

THE COLORADO EXPERIMENT STATION

FORT COLLINS

A NEW SMOOTH-AWNED BARLEY FOR IRRIGATED CONDITIONS IN NORTHEASTERN COLORADO

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In Colorado barley is used as a feed crop. It is becoming increasingly important as a substitute for corn. Under irrigation the bearded varieties have given the higher yields. In the past these varieties have had the disadvantage of barbed awns or beards.

The barbed awn is objectionable to feeders and often may be harmful to the animals eating either the straw or unground grain. Figure 1 illustrates a typical awn of the varieties Trebi or Coast. The rough saw-like edge may cause serious damage to animals. To say the least, it causes discomfort.

Under irrigation the bearded varieties have produced heavier and plumper grain than the hooded varieties. This is desired in a feed barley. The original smooth-awned barley varieties had some undesirable qualities. Consequently, it was necessary to try to obtain desirable smooth-awned barleys by crossing.

Under other climatic conditions similar deficiencies were found in smooth-awned barleys. The Minnesota Experiment Station, in cooperation with the United States Department of Agriculture, started extensive breeding experiments in 1912 to obtain high-yielding smooth-awned barleys.* The work was carried out using Mendelian methods. Many selections were made from hybrids between the years 1915 and 1918. These selections were tested further in the following years and three high-yielding smooth-awned barleys suitable for Minnesota conditions were finally selected.

In the fall of 1920 several selections were obtained from the Minnesota Experiment Station. These have been tested under Colorado conditions. Two more selections, Velvet and Comfort, were obtained in 1924 from the same source and have been tested in Colorado.

In Figure 2 a typical awn of the various smooth-awned strains is pictured. It will be noted that the awn has **no barbs** for over two-

*H. K. Hayes, Breeding Improved Varieties of Smooth Awned Barleys, *Journal of Heredity* 10:371-381, 1926.



Fig. 1. Awn of Rough-Awned Barley.—Notice the rough, saw-like, barbed awn found on varieties such as Trebi and Coast which are commonly grown on irrigated land for feed.

thirds of its length. While there are a few barbs on the tip of the awn, they can be neglected as the tip is usually broken before threshing and the rough section is lost.

In Table 1 the results of a five-year test of the smooth-awned barleys in comparison with the better rough-awned and hooded barleys is given.

Table 1.—Yield of barley varieties grown at the college at Fort Collins under irrigation, from 1924 to 1928, inclusive.

Variety	C. I. Number	Yields in bushels per acre					4-Year	5-Year
		1924	1925	Years Grown		1928	Average	Average
				1926	1927		1925-1928	1924-1928
Trebi	936	71.7	74.3	88.9	86.8	81.6	83.0	81.0
Comfort			71.2	93.6	77.7	70.0	78.0	
Velvet	4252	76.8	62.5	80.2	78.3	71.4	73.0	74.0
Colsess	2792	49.4	52.8	74.1	73.3	90.5	73.0	68.0
Coast	2785	48.9	64.7	76.7	64.2	85.7	73.0	68.0

This table shows that, while the smooth-awned barleys—Comfort and Velvet—yield slightly less than Trebi, on the average, the difference of 5 bushels may not be considered significant when we take into consideration the advantage of the smooth awn.

Comfort and Velvet have a stiffer straw than Trebi and would be easier to handle with machinery.

Conclusion

In deciding the value of the smooth-awned sorts it is necessary to compare the advantage in yield of Trebi against the advantage of the smooth-awn and stiffer straw of the smooth-awned sorts. It remains for the individual farmer to decide in favor of one or the other.

However, when one considers that he can overcome the disadvantage of the rough awn with a loss in yield of not over five bushels, it may be to his advantage to grow a smooth-awned variety. Since Comfort has yielded well in a four-year test under irrigated conditions, this variety is recommended for trial where a high-yielding feed barley with smooth awns is desired.

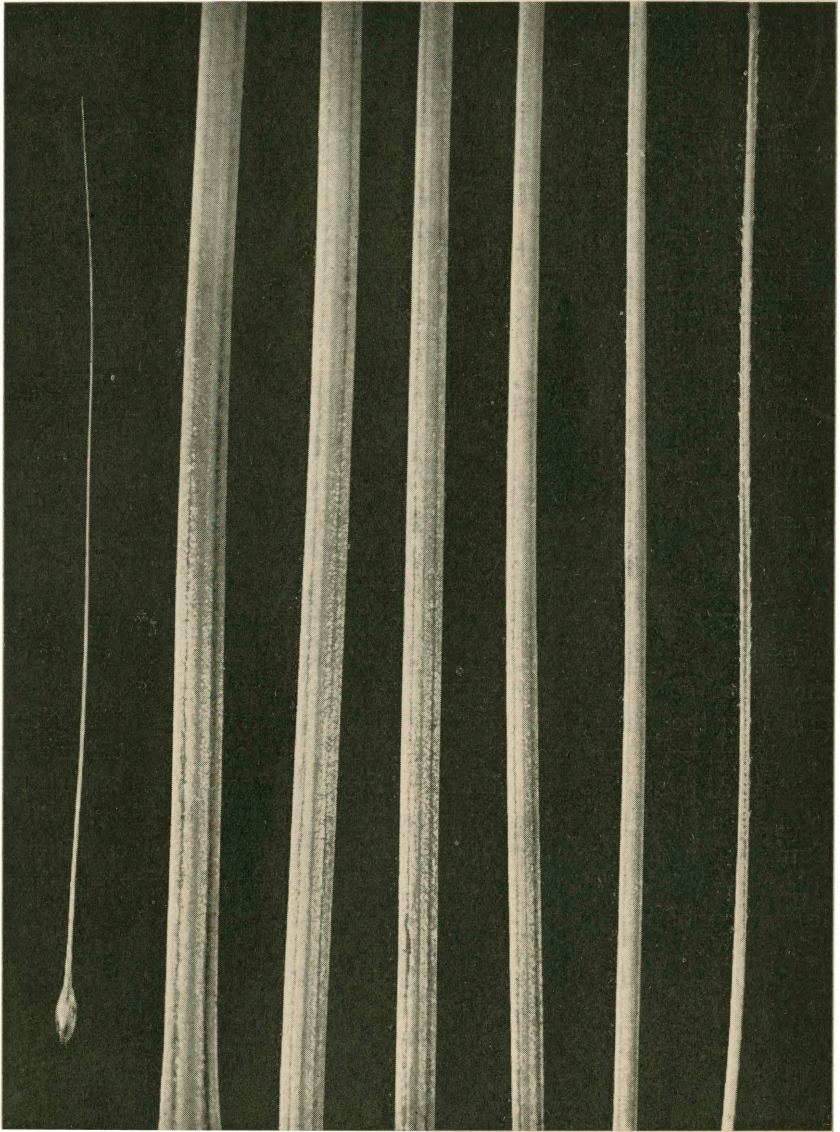


Fig. 2. Awn of Smooth-Awned Barley.—Notice the absence of barbs on these awns. On the smooth-awned barleys only a small section of the awn at the tip is rough and this is usually broken off before threshing.