



United States  
Department of  
Agriculture

Agricultural  
Research  
Service

National Soil  
Dynamics  
Laboratory

Conservation  
Systems  
Research

Research  
Project  
Description  
No. 52

August, 2005

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# Conservation Systems Research

## *Winter Rye Residue Effects on Weed Control in Soybeans*

### RESEARCH PROJECT DESCRIPTION NO. 53



Soybean growing in rye residue.

### **Researchers**

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### **The Challenge**

Winter cereals are known to be an excellent cover crop for southeastern farmers, protecting the soil surface and increasing soil organic matter content. Many soybean growers in Alabama have included winter cereal cover crops as part of their conservation tillage systems.

When rye is utilized as a winter cover crop and allowed to grow several feet in height, then mechanically rolled into a dense mat on the soil surface, weed growth is suppressed. The residue mat physically impedes weed growth and also reduces sunlight to the growing weeds. Chemical weed suppression (allelopathy) also occurs from chemicals released from the rye residue. A substantial mat of rye residue on a soybean field might provide enough weed control early in the season to eliminate the need for preemergence herbicide applications.

## The Experiment

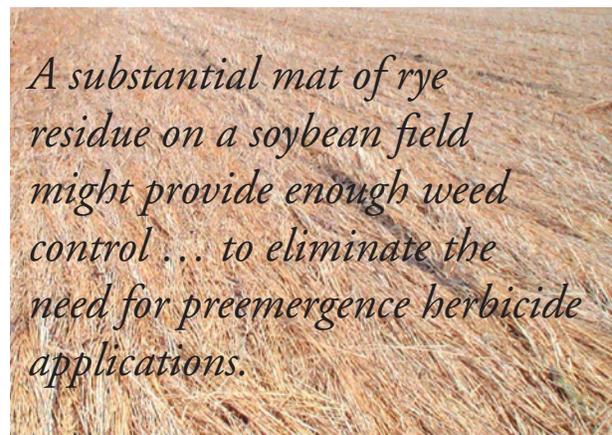
A field experiment at the Alabama Agricultural Experiment Station's Tennessee Valley Research and Extension Center at Belle Mina will:

1. Evaluate the effect of winter rye residue on weed control in conservation tillage soybean systems.
2. Determine if weed control from winter rye residue can eliminate preemergence herbicide applications.

In the autumn of 2004 cereal rye was established no-till in one-half of the experimental plots (the other half will have no cover crop) and allowed to grow until spring. In the spring, the winter cover rye and weeds in the fallow plots will be terminated with glyphosate and the rye rolled with a mechanical roller-crimper. Soybeans will be established no-till.



Rolling a rye cover crop in springtime.



*A substantial mat of rye residue on a soybean field might provide enough weed control ... to eliminate the need for preemergence herbicide applications.*

Three soybean varieties will be used:

- Roundup Ready®.
- Synchrony® tolerant.
- conventional.

Two early season residual herbicide treatments will include Valor® and none.

Postemergence herbicide treatments will include:

- early postemergence.
- late postemergence.
- sequential early and late postemergence.
- none.

Factors that will be measured include weed biomass and soybean height and yield.

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## Related Publications

Winter cover crop residue effects on weed control and cotton yield. Conservation Systems Research Project Report No. 2. USDA-ARS National Soil Dynamics Laboratory, Auburn, AL. 2005.

Winter rye residue effects on weed control in cotton. Conservation Systems Research Project Description No. 54. USDA-ARS National Soil Dynamics Laboratory, Auburn, AL. 2005.