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Rebound

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Four genotypes from Saratoga were selected and placed in isolation to produce synthetic seed which has been tested in forage experiments at Brookings, Highmore, Redfield, and Rapid City.

Rebound

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Rebound (SD 5) is a variety of smooth brome grass developed by the South Dakota Agricultural Experiment Station and released in 1978.

Rebound grows back quickly after harvest and produces growth in the middle of the summer when brome grass is normally dormant and produces little regrowth. This variety will be valuable for pasture under irrigation and can be expected to produce more regrowth on dryland when conditions are favorable.

Seed increase by the Foundation Seed Stock Division was released to three South Dakota seed firms to ensure sufficient quality seed for use on farms in South Dakota. Certified seed is available for commercial planting from harvests made in 1979. Plant Variety Protection has been applied for; and Rebound, therefore, will be sold only by variety name as certified seed.

Origin

Rebound was selected on the basis of field and greenhouse tests over a number of years.

A space-planted nursery was established during the fall of

1970 and kept at optimum moisture and fertility conditions in 1971. The nursery included 5,623 plants of South Dakota 7 and 29,039 of Saratoga smooth brome grass, a New York cultivar released for its regrowth characteristics.

It also included 977 plants of Garrison creeping foxtail, 705 of common reed canarygrass, and 681 of Frode and Rideau orchardgrass for comparison.

Sixty-three smooth brome grass plants that showed good regrowth after each cutting were selected in 1971 and evaluated for photosynthetic rate and for regrowth in the greenhouse.

On the basis of these data, 32 genotypes were selected and placed in 2- by 10-ft vegetative plots in two replicates. They were cut twice the first year and four times during the second and evaluated for forage and seed yield as well as regrowth capabilities.

Description

Rebound is a four-clone synthetic designed as a pasture variety. It has excellent regrowth after defoliation, restricted spreading habit, and moderate resistance to foliar disease.

It does not differ from Saratoga (Table 1) for foliar disease resistance.

The fast growth of this variety probably gives it an inclination to lodge and also tends to increase digestibility because lignin is not formed as fast as normally. When the forage was harvested at later stages, digestibility was higher than other varieties (Table 2).

When used as pasture or harvested at the optimum time for hay, the tendency to lodge is not detrimental; but for seed production, care must be taken not to overfertilize.

Approximately 850 lb of Foundation seed were harvested from 1¼ acres in 1976, indicating that seed yield can be expected to be adequate under optimum conditions.

Under an intensive cutting program, components of this variety showed greater stand persistence than an unselected genotype in a test of their families (Table 3).

The persistence of progeny of

Table 1. Foliar disease readings on Rebound and Saratoga in 1974 and 1975.

	Field ²		Greenhouse ⁴			
	Helminthosporium ¹ 1974	Helminthosporium ¹ 1975	Helminthosporium ¹ 1975	Stagonospora 1974	Rhynchosporium 1974	Septoria 1974
Rebound ²	17	77	17	Moderately susceptible	Moderately resistant	Susceptible
Saratoga	16	70	14	Moderately susceptible	Resistant	Susceptible

¹ Average number of disease spots per leaf.

² Average for the four genotypes.

³ Plants at heading stage of growth.

⁴ Plants in vegetative stage of growth.

Table 2. Comparison of percent *in vitro* digestible dry matter of Rebound with Lincoln and Saratoga at Brookings.

	1977 (dryland)		1978 (irrigation)
	Harvest 6/5 ¹	Harvest 6/26 ²	Harvest 6/10 ¹
	Rebound	55.5	51.0
Lincoln	55.2	45.6	59.9
Saratoga	55.5	45.9	59.9

¹ Early heading stage of growth.
² Shortly after pollination.

158-1 which was not selected for regrowth would probably be much lower than shown if the male parents also had been not selected for regrowth. This parent had been crossed with selected parents to produce these progenies.

In addition, some of the vigorous plants from other families had encroached on areas where progenies of 158-1 had not persisted. Stand persistence is extremely important where a three-cut or four-cut grass alfalfa system is used.

Performance

In irrigated forage trials at Brookings (Tables 4 and 5) under optimum moisture and fertility the superiority of Rebound in yield at second cut is shown.

Nitrogen (at 112 lb per acre) in the form of ammonium nitrate was applied in early spring; 56 lb were applied after each cutting.

Table 3. Stand persistence under an intensive cutting system¹ of polycross families from three clones included in Rebound and a clone unselected for regrowth.

Clone Designation		% Persistence
3C-46-41	Selected for regrowth	93
1A-34-40	and	94
4F-30-1	included in Rebound	88
158-1	Not selected for regrowth and not included in Rebound	80

¹ First cutting in late May followed by two and three cuttings respectively for 2 years.

Table 4. Comparison of forage yields in tons/acre of Rebound, Lincoln, and Saratoga under irrigation at Brookings, 1976-1978.

	Cut 1				Cut 2				Cut 3				Total			
	1976	1977	1978	Mean	1976	1977	1978	Mean	1976	1977	1978	Mean	1976	1977	1978	Mean
Rebound	2.61	2.56	2.70	2.61	2.85	1.78	1.31	1.79	0.83	1.31	1.25	1.23	5.58	5.64	5.36	5.63
Lincoln	3.00	2.87	2.85	2.90	1.48	1.50	1.26	1.41	0.49	1.26	1.12	0.96	4.77	5.59	5.11	5.22
Saratoga	2.64	2.98	2.82	2.81	1.82	1.71	1.31	1.60	0.70	1.31	1.28	1.16	4.96	6.03	5.41	5.53

Table 5. Forage yields in tons/acre of bromegrass varieties and one orchardgrass variety at Brookings, 1976-1977.

	Cut 1			Cut 2			Cut 3			Total		
	1976	1977	Mean	1976	1977	Mean	1976	1977	Mean	1976	1977	Mean
Rebound	3.37	2.15	2.27	1.32	1.48	1.41	0.40	0.60	0.50	4.10	4.25	4.16
Lincoln	2.53	2.53	2.53	0.90	0.81	0.86	0.58	0.82	0.70	3.91	4.17	4.04
Saratoga	2.02	2.50	2.27	1.06	1.05	1.06	0.46	0.69	0.58	3.47	4.25	3.83
Cariton	2.25	2.10	2.17	0.93	0.88	0.91	0.32	0.63	0.46	3.40	3.62	3.51
Nordstern*	1.72	2.00	1.87	1.25	1.21	1.23	0.82	1.05	0.78	3.47	4.29	3.87

* Orchardgrass

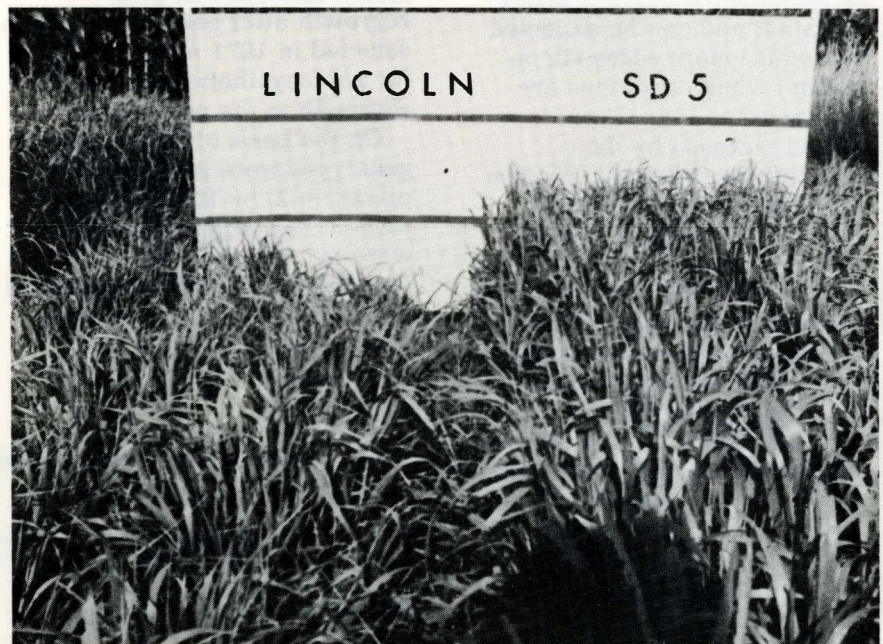
The mean yield was 127% of Lincoln (the variety presently recommended) in one test and 165% of Lincoln in the second. It is also higher than any of the other varieties (including Nordstern orchardgrass) with which it was compared. Yield at first cut, however, and sometimes at third cut is lower than Lincoln.

The principal advantage of Rebound is in its ability to

produce regrowth in the summer.

At Redfield (Table 6) under irrigation a similar increase of summer growth was noted except in 1977 during a cool summer. The overall 5-year average, however, was 131% of Lincoln. One hundred pounds of nitrogen were applied in early spring and 50 lb after each cutting.

In part of this experiment



Rebound here is SD 5; the number was given to it during selecting. Lincoln, on the left, is the most common South Dakota variety. Rebound has been consistently

superior in yield and regrowth. On dryland, Rebound will use what rains may come during regrowth periods; Lincoln can not.

Table 6. Comparison of forage yields in tons/acre of Rebound and Lincoln at Redfield under irrigation, 1975-1978.

	Cut 1					Cut 2					Cut 3					Total					
	1975	1976	1977	1978	Mean	1975	1976	1977	1978	Mean	1975	1976	1977	1978	Mean	1975	1976	1977	1978	Mean	
Grass alone																					
Rebound	3.19	3.03	2.17	2.87	2.85	2.44	2.75	1.50	1.71	2.09	2.14	—	—	0.57	1.47	8.00	5.89	3.65	5.19	5.53	
Lincoln	3.36	2.64	2.13	3.13	2.83	1.62	1.90	1.60	1.29	1.60	2.04	—	—	0.43	1.24	7.02	4.59	3.73	4.85	5.05	
With alfalfa																					
Rebound	4.01	3.92	2.01	1.74	2.83	2.05	2.54	1.53	1.74	1.88	2.32	—	—	1.01	1.70	7.11	6.48	3.55	4.50	5.44	
Lincoln	3.09	2.69	2.01	1.96	2.44	1.62	1.91	1.62	1.57	1.68	2.13	—	—	0.84	1.48	6.84	4.60	3.63	4.37	4.86	

alfalfa was included with the grass. The Rebound-alfalfa yielded 112% of the Lincoln-alfalfa mixture at the second cutting.

At Rapid City in 1977 (Table 7) where some irrigation water was applied (not at optimum amounts) a similar increase at second cutting was noted. Fifty pounds of nitrogen were applied to the grass alone in early spring. Rebound yielded 121% of

Table 7. Comparisons of forage yield in tons/acre of Rebound and Lincoln with and without alfalfa at Rapid City in 1977.

	Cut 1	Cut 2	Total
Grass alone			
Rebound	1.13	1.51	2.64
Lincoln	.81	1.25	1.03
With alfalfa			
Rebound	1.13	1.83	2.96
Lincoln	.67	1.68	2.35

Table 8. Forage and seed yields of Rebound, Lincoln, and Saratoga under dryland at Brookings, 1976-1978.

	Forage (T/A)								Seed (lb/A)
	Cut 1				Cut 2				
	1976	1977	1978	Mean	1976	1977	1978	Mean	
Rebound	1.73	2.17	2.82	2.24	—	1.33	1.34	1.30	167
Lincoln	1.64	2.22	2.57	2.14	—	1.15	1.11	1.11	206
Saratoga	1.54	2.00	2.93	2.12	—	1.32	1.02	1.15	169

Lincoln when alone and 109% with alfalfa at second cutting.

Under dryland at Brookings (Table 7) mean forage yield of Rebound at second cut for 3 years was 118% of Lincoln in comparison with Saratoga which was 104% of Lincoln. Fifty pounds of nitrogen were applied early in the spring and after the first cutting. Seed yield in 1976 was the same as Saratoga but less than Lincoln.

At Highmore under dryland (Table 8) only one cutting was produced during each of the 3 test years. Fifty pounds of nitrogen were applied early in the spring. Because Rebound has restricted spreading habit it did not fill in between the rows the way Lincoln did, so when only one cutting was made it yielded less than Lincoln as the stand became older. Seed yield in 1976 was 34 lb higher than Lincoln.

In general, the superior

Table 9. Forage and seed yields under dryland at Highmore, 1976-1978.

	Forage (T/A) ¹				Seed (lb/A)
	1976	1977	1978	Mean	1976
Rebound	0.98	2.09	2.10	1.83	254
Lincoln	0.87	2.32	2.66	1.95	220

¹ One cutting only.

performance of Rebound at second cutting resulted in a slight increase in total yield for the season, even though the yield at first cutting may have been less. When compared with Saratoga, Rebound yielded more at second cutting and tended to be somewhat taller.

Because of the restricted spreading habit of Rebound it is recommended that it be seeded at a higher rate than normal for brome grass. It will not fill in missed areas as readily as the spreading types.

Acknowledgement

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