

Varieties of Spring Oats for Missouri

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Spring oats are grown for grain and for hay in Missouri. Early maturing varieties and early seeding are necessary for a high yield of good quality grain under Missouri climatic conditions. Consistent superior performance is also highly related to a variety's resistance to pest problems.

The Barley Yellow Dwarf Virus (BYDV) disease has become one of the most serious diseases of oats in Missouri. Reddening of the leaves, failure to set seed, and the presence of many unproductive tillers are characteristic symptoms. BYDV survives through the winter in grasses such as tall fescue and then is transmitted by aphids; thus, severity of the disease is associated with the presence of large aphid populations early in the season. Resistance to BYDV is now a first consideration in selecting varieties for grain or hay production in Missouri.

Other diseases that may reduce production are crown rust (red spores on the leaf surface that rub off) and smut (black sooty spores in place of the grain). Varieties differ in susceptibility to all of these diseases. Commercial seed treatments can control the smut problem and reduce the incidence of some other seedling diseases.

Varieties of oats are being developed with more total protein and improved protein quality. A high protein variety may mean that the grain is more desirable in an animal ration. When oats are cut for hay, additional disease resistance in a variety may mean more leaves are retained for better quality hay.

Varieties of spring oats have been grown in yield tests at

four locations in Missouri: Columbia, Spickard, Novelty, and Mt. Vernon. Varieties tested include those developed by the University of Missouri College of Agriculture and other state and commercial programs in the north central United States.

Some oat varieties which have been evaluated in Missouri trials are described, and performance data is given in Table 1.

Lang

Lang, which was released from Illinois in 1977, was derived from a cross of the variety Tyler to the variety Orbit. Lang is an early maturing, stiff strawed, high yielding oat variety with good BYDV resistance, but it will be slightly lower in test weight and grain protein than the Otee variety, which Lang will probably largely replace. Lang is slightly earlier than Otee but is similar in plant height and susceptibility to the newer races of smut and rust.

Bates

Bates, which was released by Missouri and Nebraska in 1977, was selected from the cross Pettis X Fla.500. Bates, like Lang, is a high yielding oat variety with very good BYDV resistance, but Bates is superior to Lang in smut and crown rust resistance and in test weight. Straw strength is not as good as Lang's, although the varieties are similar in plant height. Bates is slightly later in maturity. Like Lang, kernel

Table 1. Spring Oat Variety Tests in Missouri, 3 year average (11 locations)

	Yield bu/A 1975-77	Test weight lb/bu	Date Headed	Height inches	Lodging %	BYDV Dis- color- ation %	Crown rust %	Smut H/10
Lang*	88.4	33.3	5/25	39	13	7	34	13
Bates	85.6	35.3	27	39	22	3	6	0
Otee	77.4	35.8	27	38	22	8	35	7
Pettis	77.8	35.9	26	44	41	7	28	5
Trio	83.5	35.0	27	43	29	9	24	0
Chief	76.6	36.1	25	44	41	9	30	5
Spear	69.4	33.2	30	40	16	19	10	2
Noble	82.1	32.7	30	39	14	10	34	0
Stout	82.3	32.6	27	35	15	15	9	3
Allen	65.4	33.2	28	37	14	20	40	16
Grundy	68.4	33.2	29	40	25	24	31	2

*Lang was grown at one less location in 1975.

protein is below that of Otee. Kernels are only moderately plump, but groat (grain exclusive of the hull) percentage is high, as is test weight.

Otee

The Otee variety was released from Illinois in 1973 and originated from crosses involving the varieties Albion, Newton, Minhafer, and Jaycee. It is similar to Bates in maturity, plant height, lodging resistance, and test weight but is superior in protein content. Otee and Jaycee tend to be higher in percent protein than other varieties grown in Missouri. Yield potential is slightly below the above varieties, and Otee is susceptible to several new races of rust and smut. BYDV resistance is good, as is standability after ripening.

Pettis

Pettis was released from Missouri in 1968. It originated from crosses involving the varieties Victoria, Hajira, Banner, Victory, Ajax and Mo.0-205. Pettis is early in maturity and tolerant of the BYDV disease but may lodge badly and show considerable susceptibility to the newer races of smut and rust. Since it is tall and grows abundant vegetation, it may be a desirable variety when oats are to be used for hay. Bates' plant color and grain type is the same as Pettis', one of Bates' parents.

Trio

Trio, released by Kansas and Nebraska in 1971, was selected from a cross involving the Garry, Landhafer, Mindo, Hajira, Joannette, and Andrew varieties. Trio is an early, tall variety that has stiff straw. It resists prevalent races of smut and has the ABD genes for resistance to stem rust, but it is susceptible to crown rust. It is moderately tolerant of the BYDV disease.

Chief

Chief was released from South Dakota in 1971. The variety matures very early in Missouri, and yields have been good. Although the variety is tall, it stands well. Chief has shown some tolerance to BYDV and to some races of crown rust and smut.

Spear

Spear was released from South Dakota in 1974. Compared to Chief, it is shorter and less susceptible to lodging but much more susceptible to BYDV and considerably later in maturity. Spear's grain is high in protein, but yield has been less than other high protein lines such as Otee.

Stout

Stout, which was released from Indiana in 1973, is early in maturity and has short, stiff straw that may result in less

lodging than occurs in other varieties. Associated with the short straw is a very compact panicle, but grain yield has been good. Resistance to prevalent races of crown rust and smut is good, but it is somewhat susceptible to BYDV.

Noble

The Noble variety was also released from Indiana in 1973. It is taller and later than Stout and more susceptible to crown rust but more tolerant to BYDV. Grain yields in Missouri have been less than from Stout except when BYDV was severe.

Allen

The Allen variety, which was released from Indiana in 1975, is short in plant height and medium early in maturity. Allen is susceptible to smut, some races of crown rust, and the BYDV disease. Grain yield has been low in Missouri.

Grundy

Grundy was released by Iowa in 1972. It originated as a selection from a cross between Clintland and Garry. It has good straw but is very susceptible to the BYDV disease. Grain yield has been below that of many other varieties. It is resistant to races 6, 7, 7A, and 8 of stem rust and some prevalent crown rust races such as 294, 321, and 325.

Other New Varieties

A series of multiline varieties has been released by the Iowa Station since 1973. The *E77* and *M77* varieties are the most recent of these. They have good crown rust resistance, but those available to date have been very susceptible to BYDV and have produced low yields in Missouri tests.

Lyon, which was released from Minnesota in 1977, is extremely susceptible to BYDV. Yields have been very low in Missouri. Rust and smut resistance are good.

Menominee was released from Michigan in 1977. It is late in maturity and susceptible to smut, crown rust, and BYDV. It has not yielded well in Missouri.

Other Older Varieties

Varieties such as Mo. 0-205, Andrew, Macon, Nodaway, Nodaway 70, and Jaycee have shown good performance in Missouri but have been largely replaced by newer varieties which generally have shown greater yield potential and more dependability. Jaycee is perhaps of most interest since it has good BYDV tolerance and produces grain that is high in protein. But Otee has largely replaced this variety. Nodaway 70 is still grown in areas where disease problems are not severe since it produces a large, plump kernel.



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