

INNOVATIONS

in Sustainable Agriculture

THE NORTHEAST REGION SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION PROGRAM & AGRICULTURE IN CONCERT WITH THE ENVIRONMENT PROGRAM

Farm Tests Alternate Rotations

First-year results from a farm-based soil conservation project in southwest Pennsylvania showed "favorable results" for sustainable practices in sweet corn and pumpkin production, project coordinator Allen Matthews says.

"Perhaps the most significant information . . . for local farmers is the production data comparisons between the sustainable and conventional project fields," Matthews said in a recent report. "For example, costs of chemical sprays were reduced over \$60 per acre in sustainable pumpkin and sweet corn fields."

Through the project, the

Matthews family is testing an alternative conservation plan on five acres of their Washington County farm. The plan was designed to reduce rotations from seven to four years. It uses living clover mulches, narrower field strips, grass roadways, reduced tillage and winter cover crops to reduce sediment loss. Integrated pest management practices are being implemented on the farm to reduce pesticide use.

Matthews hopes to demonstrate a rotation system through which family farms like his can prevent soil loss and maintain profitability. These issues are of vital importance to the roughly 1,500 vegetable producers who farm in and around the foothills of the Pennsylvania Appalachian Mountains. In 1991, this nine county area produced approximately \$6.4 million in vegetable farm income. But required Soil Conservation Service conservation plans could have a significant economic impact because they increase the years in rotation for vegetable producers.

In the first year of the Matthews project, comparison fields of similar slope, soil type and easterly exposure were established on the farm. With the help of the local conservation district, a sediment collection system was designed and installed to evaluate soil loss by the two cropping systems.

In terms of measuring soil loss, first year results primarily reflect the impact of the initial diversion construction, which disturbed a significant amount of ground and created difficulty in establishing cover crops early in the growing season.

The conservation district found, however, that there was little difference between the two systems in terms of soil loss.

Both systems were within allowable limits for the area and slopes. Matthews is concerned, however, that over a seven-year trial, the conventional system with four years of hay, two of no-till corn and one of vegetable row crops may produce far less sediment than the four-year rotation with only one year of clover.

In terms of reducing production costs associated with soil management and pest control, the Matthews family found that "sustainable tilling practices" required less soil preparation time, resulted in less soil compaction and yielded similar quantities of sweet corn and pumpkins in the first season.

"Through reduced use of chemicals, the sustainable pumpkin fields produced a per acre value of \$2,401 compared to the conventional field's \$2,229 per acre value," Matthews reports. "This included less farm labor in no-till planting, less chemical use, and similar seed, fertilizer and harvesting related costs.

"The conventional sweet corn fields yielded slightly more ears of corn per acre (2 percent). However, when reduced input costs from planting, and reduced pesticide use are considered, the sustainable fields produced nearly a 10 percent per acre value more than did the conventional fields," Matthews says.

The project's pepper plantings were a disaster. No cost comparisons could be made because the sustainable pepper plots yielded minimal fruit.

Matthews believes that the shredded newspaper mulches within the rows of sustainable peppers leached nitrogen from the soil and minimized fruit production. Soil and plant samplings showed deficient nitrogen levels in the sustainable peppers.