Oat Variety Performance in Michigan
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Cooperative Extension Service
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February 1983
4 pages

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Oat performance tests are conducted each year on farms in several Michigan locations. Recent tests in Ingham, Tuscola, Kalamazoo, Menominee and Alger Counties have included varieties from Michigan, adjacent states and Canada. These data, together with information from county demonstration trials, form the basis for our varietal recommendations and new variety release program.

Short term averages tend to be inconsistent, thus data on new varieties are not as reliable as for older varieties. Comparisons between older and newer varieties can be misleading if only two or three years' data are used. To avoid this difficulty, varietal comparisons are graphed against the mean yield of all varieties in that test. In this way, location can be ignored and varietal yield predicted with a reasonably high degree of accuracy based on the test average of all varieties. The procedure often explains over 80% of varietal yield variation at the various locations over a 10-year period.

Table 1 gives the expected yield of a given variety compared to the average yield of all test varieties of 50, 60, 75, 90, 105 or 120 bu/acre. Given an estimate of average oat yields for an area, several acceptable

TABLE 1. Expected yield of a variety when the average yield level of all varieties in the test was 50, 60, 75, 90, 105 or 120 bu/acre. Reliability column refers to the percent of the variation of the varietal yield explained by the average.

							Expected yields based on management level, or soil productivity					
							Low Management		*Medium Management*		*High Management*	
Name	**Origin**	**Height**	**Maturity**	**Reaction to BYDV***	**No. of Tests**	**Reliability Estimate (r2)**	*50*	*60*	*75*	*90*	*105*	*120*
Allen	Ind.	S (short)	VE (very early)	4.1	7	89	42	52	67	81	96	111
AuSable	Mich.	M (medium)	L (late)	2.0	44	90	56	65	79	92	105	119
Clintland 64	Ind.	M	E (early)	5.0	41	79	48	55	66	77	88	99
Dal	Wis.	M	M (medium)	2.6	22	90	48	57	71	85	99	113
Diana	Ind.	S	VE	4.0	19	81	38	48	64	79	95	110
Elgin	Ca.	M	E	2.5	7	99	51	61	76	91	107	122
Froker	Wis.	M	L	3.0	23	91	45	56	70	85	100	114
Garry	Ca.	T (tall)	M	3.5	44	89	53	63	77	92	107	121
Goodland	Wis.	S	E	3.9	15	88	32	42	56	71	86	100
Heritage**	Mich.	M	M	1.5	11	—	50	62	83	99	115	132
Hudson	Ca.	M	L	1.8	7	90	56	65	80	94	108	122
Korwood	Mich.	M	M	2.1	36	86	52	63	79	95	112	128
Lang	Ill.	S	VE	1.7	7	70	60	68	81	93	105	118
Lodi	Wis.	T	M	3.5	25	88	51	60	73	87	101	114
Mackinaw	Mich.	T	L	3.5	31	85	47	58	74	91	107	123
Mariner	Mich.	M	M	3.0	38	90	54	64	79	95	110	125
Menominee	Mich.	M	L	1.5	44	90	57	68	83	99	114	130
Noble	Ind.	M	VE	1.5	16	80	54	64	79	95	110	125
Ogle**	Ill.	M	M	0.5	11	—	60	70	88	108	120	138
Orbit	N.Y.	S	M	2.2	44	85	55	65	80	95	110	125
Otee	Ill.	S	VE	1.2	22	80	48	58	72	87	101	116
Otter	Minn.	M	M	3.0	23	83	45	54	68	82	95	109
Polak	Poland	T	L	3.5	7	94	39	54	64	79	94	109
Portal	Wis.	M	M	3.0	28	89	47	57	72	87	102	117
Rodney	Ca.	M	L	1.5	41	73	53	61	73	85	98	110
Wright	Wis.	M	VE	2.1	7	86	56	64	76	89	101	113

.*1 = *resistant, 5 = highly susceptible*
** = *estimated information relative to other varieties.*

varieties can be chosen. For example, if long-term farm yields are more than 100 bu/acre, production of Rodney would represent a yield sacrifice of at least 7 to 10 bu/acre. Under high management levels, Heritage could be expected to yield 10 to 12 bu higher than the average, and 17 to 22 bu/acre higher than Rodney.

Barley Yellow Dwarf Virus (Red Leaf)

Barley yellow dwarf virus disease (BYDV or "red leaf") has become more serious in recent years, seriously depressing oat yields in 1982. Presently, the best method of reducing BYDV losses is through the use of tolerant varieties. Table 2 gives BYDV ratings of different varieties grown at three locations in Michigan in 1982. Ogle showed excellent resistance. Noble, Heritage, Menominee, and Lang (see Table 1) also have varying degrees of resistance to BYDV.

Other possible ways of reducing BYDV losses include early planting and proper fertilization to insure rapid plant growth. Avoid planting oats adjacent to oat fields which were infested last year. Many different grasses can serve as reservoirs for the virus. Control of BYDV by aphid control does not appear to be feasible.

TABLE 2. Barley Yellow Dwarf ratings at three locations in Michigan in 1982.

	Kalamazoo	East Lansing	Chatham	Average
Ogle	1.5*	0.8	3.3	1.9
Heritage	6.2	5.5	5.1	5.6
AuSable	6.2	3.3	6.8	5.4
Menominee	5.8	3.5	4.6	4.6
Korwood	7.0	7.0	6.3	6.4
Mariner	6.9	6.5	4.8	6.1
Mackinaw	7.9	5.2	8.1	7.1
Garry	7.1	5.5	7.6	6.7
Clintland 64	7.7	6.4	8.4	7.5

0 = resistant, 9 = susceptible

County Performance Tests

Tables 3-6 show yield and test weight of 9 different varieties at 6 different county locations from

TABLE 3. Oat yields and test weight (T.W.) from Tuscola County from 1979-1982.

Variety	1979		1980		1981		1982		4 yr. average	
	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.
Ogle	127	31.4	144	32.9	126	32.6	149	32.9	137	32.5
Heritage	130	34.8	120	35.0	127	33.9	141	35.9	130	34.9
Ausable	119	34.4	101	36.3	115	35.9	139	37.2	120	36.0
Menominee	134	34.1	121	34.5	126	33.7	134	34.5	129	34.2
Korwood	127	33.7	109	35.4	115	34.2	121	35.6	118	34.7
Mariner	119	35.7	120	37.6	111	35.9	102	35.1	113	36.1
Mackinaw	112	34.1	111	35.6	102	35.0	131	37.3	114	35.5
Garry	123	33.4	115	32.7	115	31.8	124	33.7	119	32.9
Clintland 64	91	32.9	104	34.8	107	34.3	103	33.0	101	33.8
LSD .05	**10**	**0.8**	**15**	**0.9**	**12**	**1.0**	**24**	**1.3**		

TABLE 4. Oat yields and test weight (T.W.) from Kalamazoo County from 1979-1982.

Variety	1979		1980		1981		1982		4 yr. average	
	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.
Ogle	97	33.6	125	31.0	121	33.2	115	31.5	115	32.3
Heritage	92	37.3	113	31.4	99	33.5	76	32.7	95	33.7
Ausable	91	37.6	112	33.7	90	34.4	68	34.4	68	35.0
Menominee	101	37.4	112	31.3	106	32.8	82	31.0	100	33.1
Korwood	93	35.4	111	32.6	89	33.1	49	31.1	86	33.1
Mariner	89	38.1	112	35.8	87	34.7	50	32.8	85	35.4
Mackinaw	81	35.0	108	32.9	65	31.5	38	32.1	73	32.9
Garry	98	35.2	113	30.9	87	31.3	41	29.7	85	31.8
Clintland 64	79	33.9	99	32.1	71	.32.1	32	28.5	70	31.7
LSD .05	**18**	**1.2**	**10**	**1.0**	**16**	**1.3**	**18**	**1.3**		

TABLE 5. Yield and test weight (T.W.) of nine oat cultivars grown in East Lansing.

	1979		1982		Average	
	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.
Ogle	133	32.0	101	30.6	117	31.3
Heritage	108	33.3	97	29.4	103	31.4
Ausable	105	35.3	74	31.5	90	33.4
Menominee	119	33.6	91	28.8	105	31.2
Korwood	118	34.4	66	29.4	92	31.9
Mariner	109	36.6	66	29.0	88	32.8
Mackinaw	105	34.6	69	31.3	87	33.0
Garry	98	31.9	56	29.4	77	30.7
Clintland 64	98	33.7	37	26.6	68	30.2

TABLE 6. Oat yields and test weight (T.W.) from three Upper Peninsula test locations — 1982.

	Alger		Menominee		Schoolcraft	
	bu/acre	T.W.	bu/acre	T.W.	bu/acre	T.W.
Ogle	99.4	39.2	83.7	31.9	103.5	33.5
Noble	83.3	38.7	82.4	34.9	88.2	34.7
Lang	90.0	39.7	87.4	33.9	89.7	33.5
Menominee	84.4	39.2	85.4	35.1	123.3	34.8
AuSable	82.8	39.3	81.7	35.6	113.9	34.6
Benson	73.5	37.5	80.0	34.6	96.6	34.0
Heritage	82.3	38.0	91.6	35.7	104.3	36.3
Mariner	83.5	39.0	86.8	36.3	118.3	35.3
Korwood	78.8	39.4	89.0	35.8	121.0	35.1
Garry	81.9	33.6	80.0	33.1	108.2	34.9
Mackinaw	71.0	36.2	89.6	35.8	93.9	35.6
Clintland 64	67.3	35.2	78.4	34.1	103.6	33.8

1979-1982. Ogle was the highest yielding variety in all locations. Ogle is a "yellow oat" with good tolerance to BYDV. However, it has slightly lower test weight than several other varieties. Heritage and Menominee are the next two highest yielding varieties.

Since Ogle is a yellow-seeded variety, and most Michigan oat varieties have traditionally been white seeded to meet the requirements for horse feeders, growers should be sure of their market before planting.

Table 7 gives the percent lodging in 1982 of oat varieties in several Michigan locations. This information should be considered along with that in Tables 1 through 6 before decisions are made on the oat variety to be grown.

TABLE 7. Percent lodging of nine oat cultivars grown in three locations in 1982.

	Tuscola	Kalamazoo	East Lansing	Average
	%	%	%	%
Ogle	46	66	34	49
Heritage	40	40	26	35
Ausable	64	56	41	54
Menominee	37	70	21	43
Korwood	25	23	56	35
Mariner	39	39	24	34
Mackinaw	30	36	27	31
Garry	89	63	40	64
Clintland 64	59	26	18	34
Nursery mean	**55**	**48**	**37**	**47**

Six Steps to Better Oat Yields

Oats can be raised at a profit in Michigan. While not the highest income crop, there are a number of good reasons for raising oats. They fit into a rotation, serve an important function as a companion crop, help distribute labor and supply the farmer with an important feed grain and straw for bedding. Oats may be used for silage or hay. When fed in these forms, nearly twice as much TDN per acre is realized as compared with feeding only the grain. Oats can be produced on land unsuitable for corn or other high value crops.

With high-yielding varieties and improved cultural practices, yields in excess of 125 bu are not uncommon on good land in Michigan.

Time and Rate of Seeding

Plant as early in the spring as the soil can be worked without causing soil compaction. Early planting allows the flowers to pollinate and the kernels to form before hot weather begins in the summer. Using a grain drill, plant 2 to 2½ bu of seed/acre in moist soil at a depth of 1 to 2 inches. Compaction of soil over the rows with presswheels will result in more uniform stands.

Seed Quality

Varietal purity is important in getting the benefits of improved varieties. Certified seed gives you the best assurance of varietal purity. Good seed is high in germination and free of impurities such as weed seeds or other crop seeds. The use of high quality seed is a good investment.

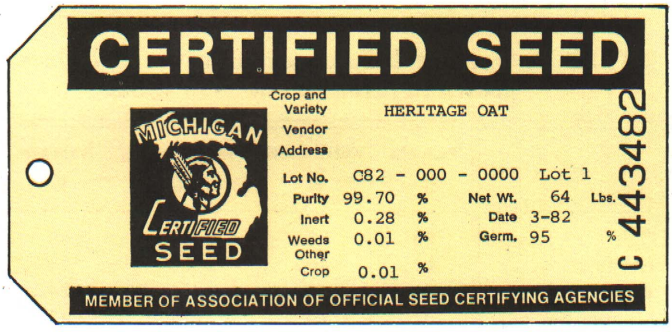

Figure 3. Certified seed provides assurance of varietal purity and high seed quality.

Seed Treatment

Seed should be treated with an effective chemical such as Vitavax 200 to prevent infection by smuts, seedling diseases and other seedborne fungi.

Weed Control

A good vigorous stand of oats will help keep weeds under control.

Chemicals such as 2,4-D, 2,4-DB, MCP or bromoxynil will control most broad-leaved weeds. Roundup (glyphosate) is registered and labeled for control of quackgrass and other perennial weeds as a nonselective herbicide prior to planting oats.

Further information on weed control is available in MSU Bulletin E-434, "Weed Control in Field Crops" (Price 50¢).

Fertilization

Soil test to determine the best rate of fertilizer needed.

Provide adequate nitrogen. Ten pounds of total nitrogen fertilizer may be adequate following a plowed-down legume and/or manure—40 pounds is recommended where no legume or manure is plowed down. When a legume is seeded with the oats, limit nitrogen to 25 lbs/acre. At higher rates of nitrogen, the oats become too competitive for the legume.

For most efficient use of phosphorus and potassium, band one inch below the seed with the fertilizer attachment on the grain drill. Banded fertilizer will help develop a vigorous plant, even when the soils are somewhat cold in the Spring.

If soil test recommendations are followed, enough nutrients are probably present.

Harvesting

Oats are ready to harvest at about 13 to 14 percent moisture. Higher moisture reduces storability unless the seed is artificially dried or the crop is to be used as silage. Follow the recommendations in the combine owner's manual regarding cylinder speed, clearance, and operating procedures.

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Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8, and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Gordon E. Guyer, Director, Cooperative Extension Service, Michigan State University, E. Lansing, MI 48824.

O-14096

1P1R-7.5M-2:83-KMF-UP, Price 15 cents. Single copy free to Michigan Residents

FILE: 22.151