

## Subcontractor Quarterly Report

---

Please use this form to clearly and concisely report on project progress. The information included should reflect quantifiable results that can be used to evaluate and measure project success. Comments should be limited to the designated boxes. Technical reports, no longer than 4 pages, may be attached to this summary report.

<b>Project Number:</b>	
<b>Project Title:</b>	Cercospora blight project
<b>Organization:</b>	
<b>Principal Investigator Name:</b>	T.W. (Mississippi State University subcontractors)
<b>Report Period:</b>	September 15, 2018 to December 15, 2018
<b>Project Status:</b> on-going	

Plots at both locations have been harvested. Data for the Verona location have been sent to Brian Ward. The last purple seed stain evaluations for the Stoneville location should be completed by the end of the week and those data also sent to Brian by sometime next week (12/19/2018). Plans for the 2019 season will begin shortly.

## Subcontractor Quarterly Report

Please use this form to clearly and concisely report on project progress. The information included should reflect quantifiable results that can be used to evaluate and measure project success. Comments should be limited to the designated boxes. Technical reports, no longer than 4 pages, may be attached to this summary report.

<b>Project Number:</b>	USB Project 1820-172-0124
<b>Project Title:</b>	Enhanced Pest Control Systems for Mid-South Soybean Production
<b>Organization:</b>	University of Missouri
<b>Principal Investigator Name:</b>	Pengyin Chen
<b>Report Period:</b>	June 15, 2018 - September 15, 2018

**Project Status - What key activities were undertaken and what were the key accomplishments during this quarter? Please use this field to clearly and concisely report on project progress. The information included should reflect quantifiable results (expand upon the KPIs) that can be used to evaluate and measure project success. Limit 5,000 characters.**

### CLB Variety Trial

We grew the 45 entry, 3 rep CLB variety trial as part of our collaboration on the CLB Project. Symptoms of CLB became more visually present when the majority of the plots were at the R6 growth stage. Plots were rated for incidence and severity three different times at 14 day intervals. 24 of the 45 entries were observed to have some degree of CLB incidence at one or more of the ratings. Symptoms of Frogeye Leaf Spot were also present in 8 of the 45 entries, although there was no severe incidence. Data will be sent to Dr. Blair Buckley in LA for cross-location analysis.

### CLB PI's

The 460 PI set for association mapping were also monitored for CLB symptoms throughout the season. 27 of the 460 PI's were observed to have some degree of incidence at one or more of the ratings. Plots were rated for incidence and severity three different times at 14 day intervals. We began rating the plots at approximately the R5 to R6 growth stage. No substantial incidence of Frogeye Leaf Spot or any other disease were observed in the plots. Data from our location will be sent to Dr. Leandro Mozzoni in AR for overall analysis.

### Advanced Yield Trials

Our 2018 advanced yield trials were comprised of 136 high yielding breeding lines. These tests were monitored for symptoms of CLB, Frogeye Leaf Spot, SDS and Stem Canker throughout the season. We will correlate the presence of disease symptoms along with the yield evaluation to help determine high yielding disease resistant lines for further testing in 2019. Selected lines will be entered in 2019 USDA Uniform Tests.

### Sting Bug Project

We used 6 lines with resistance to stink bugs to make 17 crosses with high yielding conventional, RR1 and R2Y lines for genetic mapping and breeding purposes. The F1 hybrids have been sent to winter nursery in Puerto Rico for generation advancement. These populations will be quickly advanced to F4 via single pod descent method to develop recombinant inbred lines for genetic mapping and/or pure lines for breeding selections.

USB Quarterly Report for trial located at Ben Hur (near Baton Rouge, LA).

Three ratings were conducted on September 13, 18, and 27. Diseases present included *Cercospora* leaf blight, frogeye leaf spot, target spot, and soybean rust. *Cercospora* incidence and severity was high in some varieties. However some varieties look promising for sources of resistance to the *Cercospora* leaf pathogens. Soybean rust was also severe at the end of the season. This made it difficult to rate because of defoliation. Data has been given to Dr. Brian Ward for analysis. Inclement weather prevented harvest.

## Subcontractor Quarterly Report

Please use this form to clearly and concisely report on project progress. The information included should reflect quantifiable results that can be used to evaluate and measure project success. Comments should be limited to the designated boxes. Technical reports, no longer than 4 pages, may be attached to this summary report.

<b>Project Number:</b>	1720-172-0124 (Year 2 of 2);1820-172-0124
<b>Project Title:</b>	Enhanced Pest Control Systems for Mid-South Soybean Production
<b>Organization:</b>	University of Arkansas
<b>Principal Investigator Name:</b>	Terry Spurlock
<b>Report Period:</b>	4th quarter 2018

**Project Status - What key activities were undertaken and what were the key accomplishments during this quarter? Please use this field to clearly and concisely report on project progress. The information included should reflect quantifiable results (expand upon the KPIs) that can be used to evaluate and measure project success. Limit 5,000 characters.**

The variety trial was planted 6 June 2018 at a field location near Mist, AR. The farm has a history of Cercospora leaf blight pressure and the field has been in continuous soybean for 5+ years. Plots were planted on 2-row 38" row spacing, 10 ft long, with 5 ft alleys and varieties replicated 4 times. The initial rating was made on 14 August with another rating on 31 August and another on 17 September.

Cercospora leaf blight pressure was moderate for south Arkansas and symptoms were present in the test at the initial rating. The first rating was the only rating where significant differences were observed. There was a replication interaction that when removed also render the result NS. Those results are presented below.

Due to one of the wettest years on record, the test could not be harvested with a plot combine. The test was hand harvested on 30 October. Yield and seed quality data will be reported in the final 2018 report.

Name	CLB Incidence (%)	
UA 5014C	20	a-h
UA 5615C	7.7	f-i
R11-171	11.5	d-i
R04-342	3.7	hi
R07-6669	16.7	a-i
R10-298	8.8	f-i
R13-9687	10	f-i
R13-13997	23.3	a-g
R15-818	7.3	f-i
R15-2422	4	hi
R15-1150	11.5	d-i
R12-6751RR	18.3	a-i
R13-4638RY	14	c-i
R11-7999	8	f-i
UARK-288	0.5	i
S16-14687	20	a-h
S13-3851C	28.8	a-d
S14-15146R	6.3	ghi

S14-15138R	23.7	a-g
S16-11644	10.3	e-i
S11-20242	12.3	d-i
S11-17025	23	a-g
S16-3739	15	b-i
S12-4718	11.7	d-i
S16-11222	6.5	ghi
S14-9017R	25	a-f
S13-2743C	32.5	ab
S13-10590C	15	b-i
S13-10592C	33.7	a
S15-3772RY	7	f-i
S15-5904RY	31.3	abc
S14-9051R	11.5	d-i
S15-3847RY	33.8	a
S15-16886C	28.3	a-e
S15-17812C	9	f-i
S13-1955C	8.3	f-i
S15-10434C	14.3	b-i
S15-10879	33.8	a
S16-14458	1	i
S16-8156	21.7	a-h
LA13006	33.3	a
Progeny 4930LL	25	a-f
Delta Grow 4967LL	21.3	a-h
S13-1805C	15	b-i
REV 51A56	7	f-i

---

LSD=0.10

## Subcontractor Quarterly Report

Please use this form to clearly and concisely report on project progress. The information included should reflect quantifiable results that can be used to evaluate and measure project success. Comments should be limited to the designated boxes. Technical reports, no longer than 4 pages, may be attached to this summary report.

Project Number:	
Project Title:	
Organization:	
Principal Investigator Name:	
Report Period:	

**Project Status - What key activities were undertaken and what were the key accomplishments during this quarter? Please use this field to clearly and concisely report on project progress. The information included should reflect quantifiable results (expand upon the KPIs) that can be used to evaluate and measure project success. Limit 5,000 characters.**

Travel to 16 locations across 7 states was undertaken and leaf samples showing CLB symptoms were taken. In total, over 1,000 isolates were obtained. These isolates were backed up for long-term and short-term storage. DNA is currently being extracted and will be used to build a population map across the mid-south. DNA markers will also be used to determine strobilurin resistance across populations and species. Poison plates will be used to ascertain SDHI and MBC resistance.

<b>Project Number:</b>	1720-172-0124 (Year 2 of 2);1820-172-0124
<b>Project Title:</b>	Enhanced Pest Control Systems for Mid-South Soybean Production
<b>Organization:</b>	Texas A&M AgriLife Research
<b>Principal Investigator Name:</b>	Xin-Gen (Shane) Zhou

**Project Status** - What key activities were undertaken and what were the key accomplishments during the life of this project? Please use this field to clearly and concisely report on project progress. The information included should reflect quantifiable results (expand upon the KPIs) that can be used to evaluate and measure project success. Technical reports, no longer than 4 pages, may be included in this section.

A field trial evaluating soybean stink bug resistance was established at the Beaumont Center, TX in 2018. The trial consisted of five germplasm lines, D68-0102, D86-11839, D88-5272, D88-5974, and D92-4216. These lines were arranged in a randomized complete block design with four replicates. Plots consisted of four 20-ft rows spaced 30 in. between rows. Soybean was planted on June 15th, 2018 using a planter at the rate of 8 seed per ft of row. Prior to planting, all plots received 40 lb/A of potassium and 60 lb/A of phosphorus. Immediately after planting, all plots were sprayed with a mix of Dual II Magnum (2.5 pt/A) and FirstRate (0.75 oz/A) for control of weeds. Irrigation followed local recommendations. Starting at stage R3, scouting of plots using a sweep net was conducted to assess the number of stink bugs. The number of southern green stink bugs and brown stink bugs was counted from 25 sweeps per plot on September 19<sup>th</sup>, and October 1<sup>st</sup> and 12<sup>th</sup>. **Plots were harvested on November 17 and soybean yields were determined.** Prior to data analysis, both southern green stink bugs and brown stink bugs were combined, and square root transformed to normalize the distribution of the data. The data were then back transformed for presentation.

Throughout the cropping season, only southern green stink bugs and brown stink bugs, with a majority of the bugs being southern green stink bugs, were present in the plots. No redbanded stink bugs were observed. No significant difference in the number of total stink bugs among the five germplasm lines evaluated were observed on the scouting date of September 19<sup>th</sup> (Table 1). However, total numbers of stink bugs on D68-0102, D86-11839, D88-5272, and D92-4216 were significantly lower than those on D88-5974 on the two later assessment dates of October 1<sup>st</sup> and 12<sup>th</sup>. **Due to extremely wet fall season, soybean yields were low in general. Yields of D86-11839 and D88-5974 were significantly higher than the rest of entries evaluated in the trial.**

These results indicate that D68-0102, D86-11839, D88-5272, and D92-4216 may have some tolerance against both southern green stink bugs and brown stink bugs.

**Table 1.** Stink bug and **yield** assessment on five soybean lines in the field trial at Beaumont, TX in 2018

Entry #	Entry	Source	No. of bugs/25 sweeps*			Yield (lb/A)
			Sep. 19	Oct. 1	Oct. 12	
1	D68-0102	LSU	1.8	4.5 b	17.5 b	1,626 b
2	D86-11839	LSU	1.8	4.3 b	21.5 b	1,736 ab
3	D88-5272	LSU	2.5	2.3 b	21.0 b	1,512 b
4	D88-5974	LSU	2.0	7.5 a	32.0 a	2,078 a
5	D92-4216	LSU	1.0	3.0 b	15.0 b	1,445 b
LSD (0.05) **			NS***	2.8	10.2	368
P > F =			0.9460	0.0133	0.0304	0.0212

\*Total number of southern green stink bugs and brown stink bugs.

\*\*Means are compared according to Fisher's protected Least Significance Difference (LSD) at  $P = 0.05$ .  
\*\*\*Not significant at  $P = 0.05$ .

**Did this project meet the intended Key Performance Indicators (KPIs)?** List each KPI and describe progress made (or not made) toward addressing it, including metrics where appropriate.

The field trial has met all the KPIs. The trial was properly conducted and all the disease assessments for leaf disease severity, and petiole and seed stain disease incidence were collected as scheduled. The trial was harvested, and yields were determined.

**Expected Outputs/Deliverables** - List each deliverable identified in the project, indicate whether or not it was supplied and if not supplied, please provide an explanation as to why.

Four germplasm lines (D68-0102, D86-11839, D88-5272, and D92-4216) with a level of tolerance against stink bugs were identified from the field trial conducted under the Texas environments (see Table 1).

**Describe any unforeseen events or circumstances that may have affected project timeline, costs, or deliverables (if applicable.)**

Frequent rainfall in the late spring delayed the plating of this trial, resulting in a delayed harvest. **This year's extremely wet fall season also caused relatively lower yields than normal years.**

**What, if any, follow-up steps are required to capture benefits for all US soybean farmers?**  
Describe in a few sentences how the results of this project will be or should be used.

These stink bug data collected from this study could be useful for breeders to develop stink bugs-tolerance cultivars with high yield potential in the southern United States.

**List any relevant performance metrics not captured in KPI's.**