**Evaluation of Potential Cover Crops in Conjunction with Current Weed Control Programs in Soybeans**

**Quarter 1 Report**

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**Rationale/Justification:**

Controlling problematic weeds while input prices continue to increase means that Mississippi soybean growers need to maximize yield and get the best return on investment from inputs. Currently, several cover crop programs are being utilized throughout Mississippi, with limited university-based research to support the decisions involving cover crops. With many growers choosing to incorporate cover crops, it is essential to identify which herbicides can be used in-season with soybean and will still allow for planting of cover crops in the following fall.

**Report of Progress/Activity:**

**Objective 1: Herbicide carry-over from common season-long soybean herbicide programs**

**Quarter 1.** Soybeans were harvested in the fall of 2023 and cover crops were planted in November. Cover crop injury was evaluated at multiple timings, but data have not been analyzed at this time. Cover crops were terminated and soybeans were planted in 2024.

**Quarter 2.** Soybeans were planted in the spring of 2024. Various plant emergence and plant growth measurements were recorded. Soybeans were harvested and the cover crops were planted. No data have been analyzed or summarized at this time.

**Quarter 3.** Herbicide carryover injury to cover crops has been quantified on multiple dates, but data have not been summarized at this time.

**Objective 2: Tolerance of cover crops to fall-applied herbicides at the time of cover crop planting**

**Quarter 1.** This objective will be initiated in the fall after the harvest of the current years soybeans are harvested.

**Quarter 2.** The soybeans were harvested and fall residual herbicides were applied. The cover crops have been planted but have not emerged to date due to lack of soil moisture.

**Quarter 3**. Fall applied herbicide injury to cover crops has been quantified on multiple dates, but data have not been summarized at this time.

**Quarter 4.**

**Objective 1: Herbicide carry-over from common season-long soybean herbicide programs**

This objective was completed during the winter of 2024-2025. Common soybean herbicides did not appear to greatly reduce emergence or plant height of tillage radish, vetch, or wheat. However, Dual Magnum slightly reduced the stand density of wheat compared to the untreated control.





Despite no reductions in plant density of plant height of the cover crops, all herbicides caused significant injury. Flexstar, Warrant, and Classic resulted in 30% or greater injury to tillage radishes while Dual Magnum and Zidua SC caused less than 20% injury. All herbicides caused greater than 30% injury to vetch. In contrast, wheat appeared to be most tolerant to herbicide carryover in the soil with Classic being the only herbicide to cause greater than 20% injury. Flexstar, Dual Magnum, and Warrant caused less than 20% injury to wheat.



**Objective 2: Tolerance of cover crops to fall-applied herbicides at the time of cover crop planting**

Several fall applied residual herbicides greatly reduced plant densities of cover crops. Valor EZ, Boundary, Valor EZ plus Dual Magnum, Valor EZ plus Zidua, and Vlor plus Command resulted in failed stands of tillage radish. Zidua SC and Command reduced plant density of tillage radish compared to the untreated control. Similarly, Valor EZ alone or combined with other herbicides resulted in a failed stand of vetch. Other herbicides did not significantly reduce plant density of vetch. In wheat, Dual Magnum, Boundary, and Valor plus Dual Magnum greatly reduced the plant density. All other herbicides caused slight to moderate reductions in wheat density compared to the untreated control. Herbicides that reduced plant densities of tillage radish, vetch, and wheat also reduced plant heights of those cover crops.







All fall residual herbicides caused significant injury to tillage radish with Dual Magnum being the only herbicide that caused less than 50% injury. Most other herbicides caused 100% injury of tilage radish. All herbicides caused significant injury of vetch. Zidua SC was the only herbicide that caused less than 70% injury of vetch. Wheat was slightly more tolerant to fall redidual herbicides. Valor EZ and Zidua SC caused 30% injury or less to winter wheat. Valor plus Zidua caused less than 50% injury of wintre wheat. All other herbicides caused greater than 60% injury to winter wheat.