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IOWA AGRICULTURAL EXPERIMENT STATION
AGRONOMY SECTION
Farm Crops

BARLEY
An Early Maturing Crop for Years of Feed Shortage

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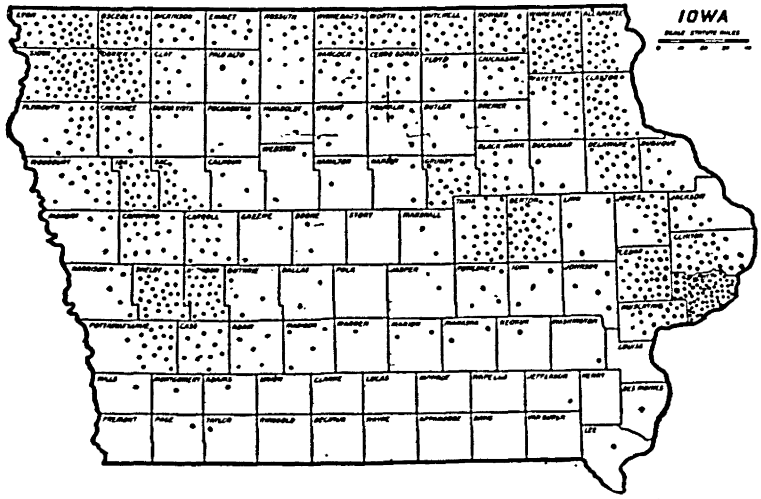
The farmer who is short of corn may well sow a field of barley in April for hog feed in July and August. Barley, the first of all spring crops to mature, is ready to harvest early in July and will offer relief from feed shortage at least sixty days before the next corn crop is ready. This early maturity makes it available for hog feed just when the pastures are beginning to fail and the shortage of feed is most stringent.

Not only will barley tide the farmer over the shortage of summer feed, but the surplus will sell at a handsome price before other cereals are ready for the market. When food is scarce on the farms it is scarce in the markets, and barley may be turned as an especially profitable "money crop" at times of shortage.

The area devoted to barley production in Iowa is not uniformly distributed over the state, nor is it so extensive as that of wheat and oats. There are a few sections of the state, however, where barley is already classed as one of the chief crops and these are spreading in extent very rapidly. Most of the barley produced in Iowa is grown in the counties located on the Mississippi loess soil in the eastern



This map shows the average production by counties of the barley grown in Iowa, 1912-1916. Each dot equals 10,000 bushels.

part of the state and on the Missouri loess along the western border. But in the past four years, a considerable acreage has also been grown in east central Iowa and in the central northern counties.

Recent trials have shown that there are but few sections where barley may not be grown at a profit. This is true, especially this year, in view of the high prices that will prevail and the shortage of corn before the new crop is ready.

THE BEST VARIETIES FOR IOWA.

The varieties of barley grown in Iowa may be classed under five general types. Probably 95 per cent of all the barley grown in the state is of the bearded 6-rowed kind, and about 4 per cent is bearded, 2-rowed. The combined production of the bearded and bald hulled types does not equal more than 1 per cent.

Several varieties from each of these types have been tested on the station plots during the past ten years. Most of these have been discarded because of poor yield or weakness of straw, until now only the best representatives of each class are being grown.

Table I gives a summary of the field records for these varieties for the last five-year period, 1913-1917.

In order to show more correctly the comparative feeding value, the yields of the hulless varieties are shown at 48 pounds per bushel, the same as the hulled varieties.

The 6-rowed varieties outyield any of the others with a regularity that warrants their use wherever barley is grown. In some of the more arid regions in the western states, excellent yields are obtained from the 2-rowed barley and occasionally good crops of this kind are grown in western Iowa. For the state as a whole, however, farm yields as well as those at the station show conclusively that the 6-rowed type is the better adapted.

The most popular variety of 6-rowed barley is Oderbrucker. This variety was distributed by the Wisconsin station some years ago. It is a bright variety of remarkable uniformity in both plant and grain.

Table I. Summary of variety test of ten varieties of barley, commonly grown in Iowa, at Iowa Agricultural Experiment Station, 1913 to 1917, inclusive.

VARIETY	Caucasian	Oderbrucker	Wisc. No. 5	Manchuria	Ontario No. 21	Frankish Brewing	Hanna Brewing	Black Hulless	White Hulless	Success
SEEDING										
Rate	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½
Date	4-20	4-20	4-20	4-20	4-20	4-20	4-20	4-20	4-20	4-20
DATE RIPE										
Latest	7-22	7-22	7-28	7-28	7-20	7-24	7-26	7-16	7-21	7-15
Earliest	7-8	7-12	7-11	7-10	7-9	7-12	7-14	7-9	7-10	7-5
Average	7-14	7-16	7-18	7-17	7-15	7-18	7-20	7-14	7-17	7-10
HEIGHT										
Tallest	32	38	40	36	38	39	37	32	32	30
Shortest	28	31	34	28	28	31	30	26	24	22
Average	30.4	33.5	37.2	33.6	32.8	36.2	33.4	29.0	28.4	26.0
LODGED										
Per Cent	0	0	0	0	0	0	0	0	0	0
Y'LD PER ACRE (Bu. of 48 lbs.)										
1913	41.5	34.0	41.3	33.9	35.5	40.7	36.8	22.2	27.0	26.3
1914	32.5	43.9	35.0	35.8	34.2	31.7	16.9	22.6	18.9	19.6
1915	11.0	12.7	11.4	9.5	16.5	12.6	10.0	9.1	4.0	5.2
1916	40.5	36.5	35.8	32.4	32.0	23.2	18.7	28.3	21.4	26 0
1917	42.1	49.2	49.2	52.9	50.8	54.6	42.0	31.2	21.3	24.2
Average	33.5	35.3	34.5	32.9	33.8	32.6	30.9	24.7	18.5	20.3
WT PER BU.										
Highest	48	46	49	47	47	47½	47½	61	57	43
Lowest	34	33	29	33	35	35	40	49	49	34
Average	41.8	40.8	41.4	41.0	42.0	41.8	43.3	57.2	53.4	38.0

Some of the other varieties have given practically equal results, but none has ever gained the wide recognition of the Oderbrucker.

The Caucasian, Oderbrucker, Wisconsin No. 5, Manchuria and Ontario No. 21 are all bearded 6-rowed varieties. The Frankish Brewing and Hanna Brewing are bearded 2-rowed kinds, while the Success is a 6-rowed beardless variety. The Black hulless is bearded while the White hulless is beardless. It will be noted that the beardless varieties have given much lower yields than the bearded kinds.

TIME AND METHOD OF SEEDING.

Barley should be sown early, as soon as freezing weather is past. The fact that barley is an early maturing crop has led some to suppose that early sowing is of little importance. It is true that better crops may be obtained with late seeding of barley than from late seeding of other cereals, but experiments all show that the best yields are obtained from crops sown as soon as the danger from freezing weather is past. It is good practice to sow oats as soon as the ground can be worked and to follow with the barley as soon as the oats are in.

The preparation of the seed bed is very important in the profitable production of barley. All barley growers are agreed that well-tilled, fertile land is essential. Lowland is not recommended, but well-tilled upland rarely becomes too rich to raise a profitable crop of barley.

Best returns are secured when the soil is well pulverized and the stalks and stubble worked down into the seed bed where it will decompose and form plant food. Whether this is done with a shallow plowing or by disking remains for the farmer to determine according to his equipment. Many farmers in the barley districts prefer plowed land. Economical crops, however, are raised on well-pulverized stalk ground.

DRILLING BETTER THAN BROADCASTING.

Drilling increases the yield and quality of barley. Barley is very sensitive to lack of uniformity in the conditions of the seed bed, distribution of seed and depth of planting. Low places and places not thoroly prepared show up in the crop thruout the season. Patchy sowing is noticeable at an early date and never yields as well as fields that are put in evenly at a uniform depth.

The advantage of drilling has been demonstrated in 6 out of 9 trials at the Iowa station. Table II shows drilling to give an average gain of 3 bushels per acre over broadcasting in 9 trials during the period from 1912 to 1916. In 2 out of 3 trials the drilled barley outyielded the broadcast and in practically every case it was of better quality.

Table II. Annual and average yields per acre, and weight per bushel obtained from drilling and from broadcasting barley in nine trials, 1912 to 1916.

YEAR VARIETY	YIELD OF GRAIN		WT. PER BUSHEL	
	Drilled	Broadcast	Drilled	Broadcast
1912 Caucasian 2	20.0	47.9	42½	40
1913 Caucasian 2	39.6	23.8	42	40½
3	42.8	32.7	41	39½
1914 Caucasian 2	20.4	20	41	41
3	18.7	17.2	40	40
1915 Caucasian 2	10.6	7.4	35	34
3	7.7	8.1	37	34
1916 Caucasian 2	33.0	36.0	41½	42
3	33.2	35.3	43	41½
Average	28.4	25.4	40.3	39.1

The depth to drill will vary with the land upon which the barley is to be sown. Lighter soils will stand deeper planting than heavy

soils. It is a safe plan to sow seed just below the loose dry earth that covers any well-prepared field. Seed sown at this depth gets the most heat, air and moisture, the three essentials for germination. If any of these are limited, germination and growth are retarded. Thus deep planting reduces the heat and air, while shallow planting reduces the moisture supply. The farmer nearly always has a tendency to drill too deeply.

THE RATE OF SEEDING.

The amount of seed to sow to the acre varies but little with different soils and seasons. In 4 trials conducted at the Iowa station from 1913 to 1916 the highest average yield was obtained from the use of 2 bushels per acre. Table III shows the annual and average yields obtained from rates varying from 1 to 3 bushels per acre. The losses occasioned from the sowing of more than 2 bushels per acre amount not only to the reduced yield, but to this must be added the extra seed sown.

Table III. Annual and average yields per acre obtained from drilling barley at rates varying from one to three bushels of seed per acre, 1913 to 1916.

YEAR VARIETY	RATE OF SEEDING, BUSHELS				
	1	1½	2	2½	3
1913 ....Caucasian.....	32.8	35.2	39.6	37.0	42.8
1914 ....Caucasian.....	16.0	18.5	20.2	16.3	18.7
1915 ....Caucasian.....	8.4	9.2	10.6	11.0	7.7
1916 ....Caucasian.....	43.4	42.4	44.0	40.5	33.2
Average.....	25.1	26.3	28.6	26.2	25.6

HARVESTING THE BARLEY CROP.

The care of the barley crop at harvest time has not received sufficient attention at the hands of the average Iowa farmer. Barley is ready to be cut when the kernel is in the dough stage. This is after the straw is ripe, but before the heads are fully mature. The shocks ought never to be large, about 10 bundles, and when well capped will give the best results. As soon as the shocks are well cured the crop should be threshed or stacked, as much damage often occurs from bad weather while it is in the shock. If any of the crop is to be sold it will pay well to thresh the cap sheaves by themselves and not allow the discolored grain from them to be mixed with that from the bright inside bundles. The bright grain will grade higher and bring a much higher price on the market.

For feeding purposes barley may be threshed closer than when it is to be sold to the cereal mills or to the malsters. Barley buyers prefer to have about ⅛ of an inch of the beard left on the kernel. Barley threshed in this manner usually shows a higher germination than that which has been threshed close, or clipped. The malsters and seed men base their prices very largely on germination and will discount close threshed and clipped barley.