MOORE BARLEY IN NORTH DAKOTA

by

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Moore barley was developed cooperatively by the Wisconsin Agricultural Experiment Station and the U. S. Department of Agriculture, and first released to growers in 1949. This variety is of hybrid origin involving three parents: Chevron, a stem rust resistant variety from Switzerland; Olli, a variety with desirable malting qualities from Finland, and Wis. 38. Moore is a six-rowed variety with smooth awns and white kernel.

The North Dakota Experiment Station has grown Moore in the larger test plots since 1947 and in the nursery tests since 1946. In these tests Moore has proven superior to Kindred ("L") and Wis. 38 in strength of straw, including less shattering and loss of heads. Like Kindred, Moore has satisfactory resistance to stem rust and more tolerance than Wis. 38 to root rot and the leaf disease called spot blotch. On the other hand Moore lacks in resistance to another leaf disease, called "net blotch"—a disease previously not considered of much importance but which in 1949 proved to be quite serious in some fields of Moore. Net blotch is regarded as likely to develop and spread most rapidly during periods of moderate or relatively cool temperatures, coupled with high humidity. How this disease may develop if Moore comes into extensive use over a wide area cannot, of course, be foreseen.

Moore is susceptible to both loose and covered smut. There are three different smuts which attack barley; covered smut (*Ustilago hordei*), and two loose smuts, one called false loose smut (*U. nigra*) and the other true loose smut (*U. nuda*). These two loose smuts are very similar in appearance, but the false loose smut, like covered smut, is carried on the outside of the seed and so can be controlled with the recommended surface seed treatments. On the other hand, the true loose smut is carried within the seed and so can not be controlled with the ordinary seed treatments. The true loose smut has not been serious on Moore up to date. Since Moore is susceptible to smut, TREATING SEED FOR SMUT CONTROL IS STRONGLY URGED.

Yield Comparisons

Moore has to date shown a satisfactory capacity for yield when grown under relatively favorable conditions. It has, however, appeared somewhat erratic in yield and less dependable under conditions that are unfavorable. In 14 field plot comparisons to date, covering three years, (Table 1) Moore and Kindred yielded about the same for six comparisons; Moore was distinctly better than Kindred in three tests and below Kindred in five other tests. Compared with Wis. 38 it yielded as well or better than that variety in seven of the 10 comparisons.

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In nursery comparisons at Fargo, Langdon and Park River since 1946 (Table 2) Moore also averaged slightly lower in yield than Kindred at Fargo. However, Moore yielded better than Kindred in each of the years tested at both Langdon and Park River. Compared in yield with Wis. 38, Moore averaged slightly lower at Fargo, better at Park River and about the same as Wis. 38 at Langdon.

Yield comparisons for Moore were relatively less favorable in 1949 than in the previous years. Some varieties like Tregal, not recognized as acceptable for malting, usually will yield better than those classed as malting types, hence may well be grown if the crop is intended for feed on the farm.

Yields alone, when based on only a limited number of tests, are not sufficient to judge the true value of a variety. Environmental conditions influence variety differences from year to year. Drouth or high temperatures coming at a critical time will injure some varieties more than others, especially where there are differences in the stage of maturity. If the unfavorable conditions occur early and are followed later by favorable rains and ripening temperatures, an early variety may be injured most. A late variety under those conditions is less advanced and so may recover better when the favorable conditions occur. On the other hand if the early conditions were satisfactory, followed by less favorable conditions, then the late varieties would be at a disadvantage. High ripening temperatures or periods of drouth are more likely to occur during the latter than the earlier part of the ripening season, hence early varieties, not recognized for a high capacity to yield, may under these conditions show to relatively better advantage than the late varieties.

Periods of high ripening temperatures during early July and again beginning about July 22, coupled with low rainfall, were factors influencing yield differences in 1949, especially at Fargo. Relatively late varieties such as Moore, Montcalm, also Wis. 38, thus failed to yield up with Kindred and a number of other early ripening varieties. Compared with Kindred, Moore requires from three to six days longer to head and ripen and is only slightly earlier than Wis. 38.

In seasons when a disease to which a variety lacks resistance is present, the yield performance for that variety may be down. A heavy infestation of net blotch in eastern North Dakota contributed to a somewhat disappointing yield for Moore in 1949 as did a late spring frost which at Fargo injured Moore more seriously than any of the other varieties.

Moore has satisfactory malting qualities. Under average growing conditions, Moore produces a plump kernel with satisfactory kernel size and weight. It also has a relatively tight hull which tends to resist damage from skinning. The kernels are usually mellow. In yield of extract Moore is superior to Wis. 38, and also averages slightly higher in the enzymes called diastase. However, in diastase it averages lower than Kindred, Manchuria and Montcalm, and so in the malting industry its use may be mainly for the production of brewers' malt.

Seed Available

There is now a considerable amount of Moore seed available. The department of agronomy began the increase of this variety in 1948. About 1150 bushels were produced and released in 1949 to 74 growers, cooperating in the further increase of this seed. From this increase there is now available about 20,000 bushels. The Experiment Station has retained an option on 75 per cent of this increase, which is to aid others in obtaining seed should they so desire.

Over and above this, other Moore seed was brought into the state and sowed last spring, resulting in more than 10,000 acres of this new variety in North Dakota. Some of the increase from this acreage presumably will be retained for distribution within the state, though much of it may move into other states where the demand may be greater.

Those who may desire seed from the increase under option to the experiment station may contact the department of agronomy, State College Station, Fargo, or their county agent. Seed will then be allotted from sources nearest to the applicant and in so far as supplies permit.

Considering the desirable characteristics for Moore, together with its limitations as mentioned previously, we believe that Moore is deserving of further increase and more extensive trial under farm conditions in 1950. For the present, however, this new variety is offered and recommended mainly for the better barley growing areas of the state, where the crop is grown and usually sold for malting.

Table 1 -- Comparing the average yields of 4 malting varieties and of Tregal, a feed variety, at the several stations where tested in field plot trials since 1947.

	Yields in bushels per acre							
						Williston		Weighted
Variety	Fargo 1947-49	Edgeley 1948-49	Langdon 1948-49	Minot[1] 1948	Dick'n 1948-49	D. Land 1948-49	Irrig. 1948-49	average 14 sta. yrs.
Kindred	45.8	28.9	45.0	61.8	33.1	39.8[2]	57.7	43.4
Wis. 38	41.0	29.0	47.5	56.3	....	....	49.7	....
Montcalm	42.0	22.2	52.4	72.0	31.6	40.2	60.0	43.6
Moore	42.5	23.8	46.5	62.6	32.7	41.2	54.6	42.0
Tregal	51.2	29.4	58.0	65.7	36.4	44.0	64.2	48.8

[1]Hail damaged 1949 stands shortly before harvest and comparisons that year without value.
[2]Shattered heavily before harvest in 1949 and yield that year calculated on basis of 58% shattering loss.

Table 2 -- How varieties compared in yield when grown in rod row nursery trials at three stations.

	Average yields, bushels per acre			
Variety	Fargo 1946-49	Langdon 1946-49	Park River 1947-49	Weighted average 11 sta. yrs.
Kindred	54.6[1]	34.7[1]	52.1	46.7
Wis. 38	54.8	42.8	54.6	50.4
Montcalm	52.9	42.9	59.2	51.0
Moore	53.5	42.6	58.2	50.8

[1]Kindred not grown in this test in 1946. Yield calculated on basis of relative yield with other varieties in other three years.