Soybean Disease and Nematode Ratings and Yields
2011 Test Summaries
Variety Reactions to:
Frogeye Leaf Spot (FLS), Sudden Death Syndrome (SDS), Stem Canker (SC), Anthracnose, Cercospora Leaf Blight and Soybean Cyst Nematode (SCN)
and
Foliar Fungicides Results
by

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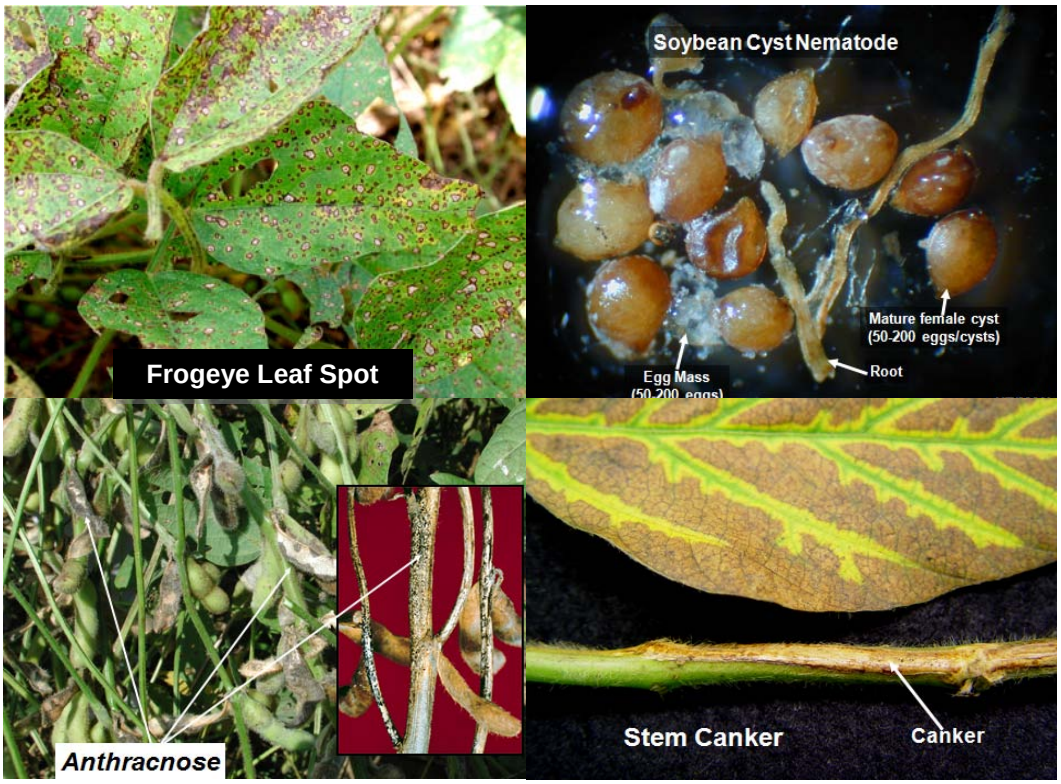

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The North Central Soybean Research Program
Go to www.utcrops.com for more soybean data.

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Soybean Disease Loss Estimate for Tennessee – 2011

		%Loss
1	**Anthracnose (*Colletotrichum truncatum*)**	**1.0**
2	**Bacterial diseases (*Pseudomonas syringae, P. syringae* pv. *tabaci, Xanthomonas campestris*)**	**0**
3	**Brown leaf spot (*Septoria glycines*)**	**2.0**
4	**Charcoal rot (*Macrophomina phaseolina*)**	**4.0**
5	**Diaporthe/Phomopsis complex (*Diaporthe* & *Phomopsis* spp.)**	**1.0**
6	**Downy mildew (*Peronospora manshurica*)**	**0**
7	**Frogeye leaf spot (*Cercospora sojina*)**	**3.0**
8	**Fusarium wilt & root rot (*Fusarium* spp.)**	**0**
9	**Other [a]**	**0**
10	**Phytophthora root & stem rot (*Phytophthora sojae)***	**0**
11	**Pod & stem blight (*Diaporthe phaseolorum* var. *sojae*)**	**0.01**
12	**Purple stain (*Cercospora kikuchii*)**	**0.1**
13	**Rhizoctonia aerial blight (*Rhizoctonia solani*)**	**0**
14	**Sclerotinia stem rot (*Sclerotinia sclerotiorum***	**0**
15	**Seeding disease (*Rhizoctonia, Pythium* & *Fusarium* spp.)**	**1.0**
16	**Southern blight (*Sclerotium rolfsi*)**	**0**
17	**Soybean cyst nematode (*Heterodera glycines*)**	**2.0**
18	**Root-knot (*Meloidogyne* spp.)**	**0.01**
19	**Other nematodes [b]**	**0.01**
20	**Stem canker (*Diaporthe phaseolorum* var. *meridionalis*)**	**0**
21	**Sudden death syndrome (*Fusarium solani* Form A)**	**0.2**
22	**Virus [c]**	**0**
23	**Brown stem rot (*Phialophora gregata*)**	**0**
24	**Soybean rust (*Phakopsora pachyrhizi)***	**0**

Total Per Cent Loss to Disease =	**6,269,375 (bu. Loss)**	**14.33 % loss**
***Total soybean production in TN for 2011:**	**43,750,000**	**(in bushels)**
***Total acres of soybeans harvested in 2011:**	**1,250,000**	**(acres)**
(As of Oct. 28, 2011) State Average for 2011:	**35**	**(bushels/acre)**

[a] Identify diseases listed as "other":	
[b] Identify nematodes listed as "other":	**Reniform and Lance**
[c] Identify "Virus" diseases:	
How was this information obtained?	Plot work and demonstration results and observations

*These are estimates as of October 28, 2011. There may be some adjustments later in the year.

Report for 2011
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 (FLS), (*Fusarium solani f.sp.glycines*) Sudden Death Syndrome (SDS), (*Colletotrichum truncatum*) Anthracnose (Septoria *glycines*) Brown Spot, and (*Cercospora kikuchii*) Cercospora Leaf Blight (CLB) on available commercial soybean cultivars.

Procedures:
Equipment: A 1.9-acre soybean plot was planted no-till at the RECM on May 10, 2011, with a four-row planter with cone seed-box attachments.

Plot information: The 59 varieties (LibertyLink, 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 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 occurrence was fairly heavy, but SDS and Stem Canker were very low. There was no soybean rust this year.

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 and 2011, FLS was very severe at RECM. 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) as soon as possible, usually in early November. Soybean breeders and commercial seed producers are using this data to bring more disease-resistant varieties to the soybean farmer.

Observations and Conclusions at Milan (RECM) Test Site: (See Chart 1 and Tables 1-5)

Maturity Group V (Early): (Table 1) FLS ratings for the early 10 MG V early varieties ranged from 0 to 4.3 for the sprayed and 0 to 7.3 for the unsprayed. Average yield was **45 bu/a** for the sprayed and **41.6 bu/a** for the unsprayed. Spraying increased the yield an average of **3.4 bu/a** for the 10 varieties. There were three sprayed varieties that were above the 3.0 rating scale. There were also two varieties that rated 0 for FLS n the unsprayed. Spraying increased the yield by **9.6 bu/a** on one variety.

Maturity Group IV (Late): (Table 2) FLS ratings for the 20 varieties in the late MG IV test ranged from 0 to 2.5 for the sprayed varieties and 0 to 7.3 in the unsprayed ones. Average yield for the sprayed varieties was **46.8 bu/a** and was **41.9 bu/a** for the unsprayed. There was an increased yield of an average **4.9 bu/a** across all varieties from spraying. All the sprayed varieties were in the zero or low ratings groups. Five sprayed varieties rated (0), 15 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), two that rated low (0.3-3), 9 that rated (3.3-6) and 5 severe at (6.5-8.5). The largest increase in yield from spraying was **7.3 bu/a** with the variety Asgrow 4703.

Maturity Group IV (Early): (Table 3) There were 14 varieties tested in this group, and their average FLS ratings ranged from 0 to 2.8 for the sprayed ones and 0 to 7.5 for the unsprayed ones. There were 5 sprayed varieties that were in the zero category. All the remaining sprayed varieties rated low from 0.3 to 2.8. There were 3 unsprayed varieties that rated (0), 3 varieties rated low (0.3-3), 5 varieties rated moderate (3.3-5.8), There were 3 varieties in either the severe group (6.3-7.5). The average yield for the sprayed varieties was **49.0 bu/a** and it was **44.7 bu/a** for the unsprayed. Spraying increased yields an average **4.2 bu/a** across all varieties.

Maturity Group III: (Table 4) FLS ratings for 8 varieties in this group ranged from 0 to 1.8 for the sprayed ones and 0 to 5.5 for the unsprayed ones. The average yield for the sprayed varieties was **48.6 bu/a** and **44.2 bu/a** for the unsprayed. Spraying increased yields by an average of **4.4 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. Three of the unsprayed varieties had a (0) FLS rating, and there were three in the low (0.8-1.0) range and 2 in the moderate category (4.5-5.5). There were no unsprayed varieties rating in the severe category.

LibertyLink (LL) varieties: (Table 5) Frogeye Leaf Spot ratings for the seven LL varieties were very low. Only one variety had any FLS and that was very low (0.3 in the sprayed and 0.5 in the unsprayed plots). The yields ranged from **38.5** to **55.7 bu/a** in the treated plots and **37.9** to **50.6** bu/a in the unsprayed plots. The average increase in yield from spraying the fungicide was only **2.2** bushels per acre.

Conclusions: In 2011, of the 59 varieties tested for disease resistance there were **17 varieties with no FLS symptoms,** 12 with only a very low rating on FLS, 20 that had moderate susceptibility and 10 with a high FLS rating in the severe category. In 2010 of the 78 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 2007-2011 of the 387 varieties tested, 97 were totally resistant to FLS (22%) 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.

Observations and Conclusions at the Lauderdale Co. Test Site:

In General:
The County variety tests (for maturity groups IV early, IV late and V early) were planted no-till on June 7, 2011 on a producer's field in Lauderdale Co. near the Mississippi River. This field had been planted to soybeans for several years and sprayed with Strobilurin fungicides. In 2010, Frogeye Leaf Spot (caused by *Cercospora sojina)* was found to be **highly resistant** to several common Strobilurin fungicides (Azoxystrobin, Pyraclostrobin and Trifloxystrobin).

Objectives:
Since this was the first finding of Strobilurin resistant FLS in soybeans in the US, the Tennessee county soybean variety tests were duplicated at this exact location in Lauderdale Co. The objective was to evaluate the resistance or susceptibility of 44 of the common commercial varieties **(Tables 6, 7 & 8)**. In addition, several fungicides were tested to find the most effective ones in controlling this new problem (**Tables 9 & 10 at Milan and 10 & 11 at Lauderdale**).

Results: (variety tests)
Disease severity was limited at the Lauderdale location because of very hot, and dry growing conditions and severe flooding in the early spring which removed most of the old diseased soybean debris. However, disease ratings were made and yields turned out fairly good. In general, soybean varieties that rated "0" or very low FLS at the Milan disease plots also rated very low or "0" at the Lauderdale location. In other words there was no indication that the varieties tested were any more susceptible to strobilurin resistant FLS than the non-strobilurin resistant FLS.
Also, each variety was sprayed with Headline (Pyraclostrobin) at the R3 stage with a side-by-side unsprayed check. There was relatively little increase in overall yields from the fungicide application and only slight decreases in FLS ratings. This indicates the poor control of the resistant FLS to the Strobilurin class of fungicides.

Results: (fungicide tests)
At the Lauderdale co. test site, 10 fungicides were tested on Asgrow 4703 against an untreated control **(Table 11).** The fungicides were in three different classes based on mode of action: Strobilurins, Triazoles and a Carboxamide. Because the FLS fungus at this site is resistant to the strobilurins, fungicides in the Triazole class out preformed the others in both yield and FLS disease ratings. The fungicide Priaxor contains both a strobilurin and a carboxamide and preformed only moderately in yield increase but rated good in the FLS ratings. Due to the extreme hot, dry environmental conditions and early flooding, disease severity was fairly low. In areas where other diseases such as anthracnose and brown spot are present as well, a Strobilurin fungicide plus a tank mix or pre-mix with a Triazole fungicide might perform even better.
In another fungicide test at the Lauderdale Co. site **(Table 12)**; higher rates of Strobilurin and Triazole fungicides were tested on Asgrow 4531 with an untreated check. The Triazole fungicide (Topguard) and a tank mix of it with Headline (Pyraclostrobin) were better in increasing yields over Headline or Quadris (Azoxystrobin) alone.

Conclusions:
Based on these tests, it is certain that the FLS fungus *(Cercospora sojina)* has gained the ability to overcome the Strobilurin class of fungicides in at lease thirteen locations throughout Tennessee, Kentucky, Illinois and Missouri. More testing and survey work needs to be done to define where all the areas of resistance are located.

Fungicides in the Strobilurin (Quinone Outside Inhibitors) class have been rated high by the FRAC (Fungicide Resistance Action Committee) committee to be overcome by certain fungi. On the other hand, fungicides in the Triazole class (Demethylation Inhibitors "DMI") are rated only medium in their ability to be overcome by fungi. Strobilurin fungicides are very effective in controlling several diseases in soybeans and other crops. *Cercospora sojina* in soybeans is the only fungus that has been found to have overcome the Strobilurins. Common diseases such as Anthracnose and Septoria Brown Spot are still managed well with Strobilurins.

So, as we go forward and learn more about this new resistance of Frogeye Leaf Spot to the Strobilurin fungicides, we still have excellent tools to help control our soybean diseases. Triazoles such as Topguard (Flutriafol) and Domark (Tetraconazole) have shown excellent control of the resistant FLS at the Lauderdale Co. test site. Tank mixtures or pre-mixes of a Triazole and a Strobilurin could be used to control both the resistant FLS fungus and to provide good control of other foliar diseases. Where there are indications that Strobilurins alone are not controlling FLS, more attention should be given to the Triazole chemistry. New products, yet to be cleared, such as Priaxor (contains a 2:1 ratio of pyraclostrobin"Headline" and fluxapyroxad "Xemium") may also provide an alternative to Strobilurins alone.

Resistant Varieties provide the best tool for control of resistant FLS. From the tests both at Milan and Lauderdale Co., there are strong indications that the varieties that were rated resistant to FLS at Milan are also resistant to FLS at Lauderdale Co. FLS is the only disease that has been shown to be resistant to the Strobilurin fungicides. However, most varieties carry little or no resistance to Anthracnose and Brown Spot. Therefore, use of foliar fungicides may still be an economical means of control these diseases, especially where crop rotation is not practiced.

Chart 1

Foliar Fungicide Spray Tests on Soybean varieties* Average Frogeye Leaf Spot Ratings (0-10) and Yields Research and Education Center at Milan TN– 2011 Melvin Newman, U T Extension										
Average FLS Rating	**MG III (8 varieties)**		**MG IV E (14 varieties)**		**MG IV L (20 varieties)**		**MG V E (10 varieties)**		**Liberty Link (7 varieties)**	
	Unsprayed	**Sprayed**	**Unsprayed**	**Sprayed**	**Unsprayed**	**Sprayed**	**Unsprayed**	**Sprayed**	**Unsprayed**	**Sprayed**
None (0)	3	4	3	5	4	5	1	2	6	6
Low (1-3)	3	4	3	9	2	15	3	7	1	1
Mod. (4-6)	2	0	5	0	9	0	4	1	0	0
Severe (7-10)	0	0	3	0	5	0	2	0	0	0
Aver. bu/a (increase)	44.2 ----	48.6 (4.4)	44.7 ---	49.0 (4.2)	41.9 ---	46.8 (4.9)	41.6 ---	45.0 (3.4)	44.3 ---	47.9 (2.6)
Aver. FLS Rating	1.26	0.44	3.52	1.14	4.16	1.28	3.35	1.8	0.28	0.32
Highest yielding variety	50.8	56.0	41.8	54.6	49.9	55.9	51.2	55.3	50.6	55.7
FLS rating for highest yielding variety	0	0	7.3	2.8	0	0	4.0	1.3	0	0
Lowest yielding variety	37.1	43.4	40.1	39.9	37.6	39.1	40.1	39.0	37.9	38.5
FLS rating for lowest yielding variety	0	0	0	0	5.3	1.8	4.5	3.3	0	0

***This is the number of varieties rated for FLS in these categories.**
***There were 11 soybean varieties that showed no symptoms of FLS in the untreated round-up ready plots and 6 in the Liberty Link plots.**

Table 1

University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group V Early, Frogeye Leaf spot, Cercospora Leaf Blight, Stem Canker, and Anthracnose

Investigator: Dr. Melvin Newman

Field ID: Frogeye V E
Location: Milan, TN RECM

Disease Rating Unit Crop Name	Harvest BU/A Treated	Harvest BU/A Untreated	FLS 0-10 Treated	FLS 0-10 Untreated	C. Blight 0-10 Treated	C. Blight 0-10 Untreated	Stem Canker 0-10 Treated	Stem Canker 0-10 Untreated	Anthracnose 0-10 Treated	Anthracnose 0-10 Untreated
Variety	Headline 6 oz/a	No Fungicide	Headline 6 oz/a	No Fungicide	Headline 6 oz/a	No Fungicide	Headline 6 oz/a	No Fungicide	Headline 6 oz/a	No Fungicide
AG 5332	55.3 a	51.2 a	1.3 cde	4.0 b	0.3 c	0.5 c	0.0 c	0.3 cd	1.0 d	1.8 d
DL 8509	51.5 ab	41.9 bc	3.3 ab	6.3 a	0.0 c	0.0 c	0.0 c	0.0 d	4.0 a	6.0 a
Armor 53-R15	48.2 bc	46.4 ab	1.5 cde	1.3 c	5.5 ab	7.0 ab	0.0 c	0.0 d	2.0 c	3.0 c
Progeny 5330RR	43.9 cd	39.4 c	0.0 e	0.0 d	4.8 ab	6.5 ab	1.0 bc	0.5 bcd	1.0 d	2.0 d
Hornbeck R5525	43.4 cd	40.4 c	0.0 e	0.3 cd	4.8 ab	6.5 ab	1.3 ab	1.3 abc	1.0 d	2.0 d
AG 5532	42.8 cd	37.5 c	1.8 bcd	5.0 b	5.8 ab	6.8 ab	0.0 c	0.0 d	3.5 ab	5.8 ab
MorSoy 5429RR	42.8 cd	42.4 bc	0.3 de	0.5 cd	5.5 ab	7.5 ab	1.0 bc	1.5 ab	1.0 d	2.0 d
NK S51-T8	42.5 d	37.7 c	4.3 a	7.3 a	0.0 c	0.0 c	0.0 c	0.0 d	3.0 b	5.3 b
Schillinger 557RC	40.4 d	38.9 c	2.5 bc	4.5 b	6.5 a	8.3 a	0.0 c	0.0 d	2.0 c	3.0 c
DG 35P53 RR	39.0 d	40.1 c	3.3 ab	4.5 b	4.3 b	5.8 b	2.3 a	2.0 a	3.5 ab	5.5 ab
LSD (P=.05)	5.64	5.99	1.59	1.20	2.00	1.75	1.11	1.18	0.65	0.64

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage on 8/8/11.

Some strobilurin resistant FLS has been identified in this field in 2010.

Table 2

University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011

Maturity Group IV Late, Frogeye Leaf Spot, Cercospora Leaf Blight, Stem Canker, and Anthracnose

Investigator: Dr. Melvin Newman

Trial ID: Frogeye IV L
Location: Milan, TN RECM

Description Rating Unit Crop Variety	Harvest BU/A Treated	Harvest BU/A Untreated	FLS 0-10 Treated	FLS 0-10 Untreated	C. Blight 0-10 Treated	C.Blight 0-10 Untreated	Stem Canker 0-10 Treated	Stem Canker 0-10 Untreated	Anthracnose 0-10 Treated	Anthracnose 0-10 Untreated
Variety	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz/a	No Fungicide
Armor X1208	55.9 a	49.9 a	0.0 f	0.0 g	0.0 b	0.0 b	0.0 b	0.0 b	2.5 a-d	3.8 a-d
Schillinger 4990RC	52.2 ab	47.3 ab	0.0 f	0.0 g	0.0 b	0.0 b	0.0 b	0.0 b	2.0 cde	2.8 def
Progeny 4908RR	50.3 abc	44.6 bcd	1.5 b-e	5.3 cde	0.0 b	0.0 b	0.0 b	0.0 b	2.3 b-e	3.0 cde
DG V47N8RR	49.2 bc	43.9 b-e	0.0 f	0.3 g	0.0 b	0.0 b	0.0 b	0.0 b	1.3 e	1.5 f
Hornbeck R4924	48.4 bc	41.4 c-h	1.8 a-d	4.5 de	0.0 b	0.3 ab	0.0 b	0.0 b	2.0 cde	3.0 cde
Terral REV-49R22	48.2 bc	43.0 b-f	2.0 abc	7.0 ab	0.0 b	0.0 b	0.0 b	0.0 b	2.3 b-e	4.0 a-d
DG V48N7RS	48.1 bc	46.0 abc	0.0 f	0.0 g	0.0 b	0.0 b	0.0 b	0.0 b	3.3 ab	4.5 ab
AG 4703	47.8 bc	40.5 d-i	2.0 abc	6.5 abc	0.0 b	0.0 b	0.0 b	0.0 b	2.8 a-d	3.8 a-d
DL 4810RR	47.3 bc	44.2 bcd	0.8 ef	2.3 f	0.0 b	0.0 b	0.0 b	0.0 b	2.5 a-d	4.0 a-d
AG 4907	47.2 bc	41.9 c-g	2.0 abc	7.3 a	0.0 b	0.0 b	0.0 b	0.0 b	2.5 a-d	3.3 b-e
NK S49-A5	47.0 bcd	41.6 c-h	0.0 f	0.0 g	0.3 a	0.5 a	0.0 b	0.0 b	1.8 de	2.8 def
AG 4730	47.0 bcd	43.3 b-f	1.3 cde	4.8 de	0.0 b	0.0 b	0.0 b	0.0 b	3.0 abc	4.0 a-d
Armor 48-R40	46.7 bcd	39.4 e-i	2.0 abc	5.8 bcd	0.0 b	0.0 b	0.0 b	0.0 b	3.5 a	4.8 a
MorSoy 46X29	46.6 bcd	41.4 c-h	2.5 a	5.5 cde	0.0 b	0.0 b	3.3 a	3.0 a	2.5 a-d	4.3 abc
DL 8482RR	45.4 cde	40.7 d-i	1.5 b-e	5.8 bcd	0.0 b	0.0 b	0.0 b	0.0 b	1.8 de	2.0 ef
Terral REV-48R22	44.6 c-f	39.0 f-i	1.0 de	4.3 e	0.0 b	0.0 b	0.0 b	0.0 b	2.3 b-e	3.3 b-e
USG 74E88	44.5 c-f	40.0 d-i	2.3 ab	7.3 a	0.0 b	0.0 b	0.0 b	0.0 b	1.3 e	1.5 f
USG 74A79R	40.9 def	36.9 hi	1.0 de	4.8 de	0.0 b	0.0 b	2.5 a	2.3 a	2.3 b-e	3.3 b-e
Schillinger 478RCS	40.4 ef	36.5 i	2.3 ab	7.0 ab	0.0 b	0.0 b	0.0 b	0.0 b	3.3 ab	4.3 abc
DG 37RY47	39.1 f	37.6 ghi	1.8 a-d	5.3 cde	0.0 b	0.0 b	1.8 ab	2.0 a	2.8 a-d	4.8 a
LSD (P=.05)	6.20	4.78	0.97	1.44	0.16	0.35	1.93	1.90	1.07	1.48

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage on 8/2/11.

Some strobilurin resistant FLS has been identified in this field in 2010.

Table 3

University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group IV Early, Frogeye Leaf Spot, Stem Canker, and Anthracnose

Investigator: Dr. Melvin Newman

Trial ID: Frogeye IV E
Location: Milan, TN RECM

Fungicide Treatments Disease Rating Unit	Treated Harvest BU		Untreated Harvest BU		Treated FLS 0-10		Untreated FLS 0-10		Treated Stem Canker 0-10		Untreated Stem Canker 0-10		Treated Anthracnose 0-10		Untreated Anthracnose 0-10	
Treatment Name	Headine 6 oz./a		No Fungicide		Headline 6 oz./a		No Fungicide		Headline 6 oz./a		No Fungicide		Headline 6 oz./a		No Fungicide	
DL 4300RR	54.6	a	41.8	cd	2.8	a	7.3	ab	0.0	a	0.0	a	2.5	b	3.0	cd
AG 4303	52.2	ab	51.9	a	0.0	d	0.3	g	0.0	a	0.0	a	2.5	b	3.5	abc
DL 4300RR	51.5	ab	42.0	bcd	2.0	ab	7.5	a	0.0	a	0.0	a	3.0	ab	3.5	abc
Armor X1205	51.3	ab	50.2	ab	0.8	cd	4.0	ef	0.0	a	0.0	a	2.8	ab	3.8	ab
AG 4531	51.3	ab	44.3	a-d	2.5	ab	5.5	cde	0.0	a	0.0	a	2.8	ab	3.5	abc
Armor X1206	50.6	ab	50.9	a	0.0	d	0.0	g	0.0	a	0.0	a	3.5	a	4.0	a
Steyer 4430RR	49.0	ab	51.2	a	0.0	d	0.8	g	0.0	a	0.0	a	3.0	ab	3.8	ab
DL 4500RS	48.3	ab	41.8	cd	1.5	bc	4.3	def	0.0	a	0.0	a	2.3	b	2.5	d
USG 74A45	47.9	abc	46.4	abc	0.3	d	3.0	f	0.0	a	0.0	a	2.3	b	3.0	cd
Terral REV-44R22	47.9	abc	46.8	abc	0.0	d	0.0	g	0.0	a	0.0	a	2.8	ab	3.0	cd
Progeny 4510	47.6	abc	40.2	cd	2.3	ab	6.3	abc	0.0	a	0.0	a	2.5	b	3.3	bc
Schillinger 458RCS	47.6	abc	37.4	d	2.0	ab	5.8	bcd	0.0	a	0.0	a	2.3	b	3.0	cd
NK S44-D5	46.2	bc	40.4	cd	2.0	ab	4.8	cde	0.0	a	0.0	a	2.8	ab	3.0	cd
USG 74B58	39.9	c	40.1	cd	0.0	d	0.0	g	0.0	a	0.0	a	3.0	ab	3.5	abc
LSD (P=.05)	8.17		8.25		1.02		1.57		0.00		0.00		0.79		0.72	

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage 7/27/11.

Some strobilurin resistant FLS has been identified in this field in 2010.

FLS = Frogeye Leaf Spot

Table 4

University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group III, Frogeye Leaf Spot, Brown Spot, and Anthracnose

Investigator: Dr. Melvin Newman

Trial ID: Frogeye III
Location: Milan, TN

Description	Harvest	Harvest	FLS	FLS	Brown Spot	Brown Spot	Cercospora Leaf Blight	Cercospora Leaf Blight	Anthracnose	Anthracnose
Rating Unit	BU/A	BU/A	0-10	0-10	0-10	0-10	0-10	0-10	0-10	0-10
Fungicide Treatment	Treated	Untreated	Treated	Untreated	Treated	Untreated	Treated	Untreated	Treated	Untreated
Variety	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide
Terrel REV-38R10	56.0 a	50.8 a	0.0 b	0.0 b	2.8 b	5.0 ab	0.0 b	0.0 b	3.8 b	4.8 bc
AG 3831 GenRR2Y	50.7 b	49.1 ab	0.0 b	0.8 b	1.8 b	3.3 d	1.8 a	2.8 a	3.3 b	4.3 c
DL 3805	50.2 b	45.6 bc	0.3 b	1.0 b	2.8 b	4.8 bc	0.0 b	0.0 b	3.8 b	4.5 c
NK S39-A3	47.7 bc	39.2 d	1.3 a	5.5 a	2.0 b	4.0 bcd	0.0 b	0.0 b	3.8 b	5.5 bc
AG 3803 RR	47.4 bc	45.6 bc	0.3 b	0.8 b	2.0 b	3.8 cd	0.0 b	0.0 b	3.8 b	4.5 c
Steyer 3402R2	47.0 bc	44.7 bc	0.0 b	0.0 b	4.0 a	6.0 a	0.0 b	0.0 b	3.5 b	4.8 bc
NK S39-A3	46.1 bc	41.5 cd	1.8 a	4.5 a	2.3 b	4.5 bc	0.0 b	0.0 b	4.5 b	6.0 b
Steyer 3102R2	43.4 c	37.1 d	0.0 b	0.0 b	4.0 a	6.0 a	0.0 b	0.0 b	6.0 a	8.0 a
LSD (P=.05)	4.92	4.55	0.61	1.26	1.06	1.24	1.07	1.66	1.36	1.42

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage on 7/27/11.

Some strobilurin resistant FLS has been identified in this field in 2010.

Table 5

University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group (Liberty Link), Frogeye Leaf Spot, Cercospora Blight, and Anthracnose

Investigator: Dr. Melvin Newman

Field ID: Frogeye LL (Not Round-up Ready)
Location: Milan, TN RECM

Disease Rating Unit Fungicide Treatment	Harvest BU/A Treated	Harvest BU/A Untreated	FLS 0-10 Treated	FLS 0-10 Untreated	C. Blight 0-10 Treated	C. Blight 0-10 Untreated	Anthracnose 0-10 Treated	Anthracnose 0-10 Untreated
Variety	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide	Headline 6 oz./a	No Fungicide
USG 74G99	55.7 a	50.6 a	0.0 a	0.0 b	0.0 a	0.0 a	2.3 ab	3.5 ab
Progeny 4960 LL	51.6 ab	45.4 abc	0.0 a	0.0 b	0.0 a	0.0 a	2.3 ab	3.0 ab
Progeny 4928 LL	51.5 ab	46.7 ab	0.0 a	0.0 b	0.1 a	0.1 a	1.4 b	3.1 ab
DL Micah 4900	48.8 ab	42.4 bc	0.3 a	0.5 a	0.0 a	0.0 a	1.4 b	2.4 b
Hornbeck HALO 4:94	45.6 bc	45.6 ab	0.0 a	0.0 b	0.1 a	0.1 a	2.3 ab	3.8 a
Schillinger go-soy 4910L	42.0 bc	41.0 bc	0.0 a	0.0 b	0.3 a	0.3 a	1.6 b	3.3 ab
DL Micah 4600	38.5 c	37.9 c	0.0 a	0.0 b	0.1 a	0.1 a	2.5 a	3.5 ab
LSD (P=.05)	9.87	7.67	0.28	0.32	0.29	0.29	0.85	1.21

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage on 8/8/11.

Some strobilurin resistant FLS has been identified in this field in 2010.

Table 6 **University of Tennessee**

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group V Early, Frogeye Leaf Spot and Cercospora Blight
Investigator: Dr. Melvin Newman

Location: Lauderdale Co.

Crop Name	Treated		Untreated		Treated		Untreated		Treated		Untreated	
Disease	Harvest		Harvest		FLS		FLS		Cercospora Blight		Cercospora Blight	
Rating Date	Oct/26/2011		Oct/26/2011		Sep/16/2011		Sep/16/2011		Sep/16/2011		Sep/16/2011	
Rating Unit	BU/A		BU/A		0-10		0-10		0-10		0-10	
Treatment Name	Headline 6 oz./a		No Fungicide		Headline 6 oz./a		No Fungicide		Headline 6 oz./a		No Fungicide	
Progeny 5330RR	61.7	a	63.7	a	0.0	d	0.0	d	1.5	ab	1.8	abc
Schillinger 557RC	61.2	a	56.5	c	0.3	cd	1.0	bc	2.3	a	2.3	ab
DG 35P53 RR	60.3	a	65.3	a	0.5	c	1.0	bc	0.6	cd	0.6	de
MorSoy 5429RR	59.5	ab	58.2	bc	0.0	d	0.0	d	1.5	ab	2.0	abc
AG 5332	59.0	ab	61.8	ab	1.0	b	1.8	b	0.0	d	0.0	e
Armor 53-R15	58.4	ab	56.6	c	0.5	c	0.8	cd	1.0	bc	1.0	cde
Hornbeck R5525	58.4	ab	55.0	cd	0.0	d	0.0	d	1.0	bc	1.3	bcd
AG 5532	58.3	ab	54.4	cde	1.0	b	1.8	b	2.0	a	2.5	a
DL 8509	54.5	bc	50.8	de	1.0	b	1.5	bc	0.0	d	0.0	e
NK S51-T8	51.0	c	50.2	e	2.0	a	3.0	a	0.3	cd	0.3	de
LSD (P=.05)	5.71		4.44		0.46		0.77		0.86		1.06	

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Site description: Soybean varieties were planted no-till in 4 row plots 40' long with 30" wide rows on June 7, 2011. Each soybean variety plot was split into 2 row plots and sprayed with Headline @ 6 oz/a and 0.25% v/v Induce at the R3 growth stage on 8/17/11 each variety had a side-by-side untreated plot.

This plot area was severely infested with strobilurin resistant FLS in 2010.

Table 7

University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group IV Late, Frogeye Leaf Spot and Cercospora Leaf Blight
Investigator: Dr. Melvin Newman

Location: Lauderdale Co.

Treatment	Treated		Untreated		Treated		Untreated		Treated		Untreated	
Disease	Harvest		Harvest		FLS		FLS		Cercospora Blight		Cercospora Blight	
Rating Date	Oct/26/2011		Oct/26/2011		Sep/16/2011		Sep/16/2011		Sep/16/2011		Sep/16/2011	
Rating Unit	BU/AC		BU/AC		0-10		0-10		0-10		0-10	
Treatment Name	Headline 6oz/a		No fungicide		Headline 6oz/a		No fungicide		Headline 6oz/a		No fungicide	
USG 74A79R	59.1	a	57.2	a	1.3	cde	2.5	bc	0.0	a	0.0	b
DG 37RY47	57.9	ab	53.1	abc	2.0	ab	3.3	a	0.0	a	0.0	b
MorSoy 46X29	57.6	ab	54.4	abc	2.3	a	2.8	ab	0.0	a	0.0	b
Terral REV-48R22	55.6	abc	54.8	abc	0.8	efg	1.0	fg	0.3	a	0.3	ab
AG 4907	55.3	abc	55.8	ab	1.0	def	1.8	de	0.0	a	0.0	b
Terral REV-49R22	54.6	abc	52.9	abc	1.0	def	2.0	cde	0.0	a	0.0	b
Armor 48-R40	53.9	abc	51.3	a-d	1.8	abc	2.8	ab	0.0	a	0.0	b
USG 74E88	53.9	abc	50.1	a-e	1.8	abc	2.3	bcd	0.0	a	0.0	b
AG 4730	53.2	abc	54.0	abc	0.5	fgh	0.8	gh	0.3	a	0.3	ab
Schillinger 4990RC	52.8	abc	54.4	abc	0.0	h	0.3	hi	0.0	a	0.0	b
Progeny 4908RR	52.1	abc	47.7	a-e	1.0	def	1.8	de	0.0	a	0.0	b
DL 4810RR	51.9	abc	47.9	a-e	0.5	fgh	0.5	ghi	0.0	a	0.0	b
Armor X1208	50.2	abc	49.2	a-e	0.3	gh	0.3	hi	0.0	a	0.0	b
NK S49-A5	50.1	abc	51.7	a-d	0.0	h	0.0	i	0.0	a	0.0	b
DL 8482RR	50.0	abc	50.8	a-e	1.0	def	1.5	ef	0.0	a	0.0	b
DG V47N8RR	49.3	abc	51.9	a-d	0.0	h	0.0	i	0.3	a	0.5	a
Hornbeck R4924	48.8	bc	45.3	cde	1.0	def	1.0	fg	0.0	a	0.0	b
AG 4703	48.2	bcd	46.7	b-e	1.5	bcd	2.3	bcd	0.0	a	0.0	b
Schillinger 478RCS	47.1	cd	42.5	de	1.8	abc	2.8	ab	0.0	a	0.0	b
DG V48N7RS	38.6	d	41.3	e	0.0	h	0.0	i	0.0	a	0.0	b
LSD (P=.05)	10.16		9.97		0.53		0.71		0.27		0.38	

Means followed by same letter do not significantly differ (P=.05, LSD)
Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.
Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage.
Site description: Soybean varieties were planted no-till in 4 row plots 40' long with 30" wide rows on June 7, 2011. Each soybean variety plot was split into 2 row plots and sprayed with Headline @ 6 oz/a and 0.25% v/v Induce at the R3 growth stage on 8/8/11
each variety had a side-by-side untreated plot.
This plot area was severely infested with strobilurin resistant FLS in 2010.

Table 8 University of Tennessee

Disease Ratings and Yields of Treated and Untreated Soybean Varieties 2011
Maturity Group IV Early, Frogeye Leaf Spot and Cercospora Leaf Blight

Location: Lauderdale Co. **Investigator: Dr. Melvin Newman**

Description	Treated		Untreated		Treated FLS		Untreated FLS		Treated Cercospora		Untreated Cercospora	
Rating Date	Oct/10/2011		Oct/10/2011		Sep/16/2011		Sep/16/2011		Sep/16/2011		Sep/16/2011	
Rating Unit	BU/A		BU/A		0-10		0-10		0-10		0-10	
Treatment Name	Headline 6 oz/a		No fungicide		Headline 6 oz/a		No fungicide		Headline 6 oz/a		No fungicide	
Progeny 4510	62.6	a	57.7	ab	1.5	ab	2.8	a	0.5	ab	0.8	ab
AG 4531	61.8	a	58.9	a	2.3	a	3.3	a	0.0	b	0.0	c
Armor X1206	58.4	ab	55.3	abc	0.0	e	0.0	e	0.0	b	0.0	c
NK S44-D5	58.4	ab	53.9	a-e	1.0	bcd	1.3	bc	0.0	b	0.0	c
USG 74A45	57.4	ab	49.5	cde	1.3	bc	1.8	b	0.0	b	0.0	c
Terral REV-44R22	57.3	ab	54.9	a-d	0.0	e	0.0	e	0.0	b	0.0	c
Armor X1205	56.4	ab	54.7	a-d	0.5	cde	0.8	cde	1.0	a	1.3	a
DL 4300RR	54.8	b	51.5	b-e	1.0	bcd	1.0	bcd	0.0	b	0.0	c
DL 4500RS	54.0	b	48.0	e	0.5	cde	1.5	bc	0.3	b	0.3	bc
DL 4300RR	53.0	bc	47.5	e	1.0	bcd	1.5	bc	0.0	b	0.0	c
AG 4303	52.3	bc	48.3	de	0.0	e	0.0	e	0.3	b	0.3	bc
Steyer 4430RR	52.0	bc	56.1	abc	0.0	e	0.0	e	0.5	ab	0.8	ab
Schillinger 458RCS	46.6	c	47.4	e	0.3	de	0.3	de	0.0	b	0.0	c
USG 74B58	36.5	d	37.2	f	0.0	e	0.0	e	0.0	b	0.0	c
LSD (P=.05)	6.81		6.65		0.78		0.79		0.62		0.69	

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Treated Plots = Sprayed with Headline fungicide @ 6 oz/a with 0.25 % Penetrator Plus as an adjuvant at R 3 growth stage on 8/10/11.

Site description: Soybean varieties were planted no-till in 4 row plots 40' long with 30" wide rows on June 7, 2011. Each soybean variety plot was split into 2 row plots and sprayed with Headline @ 6 oz/a and 0.25% v/v Induce at the R3 growth stage, each variety had a side-by-side untreated plot.

This plot area was severely infested with strobilurin resistant FLS in 2010.

Table 9

University of Tennessee
Soybean Foliar Fungicide Verification Test for Frogeye Leaf Spot and Disease Control in 2011

Trial ID: 11Soy 02
Location: Milan, TN RECM
Investigator: Dr. Melvin Newman

Disease Rating Unit Rating Date			Harvest BU/A Sep/30/2011		Frogeye L.S. 0-10 Aug/22/2011		Phytotoxicity* 0-100% Aug/22/2011		Anthracnose 0-10 Sep/30/2011	
Treatment Name	Rate	Rate Unit								
Priaxor**	6	fl oz/a	44.5	a	3.3	e	0.0	c	2.5	f
Induce	0.5	% v/v								
Domark	7	fl oz/a	42.7	ab	6.0	b	0.0	c	3.3	def
Induce	0.5	% v/v								
Topguard	10	fl oz/a	42.5	abc	4.8	cd	6.3	b	2.8	f
Induce	0.5	% v/v								
Quilt Xcel	10.5	fl oz/a	41.8	abc	4.0	de	0.0	c	3.8	c-f
Induce	0.5	% v/v								
Aproach**	9	fl oz/a	40.9	a-d	4.3	de	0.0	c	5.3	b
Induce	0.5	% v/v								
Stratego YLD	5	fl oz/a	40.3	bcd	4.3	de	11.8	a	3.0	ef
Induce	0.5	% v/v								
Headline	6.0	fl oz/a	38.8	cd	4.5	d	0.0	c	4.8	bc
Induce	0.5	% v/v								
Evito	3	fl oz/a	38.8	cd	5.8	bc	0.0	c	4.5	bcd
Induce	0.5	% v/v								
Quadris	6	fl oz/a	37.5	d	3.8	de	0.0	c	4.8	bc
Induce	0.5	% v/v								
Tilt	4	fl oz/a	37.1	d	6.5	b	0.0	c	4.3	b-e
Induce	0.5	% v/v								
Untreated Check			31.2	e	8.0	a	0.0	c	8.3	a
LSD (P=.05)			3.92		1.01		3.75		1.26	

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

***Phytotoxicity is a rating of the % leaves showing an interveinal chlorsis reaction to the application.**

No yield reduction was noticed.

****The fungicides Priaxor and Aproach are <u>NOT</u> cleared for use on soybeans at this time although registration is expected in 2012.**

Site description: Irrigated as needed, no-till, non-rotated soybean field with soybean residue, but natural infection. Planted Asgrow 4703 on May 10, 2011, four-row plots 30' long, 30" wide rows and four replications of each treatment.
All treatments sprayed at the R3 Growth Stage on 7/27/11

Some strobilurin resistant FLS has been identified in this field in 2010.

TABLE 10

University of Tennessee
Soybean Foliar Fungicide Spray Test with Strobilurin and Triazole Fungicides
One and Two Applications
Location: RECM, Milan, TN 2011, soy 04
Investigator: Dr. Melvin Newman

Description Rating Date Rating Unit				Harvest Sep/30/2011 BU/A	FLS Aug/22/2011 0-10	Phytotoxicity Aug/22/2011 0-100%	Anthracnose Sep/30/2011 0-10
Treat. Name	App. GS	Rate	Rate Unit				
Headline	R3	6.0	fl oz/a	46.4 a	4.5 cd	0.0 a	5.0 cde
Headline	R5	6.0	fl oz/a				
Topguard	R3	7.0	fl oz/a	43.9 ab	5.3 bc	0.0 a	3.3 f
Topguard	R5	7.0	fl oz/a				
Headline	R3	6.0	fl oz/a	38.8 abc	4.0 d	0.0 a	4.0 ef
Topguard	R5	7.0	fl oz/a				
Headline	R3	6.0	fl oz/a	37.7 bcd	4.3 cd	0.0 a	6.3 bc
Domark	R3	5.0	fl oz/a	36.4 bcd	6.3 b	0.0 a	6.8 b
Domark	R3	5.0	fl oz/a	36.3 bcd	4.8 cd	0.0 a	4.5 def
Topguard	R5	7.0	fl oz/a				
Topguard	R3	7.0	fl oz/a	34.9 cd	6.0 b	0.0 a	5.8 bcd
Untreated Check				29.8 d	8.5 a	0.0 a	9.0 a
LSD (P=.05)				8.62	1.22	0.00	1.39

Site description: Irrigated as needed, no-till, non-rotated soybean field with soybean residue, and natural infection.
Planted Asgrow 4703 on May 10, 2011, four-row plots 30' long, 30" wide rows and four replications of each treatment.
Means followed by same letter do not significantly differ (P=.05, LSD).
Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.
***Phytotoxicity is a rating of the % leaves showing an interveinal chlorsis reaction to the application.**
Sprayed R3 Growth Stage on 7/28/11.
Sprayed R5 Growth State on 8/8/11.

TABLE 11

University of Tennessee

Soybean Foliar Fungicide Test for control of Strobilurin Resistant Frogeye Leaf Spot 2011
Trial ID: 11Soy 13, Investigator: Dr. Melvin Newman

Location: Lauderdale Co., TN

Soybean Variety Description Rating Date Rating Unit			AG 4703 Harvest Oct/04/2011 BU/A		A 4703 FLS Sep/07/2011 0-10		A 4703 Phytotoxicity* Sep/07/2011 0-100%	
Treatment Name	Rate	Rate Unit						
Domark	7	fl oz/a	42.8	a	1.13	cd	0.00	b
Stratego YLD	5	fl oz/a	42.7	a	1.75	c	2.75	a
Quilt Xcel	10.5	fl oz/a	42.0	ab	1.50	cd	0.25	b
Topguard	10	fl oz/a	41.9	ab	0.63	d	0.63	b
Tilt	4	fl oz/a	39.8	abc	1.13	cd	0.00	b
Evito	3	fl oz/a	39.3	abc	2.13	bc	2.00	a
*Priaxor (not cleared)	6	fl oz/a	38.6	bcd	1.50	cd	0.00	b
*Aproach (not cleared)	9	fl oz/a	38.5	bcd	3.25	a	0.00	b
Untreated Check			36.8	cd	3.63	a	0.00	b
Headline	6	fl oz/a	36.7	cd	3.13	ab	0.00	b
Quadris	6	fl oz/a	35.4	d	2.00	c	0.00	b
LSD (P=.05)			3.71		1.059		1.045	

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

All treatments were sprayed at the R3 Growth Stage on 8/10/11.

***The fungicides Priaxor and Aproach are NOT cleared for use on soybeans at this time.**

Each application included a tank mix of 0.25% v/v Induce.

Site description: Asgrow 4703 soybeans were planted no-till on June 7, 2011 in 4 row plots, 30' long with 30" wide rows and four reps. Heavy flooding had occurred from the Mississippi river several weeks before planting. Most of the growing season was very dry and hot. As a result FLS, Anthracnose, and Brown Spot symptoms were very low.

***Phytotoxicity is a rating of the % leaves showing an interveinal chlorosis reaction to the application.**

This plot area was severely infested with Strobilurin resistant FLS in 2010.

TABLE 12

University of Tennessee

Soybean Foliar Fungicide Test with High Rates of Strobilurin and Triazole Fungicides on Strobilurin Resistant Frogeye Leaf Spot (FLS)
Investigator: Dr. Melvin Newman

Location: Lauderdale Co.

Soybean Variety Description Harvest Date			AG 4531 Harvest, Bu/A Oct/10/2011	
Treatment Name	Rate	Unit	Sprayed at R4 Aug. 17, 2011	
Topguard Induce	14.0	fl oz/a .25%	63.1*	A
Topguard + (tank mix) Headline Induce	6.0 6.0	fl oz/a fl oz/a .25%	60.7	AB
Headline SC Induce	9.0	fl oz/a .25 %	57.4	B
Untreated Check	---		52.3	C
Quadris Induce	9.0	fl oz/a .25%	51.9	C
LSD (P=.05)			4.05	

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

Disease Rating System: 0-10, where 0 = No disease and 10 = the most disease possible.

Replicated three times, strip plot two rows harvested, 44' long for ea. treatment.

Planted: June 7, 2011 on land that had been flooded for several weeks from the Mississippi river.

Sprayed all treatments at R4 Growth Stage on 8/17/11.

***FLS, Anthracnose and Brown Spot symptoms were very low due to early spring flooding.**

This plot area was severely infested with Strobilurin resistant FLS in 2010.

Chart 2

Tennessee County Variety Trial

Greenhouse Screening for Reaction to Soybean Cyst Nematode 2011

Pat Donald, ARS-USDA, Jackson, TN

Company	Variety	Race 2* HG Type 1.2.5.7	Race 3* HG Type 7	Race 5* HG Type 2.5.7
Armor	48-R40	4.9**	4.4	4.2
Armor	53-R15	4.9	1.3	4.4
Armor	X1205	4.1	1.8	4.3
Armor	X1206	4.9	2.2	4.6
Armor	X1208	4.5	1.1	4.2
Asgrow AG	AG3803RR	4.3	1.4	4.7
Asgrow AG	AG3831	4.7	1.1	4.6
Asgrow AG	AG4303	4.1	4.7	4.9
Asgrow AG	AG4531	5.0	5.0	4.9
Asgrow AG	AG4730	4.1	2.0	4.2
Asgrow AG	AG4907 RR	4.3	1.0	3.4
Asgrow AG	AG5332	3.7	1.6	4.8
Asgrow AG	AG5532	3.6	1.4	4.6
Dairyland	3805	4.7	1.4	5.0
Dairyland	8509	4.4	1.8	4.5
Dairyland	4300RR	4.7	4.6	3.9
Dairyland	4500RS	4.8	5.0	4.5
Dairyland	4810RR	4.3	3.4	4.8
Dairyland	8482RR	4.9	4.7	3.7
Dairyland	Micah4600	4.7	1.2	4.5
Dairyland	Micah4900	4.0	4.7	4.1
Dyna-Gro	35P53 RR	4.1	5.0	4.6
Dyna-Gro	37RY47	4.1	1.5	4.6
Dyna-Gro	V47N8RR	4.3	1.0	4.2
Dyna-Gro	V48N7RS	5.0	1.6	4.6
Hornbeck	HALO 4:94	4.6	4.8	4.9
Hornbeck	R4924	4.4	1.3	4.8
Hornbeck	R5525	4.7	3.2	4.2
MorSoy	46X29	4.2	5.0	3.4
MorSoy	5429RR	4.3	2.3	4.8

NK Brand	S39-A3	4.2	1.3	4.3
NK Brand	S44-D5	3.8	1.3	3.7
NK Brand	S49-A5	4.7	1.0	3.7
NK Brand	S51-T8	4.4	1.3	3.1
Progeny	4510	3.4	3.0	4.5
Progeny	4908RR	4.4	4.9	4.8
Progeny	4928 LL	4.2	4.8	4.3
Progeny	4960 LL	4.7	5.0	4.3
Progeny	5330RR	4.6	5.0	4.2
Schillinger	458RCS	3.9	1.0	4.0
Schillinger	478RCS	3.1	1.8	4.0
Schillinger	4910L	4.7	4.8	4.9
Schillinger	4990RC	4.5	1.0	3.7
Schillinger	557RC	3.9	2.2	4.7
Steyer	3102R2	4.7	2.5	4.0
Steyer	3402R2	4.8	1.3	2.8
Steyer	4430RR	4.0	2.1	3.8
Terral	38R10	4.6	1.9	4.3
Terral	44R22	5.0	1.3	4.3
Terral	48R22	4.6	1.6	4.6
Terral	49R22	3.7	1.0	4.5
USG	74A45	4.7	1.0	3.2
USG	74A79R	5.0	5.0	4.2
USG	74B58	3.8	3.2	4.1
USG	74E88	4.1	1.3	3.6
USG	74G99	4.3	5.0	4.2

*2500 eggs/ 3” pot
HG Type 1.2.5.7 female indices, PI 548402 = 13, PI 88788=37, PI 90763=0, PI 437654 = 0, PI 209332=70, PI 89772=1, PI 548316=33
HG Type 7 female indices, PI 548402 = 1, PI 88788= 2, PI 90763=1, PI 437654 = 0, PI 209332=9, PI 89772=1, PI 548316=12
HG Type 2.5.7 female indices, PI 548402 = 8, PI 88788= 31, PI 90763=0, PI 437654 = 0, PI 209332=24, PI 89772=0, PI 548316=26
** Average of 7 ratings of number of cysts present on the roots. 1=0-5 cysts, 2=6-10, 3=11-20, 4=21-40, and 5=>40
Ratings of 1 & 2 would be considered resistant, 3 would be moderately susceptible, 4 & 5 would be considered susceptible

Precautionary statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user's. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide application's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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