United States
Department of
Agriculture

Agricultural
Research
Service

National Soil
Dynamics
Laboratory

Conservation
Systems
Research

Research
Project
Description
No. 38

December 2003

Contact us:

USDA-ARS-NSDL
411 S. Donahue Dr.
Auburn, AL 36832
334-844-4741

http://msa.ars.usda.gov/al/auburn/nsdl/csr

# Conservation Systems Research

## *Influence of Soil Structure on Weed Seed Germination and Survival*

**RESEARCH PROJECT DESCRIPTION NO. 38**

Soil structure can be increased with conservation systems and can potentially decrease weed emergence and survival.

## Researchers

F.J. Arriaga (Soil Scientist), A.J. Price (Weed Scientist), K.S. Balkcom (Research Agronomist)

## The Challenge

Conservation tillage systems help to maintain and, in most cases, improve soil structure over time. Weed seeds can germinate from locations at the soil surface to inches below. Increased soil structure may decrease weed seed germination and survivability. Most, if not all reported studies have evaluated weed seed germination in sieved soils, which destroys soil structure. The challenge is to determine if the soil structure created by conservation systems decreases weed seed germination and survival.

## The Experiment

Greenhouse work conducted at the USDA-ARS National Soil Dynamics Unit in Auburn, Alabama will:

- Evaluate the effect of soil structure on weed seed germination and survivability.
- Evaluate the effect of conservation systems on soil structure and weed seed germination.

*"[Can] the soil structure created by conservation systems decrease weed seed germination and survival?"*

Intact soil cores, 3" in diameter, will be collected to a depth of 12" from selected sites in Alabama to represent a range of soil types and management. In the greenhouse, weed seeds will be inserted at different depths into intact soil cores and evaluated for germination. Soil cores with sieved soil will also be evaluated to determine the effect of soil structure on weed seed germination.

Weed seedling emergence is greatly influenced by soil structure.