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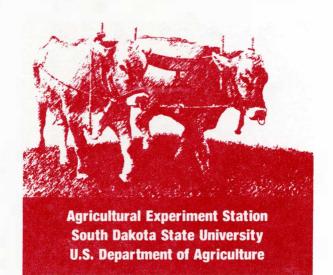
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Oxen

Hard Red Spring Wheat



by R. Hall and J. Rudd Plant Science Department

The development of Oxen hard red spring wheat is a success story of a public institution and private enterprise working together. The name "Oxen" signifies this team effort.

The breeding line that became Oxen was part of a germplasm donation made in 1990 from Pioneer Hibred International to the South Dakota Agricultural Experiment Station (SDAES). Spring wheat breeders at SDSU tested lines from this germplasm donation for several years, each year eliminating those lines that did not perform well under the variable South Dakota environment and doing more extensive testing of the remaining lines. In 1992, the designation SD0010 was given to a promising line that would later become Oxen.

Beginning in 1993, Oxen was tested throughout South Dakota by the Crop Performance Testing program of SDSU and also throughout the upper midwest as part of the Uniform Regional Spring Wheat Nursery. Evaluations for bread-making quality began in 1992 by the USDA Spring Wheat Quality Laboratory, Fargo, N.D., and in 1994 by the Wheat Quality Council.

The Pioneer designation of the cross used to develop Oxen was SBF0089, and the pedigree is SBY336A/SBZ004A. The pedigree of SBY336A is Waldron// Lundi/ Justin/3/ Arg 5/4/ Pioneer line W6744 while the pedigree of SBZ004A is Pioneer Variety 2369/ Len.

Oxen was released by the SDAES in 1996. Application for Plant Variety Protection has been made, and Oxen will be sold only as a class of certified seed.

Agronomic Characteristics

Oxen is high yielding, early maturing, and has a semi-dwarf plant stature. Grain of Oxen has medium protein and bushel weight. Mediumsized kernels are produced on awned heads that are slightly more compact than many current varieties. Threshability is excellent.

Oxen, when compared to '2375,' is higher yielding, similar in maturity, slightly shorter, better in straw strength, and less prone to shattering. Bushel weight and seed size are slightly less than 2375.

Oxen appears to be widely adapted and has performed well in all areas tested in South Dakota, Minnesota, and North Dakota. It is

resistant to the prevalent races of leaf rust and stem rust. Based on performance data, the head scab resistance of Oxen is similar to 'Butte 96' and 'Russ' and slightly less than 2375 and 'Sharp.'

Milling and bread-making characteristics of Oxen are similar to Russ. Oxen has excellent flour extraction, is strong mixing, and has a medium protein content. It received favorable comments from the Wheat Quality Council and was given an overall bread-making quality rating similar to 'Grandin.'

Table 1. Origin, disease resistance, and traits of Oxen compared to other popular spring wheat varieties.

			•••••	1995		
			Leaf	Stem	Head Scab	Baking
Variety	Origin	Standability	Rust	Rust	Tolerance	Rating
Butte 86	ND-86	Fair	MR#	R#	Fair	G-F\$
Sharp	SD-90	Good	R	R	Fair	F-P
Oxen*	SD-96	Good	R	R	Fair	VG-G
Russ*	SD-95	Good	R	R	Fair	VG-G
2375*	Pio-88	Good	MS	MR	Fair	G-F

^{*}Plant Variety Protection - sold by variety name only as a class of certified seed.

Table 2. Agronomic performance averages (1994-96) of Oxen compared to other popular spring wheat varieties.

			··· 94-96 ··					
	Relative		Bushel		·· Yi	eld ··	Тор	Yield
	Heading	Protein	Weight	Height	В	u/A	·· Perd	centage ··
Variety	day	%	lb	inch	<i>'96</i>	94-96	'96	94-96
Butte 86	0*	13.5	61	32	49	43	25	50
Sharp	0	13.9	61	32	51	43	25	67
Oxen	2	13.7	60	28	56	47	63	100
Russ	2	13.6	60	32	56	46	63	83
2375	3	13.4	61	29	51	42	13	50

[#] S= Susceptible, MS= Moderately Susceptible, MR=Moderately Resistant, and R= Resistant.

^{\$} P= Poor, F= Fair, G= Good, and VG= Very Good.

Table 3. Yield comparisons of Oxen to other popular HRS wheat varieties at various locations in South Dakota.

								Locat	ion							
	Broo	kings	Water	town	Highn	nore	Spink (Co.	Gr	oton	Bis	on	Ra	lph	Sel	by
VARIETY	<i>'96 3</i>	3-YR	'96 3	3-YR	'96 <i>3</i> -	-YR	'96 <i>3</i> -	YR	96	3-YR	<i>'96</i> 3	3-YR	96 3	3-YR	'96 S	3-YR
								·· Bw	⁄A ······							
2375	53	51	43	40	46		56		51	52	49	37	47	31	62	51
Butte 86	55	51	40	40	45		55		50	52	50	37	46	32	55	48
Oxen	56	53	45	43	46		66		61	59	51	39	59	36	66	56
Russ	56	50	50	44	48		71		57	59	53	39	50	34	61	51
Sharp	56	51	46	41	43		64		53	54	48	38	46	32	55	47

Yield Performance

The excellent yield and yield stability of Oxen is indicated in Tables 2-4. When averaged across 1994-96, Oxen was in the top yielding group at all locations (Table 2). At 47 bu/A during the 3-year period, it was 5 bu higher yielding than 2375 and 1 bu higher than Russ.

Regional data confirms South Dakota data. In the 2 years Oxen was in the regional trials it averaged 5 bu/A acre higher than Butte 86 (Table 4).

Table 4. Yield trial data from regional HRS wheat trials, 1993-94: South Dakota, North Dakota, and Minnesota.

Variety	1993 10)*	1994 (12) Bu/A -	1993-94 (22)		
Oxen	40	52	47		
Stoa	36	46	42		
Butte 86	38	46	42		

^{*}Number of locations tested.

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