

October 14, 2004

PP-575

## **Reaction of Wheat Varieties to Diseases 2004-2005 Production Season**

Austin Hagan

Extension Plant Pathologist and Alumni Professor

Alabama's wheat is the target for a variety of potentially yield robbing diseases. Establishment of resistant wheat cultivars is critical to minimizing the impact of diseases, particularly rust diseases and powdery mildew, on the quality and yield of wheat. While fungicides will give good protection from many of the diseases listed in Table 1, the cost-effectiveness of such treatments is questionable in most areas of Alabama except the Gulf Coast region and on wheat grown for seed.

### **Common Diseases of Wheat**

**Leaf Rust** – Is the most common and destructive disease found on wheat in Alabama. Planting a resistant cultivar is the best control measure. Baytan-Thiram seed dressing will give some early season control of leaf rust. Fungicides will give some control but cost-effectiveness is questionable.

**Stripe Rust** – Occurs sporadically in the Tennessee Valley and less frequently in other areas of Alabama but can cause a severe decline in crop quality and yield. A resistant cultivar is the best defense.

**Powdery Mildew** – Commonly found on wheat in late winter but usually fades out as crop matures. Powdery mildew has less impact on yield than rust or blotch diseases. Yield gains from fungicide treatment usually will not cover cost of fungicide inputs and application. Baytan-Thiram seed dressing will give some early season control of powdery mildew.

**Leaf and Glume Blotch** – Serious yield loss will occur, particularly when the flag leaf and glumes are blighted. In Alabama trials, most wheat lines are susceptible to this disease but some differences in cultivar sensitivity have been seen in other states. Fungicides will protect flag leaf and seed head, as well as maintain seed test weights. Cost effectiveness of fungicide inputs is questionable except in the Gulf Coast region.

**Soilborne Wheat Mosaic and Wheat Spindle Streak Mosaic Virus** – Occur sporadically in Alabama during unusually wet winters and usually causes little loss. Diseases are most noticeable where wheat is cropped for several consecutive years. Planting a resistant cultivar is the only defense against either of these virus diseases.

**Black Chaff/Bacterial Streak** – Heavy rainfall during heading favors disease development but the occurrence of this disease is very sporadic. Frequent cropping of wheat may increase risk of disease outbreak. Disease resistant cultivars are only means of defense.

**Fusarium Head Blight** – Risk of disease outbreak may be increased in wheat grown behind corn, probably grain sorghum, or several successive wheat crops. Severe outbreaks are rare. Wet weather during flowering favors disease development. Under the right conditions, all wheat cultivars are susceptible to this disease. Foliar fungicide applications provide no control. Fungicide seed dressings will reduce the risk of seed transmission.

**Barley Yellow Dwarf** – Aphid-transmitted virus is endemic in Alabama wheat. While wheat varieties differ in symptom expression, yield response is not closely tied to the severity of BYD symptoms (See Table 3). Insecticide (Gaucho 480 and Gaucho TX) seed dressings may slow early season disease spread.

**Take-All** – Disease severity is directly linked to wheat cropping frequency. Rotation with other winter grasses and balanced soil fertility will minimize the impact of this disease on wheat yields. Frequent heavy winter rains appear to favor disease development. All wheat cultivars are susceptible to take-all. Dividend fungicide seed dressings will help suppress take-all.

**Loose Smut** – Common disease that will cause sizable yield losses, particularly on farm-sourced wheat seed when not controlled. This disease is easily controlled with a fungicide seed dressing.

Table 1. Reaction of wheat cultivars recommended by UGA to diseases<sup>a</sup>.

<b>Cultivar</b>	<b>Planting Region<sup>b</sup></b>	<b>Powdery Mildew</b>	<b>Leaf Rust</b>	<b>Stripe Rust<sup>c</sup></b>	<b>Leaf and Glume Blotch</b>	<b>Soilborne Wheat Mosaic<sup>d</sup></b>	<b>Black Chaff<sup>e</sup></b>
AGS 2000	All	MR	MR	VS	MS	S	MR
AGS 2485	S,C	S	MR	VS	MS	VS	--
Crawford	S	MR	MR	-- <sup>f</sup>	MS	--	--
Fleming	S	MS	MS	--	MS	--	--
NK Coker 9152	All	MS	MS	MR	MR	R	--
Pioneer 26R24	N,C	MR	S	--	MS	MS	--
Pioneer 26R38	All	S	S	VS	MS	--	--
Pioneer 26R61	All	MR	MS	--	MS	--	R
SS 520	N	MR	S	VS	MS	R	--
SS 535	N	MS	S	VS	MR	R	--
Vigoro Tribute	All	MR	MR	S	MS	MR	--
USG3209	N,C	MR	MS	MS	S	MS	MR

<sup>a</sup>Information from Characteristics of Recommended Cultivars, Wheat Production 2003-2004, University of Georgia.

<sup>b</sup>Planting Region: S = south, C = Central, N = north, and All = all of Alabama.

<sup>c</sup>Information from Mississippi Small Grain Variety Report, 2004

<sup>d</sup>Information from Wheat Update 2004, University of Arkansas.

<sup>e</sup>Wheat Disease Control 2003, Louisiana State University.

<sup>f</sup>-- = no information concerning cultivar reaction to that disease.

Table 2. Reaction of other wheat varieties to diseases<sup>a</sup>.

	<b>Leaf and</b>	<b>Soilborne</b>
--	-----------------	------------------

<b>Cultivar</b>	<b>Planting Region<sup>b</sup></b>	<b>Powdery Mildew</b>	<b>Leaf Rust</b>	<b>Stripe Rust<sup>c</sup></b>	<b>Glume Blotch</b>	<b>Wheat Mosaic<sup>d</sup></b>	<b>Black Chaff<sup>e</sup></b>
NK Coker 9663	All	S	MS	S	MS	S	MS
NK Coker 9835	All	MS	S	-- <sup>f</sup>	MS	--	--
Pioneer 2684	All	MS	S	--	MS	--	--
Pioneer 2691	S	MS	MS	--	MS	--	--
Pioneer 26R12	All	MR	MR	S	MR	MR	--

<sup>a</sup>Information from Characteristics of Recommended Cultivars, Wheat Production 2003-2004, University of Georgia.

<sup>b</sup>Planting Region: S = south, C = Central, N = north, and All = all of Alabama.

<sup>c</sup>Information from Mississippi Small Grain Variety Report, 2004

<sup>d</sup>Information from Wheat Update 2004, University of Arkansas.

<sup>e</sup>Information from Wheat Disease Control 2003, Louisiana State University.

<sup>f</sup>-- = no information concerning cultivar reaction to that disease.

Table 3. Incidence of Barley Yellow Dwarf and yield response of wheat selections evaluated in the Alabama Region Small Grain Variety Performance Trials.

Wheat Variety	2003		2004	
	BYD % symptomatic plants	Yield bu/A	BYD % symptomatic plants	Yield bu/A
Pioneer 26R24	57.5	54	36.7	99
USG 3209	55.8	46	19.2	96
AGS 2000	66.7	57	52.5	95
Croplan 8308	-- <sup>a</sup>	--	62.5	90
Pioneer 26R58	54.2	52	33.3	90
Pioneer 26R15	--	--	26.7	90
SS 535	53.3	50	45.8	89
SS 520	68.3	60	68.3	84
USG 3592	--	--	37.5	89
Tribute	58.3	50	47.5	89
NK Coker 9184	55.0	48	63.3	89
McCormick	48.3	50	37.5	88
Pioneer 26R12	51.7	58	53.3	87
NK Coker 9375	--	--	51.7	86
AGS 2485	56.7	53	25.8	85
Pioneer 25R23	--		25.0	83
Jackson	59.2	52	40.8	83
SS 550	64.2	48	43.3	81
Pioneer 25R37	--	--	50.8	80
Pat	32.5	55	25.0	79
Croplan 514W	--	--	34.2	79
NK Coker 9152	--	--	46.7	78
SS 560	70	53	67.5	59

<sup>a</sup>-- = no information.