Malting Barley

Variety Trials In Arizona

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View of malting barley variety plots at the Mesa Experiment Station in 1957.

While a few of the varieties produced high quality malt, none of the high yielding varieties had a high level of all the known malting quality characteristics desired in high quality malting barley. If an ideal malting barley variety is to be grown in Arizona, a breeding program will have to be initiated to develop such a variety for this area.

In Arizona, where the winters are generally mild, spring barley is an important feed grain crop when grown as a winter annual under irrigation. The usual practice is to plant feed barley in November or December and harvest the grain crop in May or June of the following year.

Because of the cotton acreage allotment, Arizona farmers recently became interested in growing malting barley as a possible new cash crop for the irrigated areas of the state. Four experiments were conducted over a 4-year period (1954-57) at Mesa, Arizona, to investigate the yield and quality of spring malting barley varieties. Twenty malting barley varieties from the principal barley growing areas in the United States and Canada were grown and compared with Arivat barley, our main feed barley, as to yield, barley seed quality, and malt quality.

Weight and Malt Tests

At maturity the grain was harvested from each variety plot to determine yield. A composite sample from the four replications was used to determine the weight per bushel and the weight per 1,000 seeds for each variety. A five-pound composite sample from each variety was sent to Los Angeles for barley and malt quality determinations. The barley grain was analyzed for protein percentage, diastase activity, and extract percentage. The grain was then malted and the malt was analyzed for protein percentage, diastase activity, and extract percentage.

Results from these experiments indicate that spring malting barley varieties can be grown as winter annuals under irrigation in the Southwest. High calculated yields, up to 5704 pounds per acre, were obtained from a few 6-row varieties. Yields of this magnitude compare favorably with the yields obtained from commercial feed barley varieties grown in the area, and are higher than yields obtained in most of the spring barley areas in the United States. In general, the coast group of varieties was higher yielding than those varieties with a Manchurian background, and the 6-row varieties were more productive than the 2-row varieties.

All of the malting varieties produced grain with a higher weight per bushel than that obtained from Arivat feed barley. This indicates that high test weight malting barley can be grown under irrigation in Arizona. (In most instances the 2-row varieties produced higher test weight grain than the 6-row varieties.)

Kindred Was Disappointing

Most of the malting varieties produced seed of an acceptable size for malting purposes. It is noteworthy that Kindred, one of the most popular malting varieties in the Midwest, produced the smallest seed of all, indicating that Kindred is not as well adapted to fall planting in Arizona as some of the other varieties.

In general, lodging and shattering were not as detrimental in the coast group of varieties as they were in the Manchurian.

Average of yields of spring malting barley varieties grown as winter annuals under irrigation at Mesa, Arizona, in 1954, 1955, 1956, and 1957.

Variety or Selection	4-Yr. Average Yield in % of Arivat
Atlas 46	90
Hanna	60
Hannchen	68
Heines Hanna	73
Moravian	62
Tennessee Winter	86
Atlas 54	98
Brandon 3833	51
Husky	62
Kindred	42
Montcalm	51
O. A. C. 21	34
Odessa	61
Betzes	80
Traill	60
N. D. B104	67
Oderbrucker	42
Rika	74
S. D. 1761	79
Liberty	72
Arivat	100
Yield of Arivat calculated in pounds per acre	5820

For more information about small grain varieties and their performance in Arizona, the reader is referred to **"Small Grain Variety Tests—1956,"** published as Report No. 137 and available free from any Arizona County Extension Agent. Another of Dr. Day's reports, **"1956 Corn Variety Tests"** was issued as Report No. 144, and is available in the same manner.