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2-1-1980

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Recommended Citation

Reeves, D. L., "Lancer Oats" (1980). *Bulletins*. Paper 672.
http://openprairie.sdstate.edu/agexperimentsta_bulletins/672

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Lancer Oats

Agricultural Experiment Station
South Dakota State University
Brookings, South Dakota

Lancer Oats

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Lancer, C.I. 9256, is a spring oat variety developed by South Dakota Agricultural Experiment Station and released January 1979. While being tested, it was designated SD 9095.

Lancer combines excellent straw strength, good yields, and high groat protein content. Performance records indicate it is probably the best adapted high protein oat for South Dakota (Table 1).

Seed was increased in 1978 by Foundation Seed Stock Division, South Dakota State University. Minnesota also participated in the simultaneous increase of Lancer seed.

Origin

Lancer is a selection from a Neal x Clintland 64 cross made in 1963. Neal was a stiff strawed, moderately early oat in South Dakota, while Clintland 64 has long been recognized for its good resistance to crown rust.

The original selection was a single F₈ or F₉ panicle in 1972. Lines harvested that year were increased and examined each year for grain type and stem rust resistance, with the final decision being made in 1975.

Stem rust testing was done through the courtesy of Dr. Paul Rothman at the USDA Cereal Rust Laboratory in St. Paul, Minnesota. The Crop Performance Testing Project grew Lancer at all testing locations in 1976, 1977 and 1978. It was also grown the same years in the Uniform Regional Midseason Oat Nursery, which is coordinated by USDA.

Characteristics

Lancer is a midseason variety that heads the same time as Holden and slightly later than Spear and Chief. Plants are mid tall, being slightly shorter than Spear and Chief. Lancer exhibited excellent straw

Table 1. Yields (bu/A) from South Dakota Standard Variety Oat Trials. Yields reported are averages for 1976-1978 unless noted otherwise.

	Brookings	Watertown	Selby	Highmore	Bath*	Bison	Wall	Overall average
Lancer	53	76	66	33	63	56	39	53
Burnett	45	69	50	35	51	56	44	49
Chief	47	74	58	28	56	45	37	47
Dal	44	53	55	36	42	56	39	45
Froker	39	63	66	35	50	51	36	49
Noble	44	73	69	34	59	57	44	53
Otee	42	67	53	26	44	39	35	44
Spear	46	72	63	31	53	47	38	49

*Only 1977 and 1978.

strength wherever tested. Kernels are white and plump in appearance. In South Dakota tests, Lancer averaged 1½ to 2 lb higher test weight than Spear (Table 2). Hull percentage was 3% less than Spear in 1976 and 1977. Test weight in regional trials has also been good. Under ultraviolet light the grain is fluorescent and light in color with some golden kernels.

Lancer is a high protein oat with the groat protein percentage slightly less than Dal, Otee, and Spear (Table 3).

Yields of Lancer in South Dakota have usually been equal to or better than those of other varieties (Table 1). Grain yields in 1977 and 1978 were about 10% better than Dal and Spear when averaged for seven testing locations across South Dakota.

Yield and test weight data from the South Dakota Standard Variety Oat Trials are courtesy of J. J. Bonnemann. In the Uniform Regional Midseason Oat Tests, Lancer had higher average yields than Dal and Lodi when tested in 1977 and 1978 at a total of 38 locations.

Disease Resistance

Lancer is moderately susceptible to prevalent leaf rust races, but in field conditions it has better resistance than Noble, Burnett, and Nodaway 70 and is equal to or better than Chief and Spear. Seedling tests for leaf rust indicate Lancer is resistant to race 264 B and moderately susceptible to races Pc-45 and 47. Lancer is considered less resistant to leaf rust than Dal. However, in a 1976 Iowa test, Dal and Lancer had

Table 2. Test weight (lb/bu) data from South Dakota Standard Variety Oat Trials. Weights reported are average for 1976-1978.

	Brookings	Watertown	Selby	Highmore	Bath	Bison	Wall	Overall average
Lancer	33	35	33	33	35	32	33	33
Burnett	32	36	34	33	35	35	32	34
Chief	32	35	32	32	35	32	32	33
Dal	34	36	33	33	35	34	31	34
Froker	33	36	34	34	36	35	32	34
Noble	33	36	35	33	35	33	33	34
Otee	33	36	34	33	36	34	33	34
Spear	33	34	33	31	33	31	32	32

similar yield losses caused by leaf rust.

Resistance to yellow dwarf is better than that of Froker, Diana, or Chief; but Lancer is still quite susceptible to damage from the disease. Lancer has good resistance to the smuts present in South Dakota; however, it is moderately susceptible to some smut races which have not been a problem in South Dakota.

Lancer is resistant to race 61 of stem rust. This is an improvement over Spear in which one third of the plants are susceptible.

Table 3. Groat protein percentage,*** from South Dakota Standard Variety Oat Trials. Data are averages for 1976 and 1978.

	Brookings	Watertown	Selby	Highmore	Bath*	Groton**	Bison	Wall	Overall average
Lancer	20	20.9	19.9	22.7	22.8	20.4	22.3	21.4	21.3
Burnett	18.9	—	18.6	21.1	18.6	19.1	20	19.2	19.3
Chief	20.5	20.3	20	22.6	18.5	21.3	21.2	20.6	20.9
Dal	22.1	22	21.8	22.8	21.8	21	22.6	22.8	22.3
Froker	19.4	19	20.2	20.9	18.5	19.6	20.9	20.5	20
Noble	19.2	19	20.3	21	20.1	19.5	21.2	20.2	20.2
Otee	22.1	—	23.1	24	24.2	22.3	22	22.8	22.8
Spear	21.3	21.9	21.1	22.5	22.8	19.9	22.6	21.9	22.2

*1976 data only

**1978 data only.

***Protein percentage of whole grain oats is approximately 4% less than groat protein percentage.

Yield and test weight data from the South Dakota Standard Variety Test Trials are courtesy of J. J. Peterson in the Interior Regional Experiment Station. Lancer had higher average yields than the other varieties tested in 1917 and 1918 at a total of 38 bushels.

Disease Resistance

Lancer is moderately susceptible to prevalent rust races, but in field conditions it has better resistance than Noble, Burbank, and Metway 70 and is equal to or better than Chin and Spear. Seeding tests for leaf rust indicate Lancer is resistant to race 184 B and moderately susceptible to races 7-55 and 41.

Lancer is a high protein oat with the great protein percentage slightly less than Dal, Glen, and Spear (Table 2). Yields of Lancer in South Dakota have usually been equal to or better than those of other varieties (Table 1). Grain yields in 1917 and 1918 were about the same as the other varieties tested. Lancer is white and plump in appearance. In South Dakota tests, Lancer averaged 2.5 to 3.0 higher test weight than Spear (Table 2). Full maturity was 7 to 10 days earlier than Spear in 1917 and 1918. Test weight in regional trials has also been good. Lancer withstood light frost better than other varieties and light in color with some golden kernels.

Lancer is a high protein oat with the great protein percentage slightly less than Dal, Glen, and Spear (Table 2). Yields of Lancer in South Dakota have usually been equal to or better than those of other varieties (Table 1). Grain yields in 1917 and 1918 were about the same as the other varieties tested. Lancer is white and plump in appearance. In South Dakota tests, Lancer averaged 2.5 to 3.0 higher test weight than Spear (Table 2). Full maturity was 7 to 10 days earlier than Spear in 1917 and 1918. Test weight in regional trials has also been good. Lancer withstood light frost better than other varieties and light in color with some golden kernels.

Lancer is a selection from a cross of standard oat crosses made in 1903. It was a tall strawed variety and was first grown in South Dakota in 1904. It has long been recognized for its great resistance to crown rust. The original selection was a single 3/8 or 1/2 parent in 1917. Lines harvested that year were increased and examined each year for grain type and stem rust resistance with the final decision being made in 1917.