

Better Yields

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of SPRING OATS

With Better Varieties

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IMPROVEMENT in oat varieties during the past few years has been as spectacular as the recent improvement made in corn with the development of hybrids. The new varieties best adapted to Illinois exceed Columbia, which was until a few years ago the most popular variety, by many bushels. For instance as a three-year average in northern Illinois tests the yields of Vicland were 18.1 bushels more per acre than the yields of Columbia.

Oats are an essential farm crop not only because of their grain and straw but also because they fit into the crop rotation and are one of the best companion crops for small-seeded legumes and grasses. The present decline in acreage can be offset to a large extent by the use of improved varieties.

Best Varieties for Different Sections

Distinctly superior varieties of oats are now available for planting in Illinois. A purchaser of seed oats can avoid the less desirable varieties being offered for sale by relying on tests such as are reported here.

The ranking of the varieties in the following tables is based on yields of the last three years only, since those are the only years the newer varieties have been grown in the Illinois drill-plot tests.

Northern Illinois. On the Mt. Morris field in northern Illinois the varieties rank in the following order according to average acre-yield for the years 1941-1943.

	<i>bu.</i>		<i>bu.</i>		<i>bu.</i>
1 C. I. 3337*	62.0	7 Marion	53.3	13 Sixty-Day	38.7
2 Vicland	61.6	8 Hancock	48.3	14 Cartier	38.5
3 Boone	61.4	9 Erban	45.0	15 Legacy	27.8
4 C. I. 3607*	61.3	10 Vanguard	43.7	16 Eagle	24.3
5 Tama	59.8	11 Columbia	43.5	(*Experimental strains—no seed available commercially)	
6 C. I. 3336*	59.3	12 Iowar	40.7		

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Central Illinois. At Urbana the average acre-yields for the three years 1941-1943 were as follows:

	<i>bu.</i>		<i>bu.</i>		<i>bu.</i>
1 C. I. 3310*	70.1	7 Boone	64.0	13 Hancock	53.8
2 Tama	69.5	8 C. I. 3336*	63.1	14 Cartier	52.7
3 Vicland	67.0	9 Vikota	61.7	15 Erban	51.5
4 C. I. 3337*	66.0	10 Iowar	56.6	16 Eagle	36.6
5 Marion	65.6	11 Vanguard	55.9	17 Legacy	35.9
6 C. I. 3607*	64.9	12 Columbia	55.4		

Southern Illinois. Average acre-yields at Alhambra during 1942 and 1943 place the varieties in the following order.

	<i>bu.</i>		<i>bu.</i>		<i>bu.</i>
1 Tama	28.0	3 Columbia	24.6	7 Boone	21.0
2 C. I. 3310*	25.7	5 Fultex	22.5	8 Hancock	16.3
3 Marion	24.6	6 Vicland	22.4	9 Vanguard	15.1

*Experimental strains—no seed is available commercially.

Description of Varieties

Yields alone are not a complete index to the desirability of an oat variety. Some other characteristic, such as resistance to lodging, is often more important than a high yield. The descriptions given here will supplement the data on yields.

Boone, Cedar, Control, Tama, Vicland, Vikota, C. I. (Cereal Investigation) 3310, C. I. 3336, and C. I. 3337 are selections from a cross made by the U. S. Department of Agriculture between Victoria, a variety resistant to crown rust and smut, and Richland, which is resistant to stem rust. Similar in appearance and growth habits, these varieties have a short, fine, stiff straw and are resistant to crown rust, stem rust, and smut. They ripen a few days later than Columbia. Their yellowish-white grain is of good quality. Vicland was distributed by the Wisconsin Station; Tama, Boone, and Control by the Iowa Station; Cedar by the Nebraska Station; Vikota by the North Dakota Station; and C. I. 3310, 3336, and 3337 are not yet released.

Hancock, Marion, and C. I. 3607, being moderately tall, are especially well suited to the poorer soils, where varieties with shorter straw might not grow tall enough to harvest readily. Hancock and Marion are selections from a cross between the smut-resistant variety Markton and the rust-resistant Rainbow. C. I. 3607 is from a cross between two strains, one of which was developed from a cross between Markton and Rainbow, the other from a cross between Victoria and Richland. These crosses were made in investigations carried on cooperatively by the Iowa Station and the U. S. Department of Agriculture.

Marion is only moderately resistant to lodging, whereas Hancock is notably so, being fully as resistant as Vicland, Tama, and Boone. C. I. 3607 is between the two in lodging resistance. All three varieties produce grain of excellent quality, being high in test weight and low in percentage of hull. Marion and C. I. 3607 are white; Hancock, yellow.

Iowar and Sixty-Day, early maturing white oats, are susceptible to disease and on productive soils inclined to lodge. Oats of this type have been largely replaced in Illinois by the higher-yielding rust- and smut-resistant varieties.

Richland, a selection from Sixty-Day, is resistant to stem rust. It has a yellow kernel and a stiff straw. A parent of Tama, Vicland, and Boone, it is not now grown to any extent in Illinois.

Columbia is an early tannish-gray oat, susceptible to crown rust, stem rust, and smut, but high yielding and of good quality in years when rust is not prevalent. Its straw is medium-long and lodges badly when fully ripe. It was selected by the Missouri Station from Fulghum.

Cartier, Eagle, Erban, Legacy, and Vanguard are white oats that ordinarily mature too late to yield well in Illinois. Eagle and Legacy are especially late. In 1943 at Urbana these varieties were much more heavily infested with corn borer than were other varieties. Vanguard is the only one in this group that is resistant to disease and it resists stem rust only. Vanguard and Erban give the best grain yields.

Varieties for straw. Most of the varieties that give high yields of grain are below average in yields of straw. Cartier, Eagle, Erban, Hancock, Legacy, Marion, C. I. 3607, and Vanguard are above average.

Recommended Growing Practices

Plow cornstalk land. Even tho oats do fairly well on unplowed land, to seed them without plowing is unwise. Turning the cornstalks under will help to hold the European corn borer in check and will also help to increase the oat yields, which are usually about 3 bushels higher on plowed land. This is especially true if plowing can be done in the late fall or early spring so that oats can be seeded in good time. If plowing is delayed, it may be best to sow soybeans instead of oats.

Follow soybeans with oats. On farms where soybeans are grown, a rotation of corn, soybeans, oats, and clover is desirable. The cornstalks can be plowed down for soybeans, and the oats can be seeded without plowing when they follow a bean crop. In areas where it is hard to get a stand of clover in oats following soybeans, the ground should be stirred as little as possible in the seeding operations. The oats may be sowed with a disk drill, for instance, without any previous working of the soil.

Seed with a drill. Drilling saves seed and usually gives higher yields than broadcasting. If seed is drilled, 8 pecks should be used to the acre. If broadcasted, 10 to 12 pecks are better. When a legume is sowed in the oats, the best rate is 6 pecks of seed oats to the acre if drilled and 8 to 10 pecks if broadcasted.

Treat seed. Seed treatment is advised for all oat varieties that are susceptible to smut. Not only is it cheap and good insurance against smut, but in some years it has the added value of controlling some other diseases. If New Improved Ceresan dust is applied some weeks before the seed is to be sowed, no more than $\frac{1}{4}$ ounce should be used for a bushel of seed. For smut-resistant varieties, seed treatment is not so important, and unless it can be done without much trouble and expense, it probably will not be worth

while. If, however, the oats are cleaned and treated in one operation, the extra cost of the disinfectant will doubtless be more than repaid.

Sow early. Moderately early seeding is recommended for oats. The middle of March is not too early for central and southern Illinois, nor the first of April for northern Illinois. Extremely early seeding sometimes results in weak, uneven, or poor stands, but seeding too late usually reduces yields more than seeding too early.

Harvest with a binder or combine. Harvest the ripened crop with a binder and thresh it with a regular small-grain separator; or harvest with a windrower and follow with a pick-up combine when the grain is dry enough to bin. Harvesting may be done directly with a combine, but in that case great care must be taken to prevent heating and molding of the grain in the bin.

Soil for oats not often fertilized. Soil-treatment materials are seldom applied directly for oats; most plans call for such materials to be applied ahead of corn and wheat.

1943 YIELDS OF OATS IN TESTS ON THREE FIELDS

(The percentage yields for each field are obtained by dividing the yield of each variety by the average yield of the whole field.)

Variety	Average percentage yield	MT. MORRIS (north)		URBANA (central)		ALHAMBRA (south)	
		Bushels	Percent of average	Bushels	Percent of average	Bushels	Percent of average
C. I. 3337 ^{*1}	132.3	53.7	149.2	58.3	115.4	.....	.....
C. I. 3971 ^{*2}	130.7	59.8	166.1	56.9	112.7	26.6	113.2
Vieland.....	127.5	53.8	149.4	56.7	112.3	28.4	120.9
C. I. 4065 ^{*2}	126.9	57.2	158.9	56.8	112.5	25.7	109.4
Tama.....	125.3	53.6	148.9	58.6	116.0	26.1	111.1
C. I. 3652 ^{*3}	123.8	62.6	173.9	52.2	103.4	22.1	94.0
C. I. 3336 ^{*1}	123.3	50.6	140.6	56.1	111.1	27.8	118.3
C. I. 3607 ^{*4}	117.7	46.5	129.2	53.6	106.1	.....	.....
C. I. 4066 ^{*2}	116.8	.....	.....	59.0	116.8	.....	.....
Boone.....	116.5	53.3	148.1	55.4	109.8	21.5	91.5
C. I. 3310 ^{*1}	114.3	.....	.....	59.6	118.0	26.0	110.6
Vikota.....	108.9	.....	.....	55.0	108.9	.....	.....
Marion.....	105.1	34.3	95.3	57.1	113.1	25.1	106.8
Fultex.....	98.8	32.9	91.4	53.3	105.5	23.4	99.6
Columbia.....	94.3	28.1	78.1	53.6	106.1	23.2	98.7
Erban.....	85.0	27.9	77.5	46.7	92.5	.....	.....
Sixty-Day.....	83.9	23.9	66.4	44.8	88.7	22.7	96.6
Hancock.....	82.1	28.4	78.9	46.3	91.7	17.8	75.7
Iowar.....	77.5	21.2	58.9	48.5	96.0	.....	.....
Cartier.....	76.2	21.6	60.0	46.6	92.3	.....	.....
Vanguard.....	67.4	20.8	57.8	46.3	91.7	12.4	52.8
Richland.....	63.6	15.1	41.9	43.1	85.3	.....	.....
Eagle.....	33.8	5.5	15.3	26.4	52.3	.....	.....
Legacy.....	29.5	5.5	15.3	22.0	43.6	.....	.....
Average.....	.....	36.0	.....	50.5	.....	23.5	.....
Difference necessary for significance.....	.....	5.7	.....	4.2	.....	3.5	.....

*Experimental strains—no seed is available. ¹Selection from Victoria × Richland. ²Selection from Iogold (Victoria × Richland). ³Selection from Bond × Anthony. ⁴Selection from Markton × Rainbow crossed with a selection from Victoria × Richland. ⁵Selection from D69 × Bond.