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R. G. Hall

J. Rudd

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B 726
November 1997

Oxen

Hard Red Spring

W H E A T



Agricultural Experiment Station
South Dakota State University
U.S. Department of Agriculture



Oxen



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by R. Hall and J. Rudd
Plant Science Department

Hard Red Spring Wheat

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 Hybrid 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. Medium-sized 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.

Variety	Origin	Standability	Disease Reaction			1995 Baking Rating
			Leaf Rust	Stem Rust	Head Scab Tolerance	
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.

S= Susceptible, MS= Moderately Susceptible, MR=Moderately Resistant, and R= Resistant.

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

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

Variety	Relative Heading day	94-96			Yield		Top Yield	
		Protein %	Bushel Weight lb	Height inch	'96 Bu/A	94-96 Bu/A	'96 Percentage	94-96 Percentage
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

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

VARIETY	Location															
	Brookings		Watertown		Highmore		Spink Co.		Groton		Bison		Ralph		Selby	
	'96	3-YR	'96	3-YR	'96	3-YR	'96	3-YR	96	3-YR	'96	3-YR	96	3-YR	'96	3-YR
 Bu/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	1994	1993-94
	10)*	(12)	(22)
 Bu/A		
Oxen	40	52	47
Stoa	36	46	42
Butte 86	38	46	42

*Number of locations tested.

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