

TIMELY INFORMATION

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Oat Disease Control For 2008-2009 Production Season

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For the 2007-2008 production season, approximately 40,000 acres of oat were planted as winter cover or harvested for grain. In most years, weather patterns favor the development of the crown rust on oat. While this disease is a significant threat to oat planted in the southern third of Alabama, crown rust is not a serious concern across the remainder of the state. Loose smut is a common disease of oat statewide. While losses are difficult to estimate, occurrence of loose smut is especially high in bin run seed that has not been treated with a fungicide seed dressing. Other damaging diseases noted on oat include the virus disease barley yellow dwarf as well as the fungal diseases *Helminthosporium* leaf spot, stem rust, *Septoria* leaf blotch, and bacterial leaf spot halo blight. Typically, losses to the above diseases appear to be minor when compared with those attributed to crown rust.

Disease Resistant Oat Varieties

As is the case with wheat, the best method of avoiding losses to most damaging foliar diseases is planting a resistant variety. Choosing a rust resistant cultivar is particularly important where oat will be harvested for grain but is not critical for oat grown as a winter cover for cotton, peanut, or full-season soybean.

While factors other than resistance influence yield, the oat varieties with moderate to a high level of crown rust resistance generally yield higher when compared with a rust-susceptible variety like Florida 501 (Table 1). Among available oat varieties, Brooks, Coker 227, and Florida 501 are highly susceptible to crown rust and given the right weather conditions are likely to suffer sizable rust-related yield loss (Table 2). In contrast, the oat varieties Horizon 474 and Horizon 270, which are partially to highly resistant to crown rust respectively, would be good choices in situations where oat will be harvested for grain (Table 1).

Table 1. Yields and reaction of oat varieties to crown rust at the GCREC, 2008.

Oat Variety	Crown Rust Rating**	Yield bu/A***
FL 99201-D29-E1*	2.3	154
FL 99212-D6*	3.3	119
Florida 501	5.7	89
Horizon 270	0.7	128
Horizon 474	3.3	111
LA 99011-45-S2*	2.7	82
LA 99016SBSB-98*	0.7	111

*Experimental breeding line.

**Crown rust was rated on a 0 to 10 scale where 0 = no disease and 10 = severe disease.

***Yields calculated at 32 pounds of seed per acre.

Table 2. Response of commercial oat varieties to crown rust.

Oat Variety	Crown Rust
Brooks	Highly Susceptible
Coker 227	Highly Susceptible
Florida 501	Highly Susceptible
Horizon 270	Resistant
Horizon 474	Moderately Resistant

Loose Smut on Oat

Oat is very vulnerable to the disease loose smut. Since nearly all commercial oat seed is treated with a fungicide seed dressing after the seed is cleaned, disease incidence in fields planted to treated seed is very low. Sizable reductions in yield and quality of oat have been seen when bin run non-fungicide treated seed is grown for grain. While the fungus invades oat embryo, this disease has no impact on vegetative growth. So, the top growth of smut-infected oats strictly grown as winter cover is not affected by loose smut.

A fungicide seed dressing is the only effective control for loose smut. For best results, apply a fungicide seed dressing for oats grown for grain when the seed is cleaned and before it's bagged. All fungicide seed dressings will control loose smut. A listing of recommended fungicide seed dressings can be found in <http://www.aces.edu/pubs/docs/A/ANR-0500-A/VOL1-2008/smallgrains.pdf>. The hopper box fungicide seed dressing DIVIDEND XL RTA is also available. Typically, machine applied products give better control of loose smut than hopper box products.

Foliar Fungicide Use on Oat

Fungicides are registered for the control of crown rust and Septoria leaf blotch on oat (Table 3). Guidelines for applying fungicides on oats are similar to those for wheat. In general, a sizable

yield response will be obtained with fungicide inputs when treating a disease-susceptible oat cultivar that has come up to a good stand, has a uniform height with deep green color foliage, and the potential for high yield. Like wheat, yield gains from fungicides are more likely in South Alabama.

Table 3. Fungicides for the control of crown rust and leaf spot diseases on oat*.

Fungicide	Rate per acre	Comments
Tilt 3.6E Propimax EC Bumper 41.8 EC	4 fl oz 4 fl oz 4 fl oz	For control of crown rust and Septoria leaf blotch on oat and may also have activity against Helminthosporium leaf spot and stem rust. Apply as needed at full flag leaf extension and again at flowering. On oat, Bumper 41.8EC may be applied once no later than flag leaf extension. <i>See product labels for additional application guidelines and use restrictions.</i>
Stratego 250EC	7 fl oz	For control of crown rust and Septoria leaf blotch on oat. Two applications can be made per year but no applications may be made after full flag leaf emergence. <i>See product labels for additional application guidelines and use restrictions.</i>

*Fall 2008 Listing.

Results of Oat Fungicide Evaluation

A selection of fungicides registered for use on oat as well as several other products cleared for the control of diseases on other small grains were evaluated for the control of crown rust on oat at the Gulf Coast Research and Extension Center in Fairhope, AL in 2008. The study site was turned with a moldboard plow and then leveled with a disk harrow. On 9 October 2007, 363 pounds per acre of 5-27-16 fertilizer with 10% sulfur was broadcast. The oat variety Coker 227 was planted with a grain drill on 3 December. The plot was topdressed with 235 pound per acre of ammonium nitrate on 11 February 2008. Fungicides were applied with a backpack sprayer at GS (growth stage) 8 on 1 April and/or GS 10.2 (flowering) on 9 April 2008 in 5 gallons of spray volume per acre. On 24 April at GS 10.5 (milk stage), Rust incidence was rated on a scale of 0 to 10 where 0 = no disease, 1 = 1 to 10%, 2 = 11 to 20%, etc. to 10 = 91 to 100% of the flag leaf damaged by rust. The test was harvested with a plot combine on 13 May 2008.

While all fungicide programs reduced the severity of crown rust when compared with the non-treated control, sizable differences in crown rust control were noted among the treatments (Table 4). Little if any rust damage was seen on the flag leaves of the oat receiving two applications of Tilt 3.6E or Stratego 250EC. With both of these fungicides, the two application programs gave better rust control than a single application made at GS 8 or 10.2. A single application of either rate of Headline 2.09E and Quilt, which are not cleared use on oat, gave the same level of rust control as one application of Tilt 3.6E or Stratego 250EC. Quadris 2.08SC was the least effective fungicide tested evaluated for the control of crown rust.

With the exception of Tilt 3.6E applied at GS 10.2 and the single application of 6.2 fl oz/A of Quadris, all fungicide treatments increase oat yield when compared with the non-treated control (Table 4). The best yield gains were obtained with two applications of Tilt 3.6E and Stratego 250EC. For the single application Tilt 3.6E and Stratego 250EC programs, better yield gains were obtained when these fungicides were applied at GS 8 than at GS 10.2.

Table 4. Fungicide programs compared for control of crown rust and yield response of oat cv Coker 227 at Fairhope, AL in 2008.

Fungicide	Application		Crown Rust Rating	Yield bu/A
	Rate/A	Timing (GS)		
Tilt 3.6E	4 fl oz	8	1.8 cd*	79.3 abc*
Tilt 3.6E	4 fl oz	10.2	1.0 e	62 cd
Tilt 3.6E	4 fl oz	8 & 10.2	0.1 f	91.4 a
Stratego 250EC	7 fl oz	8	1.6 cde	77.0 abc
Stratego 250EC	7 fl oz	10.2	1.1 de	59.2 cd
Stratego 250EC	7 fl oz	8 & 10.2	0.1 f	87.2 ab
Headline 2.09E	6 fl oz	8	1.7 c	76.4 abc
Headline 2.09E	9 fl oz	8	1.2 cde	88.5 ab
Quilt	10 fl oz	8	1.3 cde	70.8 abc
Quadris 2.08SC	3.1 fl oz	8	3.0 b	64.8 bc
Quadris 2.08SC	6.2 fl oz	8	3.1 b	62.0 cd
Non-treated Control	--	--	4.3 a	45.0 d

*Means in each column that are followed by the same letter are not significantly different according to Fisher's least significant difference (LSD) test (P=0.05).

Barley Yellow Dwarf in Oat

Barley yellow dwarf is a fairly common disease in oat. While the impact of the group of aphid-vectored viruses that are responsible for barley yellow dwarf on the yield of wheat has been extensively studied, relatively little is known on the impact of the causal viruses on the yield and grain quality of oat. Early planting greatly increases the risk of a damaging virus outbreak in all small grains. Oat planted for grain should be sown as late in the fall planting window as possible so that the risk of a damaging disease outbreak is minimized. In addition, application of either Gaucho 600 or Gaucho XT to oat seed will give good early suppression of the aphid vector of barley yellow dwarf. Gaucho 600 can be either used in machine-applied or hopper box applications.