Oat Variety Performance in Michigan

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Oat performance tests are conducted each year on farms in several Michigan locations. Recent tests located in Ingham, Tuscola, Lenawee, Kalamazoo, Menominee, Delta, and Alger Counties have included varieties from adjacent states, Canada, and Michigan. These data, together with information from county demonstration trials, form the basis for our varietal recommendation 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 30 varieties in that test. In this way, one can ignore location and predict varietal yield with a reasonably high degree of accuracy based on the test average of all varieties. In many cases the procedure explains over 80% of the variation in yield for a particular variety at the various locations over a ten year period.

This method of comparing varieties can be used because the 30 varieties in a test cover a wide range of types obtained from a wide geographical region, including Michigan. These varieties represent the area gene pool, and when yearly additions or deletions from the list of varieties are made, the average reaction to the environment as measured by yield is not greatly changed over a five or six year period. When the yield of the general gene pool is depressed, the yield of all varieties is depressed. The opposite is true where high yield is concerned. As long as the conditions affecting yield are common factors in the Michigan environment, the method is expected to work.

Table 1 gives the expected yield of a given variety compared to the average yield of all test varieties of

Table 1. Expected yield of a variety when the average yield level of all varieties in the test was 60, 75, 90, 105 or 120 bu/acre. Reliabilty 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	Source	No. of Tests	Reliability Estimate (r^2)	50	60	75	90	105	120
Allen	Ind.	7	89	42	52	67	81	96	111
AuSable	Mich.	44	90	56	65	79	92	105	119
Clintland 64	Ind.	41	79	48	55	66	77	88	99
Dal	Wis.	22	90	48	57	71	85	99	113
Diana	Ind.	19	81	38	48	64	79	95	110
Elgin	Ca.	7	99	51	61	76	91	107	122
Froker	Wis.	23	91	45	56	70	85	100	114
Garry	Ca.	44	89	53	63	77	92	107	121
Goodland	Wis.	15	88	32	42	56	71	86	100
Hudson	Ca.	7	90	56	65	80	94	108	122
Korwood	Mich.	36	86	52	63	79	95	112	128
Lang	Ill.	7	70	60	68	81	93	105	118
Lodi	Wis.	25	88	51	60	73	87	101	114
Mackinaw	Mich.	31	85	47	58	74	91	107	123
Mariner	Mich.	38	90	54	64	79	95	110	125
Menominee	Mich.	44	90	57	68	83	99	114	130
Noble	Ind.	16	80	54	64	79	95	110	125
Orbit	N.Y.	44	85	55	65	80	95	110	125
Otee	Ill.	22	80	48	58	72	87	101	116
Otter	Minn.	23	83	45	54	68	82	95	109
Polak	Poland	7	94	39	54	64	79	94	109
Portal	Wis.	28	89	47	57	72	87	102	117
Rodney	Ca.	41	73	53	61	73	85	98	110
Wright	Wis.	7	86	56	64	76	89	101	113

Table 2. Five year average yield and test weight of 30 varieites for six counties in Michigan.

	Ingham Co.	Tuscola Co.	Lenawee Co.	Kalamazoo Co.	Menominee Co.**	Alger Co.
Yield	108	105	108	60	74	73
$S_{\bar{x}}$ *	7	7	6	4	5	7
Test Wt.	34.1	34.2	33.3	31.7	33.9	35.3
$S_{\bar{x}}$ *	1.0	0.6	0.4	1.1	1.7	0.9

* = standard error of the mean

** = data from Menomonee and Delta Counties averaged.

50, 60, 75, 90, 105 or 120 bu/acre. Given an estimate of oat yields for an area (See Table 2), several acceptable 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 five to ten bu/acre. Under medium or high management levels, Korwood could be expected to yield seven to eight bushels higher than the average, and 14 to 18 bu/acre higher than Rodney. Other comparisons can also be made depending on the long term yield expectations and grower preference for certain varieties. Then Table 3 and 4 can be used to help narrow the choice.

The test weight data were treated in the same manner as the yield data and similar comparisons may be made. Data on relative maturity, height, and lodging have not been examined for regression characteristics and only means are given in Table 4.

Table 3. Expected test weight given an average test weight of 30, 33 or 36 lbs/bu. for all varieties in the test. Reliability column refers to the percent of the variation in varietal test weight explained by the average.

Name	No. of Tests	Reliability of Estimates (r^2) %	Average Test Weight at Your Location 30	33	36
Allen	7	90	30.7	33.8	36.9
AuSable	44	88	32.1	34.9	37.7
Clintland 64	41	62	30.5	32.9	35.3
Dal	22	78	30.2	33.0	35.7
Diana	19	53	30.6	32.6	34.6
Elgin	7	98	27.7	30.8	34.0
Froker	23	68	30.8	33.2	35.5
Garry	44	88	27.7	31.0	34.4
Goodland	15	85	28.6	32.0	35.3
Hudson	7	81	26.2	28.3	30.4
Korwood	36	88	30.4	33.4	36.5
Lang	7	47	30.7	33.1	35.5
Lodi	25	85	28.9	32.0	35.0
Mackinaw	31	76	30.1	33.5	36.9
Mariner	38	86	32.0	35.0	38.0
Menominee	44	84	29.6	32.9	36.3
Noble	16	73	31.3	33.7	36.1
Orbit	44	79	28.4	31.0	33.6
Otee	22	60	31.9	33.9	35.9
Otter	23	64	30.6	33.2	35.7
Polak	7	90	27.0	30.5	34.0
Portal	28	66	31.6	33.4	35.3
Rodney	41	71	30.5	33.2	35.9
Wright	7	96	33.0	35.4	37.8

Table 4. Relative maturity, height, lodging, resistance, and response to red leaf (barley yellow dwarf virus).

Name	Date of Heading	Height	Lodging Resistance	Red Leaf*
Allen	VE (very early	S (short)	M (medium)	4.1
AuSable	Late	M (medium)	M	2.0
Clintland 64	E (early)	M	G (good)	5.0
Dal	M (medium)	M	G	2.6
Diana	VE	S	G	4.0
Elgin	E	M	M	2.5
Froker	L	M	G	3.0
Garry	M	T (Tall)	M	3.5
Goodland	E	S	VG (very good)	3.9
Hudson	L	M	G	1.8
Korwood	M	M	G	2.1
Lang	VE	S	G	1.7
Lodi	M	T	G	3.5
Mackinaw	L	T	G	3.5
Mariner	M	M	G	3.0
Menominee	L	M	M	1.5
Noble	VE	M	G	1.5
Orbit	M	S	M	2.2
Otee	VE	S	G	1.2
Otter	M	M	G	3.0
Polak	L	T	P (poor)	3.5
Portal	M	M	G	3.0
Rodney	L	M	P	1.5
Wright	VE	M	G	2.1

* 1 = resistant, 5 highly susceptible

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