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J. E. Grafius

South Dakota State University

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FEEBAR BARLEY

A foundation field of Feebar Barley

South Dakota AGRICULTURAL EXPERIMENT STATION

AGRONOMY DEPARTMENT • SOUTH DAKOTA STATE COLLEGE - Brookings

FEEBAR BARLEY

By J. E. GRAFIUS¹

High yield, resistance to stem rust, stiff straw and high protein are some of the advantages that recommend Feebar, a new variety of feed barley, to South Dakota farmers. About 4500 bushels of this new barley were released by the South Dakota Agricultural Experiment Station to the South Dakota County Crop Improvement Associations in the spring of 1947. Tests made in different areas of South Dakota on widely different soil types show Feebar to be adapted and capable of displacing some of the older barley varieties commonly grown.

History

Feebar was derived from the cross of Peatland x Vaughn made at the South Dakota Experiment Station by S. P. Swenson² in 1936. The two parents of this cross have many desirable characteristics but individually are not of great worth under South Dakota conditions. Peatland has a stiff straw and high resistance to stem rust *Puccinia graminis* Pers. Vaughn is characterized by a short dense head, large kernels, stiff straw and drought resistance. The purpose of the cross was to develop a stem rust resistant, high yielding barley adapted to South Dakota conditions.

Plant and Seed Characteristics

Feebar is a six-row, semi-smooth awned barley. It is stiff strawed and resistant to

¹Associate Agronomist, South Dakota Agricultural Experiment station

²Formerly Associate Agronomist



Figure 1. Heads of Feebar barley illustrating dense erect heads and long, spreading awns.

stem rust. It is easily distinguished from other South Dakota varieties by the dense erect head and the long, rough-tipped spreading awns (Figure 1). The leaf sheath has a bluish color which persists until the seed starts to ripen. The seeds are moderately large and plump (Figure 2). As a comparison with other varieties grown at

the South Dakota Agricultural Experiment Station, the seed weights per 1000 kernels in 1946 were: Feebar, 33.77 grams; Odessa, 31.33 grams; Wisconsin 38, 30.06 grams; and Spartan, 35.65 grams.

Feebar is far from perfect. It is believed that the farmers of South Dakota will be pleased with its performance, but it has several defects. It is susceptible to several prevalent diseases, namely: loose smut, *Ustilago nuda* Jens. K. and S.; leaf rust, *Puccinia anomala* Rostr.; spot blotch, *Helminthosporium sativum* P.K. and B.; and to bacterial blight, *Xanthomonas* spp. In addition, the beards tend to be tough and hard to remove entirely in threshing. This often causes a low test weight.

Relative Maturity and Grasshopper Resistance

As shown in Table 1, Feebar is mid way between Spartan and Wisconsin 38 in date of heading. In central and western South Dakota, where drought and grasshoppers are primary hazards, earliness is an important factor. Feebar may be criticized some in this respect, but it is worthy of note that it has some resistance to grasshoppers as measured by the percentage of heads removed by these insects (Table 3). The data indicate that Feebar and Trebi are more resistant to grasshoppers than Spartan and Odessa and far more resistant than Wisconsin 38.



Figure 2. Threshed grain of Feebar barley.

Yield and Test Weight

The yield of Feebar in comparison with four standard varieties is shown in Tables 1 and 2. Notice that on the basis of four and five year averages Feebar outyielded all standard varieties at Eureka, and that the yields were statistically equal to the highest yielding varieties at Highmore and Vivian and at the main experiment station at Brookings. This factor of a rather wide adaptation plus resistance to stem rust and grasshoppers and improved strength of straw are the points of merit which have been stressed.

Examination of Table 1 shows that the test weight, although not abnormally low,

Table 1. Summary of tests of Feebar barley in comparison with four standard varieties grown at the South Dakota Experiment Station (Brookings) for the years 1942—1946.

Variety	Date Headed	Date Ripe	Height Inches	Stem Rust	Lodging Degree*	Test Wt.	Average Yield in Bu./Acre				
							'45-'46	'44-'46	'43-'46	'42-'46	
Odessa	6/24	7/24	33	St	90	15	42	54.4	49.7	47.0	53.4
Spartan	6/20	7/22	29	S	Tr.		46	43.2	35.5	32.6	39.1
Trebi	6/24	7/23	29	S	90	20	38	53.4	46.4	42.4	50.2
Wisc. 38	6/26	7/26	37	S	90	25	40	47.2	38.4	37.1	45.2
Feebar	6/23	7/23	28	R	Tr.		41	47.6	45.5	42.8	51.9
Least Significant Difference											3.9

*Data from '42-'45 crop; Feebar probably not quite as resistant to lodging as Spartan.
 †S—susceptible; R—resistant

leaves room for improvement. As previously mentioned, the toughness of the beards contributes to the low test weight. Care in ad-

justment of concave settings and cylinder speed should help in removal of the beards and improve the test weight.

Table 2. Summary of Feebar barley in comparison with four standard varieties grown at the Highmore, Eureka, Vivian and Cottonwood substations for the years 1942—1946

Variety	Highmore* Yield in Bu./Acre				Eureka Yield in Bu./Acre			Vivian and Cottonwood† Yield in Bu./Acre			
	'44—'45	'43—'45	'42—'45	'45—'46	'44—'46	'43—'46	'42—'46	'45—'46	'44—'46	'43—'46	'42—'46
Odessa	26.6	25.1	28.6	20.0	21.7	24.1	30.0	32.4	25.9	21.6	21.1
Spartan	31.4	24.8	29.8	17.4	14.2	14.1	22.5	21.0	17.2	14.9	15.4
Trebi	36.8	36.1	36.2	27.6	28.3	29.8	33.2	32.9	27.3	26.0	27.1
Wisc. 38	27.5	25.4	30.9	20.4	24.7	28.2	32.1	34.4	25.1	21.0	18.5
Feebar	42.0	38.2	38.7	25.7	31.5	32.5	37.5	32.7	29.2	25.2	25.8
Least significant difference			3.4				2.7				3.0

*1946 crop destroyed by hail

†1945 and 1946 data from Cottonwood only

Table 3. Varietal resistance to grasshoppers as measured by the percentage of barley heads removed under field conditions at two locations

Variety	Resistance to grasshoppers in average percent of barley heads removed							Average of All stations
	Highmore		Vivian and Cottonwood*					
	1943	1944	1942	1943	1944	1945		
Odessa	18	12	50	10	45	38	29	
Spartan	15	5	60	5	25	42	25	
Trebi	8	10	40	Tr.†	18	20	15	
Wisc. 38	22	35	90	80	90	47	61	
Feebar	10	8	15	Tr.	0	17	8	

*1945 data from Cottonwood only

†—Trace

