2013 Alabama Wheat & Feed Grain Committee
Project Summaries
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Compiled by:  C. Dale Monks, Alabama Coop. Extension System & Auburn University

Each year, Alabama wheat and feed grain producers provide funding for research-based educational projects through the use of check-off funds. This effort is lead by a committee of elected producer representatives from across the state. Summaries of the work conducted were submitted Fall 2013 to the committee by research and extension professionals through the Head, Department of Crop, Soil and Environment Sciences at Auburn University.

The following reports were presented to the AWFGC in December 2013. They contain the results from some of the proposals that were approved the previous year(s). This information is not intended to be used to promote specific products but is meant to provide the information generated to those who funded the efforts- Alabama wheat and feed grain producers.

Summaries
-Corn Disease Control: Will fungicide applications increase profitability when applied at V5 to V8 growth stage?
 -Evaluation of Population and Economic Damage of Southwestern Corn Borer through GPS
 -Post-Harvest Resistant Palmer amaranth (Palmer pigweed) Management in Corn
 -Corn Row Patterns and Plant Populations for Different Yield Potentials
 -Monitoring Hessian Fly Populations in Alabama
 -Stored Grain Management

Acknowledgement

We would like to thank the Alabama Wheat and Feed Grain Committee for all that they do to support our projects and educational programs. Without the support of Alabama producers, these efforts would not be possible.


The Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is an equal opportunity educator and employer.

www.aces.edu
2013 Alabama Wheat & Feed Grain Producers
Project Summary

Title: Corn Disease Control: Will fungicide applications increase profitability when applied at V5 to V8 growth stage?

Principal Investigators:
Mark Hall, Extension Specialist
Anora Brooke, Biosystems Engineering

One Fungicide Application
On Irrigated Corn at V5
$9.30 Loss/Acre

Test 1 had four plots that were treated with nine ounces of Quilt fungicide per acre when the corn was knee high and four untreated plots. The treated corn yielded 1 bushel per acre less than the untreated. The corn sold for $4.50 per bushel.

\[
\begin{align*}
1 \text{ bushel} \times \$4.50 &= \$4.50 \\
9 \text{ oz Quilt} @ \$1.03/oz &= $9.30 + $4.50 \text{ application} = $13.80 \\
\text{Fungicide application loss/acre} &= - $9.30
\end{align*}
\]

Test 2 was an on-farm test and the harvest data was not available for this report (Fall 2013).
2013 Alabama Wheat & Feed Grain Producers
Project Summary

Title: Evaluation of Population and Economic Damage of Southwestern Corn Borer through GPS

Principal Investigators:
Mark Hall, Extension Renewable Energy Specialist
Tim Reed, Extension Entomologist
Anora Brooke, Research Technician
John Fulton, Biosystems Engineering

<table>
<thead>
<tr>
<th>No Insecticide Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ 14.82 Profit/acre</td>
</tr>
</tbody>
</table>

SWCB traps were monitored twice weekly in five North Alabama counties. In 2013 threshold populations did not develop. Mark communicated with consultants and farmers about the low SWCB populations.

\[ 6 \text{ oz Intrepid @ $1.72/oz} = \$10.32 + \$4.50 \text{ application} = \$14.82 \]

Treatment profit/acre = $ 14.82
2013 Alabama Wheat & Feed Grain Producers
Final Project Summary

Title: Post-Harvest Resistant Palmer amaranth (Palmer pigweed) Management in Corn

Investigators: Andrew Price (Weed Scientist, USDA-ARS), Kip Balkcom, (Agronomist, USDA-ARS), Brenda Ortiz (Small Grains Extension Specialist, Auburn University), Charlie Burmester (Row Crop Agronomist, Auburn University), Jorge Mosjidis (Plant Breeder, Auburn University).

In 2011, herbicide applications were not applied due to predicted cold temperature; however, weed control provided by winter covers was collected and presented in Table 1 below. Buckwheat controlled Palmer amaranth 80% likely due to quick soil shading and allelopathic properties provided by this cover. In general, sun hemp provided > 65% control on Palmer amaranth in less than ideal planting timing. In 2011, sorghum Sudangrass and cowpea were less effective.

Analysis allowed for combining 2012 and 2013 data (Table 2). Any herbicides applied in this study controlled emerged pigweed following corn harvest. Any cover crop except for cowpeas provided the ≥ 90% pigweed control with sorghum Sudangrass providing 98% control, followed by sun hemp and buckwheat.

In conclusion, based on three years of data, sun hemp appears to provide the most consistent pigweed suppression. Because researchers have developed sun hemp for use behind corn, it appears that resistant pigweed suppression is another advantage this cover provides.

Table 1. Cover Crop Biomass and Pigweed Response to Different Weed Control Options After Fall Corn Harvest, E.V. Smith 2011

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cover Crop Biomass (kg/Ha)</th>
<th>Pigweed Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nontreated(^1)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sun Hemp (PBU)(^2)</td>
<td>1565</td>
<td>65</td>
</tr>
<tr>
<td>Sun Hemp (P2)(^3)</td>
<td>1976</td>
<td>67</td>
</tr>
<tr>
<td>Sun Hemp (Tropic Sun)(^4)</td>
<td>1769</td>
<td>70</td>
</tr>
<tr>
<td>Buckwheat(^5)</td>
<td>1500</td>
<td>80</td>
</tr>
<tr>
<td>Sorghum Sudangrass(^6)</td>
<td>1917</td>
<td>48</td>
</tr>
<tr>
<td>Cowpeas (Iron Clay)(^7)</td>
<td>887</td>
<td>41</td>
</tr>
<tr>
<td>(LSD (0.05))</td>
<td>865.7</td>
<td>58.1</td>
</tr>
</tbody>
</table>

\(^1\)No herbicide or cover crop was applied to the plots.
\(^2\)Sun Hemp (PBU variety) was planted at 45 lbs/A with a 1205NT Great Plains no-till grain drill.
\(^3\)Sun Hemp (P2 variety) was planted at 45 lbs/A with a 1205NT Great Plains no-till grain drill.
\(^4\)Sun Hemp (Tropic Sun variety) was planted at 45 lbs/A with a 1205NT Great Plains no-till grain drill.
\(^5\)Buckwheat was planted at 45 lbs/A with a 1205NT Great Plains no-till grain drill.
\(^6\)Sorghum Sudangrass was planted at 45 lbs/A with a 1205NT Great Plains no-till grain drill.
Table 2. Weed Response to Different Weed Control Options after Fall Corn Harvest, E.V. Smith.

<table>
<thead>
<tr>
<th>Weed Control</th>
<th>Cover Crop Biomass (kg/Ha)</th>
<th>Pigweed Control (%)</th>
<th>Crabgrass Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nontreated(^1)</td>
<td>---</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Valor + Roundup(^2)</td>
<td>---</td>
<td>98</td>
<td>92</td>
</tr>
<tr>
<td>Roundup Powermax(^3)</td>
<td>---</td>
<td>98</td>
<td>87</td>
</tr>
<tr>
<td>Ignite 280(^4)</td>
<td>---</td>
<td>99</td>
<td>81</td>
</tr>
<tr>
<td>Gramoxone Inteon(^5)</td>
<td>---</td>
<td>99</td>
<td>98</td>
</tr>
<tr>
<td>Aim(^6)</td>
<td>---</td>
<td>98</td>
<td>31</td>
</tr>
<tr>
<td>2,4-D Amine 4(^7)</td>
<td>---</td>
<td>99</td>
<td>0</td>
</tr>
<tr>
<td>Sun Hemp (PBU)(^8)</td>
<td>4402</td>
<td>94</td>
<td>78</td>
</tr>
<tr>
<td>Sun Hemp (P2)(^9)</td>
<td>2629</td>
<td>94</td>
<td>80</td>
</tr>
<tr>
<td>Sun Hemp (Tropic Sun)(^10)</td>
<td>5607</td>
<td>91</td>
<td>65</td>
</tr>
<tr>
<td>Buckwheat(^11)</td>
<td>196</td>
<td>93</td>
<td>47</td>
</tr>
<tr>
<td>Sorghum-Sudangrass(^12)</td>
<td>5023</td>
<td>98</td>
<td>92</td>
</tr>
<tr>
<td>Cowpeas (Iron Clay)(^13)</td>
<td>2156</td>
<td>74</td>
<td>64</td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td>922.43</td>
<td>20.93</td>
<td>37.50</td>
</tr>
</tbody>
</table>

\(^1\) No herbicide was applied and no cover crops were drilled after harvest.

\(^2\) Valor (1 oz/A) + Roundup Powermax (32 fl oz/A) was applied within 3 days after harvest of corn.

\(^3\) Roundup Powermax (32 fl oz/A) was applied 2 weeks after corn harvest.

\(^4\) Ignite 280 (32 fl oz/A) was applied 2 weeks after corn harvest.

\(^5\) Gramoxone Inteon (32 fl oz/A) was applied 2 weeks after corn harvest.

\(^6\) Aim (2 fl oz/A) was applied 2 weeks after corn harvest.

\(^7\) 2,4-D Amine 4 (8 fl oz/A) was applied 2 weeks after corn harvest.

\(^8\) Sun Hemp (PBU variety) was drilled at 45 lbs/A with a 1205NT Great Plains no-till grain drill.

\(^9\) Sun Hemp (P2 variety) was drilled at 45 lbs/A with a 1205NT Great Plains no-till grain drill.

\(^10\) Sun Hemp (Tropic Sun variety) was drilled at 45 lbs/A with a 1205NT Great Plains no-till grain drill.

\(^11\) Buckwheat was drilled at 45 lbs/A with a 1205NT Great Plains no-till grain drill.

\(^12\) Sorghum-Sudangrass was drilled at 45 lbs/A with a 1205NT Great Plains no-till grain drill.

\(^13\) Cowpeas (Iron Clay variety) were drilled at 45 lbs/A with a 1205NT Great Plains no-till grain drill.
Title: Corn Row Patterns and Plant Populations for Different Yield Potentials

Principal Investigators:
Kip Balkcom, Agronomist, USDA-ARS and Brenda Ortiz, Small Grain and Feed Grain Specialist, ACES & Auburn University

This experiment was designed to compare single and twin row patterns across different plant populations (24,000-Low, 30,000-Medium, 36,000-High plants/ac.) under irrigated and dryland conditions in a conservation system. The study was conducted across five site-years: EVS11, EVS12, TVS12, EVS13, and TVS13, but EVS13 was thrown out due to severe stink bug damage. The average rye biomass production at termination was 2300 (EVS11), 3450 (EVS12), 3350 (TVS12), 4600 (EVS13), and 2190 (TVS13) lb/ac across each experimental area. The dryland portion of each experiment received 15.5” (EVS11), 19.5” (EVS12), 13.5” (TVS12), and 25.4” (TVS13) of rainfall during the growing season, while the irrigated portion received an additional 4.6” (EVS11), 9.3” (EVS12), 8.5” (TVS12), and 6.5” (TVS13) of irrigation. The differences in total rainfall and irrigation received enabled a treatment comparison when water was limiting and when water was not limited.

The following results were determined across four site-years (EVS11, EVS12, TVS12, TVS13):

1. Corn (DK 64-69) yields across all site-years, row patterns and plant populations averaged 50 bu/ac when water was limiting, but increased to 205 bu/ac when water was not limiting.

2. Corn yield decreased at the high plant populations in the limited water environment, but yields were maximized at the high population under the non-limited water environment (Fig. 1A). Twin-rows were equivalent to single rows in the water-limiting environment, but single rows averaged 5% higher than twin rows in the non-limiting water environment (Fig. 1B).

This study has been terminated at both locations.

Figures 1A and 1B. Corn Yields measured across water environments for plant populations (1A) and row patterns (1B) for four site-years during the 2011, 2012, and 2013 growing seasons.
2013 Alabama Wheat & Feed Grain Producers
Project Summary

Title: Monitoring Hessian Fly Populations in Alabama

Investigators:
Kathy L. Flanders, Entomology and Plant Pathology, Auburn Univ.;
Brenda Ortiz, Crop, Soil & Environmental Sciences, Auburn University;
Eric Schavey, Rudy Yates and Christy Hicks, Regional Extension Agents, Alabama Cooperative Extension System

Objectives:
- Evaluate Extension Agent on-farm variety tests for Hessian fly
- Evaluate resistance of wheat varieties in small replicated plot tests
- Survey wheat fields to determine risk factors for Hessian fly

Results:
Variety Tests: Significant Hessian fly damage occurred in one on-farm test in west central Alabama and the two replicated small-plot tests tests (Prattville and Fairhope). These studies allowed up to expand the list of varieties with very good resistance to Alabama Hessian fly biotypes. All the results are posted at http://www.aces.edu/agriculture/insects-diseases-weeds-pests/HessianFly/ResistantVarieties.php.

The following varieties are considered to have very good resistance to Hessian flies in Alabama: Terral TV8848, TV 8861; Pioneer Brand 26R41, 26R10, 26R61, and 26R20; AGS 2026; Agrium/CPS Oglethorpe; and USG 3120.

Identifying factors that increase or decrease the risk of Hessian flies: 71 wheat fields were surveyed in spring 2013 for Hessian fly. Fields were selected to represent different wheat growing regions in Alabama as well as the prevalent varieties and common cultural practices. 50 stems per field were collected and brought back to the lab to determine percent of stems infested with Hessian flies. Hessian fly infestations were relatively low in 2012-2013. Only 4 wheat fields (6%) had more than 10% Hessian fly infested stems These wheat fields were planted in a susceptible variety and were in the same field or adjacent to fields that had been in wheat the previous year.
2013 Alabama Wheat & Feed Grain Producers
Project Summary

Title: Stored Grain Management

Investigators:
Kathy L. Flanders, Entomology and Plant Pathology, Auburn Univ.
Eric Schavey, Regional Extension Agent (former), Alabama Cooperative Extension System

Cooperators: Rudy Yates, Brandon Dillard, David Derrick, and Christy Hicks, Regional Extension Agents, Alabama Cooperative Extension System, and Brenda Ortiz, Agronomy and Soils, Auburn Univ.

Objectives:
✓ Conduct four workshops on managing insects in stored grain, with emphasis on applying grain protectants and monitoring for stored grain pests.
✓ Continue to develop YouTube videos using farmer best-management-practices sound bites
✓ Maintain phosphine gas detectors and make them available to farmers during on-farm fumigations.

Results:
Workshops: Three workshops were conducted (Hillsboro, Ozark, and Alexandria) in which training was provided in how to calibrate sprayers to apply grain protectants, how to use Storgard traps to look for insects in stored grain, and how to clean and prepare bins for on-farm storage. 41 people attended these workshops. Farmers who attended the workshops were given at least 5 Storgard traps to use to look for insects in their grain bins. A Little Gus sprayer was purchased so we could show farmers how to calibrate and apply liquid grain protectant insecticides. The fourth scheduled workshop had to be postponed until 2014.

YouTube videos. Five new YouTube videos are in review and will be posted before the end of 2013.
Calibrating Gas Detectors: The low-range phosphine gas detectors were recalibrated. Phosphine gas detectors are at each of the following locations: Belle Mina, Headland, Autaugaville, Alexandria, and Brewton.