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SHARP

Hard Red Spring Wheat



Agricultural Experiment Station
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SHARP

Hard Red Spring Wheat

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Excellent yield stability, high test weight, and early maturity should make Sharp a very popular wheat with South Dakota spring wheat growers.

These characteristics, along with medium height, give Sharp a wide range of adaptation and good yield potential. It should be a good wheat for growers in the southern spring wheat regions.

Sharp was developed by the South Dakota Agricultural Experiment Station and released in the spring of 1990.

ORIGIN

Sharp is a fifth-generation derived selection obtained from the backcross Butte *2/MN7125 made in 1980. MN7125, a Minnesota experimental line, has the parentage Fletcher/CI13990; Butte was released from North Dakota in 1977. The first five generations of Sharp were either grown in Brookings or at winter nurseries in Mexico.

Five heads selected during the sixth generation were harvested. Sharp was tested in South Dakota yield trials from 1983 through 1989 and in the Uniform Regional Spring Wheat Nursery from 1986 through 1989 as SD 2980. In 1986 and 1987,

Sharp was entered in the Spring Wheat Crop Quality Test. This test is conducted by the milling industry to evaluate bread-making and milling-quality characteristics of new spring wheat lines.

YIELD RESULTS

Sharp has been a consistent top yielder throughout the state, based on 3-year averages. In eastern South Dakota Sharp was a top yielder at all locations except Selby (Table 1). In western South Dakota Sharp was a top yielder in all tests (Table 2).

Based on 3-year averages, Sharp has a top-yield percentage of 92% over all locations tested (Table 3). A top-yield percentage of 50% is an indication of good yield stability; a rating of 80% or more indicates an excellent yield stability. The

Table 1. Yield comparison of Sharp with other varieties at several eastern South Dakota locations.

VARIETY	LOCATION															
	BROOKINGS		WATERTOWN		BERESFORD		HIGHMORE		SPINK CO.		SELBY		AURORA CO.		GROTON	
	90	3-YR	90	3-YR	90	3-YR	90	3-YR	90	3-YR	90	3-YR	90	3-YR	90	3-YR
SHARP	32.9	31.5*	61.3	36.3*	29.5	23.3*	38.2*	32.5*	57.4	44.8*	58.0	37.8	31.7*	23.8*	60.2	40.9*
BUTTE 86	35.5	32.6*	64.3*	38.5*	33.5*	23.4*	36.4	30.2*	58.3*	43.8*	62.6	39.0*	23.5	20.8*	59.0	40.8*
PROSPECT	39.0	32.8*	61.2	37.4*	29.6	21.7*	38.5*	29.1*	54.9	43.2*	66.0*	39.0*	29.9	24.6*	66.0*	41.4*
STOA	34.2	31.3*	66.7*	38.8*	30.9	23.6*	35.8	27.8	57.6	43.6*	66.2*	39.7*	29.4	24.0*	59.6	41.9*
LOCATION:	BU/AC															
TEST AVERAGE-	33.6**	29.0	59.6	35.4	25.3	21.2	36.4	29.3	55.2	40.4	62.7	37.6	26.8	22.3	59.7	39.4
TEST LSD(5%)-	4.4\$	5.1	4.4	4.7	4.1	6.1	3.6	4.9	6.8	4.2	6.7	4.5	5.8	NS#	10.9	5.7

* A TOP-YIELDING VARIETY; ** TEST AVERAGE OF ALL ENTRIES
 \$ TEST LSD(5%)- YIELD DIFFERENCE BETWEEN VARIETIES NEEDED FOR A SIGNIFICANT YIELD DIFFERENCE.
 # NS- INDICATES YIELD DIFFERENCES WITHIN A COLUMN ARE NOT SIGNIFICANT.

Table 2. Yield comparison of Sharp with other varieties at several western South Dakota locations.

VARIETY	LOCATION											
	WALL		BISON		MARTIN		RALPH		BEAR BUTTE		PLAINVIEW	
	90	3-YR	90	3-YR	90	3-YR	90	3-YR	90	3-YR	90	3-YR
SHARP	21.3*	18.3*	16.4*	22.2*	32.8*	24.5*	26.2	28.2*	22.4*	17.1*	18.9*	.
BUTTE 86	24.2*	18.3*	17.0*	21.8*	21.0*	18.0	30.0*	29.1*	17.7	14.9*	16.9*	.
PROSPECT	26.3*	19.3*	18.6*	25.6*	27.0*	21.2*	30.4*	29.7*	17.5	15.0*	15.3*	.
STOA	26.4*	16.7*	17.2*	23.6*	26.8*	18.9	28.5*	30.8*	18.8	14.5	17.9*	.
LOCATION:	(HAIL, 5/5/90)											
TEST AVERAGE-	24.5**	16.8	17.5	23.0	23.0	17.7	26.6	26.9	16.7	13.4	16.5	.
TEST LSD(5%)-	NS#	NS	NS	NS	NS	3.9\$	6.0	3.7	3.4	2.5	NS	.

* A TOP-YIELDING VARIETY; ** TEST AVERAGE OF ALL ENTRIES.
 \$ TEST LSD(5%)- YIELD DIFFERENCE BETWEEN VARIETIES NEEDED FOR A SIGNIFICANT YIELD DIFFERENCE.
 # NS- INDICATES YIELD DIFFERENCES WITHIN A COLUMN ARE NOT SIGNIFICANT.



Table 3. Comparison of Sharp characteristics with other spring wheat varieties.

VARIETY	1990 DAYS TO HEADING	PROTEIN (%)	BUSHEL WEIGHT (LBS)	HT. (IN.)	STATE-WIDE AVERAGES			
					YIELD (BU/AC)		TOP YIELD (%)	
					88-90	1990	88-90	1990
SHARP	68	16.5	57.4	29	28.7	36.2	92	50
BUTTE 86	68	16.7	55.7	28	27.9	35.7	92	57
PROSPECT	69	16.7	55.4	26	28.5	37.2	100	57
STOA	70	16.5	54.9	29	28.2	36.9	77	50

yield stability of 92% by Sharp was equal to Butte 86, slightly less than Prospect and higher than Stoa.

Since yield stability is calculated by using all test entries (both released varieties and advanced breeding entries), this means Sharp is competing well at this time with all spring wheat entries under test.

In 1990, Sharp's good yield stability of 50% was equal to Stoa and slightly lower than Butte 86 and Prospect. All numbers (Table 3) dropped in 1990 because of poor small-grain growing conditions.

Sharp has also yielded well regionally. In 15 North Dakota trials in 1989 and 1990, Sharp averaged 45.6 bu/A compared to 44.0 and 47.4 bu/A for Butte 86 and Stoa, respectively.

In 12 Minnesota trials in 1989 and 1990, Sharp produced 54.8 bu/A. Butte 86 and Stoa produced 54.4 and 54.7 bu/A, respectively.

AGRONOMIC CHARACTERISTICS

Sharp, like Butte 86, is early in maturity. Both head out about 1-2 days earlier than Prospect or 2-3 days earlier than Stoa (Table 3).

Sharp, like Butte 86 and Stoa, averages about 2-3 inches taller than Prospect (Table 3). Although taller than Prospect, Sharp has good straw strength. As with the other medium-tall or tall spring wheat varieties, Sharp has marginal straw strength for the Red River Valley.

Spikes are awned, bearded, and erect.

This variety contains variants for two traits. First, a tall variant measuring about 4 inches taller

than normal occurs at a frequency of 0.18%, and a very tall variant measuring about 8-9 inches taller than normal occurs at a frequency of 0.003%. Second, an awnless, very tall variant occurs at 0.03% frequency.

Among the varieties compared in Table 3, Sharp has the highest test weight on a statewide basis. Sharp averages more than 1.5 lb/bu higher than the next highest variety, Butte 86.

Sharp is resistant to leaf rust. It probably has *Lr1*, *Lr10*, and *Lr13* genes for leaf rust resistance. It is also resistant to prevalent races of stem rust; probable stem rust genes are *Sr5*, *Sr6*, and *Srwd*. The combination of different genes for rust resistance should protect Sharp from potential rust race changes.

In some environments Sharp may develop "false blackchaff," a blackening of the glumes and associated floral parts. This has no known adverse effects on variety performance.

The grain protein content of Sharp is rated as medium, higher than Marshal and Prospect but lower than Butte 86. The milling and bread-making quality of Sharp is rated as satisfactory.

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