance between yield potential, disease responses and grain quality. Leading varieties in Minnesota, based on acres planted, include Freyr, Oklee, Knudson, Glenn, Briggs, and Alsen. New releases for 2007 are Blade (WestBred), Cromwell (Thunder Seed), Faller (NDSU), Hat Trick (Trigen), Hot Shot (North Star Genetics), Kuntz (AgriPro),

RB07 (MN), Samson (WestBred), and Vantage (WestBred).

Leaf rust caused substantial damage on susceptible varieties in 2007. Varieties with ratings of 5 or higher should be closely monitored during the season for rust development. Varieties with ratings of 4 or better should not experience economic levels of damage in most years.

Stripe rust was a serious problem on susceptible varieties in some locations in 2004. This disease is not as widespread and does not occur as regularly as leaf rust, but can be very damaging when temperatures remain unseasonably cool into early July. Most varieties are resistant or moderately resistant.

Stem rust ratings are included in the disease tables because there are differences in variety reaction. The levels of this disease have been very low in production fields in recent years, even on susceptible varieties.

Due to the increased use of fungicides in wheat in Minnesota, we initiated an additional variety trial in 2004 in which fungicides are applied at the time of herbicide application (Feekes 5), flag leaf emergence (Feekes 9), and at the onset of flowering (Feekes 10.51). The practice of three fungicide applications during the growing season is not recommended. This fungicide regime was implemented to measure performance of varieties

Table 2. Grain quality of hard red spring wheat varieties in Minnesota in single-year (2007) and multiple-year comparisons (2006-2007).

Variety	Test Weight (Lb/Bu)		Protein (%) ¹		Baking Quality ²	Pre-Harvest Sprouting ³
	2007	2-Year	2007	2-Year		
Rush	61.6	61.5	14.7	14.7	Medium-High	2
Ulen	60.0	60.5	14.8	14.7	Medium	5
Kelby	61.1	61.0	14.9	14.8	Medium	2
Briggs	61.3	61.4	15.0	14.6	Medium	2
Trooper	61.6	61.7	13.8	13.9	Medium-High	2
Samson	59.6	—	13.9	—	—	3 ⁴
Traverse	58.1	58.6	13.8	13.6	Low	4
Banton	62.2	62.3	14.7	14.6	High-Medium	3
Glenn	63.2	63.4	15.7	15.2	High	1
Oklee	60.8	61.0	14.8	14.8	Low-Medium	3
Granger	60.8	61.0	14.5	14.5	Medium	4
Oxen	57.8	59.1	14.3	14.3	High-Medium	2
Norwell	60.6	—	14.2	—	—	1 ⁴
Steele-ND	61.4	61.7	15.3	14.9	High	2
Freyr	60.0	60.5	14.4	14.3	Medium	1
Howard	61.5	61.7	15.0	14.8	Medium-High	1
Kuntz	60.2	—	14.0	—	—	2 ⁴
Alsen	60.8	61.2	15.2	14.9	High	2
Knudson	60.8	60.9	14.1	14.0	Medium-High	3
FBC-Dylan	59.9	60.6	14.1	14.1	Medium-Low	3
Ada	61.4	61.7	14.3	14.3	Medium-High	2
Blade	62.6	—	14.9	—	—	5 ⁴
RB07	60.4	60.6	15.2	14.9	Medium-High	2
Bigg Red	61.9	62.1	13.4	13.4	Medium-Low	4
Faller	60.9	60.7	14.3	14.0	Medium	2
Hat Trick	61.2	61.5	14.1	14.1	Medium-Low	4
Cromwell	61.6	—	14.8	—	—	3 ⁴
Granite	62.0	62.1	15.3	15.2	Medium-Low	2 ⁵
Fireball	58.2	58.8	15.8	15.5	Medium	5
Marshall	57.3	58.7	13.5	13.4	Low	2
Vantage	61.8	—	15.3	—	—	2 ⁴
Hot Shot	58.6	—	12.9	—	—	1 ⁴
Polaris	58.4	59.1	13.3	13.3	Medium	1
Bakker Gold	58.5	59.2	13.4	13.4	Low	1
Mean	60.5	60.8	14.4	14.4		

¹ 12% moisture basis.

² 2001-2006 crop years.

³ 1-9 scale in which 1 is best and 9 is worst. Values of 1-3 should be considered as resistant.

⁴ These ratings are based on 1-year data (2007). The rating may change by as much as 1 after additional data is collected.

⁵ Granite's falling numbers are typically 25-50 seconds (on a scale to 400) less than other varieties.

when fungal diseases were controlled to the maximum extent possible. Grower's decisions regarding fungicide applications should be based on the available decision-support systems, and fungicides applied only if and when disease levels are forecasted to reach economic damaging levels.

The additional performance evaluations were carried out adjacent to the conventional (no fungicides applied) trials, so results can be compared directly. The trials were conducted in Lamberton, Morris, Crookston and Roseau in 2007. The fungicide regime as applied in these trials increased grain yield on average by more than 9 bu/acre. The 2- and 3-year comparisons showed an increase in grain yield of 6 to 7 bu/acre.

Rather than the average increases in grain yield, the responses of individual varieties provide the most useful information; varieties rated susceptible to leaf rust and other leaf diseases benefited most from fungicide applications.

Test Plot Research

Test plot establishment and management were supervised by John Wiersma, George Nelson, Steve Quiring, Tom Hoverstad, Donn Vellekson, Galen Thompson and Derek Crompton.

Table 3. Disease reactions¹ of hard red spring wheat varieties in Minnesota in multiple year comparisons (2005-2007).

Variety	Leaf Rust	Stripe Rust	Stem Rust ²	Other Leaf Diseases ³	Scab
Rush	5	—	4	5	5
Ulen	4	1	1	6	6
Kelby	3	—	1	4	5
Briggs	1	1	2	4	5
Trooper	6	7	1	8 ⁴	6
Samson	5	—	—	—	—
Traverse	5	—	2	5	5
Banton	3	1	1	5	5
Glenn	1	1	1	4	3
Oklee	5	1	1	5	5
Granger	3	1	1	4	5
Oxen	7	1	3	7	8
Norwell	7	—	—	7	—
Steele-ND	1	1	1	4	6
Freyr	4	1	4	4	4
Howard	1	—	1	4	6
Kuntz	3	—	—	4	—
Alsen	5	1	1	6	4
Knudson	2	3	3	3	6
FBC-Dylan	7	—	1	7	7
Ada	4	1	2	4 ⁴	6
Blade	2	—	—	—	—
RB07	1	1	1	4	5
Bigg Red	8	—	2	7	3
Faller	1	—	1	3	4
Hat Trick	4	—	3	5 ⁴	4
Cromwell	5	—	—	—	—
Granite	6	3	3	5 ⁵	6
Fireball	5	—	1	3	6
Marshall	8	1	1	7	7
Vantage	4	—	—	—	—
Hot Shot	7	—	—	7	—
Polaris	6	1	8	4	7
Bakker Gold	5	—	7	5	5

¹ 1-9 scale where 1=most resistant, 9=most susceptible.

² This rating is based on limited data.

³ Includes tan spot, septoria, bacterial leaf blight, and powdery mildew.

⁴ These varieties are more susceptible to powdery mildew.

⁵ This variety is more susceptible to bacterial leaf blight.

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 the 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

Table 4. Relative grain yield, percent of the mean, of hard red spring wheat varieties in northern Minnesota locations.

Variety	Crookston			Roseau ¹		Stephen			On-Farm		
	2007	2-Year	3-Year	2007	2-Year	2007	2-Year	3-Year	2007	2-Year	3-Year
Rush	90	88	—	108	94	93	97	—	97	94	—
Ulen	97	98	98	105	107	98	102	97	103	101	101
Kelby	101	102	—	120	102	97	93	—	94	98	—
Briggs	103	110	105	127	114	102	104	100	104	109	105
Trooper	92	99	98	100	89	105	94	97	92	98	97
Samson	114	—	—	109	—	117	—	—	113	—	—
Traverse	111	111	116	119	117	112	115	112	119	118	—
Banton	97	97	97	104	101	94	95	97	94	101	97
Glenn	100	96	98	98	105	90	94	99	102	102	101
Oklee	96	96	100	103	96	94	95	96	98	101	100
Granger	95	94	102	105	105	91	97	103	100	107	105
Oxen	97	102	101	79	92	97	103	104	95	96	94
Norwell	97	—	—	84	—	93	—	—	90	—	—
Steele-ND	101	103	102	106	109	96	102	99	111	108	105
Freyr	109	103	106	103	101	101	99	106	108	103	103
Howard	100	105	106	107	109	110	107	105	—	—	—
Kuntz	113	—	—	95	—	99	—	—	112	—	—
Alsen	89	92	94	80	93	90	93	92	93	95	94
Knudson	109	108	111	109	106	112	109	110	113	109	107
FBC-Dylan	93	95	—	87	96	91	95	—	95	—	—
Ada	95	96	100	103	100	97	92	95	101	99	98
Blade	101	—	—	106	—	107	—	—	107	—	—
RB07	110	109	110	86	90	106	113	110	108	109	109
Bigg Red	93	94	—	73	88	93	92	—	86	86	95
Faller	131	118	—	127	120	126	114	—	118	—	—
Hat Trick	93	87	—	89	89	117	98	—	106	106	103
Cromwell	101	—	—	118	—	98	—	—	107	—	—
Granite	96	99	102	94	92	108	97	99	92	94	89
Fireball	98	94	—	85	96	88	92	—	92	94	—
Marshall	72	85	87	73	83	83	82	80	63	74	—
Vantage	102	—	—	91	—	104	—	—	95	—	—
Hot Shot	83	—	—	73	—	92	—	—	84	84	—
Polaris	85	88	100	90	98	93	98	111	92	92	94
Bakker Gold	89	88	—	93	101	104	101	—	96	97	94
Mean (Bu/Acre)	76.7	76.3	71.8	49.1	63.9	69.0	69.5	72.8	77.7	69.4	68.8
LSD (0.05)	11.2	14.4	13.5	12.5	21.5	12.6	17.0	19.0	9.9	14.3	13.1

¹ The 2005 Roseau trial was lost due to flooding.

Table 5. Relative grain yield, percent of the mean, of hard red spring wheat varieties in southern Minnesota locations.

Variety	Lamberton			Morris			St. Paul			Waseca		
	2007	2-Year	3-Year	2007	2-Year	3-Year	2007	2-Year	3-Year	2007	2-Year	3-Year
Rush	92	90	—	93	88	—	96	93	—	95	89	—
Ulen	101	100	105	97	103	102	105	107	109	108	113	119
Kelby	102	94	—	94	84	—	134	117	—	116	106	—
Briggs	123	115	116	107	108	111	111	105	105	101	102	104
Trooper	71	73	73	105	106	108	83	99	100	74	82	81
Samson	108	—	—	106	—	—	103	—	—	108	—	—
Traverse	116	122	135	114	115	120	100	105	103	121	117	122
Banton	91	88	96	97	90	96	116	107	105	95	93	96
Glenn	104	96	94	86	82	84	101	93	103	102	94	102
Oklee	88	91	100	94	95	97	112	103	100	118	109	114
Granger	120	116	118	112	105	105	99	97	97	124	116	129
Oxen	87	89	85	96	106	96	116	113	99	85	95	97
Norwell	92	—	—	95	—	—	109	—	—	100	—	—
Steele-ND	113	109	115	106	111	107	113	105	114	119	108	114
Freyr	101	102	109	103	109	109	111	106	100	95	98	99
Howard	111	109	112	98	107	106	116	109	112	121	109	117
Kuntz	103	—	—	107	—	—	100	—	—	98	—	—
Alsen	90	93	90	91	89	94	93	92	95	95	99	97
Knudson	126	117	108	112	109	110	87	94	105	99	101	101
FBC-Dylan	82	87	—	94	105	—	101	98	—	85	91	—
Ada	106	108	111	105	99	101	80	92	87	61	79	89
Blade	109	—	—	102	—	—	104	—	—	104	—	—
RB07	107	108	114	88	100	95	111	106	101	98	97	103
Bigg Red	93	97	—	99	99	—	101	98	—	105	101	—
Faller	133	123	—	120	115	—	107	109	—	119	111	—
Hat Trick	112	103	—	101	105	—	81	87	—	115	107	—
Cromwell	86	—	—	97	—	—	98	—	—	89	—	—
Granite	103	104	109	97	91	94	103	99	97	107	107	101
Fireball	88	89	—	90	97	—	95	92	—	89	91	—
Marshall	64	71	60	69	83	71	72	87	73	47	72	58
Vantage	98	—	—	97	—	—	80	—	—	89	—	—
Hot Shot	73	—	—	82	—	—	77	—	—	68	—	—
Polaris	86	97	84	89	105	99	59	76	83	66	89	83
Bakker Gold	79	93	—	91	95	—	58	77	—	70	88	—
Mean (Bu/Acre)	76.7	46.7	42.2	70.8	68.9	58.6	59.9	75.9	66.8	52.0	59.8	52.5
LSD (0.05)	17.5	16.8	19.3	10.7	17.3	16.1	18.4	19.3	23.7	21.0	24.2	22.6

Table 6. Relative grain yield, percent of the mean, of hard red spring wheat varieties in Minnesota.

Variety	State			North			South		
	2007	2-Year	3-Year	2007	2-Year	3-Year	2007	2-Year	3-Year
Rush	95	91	—	97	93	—	94	90	—
Ulen	102	104	105	100	102	97	103	106	109
Kelby	109	100	—	106	99	—	111	100	—
Briggs	110	108	107	110	109	103	110	107	109
Trooper	90	92	93	99	94	97	83	90	90
Samson	109	—	—	114	—	—	106	—	—
Traverse	113	115	118	114	114	114	113	115	120
Banton	99	96	98	98	98	97	100	95	98
Glenn	97	94	97	96	98	99	98	91	96
Oklee	101	98	101	98	96	98	103	99	103
Granger	107	104	109	97	99	103	114	109	112
Oxen	94	100	97	91	99	103	96	101	94
Norwell	96	—	—	91	—	—	99	—	—
Steele-ND	108	107	108	101	105	101	113	108	112
Freyr	103	103	105	104	101	106	103	104	104
Howard	109	108	110	105	107	105	111	109	112
Kuntz	102	—	—	102	—	—	102	—	—
Alsen	90	93	94	86	93	93	92	93	94
Knudson	108	106	107	110	108	110	106	105	106
FBC-Dylan	90	95	—	90	95	—	91	95	—

Table 6 (continued). Relative grain yield, percent of the mean, of hard red spring wheat varieties in Minnesota.

Variety	State			North			South		
	2007	2-Year	3-Year	2007	2-Year	3-Year	2007	2-Year	3-Year
Ada	92	95	97	98	96	97	88	94	97
Blade	105	—	—	105	—	—	105	—	—
RB07	101	103	106	101	104	110	101	103	103
Bigg Red	94	96	—	86	91	—	99	99	—
Faller	123	116	—	128	117	—	120	115	—
Hat Trick	101	97	—	100	92	—	102	101	—
Cromwell	98	—	—	106	—	—	93	—	—
Granite	101	98	100	99	96	101	103	100	100
Fireball	90	93	—	90	94	—	90	92	—
Marshall	68	80	71	76	83	83	63	78	65
Vantage	94	—	—	99	—	—	91	—	—
Hot Shot	78	—	—	83	—	—	75	—	—
Polaris	81	93	93	89	95	106	75	92	87
Bakker Gold	84	92	—	95	97	—	75	88	—
Mean (Bu./Acre)	60.3	65.8	64.0	65.0	70.0	70.0	56.8	65.8	55.0
LSD (0.05)	9.6	6.6	6.1	12.2	8.8	9.3	13.9	9.2	10.0
No. of Environments	7	14	20	3	6	8	4	8	12

Table 7. Grain yield (percent of the mean) of hard red spring wheat varieties grown under conventional and intensive management. ¹

Variety	North			South			State		
	1-Year Conv. Inten.	2-Year Conv. Inten.	3-Year Conv. Inten.	1-Year Conv. Inten.	2-Year Conv. Inten.	3-Year Conv. Inten.	1-Year Conv. Inten.	2-Year Conv. Inten.	3-Year Conv. Inten.
Rush	60.8 68.1	62.8 70.0	- -	53.3 54.3	50.7 50.9	- -	57.1 61.2	57.0 60.4	- -
Ulen	62.5 73.9	71.8 74.9	69.6 73.0	56.7 59.9	57.2 58.2	54.3 56.2	59.6 66.9	64.8 66.6	62.2 64.9
Kelby	68.1 74.0	70.3 75.1	- -	55.8 59.1	50.8 56.3	- -	61.9 66.6	61.0 65.7	- -
Briggs	70.2 76.9	77.3 83.3	73.9 80.3	65.1 66.2	62.8 63.7	60.3 60.8	67.7 71.6	70.3 73.5	67.3 70.9
Trooper	59.4 79.3	65.4 81.9	64.1 78.0	52.9 57.4	52.0 53.6	51.3 52.7	56.2 68.3	59.0 67.8	57.9 65.8
Samson	70.1 80.9	- -	- -	61.3 69.7	- -	- -	65.7 75.3	- -	- -
Traverse	71.6 76.6	79.4 80.6	- -	66.1 78.3	67.1 73.5	- -	68.9 77.4	73.5 77.0	- -
Banton	62.4 73.7	69.0 78.8	67.1 76.1	54.6 57.5	51.2 54.1	50.2 52.5	58.5 65.6	60.5 66.4	58.9 64.7
Glenn	62.1 67.6	70.6 70.5	69.3 69.5	53.3 58.5	50.3 54.2	47.6 52.4	57.7 63.1	60.9 62.4	58.8 61.2
Oklee	61.9 72.5	66.8 72.6	67.0 70.6	52.8 61.8	53.0 59.9	50.9 58.3	57.4 67.1	60.2 66.2	59.2 64.6
Granger	61.9 67.3	69.6 73.3	70.3 73.2	66.2 70.9	63.0 68.7	59.3 65.9	64.0 69.1	66.4 71.0	65.0 69.7
Oxen	56.4 76.5	69.3 85.7	67.9 80.5	53.4 72.5	55.2 68.8	50.7 66.4	54.9 74.5	62.6 77.3	59.6 73.7
Norwell	57.5 64.3	- -	- -	54.1 68.4	- -	- -	55.8 66.4	- -	- -
Steele-ND	64.7 70.8	74.6 79.0	72.1 75.0	62.7 63.0	62.2 60.5	58.1 57.4	63.7 66.9	68.7 69.8	65.3 66.5
Freyr	66.6 76.6	71.4 80.3	70.9 76.9	58.9 66.0	59.9 65.4	57.2 62.9	62.7 71.3	65.9 72.9	64.3 70.2
Howard	64.2 74.3	75.1 78.0	- -	59.0 67.8	60.6 66.7	- -	61.6 71.0	68.1 72.3	- -
Kuntz	66.2 75.2	- -	- -	60.7 60.5	- -	- -	63.5 67.8	- -	- -
Alsen	53.6 62.9	65.6 70.9	- -	52.4 61.0	51.9 58.2	- -	53.0 62.0	59.1 64.5	- -
Knudson	68.1 75.0	75.1 80.9	74.5 78.8	67.5 73.5	64.0 67.2	62.0 64.9	67.8 74.3	69.8 74.1	68.5 72.1
FBC-Dylan	56.5 73.7	67.6 75.9	- -	51.4 62.0	54.2 63.1	- -	53.9 67.8	61.2 69.5	- -
Ada	61.4 76.5	66.7 81.2	64.8 69.6	60.7 62.4	58.9 62.3	50.5 55.7	61.0 69.4	63.0 71.8	57.9 62.9
Blade	64.7 65.8	- -	- -	60.4 66.1	- -	- -	62.6 66.0	- -	- -
RB07	62.8 65.6	- -	- -	54.8 60.1	- -	- -	58.8 62.9	- -	- -
Bigg Red	53.1 68.7	65.2 77.0	- -	55.4 69.7	55.7 64.2	- -	54.3 69.2	60.7 70.6	- -
Faller	81.0 83.4	- -	- -	72.0 73.6	- -	- -	76.5 78.5	- -	- -
Hat Trick	57.3 67.3	- -	- -	60.6 66.0	- -	- -	58.9 66.7	- -	- -
Cromwell	67.4 73.2	- -	- -	53.5 56.8	- -	- -	60.4 65.0	- -	- -
Granite	59.7 69.9	66.5 74.0	66.7 72.9	57.3 67.0	55.4 62.4	54.6 60.5	58.5 68.4	61.2 68.2	60.9 66.9
Fireball	58.2 62.7	- -	- -	51.2 58.9	- -	- -	54.7 60.8	- -	- -
Marshall	45.1 77.7	59.7 81.5	59.1 80.0	38.6 61.1	43.3 60.6	38.5 58.5	41.9 69.9	51.9 71.0	49.2 69.6
Vantage	61.2 68.4	- -	- -	56.1 67.2	- -	- -	58.7 67.8	- -	- -
Hot Shot	49.4 78.1	- -	- -	44.9 74.0	- -	- -	47.2 76.0	- -	- -
Polaris	54.4 68.8	65.6 77.7	67.8 78.9	50.5 75.4	56.6 69.8	54.2 67.1	52.4 72.1	61.3 73.7	61.2 73.2
Bakker Gold	56.7 62.2	- -	- -	49.8 61.6	- -	- -	53.3 61.9	- -	- -
Mean	61.7 72.0	69.3 77.4	68.3 75.6	56.6 65.0	56.2 61.9	53.3 59.5	59.1 68.5	63.0 69.7	61.1 67.8
LSD	9.6 11.0	9.3 7.5	8.5 5.7	7.2 11.8	5.8 7.8	4.8 7.2	5.8 8.6	4.8 5.3	4.6 4.7
Env.	2 2	4 4	6 6	2 2	4 4	6 6	4 4	8 8	12 12

¹ Intensive trials received fungicide treatments at Feekes 5 (Stratego @ 5 fl.oz/acre), Feekes 9 (Tilt @ 4 fl.oz/acre), and Feekes 10.51 (Folicur @ 4 fl.oz/acre). Conventional trials received no fungicide.