

Soybean Disease and Nematode Ratings 2010 Test Summaries

**Variety Reactions to:
Frogeye Leaf Spot (FLS)
Sudden Death Syndrome (SDS)
Stem Canker (SC)
Anthracnose
Soybean Cyst Nematode
and
Foliar Fungicides Results**

**by
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**Funds provided by:
Tennessee Soybean Promotion Board
The North Central Soybean Research Program**

Go to www.utcrops.com for more soybean data.

2010 Soybean Disease Loss Estimate for Tennessee

		<u>%Loss</u>
1	Anthracnose (<i>Colletotrichum truncatum</i>)	2.0
2	Bacterial diseases (<i>Pseudomonas syringae</i> , <i>P. syringae</i> pv. <i>tabaci</i> , <i>Xanthomonas campestris</i>)	0
3	Brown leaf spot (<i>Septoria glycines</i>)	2.0
4	Charcoal rot (<i>Macrophomina phaseolina</i>)	3.0
5	Diaporthe/Phomopsis complex (<i>Diaporthe</i> & <i>Phomopsis</i> spp.)	2.0
6	Downy mildew (<i>Peronospora manshurica</i>)	0
7	Frogeye leaf spot (<i>Cercospora sojina</i>)	3.0
8	Fusarium wilt & root rot (<i>Fusarium</i> spp.)	0
9	Other ^a	0
10	Phytophthora root & stem rot (<i>Phytophthora sojae</i>)	0
11	Pod & stem blight (<i>Diaporthe phaseolorum</i> var. <i>sojae</i>)	0.1
12	Purple stain (<i>Cercospora kikuchii</i>)	1.0
13	Rhizoctonia aerial blight (<i>Rhizoctonia solani</i>)	0
14	Sclerotinia stem rot (<i>Sclerotinia sclerotiorum</i>)	0
15	Seeding disease (<i>Rhizoctonia</i> , <i>Pythium</i> & <i>Fusarium</i> spp.)	1.0
16	Southern blight (<i>Sclerotium rolfsii</i>)	0
17	Soybean cyst nematode (<i>Heterodera glycines</i>)	2.0
18	Root-knot (<i>Meloidogyne</i> spp.)	0
19	Other nematodes ^b	0
20	Stem canker (<i>Diaporthe phaseolorum</i> var. <i>meridionalis</i>)	0
21	Sudden death syndrome (<i>Fusarium solani</i> Form A)	1.0
22	Virus ^c	0
23	Brown stem rot (<i>Phialophora gregata</i>)	0
24	Soybean rust (<i>Phakopsora pachyrhizi</i>)	0
Total Per Cent Loss to Disease =		17.1
Total soybean production in your state for 2010:		46,530,000 (in bushels)
Total acres of soybeans harvested in 2010:		1,410,000
State Average for 2010:		33 (bushels/acre)
a Identify diseases listed as "other":		
b Identify nematodes listed as "other":		
c Identify "Virus" diseases:		
How was this information obtained?		Plot work and demonstration results and observations

**Report for 2010
Melvin A. Newman, Professor
University of Tennessee**

Title: Evaluation of Soybean Cultivars for Resistance to Frogeye Leaf Spot (FLS), Sudden Death Syndrome (SDS), Stem Canker (SC) and Anthracnose.

Personnel:

**Melvin A. Newman, Professor
Bob Williams, Extension Area Specialist
Blake Brown, Superintendent - Research and Education Center at Milan (RECM)**

Objectives:

Evaluate the effect of natural infections of (*Cercospora sojina*) Frogeye Leaf Spot, (*Fusarium solani f.sp.glycines*) Sudden Death Syndrome (SDS), (*Colletotrichum truncatum*) Anthracnose (*Septoria glycines*) Brown Spot, and (*Cercospora kikuchii*) Cercospora Leaf Blight on available commercial soybean cultivars.

Procedures:

Equipment: A 1.9-acre soybean plot was planted no-till at the RECM on May 2010, with a four-row planter with cone seed-box attachments.

Plot information: The 86 varieties (Conventional Varieties, MG III, IV E, IVL and V) were planted in four-row plots with 30" centers and 30' long. Each plot was randomized and replicated four times. Irrigation was provided with a center pivot system. Each 4-row plot was split (side-by-side) with 2 rows being sprayed with Headline at 6 oz/a and 2 rows left unsprayed.

Disease ratings: FLS and SDS Disease Ratings were taken on Aug. 31 for MG III and MG IVE; Sept.2 for MG IVL and VE. The rating scale was 0 to 10 with 0 = no detectable disease and 10 = extremely heavy leaf spot for FLS and heavy interveinal chlorosis and necrosis for SDS. FLS and SDS occurrence was fairly heavy because of the excessive rainfall most of the season.

Justification:

Frogeye leaf spot (FLS) caused by the fungus *Cercospora sojina* has been observed in Tennessee for over thirty years, but until recently, it has caused only limited yield loss. However, for 2 years (2009-2010) this foliar disease reduced soybean yields state wide by an average 4% of the annual crop. It is possible that lack of crop rotation and planting of susceptible varieties have been responsible for some of the increase in severity of FLS. An increase in the number of reported races of this fungus may also play a role in the increased yield loss. In 2007 FLS was at its lowest damaging level and only caused a 2% loss state wide due mainly to the extremely dry weather. In 2008, FLS was still less severe than usual because infection of soybean plants was later than usual and then late season dry weather further reduced the spread and damage from this disease. In 2009, FLS, SDS and SC were all fairly severe in these plots and across the state due to an extremely wet season. In 2010, FLS was very severe. Frequent irrigations due to hot, dry weather increased the severity of this disease. SDS and stem canker were at a very low level.

Benefits:

Disease ratings for Frogeye Leaf Spot (FLS), Septoria Brown Spot, Sudden Death Syndrome (SDS), Stem Canker (SC), and Anthracnose: Each year soybean producers are provided an updated list of soybean varieties and fungicide results with disease ratings for the most damaging diseases. This has been a tremendous, no-cost aid in reducing diseases and increasing yields. Producers have UT results either in hard copy or on the internet (utcrops.com). Soybean breeders and commercial seed producers are using this data to bring more disease-resistant varieties to the soybean farmer.

Observations and Conclusions: (See Chart 1 and Tables 1-5)

Maturity Group V (Early): (Table 1) FLS ratings for the early 12 MG V early varieties ranged from 0 to 3.8 for the sprayed and 0.8 to 9.8 for the unsprayed. Average yield was **50.2 bu/a** for the sprayed and **45.3 bu/a** for the unsprayed. Spraying increased the yield an average of **4.88 bu/a** for the 12 varieties. The sprayed varieties were all in the zero or low rating groups. In the unsprayed, there were no varieties that rated (0) for FLS, 8 varieties rated (0.3-3), three varieties that rated (3.3-6), and one variety that rated severe (9.8).

Maturity Group IV (Late): (Table 2) FLS ratings for the 28 varieties in the late MG IV test ranged from 0 to 2.8 for the sprayed varieties and 0 to 8.5 in the unsprayed ones. Average yield for the sprayed varieties was **59.0 bu/a** and was **59.2 bu/a** for the unsprayed. There was a decreased yield of an average **0.2 bu/a** across all varieties from spraying. All the sprayed varieties were in the zero or low ratings groups. Seven sprayed varieties rated (0), 21 varieties rated low (0.3-3) and there were no varieties in the moderate or severe category. There were 4 varieties in the unsprayed that rated (0), 6 that rated low (0.3-3), 8 that rated (3.3-6) and 10 severe at (6.5-8.5). The largest increase in yield from spraying was **9.8 bu/a** with the variety USG 74A91.

Maturity Group IV (Early): (Table 3) There were 22 varieties tested in this group, and their average FLS ratings ranged from 0 to 2.3 for the sprayed ones and 0 to 7.3 for the unsprayed ones. There were 8 sprayed varieties that were in the zero category. All the remaining sprayed varieties rated low from 0.3 to 1.3. There were 3 unsprayed varieties that rated (0), 6 varieties rated low (0.3-3), 6 varieties rated moderate (3.3-5), There were 7 varieties in either the moderate or severe group (5.3-7.3). The average yield for the sprayed varieties was **61.6 bu/a** and it was **56.12 bu/a** for the unsprayed. Spraying increased yields an average **5.4 bu/a** across all varieties.

Maturity Group III: (Table 4) FLS ratings for 8 varieties in this group ranged from 0.3 to 2.0 for the sprayed ones and 2.0 to 7.5 for the unsprayed ones. The average yield for the sprayed varieties was **57.6 bu/a** and **49.7 bu/a** for the unsprayed. Spraying increased yields by an average of **7.9 bu/a**. The sprayed varieties were all in the low rating of (0.3-2.0). There were no sprayed varieties in the moderate to severe range. None of the unsprayed varieties had a (0) rating, but there were eight in the moderate (2.0-7.5) range and none in the severe category.

Conventional Soybean Varieties: (Table 5) There were 16 non-roundup ready (conventional) varieties planted on May 14, 2010. FLS rating for the fungicide treated group ranged from 0 to 4.5 and from 0 to 8.5 in the unsprayed. In the unsprayed varieties there were four varieties in the severe category, three in the moderate, eight in the low category and one in the none (0) category. For the sprayed varieties, there were 2 in the (0) category, 10 in the low category, 4 in the moderate category and none in the severe category. Each four-row variety plot was randomized and replicated four times in the same plot area as all the other MG variety tests. The treated yielded an average of **29.8 bu/a** across all varieties with a high of **40.1 bu/a** for the best variety. The untreated yielded an average of **26.0 bu/a** across all varieties with a high of **39.3 bu/a** for the highest. An average of **3.8 bu/a** was produced by spraying. Asgrow 4703 was included in this test as a RR check and as a susceptible FLS check. FLS ratings were not included for this variety in the rating summary.

Conclusions: In 2010 of the 86 varieties tested, there were 8 varieties that had no symptoms (0) of FLS in the untreated plots, 30 varieties that rated in the low (1-3) category, and 30 that rated in the moderate (4-7) category and 18 in the severe (7-10) category. In 2009, of the 84 varieties tested, there were 28 varieties that had no symptoms (0) of FLS in the untreated plots, 37 varieties that rated in the low (1-3) category, 17 that rated in the moderate (4-7) category and only 2 in the severe (7-10) category. In 2008 of the 71 varieties tested there were 19 with no FLS symptoms, 19 in the low category, 24 in the moderate category, and 9 in the severe category. In 2007 of the 87 varieties tested there were 25 in the (0) category, 22 in the low category, 29 in the moderate category and 11 in the severe category. **Therefore, from 2007-2010 of the 328 varieties tested, 80 were totally resistant to FLS (24%) at the Milan Research Station.** (Some of these varieties were tested more than one year.) It is clear that there are many varieties that have some or complete resistance to FLS. However, spraying susceptible varieties with a foliar fungicide may reduce the severity of FLS but it does not always increase the yield. On the other hand, spraying a FLS resistant variety may increase the yield because of other diseases that may be present.

Chart 1

Foliar Fungicide Spray Tests on Soybean varieties* Average Frogeye Leaf Spot Ratings (0-10) and Yields Research and Education Center at Milan – 2010 Melvin Newman, U T Extension										
Average FLS Rating	MG III (8 varieties)		MG IV E (22 varieties)		MG IV L (28 varieties)		MG V E (12 varieties)		Conventional (16 varieties)	
	Unsprayed	Sprayed	Unsprayed	Sprayed	Unsprayed	Sprayed	Unsprayed	Sprayed	Unsprayed	Sprayed
None (0)	0	0	3	8	4	7	0	1	1	2
Low (1-3)	2	8	6	14	6	21	8	10	8	10
Mod. (4-6)	5	0	11	0	8	0	3	1	3	4
Severe (7-10)	1	0	2	0	10	0	1	0	4	0
Aver. bu/a (increase) bu/a	49.7 ----	57.6 7.86	56.2 ---	61.6 5.45	59.2 0.2	59.0 ---	45.3 ---	50.2 4.88	26.0 ---	29.8 3.80
Aver. FLS Rating	1.43	0.90	1.13	0.56	1.18	0.66	1.05	0.67	1.11	0.88
Highest yielding variety	64.3	68.8	70.2	77.0	92.9	92.1	53.0	55.2	39.3	40.1
FLS rating for highest yielding variety	4.3	1.3	3.8	1.0	7.0	2.8	1.8	0.5	2.3	1.0
Lowest yielding variety	38.2 (2)*	50.0	51.5	34.4	44.1	41.7	40.3	44.3	21.2	24.0
FLS rating for lowest yielding variety	3.0 & 6.0	1.3	2.3	0.8	2.8	1.0	5.8	2.8	8.5	2.5

- Number of varieties rated for FLS in these categories.
- There were 10 soybean varieties that showed no symptoms of FLS in the untreated round-up ready plots and one in the conventional plots.

*There were two lowest yielding varieties

Table 1

University of Tennessee

**MG V, Frogeye Leaf Spot, Brown Spot, SDS, Cercospora Blight(CB)
Disease Ratings and Yields 2010**

Trial ID: FROGEYE V RR

Crop: Soybean

Location: MILAN A4

Investigator: Dr. Melvin Newman

Crop Code	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY		
Pest Name			Frogeye LS	Frogeye LS	Brown Spot	Brown Spot	SDS	SDS	CB	CB		
Rating Date	10/1/10	10/1/10	9/7/10	9/7/10	9/7/10	9/7/10	9/7/10	9/7/10	9/7/10	9/7/10		
Rating Data Type	YIELD	YIELD										
Rating Unit	BU/a	BU/a	0-10 rating	0-10 rating	0-10 rating	0-10 rating	0-10 rating	0-10 rating	0-10	0-10		
Entry No.	Entry Name	Rate Unit	17	18	1	2	3	4	5	6	7	8
5	MORSOY RT5388NRR		55.2 a	53.0 a	0.5 def	1.8 cde	1.8 cd	4.0 bcd	0.0 a	0.0 b	2.5 bcd	4.0 bc
3	CROPLAN RC5663		54.9 a	49.3 ab	0.0 f	0.8 e	1.0 d	1.8 e	0.8 a	0.3 ab	2.5 bcd	3.8 c
12	AG 4703 (check)		52.9 ab	43.1 cd	3.8 a	9.8 a	1.8 cd	3.0 cde	0.0 a	0.0 b	0.0 e	0.0 d
4	DL 8509		52.0 ab	46.2 bc	1.0 d	1.8 cde	2.3 bc	4.5 bc	0.8 a	1.0 a	0.3 e	0.5 d
7	PROGENY 5330RR		51.2 ab	48.9 ab	0.5 def	1.0 de	1.5 cd	3.3 cde	0.0 a	0.8 ab	1.8 cd	3.5 c
2	CROPLAN RC5007		51.2 ab	47.4 abc	1.0 d	2.3 c	3.0 ab	5.5 ab	0.0 a	0.0 b	2.8 bc	4.5 bc
11	TN06-140		51.0 ab	44.7 bcd	0.8 de	2.0 cd	2.3 bc	4.3 bc	0.0 a	0.0 b	5.3 a	8.0 a
10	USG 75T18		48.6 ab	46.6 bc	1.0 d	2.3 c	3.8 a	7.0 a	0.0 a	0.0 b	1.5 d	3.0 c
8	SCH 557		48.1 ab	40.3 de	2.0 c	5.8 b	1.0 d	2.3 e	0.8 a	0.5 ab	3.0 b	5.5 b
6	MORSOY RT5429RR		47.5 ab	46.9 bc	0.3 ef	0.8 e	1.3 cd	2.0 e	0.3 a	0.5 ab	0.3 e	0.5 d
1	AG 5503		45.2 b	34.9 e	2.3 bc	6.0 b	1.3 cd	2.3 e	0.0 a	0.0 b	0.0 e	0.0 d
9	TERRAL REV-55R21		44.3 b	42.4 cd	2.8 b	5.8 b	1.5 cd	2.5 de	0.0 a	0.0 b	6.0 a	8.3 a
LSD (P=.05)			8.76	5.71	0.67	1.05	1.07	1.57	0.80	0.79	1.14	1.73

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage

Table 2

University of Tennessee

MG IV Late, Frogeye Leaf Spot, Brown Spot, SDS, Stem Canker, Cercospora Blight (CB), Anthracnose
Disease Ratings and Yields 2010

Trial ID: FROGEYE IV L RR

Crop: Soybean

Location: MILAN A4

Investigator: Dr. Melvin Newman

Crop Code	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	
Pest Name	9/22/10	9/23/10	Frogeye LS	Frogeye LS	Brown Spot	Brown Spot	SDS	SDS	Stem Canker	Stem canker	
Rating Date	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	
Rating Data Type	YIELD	YIELD	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10	
Rating Unit	BU	BU	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10	
Entry No.	Rate Unit	17	18	1	2	3	4	5	6	7	8
Entry Name											
6 CROPLAN RT4886S		92.1 a	92.9 a	2.8 a	7.0 bc	1.0 f	2.8 f	0.0 a	0.0 b	0.0 c	0.0 c
14 MORSOY RTS4955N		92.0 a	87.4 ab	2.5 ab	7.0 bc	1.3 ef	2.8 f	0.0 a	0.0 b	0.0 c	0.0 c
19 SCH 478		91.6 a	68.3 c	2.8 a	8.5 a	1.0 f	3.0 ef	0.0 a	0.0 b	0.0 c	0.0 c
20 SCH 4990		88.3 a	91.5 ab	0.0 g	0.0 i	1.8 c-f	4.3 b-f	0.0 a	0.0 b	0.0 c	0.0 c
28 USG 74A91		66.6 b	58.1 def	2.0 bcd	5.8 de	1.8 c-f	3.5 c-f	0.0 a	0.0 b	0.3 bc	1.0 ab
26 TERRAL 49R10		65.4 bc	68.2 c	1.0 f	3.0 h	2.0 b-e	4.0 b-f	0.0 a	0.0 b	0.0 c	0.0 c
17 PROGENY 4906		65.2 bc	54.2 fgh	1.8 cde	5.0 ef	1.3 ef	3.0 ef	0.0 a	0.0 b	1.3 a	1.3 a
23 STEYER 4810RR		65.2 bc	82.8 b	2.0 bcd	7.8 ab	2.0 b-e	4.0 b-f	0.3 a	0.3 ab	0.0 c	0.0 c
10 DL 8482		62.8 bcd	64.5 cde	1.8 cde	5.0 ef	1.5 def	3.8 b-f	0.0 a	0.0 b	0.0 c	0.0 c
18 PROGENY 4908		61.8 b-e	57.9 def	1.8 cde	5.5 de	1.3 ef	3.3 def	0.0 a	0.0 b	0.0 c	0.0 c
8 DG 33G48		57.2 b-f	65.8 cd	0.0 g	0.3 i	1.8 c-f	4.0 b-f	0.0 a	0.3 ab	0.0 c	0.0 c
13 MORSOY RTS4824		56.7 b-f	49.0 f-i	2.3 abc	7.3 bc	2.3 bcd	4.0 b-f	0.0 a	0.3 ab	0.0 c	0.0 c
11 MER Nashville 749RR		54.5 c-f	65.0 cde	0.0 g	0.3 i	1.8 c-f	4.0 b-f	0.0 a	0.0 b	0.0 c	0.0 c
1 ARMOR 47-R33		53.3 def	55.2 e-h	2.5 ab	7.5 abc	1.5 def	3.8 b-f	0.0 a	0.0 b	0.0 c	0.0 c
27 USG 74A69R		53.2 def	46.3 ghi	2.3 abc	7.8 ab	2.3 bcd	5.3 ab	0.0 a	0.0 b	0.3 bc	0.0 c
15 NK S48-C9		51.2 efg	51.8 f-i	1.8 cde	5.3 ef	2.5 bc	4.8 bcd	0.0 a	0.0 b	0.0 c	0.0 c
12 MER Atlanta 1047RR		50.3 fg	52.4 f-i	2.0 bcd	7.5 abc	2.8 ab	5.3 ab	0.3 a	0.0 b	0.0 c	0.0 c
5 CROPLAN RC4877		49.8 fg	49.4 f-i	0.0 g	0.0 i	1.5 def	3.5 c-f	0.0 a	0.5 a	0.0 c	0.0 c
3 AG 4730		49.6 fg	54.4 fgh	1.5 def	4.3 fg	2.8 ab	5.0 bc	0.0 a	0.0 b	0.0 c	0.3 c
16 NK S49-A5		49.4 fg	49.0 f-i	0.0 g	0.0 i	2.0 b-e	3.8 b-f	0.0 a	0.0 b	0.0 c	0.0 c
7 DG 37RY47		49.2 fg	45.2 hi	2.0 bcd	6.5 cd	2.0 b-e	4.5 b-e	0.0 a	0.0 b	0.0 c	0.0 c
9 DL 4810		48.7 fg	56.1 d-g	0.0 g	0.3 i	2.5 bc	5.0 bc	0.0 a	0.0 b	0.0 c	0.0 c
25 TERRAL REV-49R11		48.5 fg	53.9 f-i	1.3 ef	3.5 gh	2.5 bc	5.0 bc	0.3 a	0.3 ab	0.0 c	0.0 c
22 STEYER 4710RR		47.5 fg	48.1 f-i	0.3 g	0.3 i	2.0 b-e	3.5 c-f	0.0 a	0.3 ab	0.0 c	0.5 bc
24 TERRAL REV-48R10		47.0 fg	51.4 f-i	1.8 cde	5.5 de	2.3 bcd	5.0 bc	0.3 a	0.3 ab	0.0 c	0.0 c
2 ARMOR 48-R40		46.4 fg	49.2 f-i	2.0 bcd	7.0 bc	1.5 def	4.3 b-f	0.0 a	0.0 b	0.5 b	0.5 bc

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage

Table 2 - continued

University of Tennessee

**MG IV Late, Frogeye Leaf Spot, Brown Spot, SDS, Stem Canker, Cercospora Blight (CB), Anthracnose
Disease Ratings and Yields 2010**

Trial ID: FROGEYE IV L RR

Crop: Soybean

Location: MILAN A4

Investigator: Dr. Melvin Newman

Crop Code		SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY
Pest Name				CB	CB	Anthracnose	Anthracnose
Rating Date		9/22/10	9/23/10	8/30/10	8/30/10	9/22/10	9/22/10
Rating Data Type		YIELD	YIELD				
Rating Unit		BU	BU	0-10	0-10	0-10	0-10
Entry No.	Entry Name	Rate Unit					
		17	18	9	10	11	12
6	CROPLAN RT4886S	92.1 a	92.9 a	0.0 b	0.0 b	1.3 ab	2.8 a-d
14	MORSOY RTS4955N	92.0 a	87.4 ab	0.0 b	0.0 b	1.3 ab	3.3 ab
19	SCH 478	91.6 a	68.3 c	0.0 b	0.0 b	1.0 b	2.3 cde
20	SCH 4990	88.3 a	91.5 ab	0.0 b	0.0 b	1.0 b	2.3 cde
28	USG 74A91	66.6 b	58.1 def	0.0 b	0.0 b	1.0 b	2.3 cde
26	TERRAL 49R10	65.4 bc	68.2 c	0.0 b	0.0 b	1.3 ab	3.0 abc
17	PROGENY 4906	65.2 bc	54.2 fgh	0.3 a	0.3 b	1.0 b	2.3 cde
23	STEYER 4810RR	65.2 bc	82.8 b	0.0 b	0.0 b	1.0 b	1.5 efg
10	DL 8482	62.8 bcd	64.5 cde	0.0 b	0.0 b	1.0 b	2.0 def
18	PROGENY 4908	61.8 b-e	57.9 def	0.0 b	0.0 b	1.0 b	2.5 bcd
8	DG 33G48	57.2 b-f	65.8 cd	0.0 b	0.0 b	1.0 b	1.0 g
13	MORSOY RTS4824	56.7 b-f	49.0 f-i	0.0 b	0.0 b	1.0 b	2.3 cde
11	MER Nashville 749RR	54.5 c-f	65.0 cde	0.0 b	0.0 b	1.0 b	2.5 bcd
1	ARMOR 47-R33	53.3 def	55.2 e-h	0.0 b	0.0 b	1.0 b	2.3 cde
27	USG 74A69R	53.2 def	46.3 ghi	0.0 b	0.0 b	1.0 b	2.5 bcd
15	NK S48-C9	51.2 efg	51.8 f-i	0.3 a	0.8 a	1.0 b	2.5 bcd
12	MER Atlanta 1047RR	50.3 fg	52.4 f-i	0.0 b	0.0 b	1.0 b	2.5 bcd
5	CROPLAN RC4877	49.8 fg	49.4 f-i	0.0 b	0.0 b	1.0 b	1.0 g
3	AG 4730	49.6 fg	54.4 fgh	0.0 b	0.0 b	1.0 b	2.3 cde
16	NK S49-A5	49.4 fg	49.0 f-i	0.0 b	0.0 b	1.0 b	2.3 cde
7	DG 37RY47	49.2 fg	45.2 hi	0.0 b	0.0 b	1.3 ab	3.0 abc
9	DL 4810	48.7 fg	56.1 d-g	0.0 b	0.0 b	1.3 ab	2.8 a-d
25	TERRAL REV-49R11	48.5 fg	53.9 f-i	0.0 b	0.0 b	1.0 b	2.0 def
22	STEYER 4710RR	47.5 fg	48.1 f-i	0.0 b	0.0 b	1.0 b	1.0 g
24	TERRAL REV-48R10	47.0 fg	51.4 f-i	0.0 b	0.0 b	1.5 a	3.5 a
2	ARMOR 48-R40	46.4 fg	49.2 f-i	0.0 b	0.0 b	1.0 b	2.0 def

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage

Table 3

University of Tennessee

**MG IV Early, Frogeye Leaf Spot, Brown Spot, SDS, Stem Canker, Anthracnose
Disease Ratings and Yields 2010**

Trial ID: FROGEYE IV E RR

Crop: Soybean

Location: MILAN A4

Investigator: Dr. Melvin Newman

Crop Code	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY		
Pest Name			Frogeye LS	Frogeye LS	Brown Spot	Brown Spot	SDS	SDS	Stem Canker	Stem Canker		
Rating Date	9/22/10	9/22/10	8/23/10	8/23/10	8/23/10	8/23/10	8/23/10	8/23/10	8/23/10	8/23/10		
Rating Data Type	YIELD	YIELD										
Rating Unit	BU	BU	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10		
Entry No.	Entry Name	Rate Unit	15	16	1	2	3	4	5	6	7	8
8	CROPLAN RT 4539		77.0 a	70.2 a	2.0 ab	5.5 bcd	0.8 de	1.8 c	0.0 b	0.0 b	0.0 b	0.0 b
20	TER REV-45R10		70.8 ab	64.8 ab	1.8 abc	4.5 d-g	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
10	DG V42N9RS		70.2 abc	64.5 ab	0.0 f	0.5 j	0.8 de	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
3	AG 4703		67.5 a-d	62.4 a-d	2.3 a	7.3 a	0.5 e	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
15	SCH 458		67.0 a-d	61.8 a-e	1.3 cde	4.0 fgh	1.3 bcd	2.5 bc	0.0 b	0.0 b	0.0 b	0.0 b
16	SC Caleb		66.1 bcd	60.6 b-f	1.3 cde	5.0 c-f	1.0 cde	2.3 bc	0.0 b	0.3 b	0.0 b	0.0 b
14	PROGENY 4206		65.7 bcd	57.5 b-g	0.0 f	0.3 j	2.5 a	4.5 a	0.0 b	0.0 b	0.0 b	0.0 b
4	AG 4303		64.9 b-e	60.9 a-f	0.0 f	0.3 j	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
17	SC Jericho		64.7 b-e	62.7 abc	0.0 f	0.3 j	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
11	DL 4300		63.8 b-f	60.9 a-f	2.3 a	6.3 ab	0.8 de	1.8 c	0.0 b	0.0 b	0.0 b	0.0 b
5	AG 4531		63.1 b-f	49.9 gh	2.0 ab	5.8 bc	1.5 bc	3.0 b	0.0 b	0.0 b	0.0 b	0.0 b
1	ARMOR 42-M1		62.1 b-g	55.7 b-h	0.0 f	0.3 j	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
13	NK S44-D5		60.2 c-h	54.7 c-h	1.3 cde	3.3 hi	0.8 de	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
6	BECK'S 445NR		58.4 d-h	55.4 b-h	0.0 f	0.0 j	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
18	STEYER 4430RR		58.1 d-h	54.4 c-h	0.0 f	0.0 j	1.3 bcd	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
7	BECKS 451NR		55.4 e-h	52.1 fgh	1.0 de	3.8 gh	0.8 de	2.0 bc	0.8 a	0.8 a	0.0 b	0.0 b
2	ARMOR 44-R12		55.1 e-h	52.6 e-h	1.5 bcd	4.3 e-h	1.3 bcd	2.8 bc	0.0 b	0.0 b	0.0 b	0.0 b
19	STEYER 4501R2		54.5 fgh	46.6 h	1.8 abc	5.3 b-e	1.0 cde	2.5 bc	0.0 b	0.0 b	0.0 b	0.0 b
22	TN05-8733		54.0 fgh	50.6 gh	2.0 ab	5.3 b-e	0.5 e	1.8 c	0.0 b	0.0 b	1.3 a	1.8 a
21	USG 74B58		52.7 gh	53.3 d-h	0.0 f	0.0 j	1.8 b	2.8 bc	0.0 b	0.0 b	0.0 b	0.0 b
12	DL 4500RS		52.3 gh	49.4 gh	1.8 abc	5.5 bcd	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
9	CROPLAN RC 4455		51.5 h	34.4 i	0.8 e	2.3 i	1.0 cde	2.3 bc	0.0 b	0.0 b	0.0 b	0.0 b
LSD (P=.05)			10.05	9.38	0.56	1.13	0.70	1.25	0.29	0.33	0.45	0.62

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible.

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage. 3 - AG 4703: Used only as a FLS Susceptible Check

Table 3 - continued**University of Tennessee**

**MG IV Early, Frogeye Leaf Spot, Brown Spot, SDS, Stem Canker, Anthracnose Ratings and Yields
2010**

Crop Code			SPRAYED	UNSPRAY
Pest Name			Anthracnose	Anthracnose
Rating Date			9/22/10	9/22/10
Rating Data Type				
Rating Unit			0-10	0-10
Entry No.	Entry Name	Rate Unit	9	10
8	CROPLAN RT 4539		1.5 abc	3.3 a-d
20	TER REV-45R10		1.8 ab	4.0 ab
10	DG V42N9RS		1.3 bc	3.3 a-d
3	AG 4703		1.0 c	2.5 d
15	SCH 458		1.8 ab	3.8 abc
16	SC Caleb		1.0 c	2.5 d
14	PROGENY 4206		1.8 ab	4.0 ab
4	AG 4303		1.0 c	2.8 cd
17	SC Jericho		1.8 ab	3.8 abc
11	DL 4300		1.5 abc	4.0 ab
5	AG 4531		1.0 c	3.0 bcd
1	ARMOR 42-M1		1.0 c	2.3 d
13	NK S44-D5		1.0 c	2.5 d
6	BECK'S 445NR		1.8 ab	4.3 a
18	STEYER 4430RR		1.5 abc	4.0 ab
7	BECKS 451NR		1.0 c	2.3 d
2	ARMOR 44-R12		1.0 c	3.0 bcd
19	STEYER 4501R2		1.0 c	2.5 d
22	TN05-8733		2.0 a	4.3 a
21	USG 74B58		1.3 bc	3.3 a-d
12	DL 4500RS		1.5 abc	3.0 bcd
9	CROPLAN RC 4455		1.8 ab	3.8 abc
LSD (P=.05)			0.73	1.15

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible.

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage

3 - AG 4703: Used only as a FLS Susceptible Check

Table 4

University of Tennessee

M G III, Frogeye Leaf Spot, Brown Spot, SDS, Anthracnose
Disease Ratings and Yields 2010

Trial ID: FROGEYE III RR

Crop: Soybean

Location: MILAN A4

Investigator: Dr. Melvin Newman

Crop Code	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY	SPRAYED	UNSPRAY		
Pest Name			Frogeye LS	Frogeye LS	Brown Spot	Brown Spot	SDS	SDS	Anthracnose	Anthracnose		
Rating Date	9/20/10	9/20/10	8/18/10	8/18/10	8/18/10	8/18/10	8/18/10	8/18/10	9/20/10	9/20/10		
Rating Data Type	YIELD	YIELD										
Rating Unit	BU	BU	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10		
Entry No.	Entry Name	Rate Unit										
			16	15	1	2	3	4	5	6	9	10
8	PROGENY 3909 RR		68.8 a	64.3 a	1.3 ab	4.3 cd	2.0 a	4.0 bc	0.3 a	0.0 a	1.0 c	2.5 b
5	NK S39-A3		62.9 ab	57.3 a	2.0 a	7.5 a	2.0 a	4.3 abc	0.0 a	0.0 a	3.0 a	5.3 a
3	AG 3830		61.6 ab	57.6 a	1.3 ab	4.0 cd	2.3 a	4.5 abc	0.0 a	0.0 a	1.5 bc	3.3 b
1	AG 3802		55.7 bc	38.2 b	0.5 bc	3.0 de	2.3 a	3.5 c	0.0 a	0.0 a	1.3 bc	2.8 b
4	NK S38-H8		54.9 bc	38.2 b	2.0 a	6.0 b	2.5 a	5.5 a	0.3 a	0.0 a	1.8 b	3.3 b
6	SC Malichi 3250		54.3 bc	48.0 ab	1.3 ab	4.8 bc	2.3 a	4.5 abc	0.3 a	0.0 a	1.3 bc	3.0 b
2	AG 3803		52.2 bc	48.0 ab	0.3 c	2.0 e	2.8 a	4.8 abc	0.0 a	0.0 a	1.5 bc	3.3 b
7	USG 73F59R		50.0 c	46.0 ab	1.3 ab	5.0 bc	2.8 a	5.3 ab	0.0 a	0.0 a	1.3 bc	3.5 b
LSD (P=.05)			10.76	18.83	0.90	1.43	1.01	1.36	0.44	0.00	0.71	1.08

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible.

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage

Table 5

University of Tennessee

**Conventional Soybean Variety Test (MG V) Disease Ratings and Yields
2010**

Trial ID: FROGEYE CONVENTIONAL

Crop: Soybean

Location: MILAN A4

Investigator: Dr. Melvin Newman

Crop Code	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY	SPRAY	UNSPRAY
Pest Name			Frogeye LS	Frogeye LS	Brown Spot	Brown Spot	SDS	SDS	CB	CB
Rating Date	10/1/10	10/1/10	8/27/10	8/27/10	8/27/10	8/27/10	8/27/10	8/27/10	8/27/10	8/27/10
Rating Data Type	YIELD	YIELD								
Rating Unit	BU	BU	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10
Entry No.	15	16	1	2	3	4	5	6	7	8
Entry Name										
2 ANAND	40.1 a	39.3 a	1.0 ef	2.3 f	0.0 c	0.0 c	0.3 b	0.3 b	0.0 c	0.0 b
3 JAKE	39.9 ab	34.5 abc	0.5 fg	1.5 fg	0.0 c	0.0 c	0.0 b	0.0 b	1.8 a	2.3 a
1 GLENN	38.8 abc	32.9 bcd	1.8 de	4.3 e	0.0 c	0.0 c	0.0 b	0.0 b	0.8 abc	1.8 ab
8 USG 5601	37.9 a-d	35.5 ab	1.8 de	4.0 e	0.0 c	0.0 c	0.0 b	0.0 b	0.0 c	0.0 b
9 USG 5002	34.6 a-e	30.8 b-e	0.0 g	0.0 h	0.5 bc	1.0 bc	0.0 b	0.0 b	1.5 ab	2.3 a
13 JTN 5203	34.1 a-e	29.4 c-f	0.0 g	0.3 h	0.5 bc	0.8 bc	0.0 b	0.0 b	0.0 c	0.0 b
6 STEYER 4801	33.8 b-e	29.3 c-f	0.3 fg	0.3 h	1.3 a	2.8 a	0.0 b	0.0 b	0.0 c	0.0 b
12 PROGENY 4928LL	33.8 b-e	28.8 def	0.8 fg	1.8 fg	0.3 bc	0.8 bc	0.3 b	0.3 b	0.3 c	0.8 ab
10 TN 74G99LL	33.7 b-e	25.9 e-h	0.5 fg	1.8 fg	0.3 bc	0.8 bc	0.8 a	0.8 a	0.8 abc	1.8 ab
5 SC SHILOH	33.7 b-e	28.2 d-g	0.3 fg	0.8 gh	0.0 c	0.0 c	0.3 b	0.3 b	0.8 abc	1.5 ab
16 AG 4703 (RR check)	32.9 cde	24.6 fgh	5.3 a	9.8 a	0.0 c	0.0 c	0.0 b	0.0 b	0.0 c	0.0 b
18 e Merge 5110	32.2 de	24.5 fgh	3.5 b	7.3 c	0.0 c	0.0 c	0.0 b	0.0 b	0.0 c	0.0 b
7 STEYER 5201	30.7 e	27.2 efg	0.8 fg	2.0 f	0.8 ab	2.0 ab	0.0 b	0.0 b	0.5 bc	0.8 ab
11 CROPLAN RT4886S	30.6 e	23.1 gh	3.3 bc	6.5 cd	0.0 c	0.0 c	0.3 b	0.3 b	0.0 c	0.0 b
17 e Merge 4910	29.2 ef	21.2 h	4.5 a	8.5 b	0.0 c	0.0 c	0.0 b	0.0 b	0.0 c	0.0 b
4 ALLEN	24.0 f	25.3 e-h	2.5 cd	5.8 d	0.0 c	0.0 c	0.0 b	0.0 b	0.0 c	0.0 b
LSD (P=.05)	6.30	5.59	0.88	1.13	0.68	1.48	0.49	0.49	1.24	2.08

Means followed by same letter do not significantly differ (P=.05, LSD)

DISEASE RATING SYSTEM: 0-10, Where 0 = NO Disease Symptoms and 10 is the most disease possible

CB = Cercospora Blight

SDS = Sudden Death Syndrome

Sprayed Plots = Sprayed Headline @ 6oz/a with 0.25% Penetrator Plus as adjuvant @ R3 Stage

TABLE 6

University of Tennessee

**Soybean Foliar Fungicide Verification Test for Frogeye Leaf Spot Control
2010**

Trial ID: 10SOY05
Location: Milan- A4

Protocol ID: 10SOY05 FFV
Investigator: Dr. Melvin Newman

Pest Name Procedure Crop Variety Rating Date		Bu/A HARVEST AG 4703 Sep/27/2010	Frogeye LS RATING AG 4703 Aug/23/2010	Frogeye LS RATING AG 4703 Sep/08/2010	% Defoliation RATING AG 4703 Sep/08/2010	Phyto Burn RATING AG 4703 Aug/23/2010	Anthracnose RATING AG 4703 Sep/23/2010		
Trt No.	Treatment Name	Rate	Unit	8	1	2	3	4	5
12	Headline AMP (S + T)	10 fl oz/a		54.2 a	2.3 ef	3.5 de	37.5 cd	2.2 a	2.0 ab
10	Headline (S) Folicur (T)	6 fl oz/a 4 fl oz/a		54.0 a	2.0 f	3.3 de	42.5 cd	2.5 a	2.0 ab
3	Headline (S)	6 fl oz/a		52.3 a	2.3 ef	3.0 e	23.8 d	0	1.5 ab
8	Topguard (T)	10 fl oz/a		51.7 a	4.3 cd	4.5 d	57.5 bcd	0	1.8 ab
6	Stratego (S + T)	10 fl oz/a		51.1 a	2.8 ef	4.3 de	46.3 bcd	0	1.3 b
7	QuiltXcel (S + T)	10.5 fl oz/a		50.3 a	3.5 de	3.8 de	51.3 bcd	0	2.0 ab
2	Quadris (S)	6 fl oz/a		46.6 b	3.3 def	3.8 de	56.3 bcd	0	2.3 ab
5	Approach+Penthiopyrd (S + A)	9.6 fl oz/a		45.8 b	4.5 cd	6.3 c	67.5 abc	0	3.0 a
11	Domark (T)	5 fl oz/a		44.9 b	5.5 c	4.5 d	65.0 abc	0	2.5 ab
4	Evito (S)	2 fl oz/a		43.5 bc	5.0 c	5.8 c	73.8 abc	0	2.3 ab
9	Folicur (T)	4 fl oz/a		40.8 c	7.0 b	8.5 b	81.3 ab	2.2 a	2.5 ab
1	Untreated Check			34.2 d	8.3 a	10.0 a	96.0 a	0	2.8 ab
LSD (P=.05)				2.96	0.94	0.91	23.41	1.31	0.97
Standard Deviation				2.05	0.65	0.63	16.21	0.67	0.67
CV				4.32	15.52	12.35	27.85	29.27	31.27
Grand Mean				47.44	4.21	5.08	58.21	2.28	2.15

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

All disease ratings and Phytotoxic Burn range from 0= no disease to 10= most disease possible.

Fungicide Class: (S) = Strobilurin, (T) = Triazole, (A) = Amide

Application: Sprayed at the R3 stage, with plot sprayer with fungicide treatment and Penetrator Plus at 0.25% in each treatment with 15 gallons of water per acre. Nozzles: flat fan 8003.

Site description: Irrigated, no-till, non-rotated soybean field with soybean residue, but natural infection.

Planted: Asgrow 4703, May 14, 2010, four-row plots, 30 feet long, 30" wide rows, and four replications.

Headline AMP #12 and Approach + Penthiopyrd #5 are not registered for soybeans at this time.

**Soybean Cyst Nematode Greenhouse Ratings of Selected Soybean Varieties
2010 Test Summaries
by Dr. Pat Donald, USDA**

See rating scale below

Varieties Tested	HG Type 1.2.5.7 race 2	HG Type 5.7 race 3	HG Type 2.5.7 race 5
<u>MG III RR</u>			
AG 3802	no germ	1	no germ
AG 3803	5	1	5
AG3830	5	1	4
NK S38-H8	5	1	5
NK S39-A3	5	1	5
SC Malichi 3250	5	1	5
USG 73F59R	5	1	5
Progeny 3909 RR	4	1	4
<u>MG IV E RR</u>			
Armour 42-M1	5	1	5
Armor 44-R12	5	1	5
AG 4703	5	4	5
AG 4303	5	3	5
AG 4531	5	5	5
Beck's 445NR	5	2	5
Beck's 451 NR	5	1	5
Croplan RT 4539	5	5	5
Croplan RC 4455	5	1	5
DG V42N9RS	5	1	5
DL 4300	5	4	5
DL 4500 RS	5	5	5
NK S44-D5	5	1	5
Progeny 4206	5	1	5
SCH 458	5	1	5
SC Caleb	5	2	4
SC Jericho	5	1	5
Steyer 4430RR	5	2	5
Steyer 4501R2	4	5	5
Ter Rev 45R10	4	1	5
USG 74B58	4	2	5
TN05-8733	5	3	5

Varieties Tested	HG Type 1.2.5.7 race 2	HG Type 5.7 race 3	HG Type 2.5.7 race 5
<u>MG IVL RR</u>			
Armour 47-R33	5	4	5
Armor 48 R40	5	5	5
AG 4730	5	5	5
Beck's 491 NR	5	1	5
Croplan RC 4877	5	1	5
Croplan RT 4886S	5	1	5
DG 37RY47	5	5	5
DG 33G48	5	1	5
DL 4810	5	1	5
DL 8482	5	5	5
Mer Nashville 749RR	5	3	5
Mer Atlanta 1047 RR	5	5	5
Morsoy RTS 4824	5	5	5
Morsoy RTS 4955N	5	1	5
NK S48 C9	5	2	5
NK S49 A5	5	2	5
Progeny 4906	5	5	5
Progeny 4908	5	5	5
SCh 478	5	2	5
Sch 4990	4	2	5
SC Galilee RR	5	1	5
Steyer 4710 RR	5	1	5
Steyer 4810 RR	5	1	5
Terral Rev 48R10	5	1	5
Terral Rev 49R11	5	2	5
Terral 49R10	4	4	5
USG 74A69R	5	5	5
USG 74A91	5	5	5

Varieties Tested	HG Type 1.2.5.7 race 2	HG Type 5.7 race 3	HG Type 2.5.7 race 5
<u>MG V RR</u>			
AG 5503	5	5	5
Croplan RC5007	5	1	5
Croplan RC5663	5	2	5
DL 8509	5	2	5
Morsoy RT5388Nrr	5	1	5
Morsoy RT5429RR	5	3	5
Progeny 5330RR	5	4	5
SCh 557	5	2	5
Terral Rev 55R21	5	2	5
USG 75T18	5	4	5
TN06-140	1	3	1
AG 4703	5	4	5
<u>CONVENTIONAL</u>			
Glenn	5	4	5
Anad	1	2	1
Jake	2	3	1
Allen	5	4	5
SC Shiloh	5	4	5
Steyer 4801	5	4	5
Steyer 5201	5	4	5
USG 5601	5	4	5
USG 5002	5	5	5
TN 74G99LL	5	4	5
Croplan RT 4886S	5	1	5
Progeny 4928LL	5	4	5
JTN 5203	2	3	1
JTN 5109	1	1	1
JTN 5209	5	5	5
AG 4703	5	4	5
eMerge 4910	5	2	5
eMerge 5110	4	2	4

Rating Scale:

1 = 0 to 5 cysts, 2= 6-10 cysts, 3= 11-20 cysts, 4= 21-40 cysts, 5 =>40 cysts

Ratings of 1 & 2 would be considered resistant , 3 would be moderately susceptible, 4 & 5 would be considered susceptible