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Extension Extra

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2004 Winter Wheat Variety Yield Results and Production Tips

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Winter wheat yields in South Dakota were a study in contrasts in 2004.

The statewide average yield in the Crop Performance Testing Program was 59 bu/A, which was similar to last year's average. However this does not reflect the fact that many locations in the western half of the state were not harvested.

Extremely dry conditions in West River in the fall of 2003 caused poor emergence, and the continuing lack of moisture through spring left much of the wheat in poor condition. Testing locations at Martin, Oelrichs, Hayes, and Kennebec were abandoned because of poor stands and drought stress. Bison wheat was killed by freezing (20^o F) temperatures in mid May.

Conditions in the eastern part of the state were different. Adequate spring precipitation and cool conditions in June produced excellent yields. Brookings was the top yielding site, averaging 91 bu/A, with some varieties producing over 100 bu/A.

The best performing varieties statewide in 2004 were Harding, Wahoo, Jerry, Millennium, Alliance, and Jagalene. Generally, the late-maturing varieties were able to utilize late-season moisture at many test locations.

The tables present the characteristics and performance of winter wheat varieties adapted to South Dakota. Use them and the following production tips to select the variety you will plant.

Choose a variety with good agronomic characteristics, that is recommended for production in your area, and that, on average, performed well in locations near your farm in the last few years.

Choosing the right winter wheat variety is only the first step toward successful winter wheat production and must be followed by good management practices. The man-

agement practices outlined here have direct influence on plant establishment and on the performance of the crop. All of these practices are under the direct control of the grower.

• **Direct seed into standing stubble.** The stubble traps snow, and the trapped snow insulates the wheat seedlings against cold temperatures, reducing risk of winter kill.

Seeding winter wheat into broadleaf crops stubble is recommended to reduce the risk of insect, disease, and weed problems in the rotation.

Avoid seeding into wheat stubble. This can increase the risk of disease carryover to the following season.

If seeding into a fallow field, minimize the number of tillage operations just before planting. Plowing and other deep tillage operations can reduce seedbed firmness, dry the topsoil, and bury protective residues, thus increasing the risk of winter kill.

• **Plan weed control before planting.** Controlling grassy weeds and volunteer wheat crop 2 weeks before planting winter wheat will provide a break in the life cycle of wheat curl mite and help to control wheat streak mosaic and other diseases.

• **The South Dakota recommended time to plant is September 10 through October 1.** Wheat plants should be well established before freezing to attain maximum cold tolerance and to accumulate energy reserves for the following spring.

Planting wheat too early may produce excessive fall growth, reducing soil moisture and nutrients. Early planted wheat may act as a host for leaf curl mites that transmit wheat streak mosaic virus and it may also increase the risk of root and crown rot diseases.

Research from western South Dakota shows that grain yield is decreased and that the crop suffers substantial winter injury when planting is later than October 15.

• **Plant at a depth of 1.5 to 2 inches in a firm seedbed.** Planting deeper than 2 inches reduces emergence and can result in weak spindly seedlings with a poor ability to survive the winter.

If direct seeding and moisture conditions are optimum, a uniform depth of 1-1.5 inches will give a good stand. Make sure there is good soil-to-seed contact, especially under drier conditions. If soil cover over the seed is poor, there is risk of exposing the crown and adversely affecting winter survival.

• **Recommended seeding rate is 960,000 to 1 million viable seeds per acre or about 80 lb/acre** if planting within the recommended planting dates.

Generally, higher seeding rates to compensate for higher winter kill are suggested when planting later than recommended dates. However, properly managed winter wheat has a good ability to tiller and can compensate for thin stands.

• **Have the soil tested, and apply fertilizer based on soil test results and yield expectations.** Research shows that phosphorus helps winter survival by stimulating root growth and tillering in the fall. Therefore, if soil test results indicate low phosphorus, application of the required rate is recommended.

You must evaluate your own farm situation against the above recommendations and decide on the best cultural practices to follow. Moisture conditions at the time of planting as well as potential pest problems may influence your crop management decisions.

Hard red winter wheat variety performance testing yield averages for 2004.

Variety	Location											
	Brookings		So. Shore		Highmore		Selby		Platte		Pierre-pea stubble	
	b/a	tw	b/a	tw	b/a	tw	b/a	tw	b/a	tw	b/a	tw
Alliance	83	61	50	56	75	58	71	57	64	60	53	59
Arapahoe	79	59	34	54	74	57	71	58	57	60	45	58
Crimson	80	61	41	55	64	60	66	58	57	63	53	62
Expedition	91	62	39	54	62	59	62	58	58	61	45	61
Harding	93	61	45	55	76	58	68	58	72	61	46	60
Jagalene	82	61	39	56	73	60	72	60	55	62	58	61
Jerry	106	59	45	54	79	58	71	57	62	60	46	57
Millennium	100	61	46	56	74	59	70	58	60	61	47	60
Nekota	86	60	31	53	72	58	60	57	58	60	51	60
Tandem	84	61	42	55	71	59	65	58	63	60	53	61
Trego-W	82	62	49	58	68	61	63	59	59	62	49	62
Wahoo	100	60	37	53	78	60	70	56	63	60	53	59
Wesley	96	60	42	53	72	57	58	54	60	60	47	59
Test avg.*:	91	60	44	55	73	58	68	58	61	61	51	60

~ A hard white (W) winter wheat.

* Test average of all entries including experimental lines not listed.

Hard red winter wheat variety performance testing yield averages (continued).

Variety	Wall		Location				State avg. by variety		
	b/a	twt	Sturgis		Tripp Co.		Yield	Twt.	Protein
	b/a	twt	b/a	twt	b/a	twt	b/a	lb	pct#
Alliance	46	63	29	58	51	57	59	59	12.4
Arapahoe	40	61	22	56	47	56	54	58	13.7
Crimson	48	61	27	58	38	54	54	59	12.7
Expedition	47	63	21	60	40	58	53	60	12.6
Harding	56	62	27	54	52	55	61	58	13.1
Jagalene	52	63	24	60	60	58	59	60	12.9
Jerry	53	62	29	54	40	56	61	58	12.7
Millennium	47	63	29	58	55	57	60	59	12.7
Nekota	45	63	28	58	47	57	55	59	12.3
Tandem	51	63	26	60	46	59	57	60	12.7
Trego-W	36	62	27	60	57	59	55	61	11.8
Wahoo	57	62	26	57	52	55	62	58	12.6
Wesley	48	62	25	56	39	55	56	58	13.5
Test avg.*:	49	62	26	57	49	57	59	59	12.8

- A hard white (W) winter wheat.

* Test average of all entries including experimental lines not listed.

Average of seven locations: Brookings, Highmore, Wall, Platte, Pierre-pea stubble, Selby, and Tripp Co.

Origin, disease reaction, and other traits for hard red winter wheat entries tested.

Variety	Origin	Traits#					Disease Reaction ⁺					PVP** Status
		Rel. Mat. (days)	Ldg Res	End use Qlty	Wntr Hardy Rtg	Cole-optile Pct##	Wheat Streak Mosaic Virus	Tan Spot	Stripe	Rust Leaf	Stem	
Expedition	SD-02	0	F	G	G-E	88	S [^]	S [^]	MS	S [^]	R	***
Alliance	NE-93	2	G	A	G	76	MS	VS	MR	S	MS	Yes
Nekota	NE/SD-94	2	G	G	G	87	MS	MR	S	S	MR	No
Wesley	NE-98	3	E	A	G-E	79	S	MR	MR	MS	R	No
Arapahoe	NE-88	3	F	G	G-E	83	S	S	MS	MR	MR	Yes
Trego-W	KS-99	3	F	E	F-G	80	MR	MS	S	MR	R	Yes
Wahoo	NE/WY-01	3	G	-	G	91	S	S	MR	S	R	Yes
Jagalene	AW-02	3	E	-	F-G	92	MS [^]	MS [^]	MR	MR	MR	Yes
Millennium	NE-99	4	G	A	G-E	78	S	S [^]	MR	MS	MR	Yes
Tandem	SD-97	4	F	E	G	112	S	S	MR	S	MR	Yes
Crimson	SD-97	5	G	G	G-E	110	MR	MR [^]	MR	S	MS	Yes
Harding	SD-99	5	F-G	A	E	100	MR	MR	MS	MR	MR	Yes
Jerry	ND-01	6	F	G	E	92	S [^]	VS [^]	MR	S	R	No

-W Indicates a hard white wheat variety.

End-use Quality refers to baking traits for hard red varieties and noodle traits for hard white varieties.

E= excellent, A= acceptable, F= fair, G= good, P= poor.

##Pct. of Harding (3.2").

+ R= resistant, MR= moderately resist., M= intermediate, MS= mod. susceptible, S= susc., VS= very susc..

[^] Indicates disease reaction changed from last year.

** Plant variety protection (PVP), title V, certification option—to be sold by variety name only as a class of certified seed.

*** PVP application pending or anticipated.



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