Farmers May Not Get Savings of No-Till

Farmers use no till and minimum tillage to save time, energy and soil. "However, many are not getting the soil savings due to cropping practices," says Robert Hotchkiss, Soil Conservationist with the USDA Soil Conservation Service in Chambersburg.

A Dauphin County study has shown that as high as 81 percent of disk and chisel tillage is ineffective due to a lack of ground cover. Some farmers bale cornstalks for bedding. This leaves the ground surface bare over winter and greatly increases erosion.

In other cases, farmers make too many trips over the field with chisel plows or disks. As a result, too little crop residue remains on the soil surface.

Using a no-till planter leaves 95 percent of the residue on the surface. Chisel plows leave 50 to 80 percent per trip depending on type of chisel. Disks leave 25 to 50 percent of cover per trip while conventional plowing leaves 0 to 10 percent.

A minimum of 2000 pounds of residue per acre on the surface is needed for effective erosion control. Fine textured residue left by crops such as soybeans and small grain is more effective pound-for-pound than coarse textured residues such as from corn and sorghum. "To be exact," says Hotchkiss, "a pound of small grain residue is twice as effective as one pound of cornstalks."

According to Hotchkiss, there is an easy way to estimate the amount of residue produced by a crop. Multiply your crop yield in bushels per acre times the residue yield of your crop. Residue yields for common crops are: winter small grain, 100; spring small grain 60-75; corn 56; and soybeans 40. A 30 percent loss of cover over the winter is also included in the computations. Thus, an 80 bushel per acre corn yield would produce 4480 pounds of residue less 30 percent winter loss equals a spring cover of 3136 pounds of residue.

At this production level, adequate erosion control would be obtained with the use of no-till planting and leaving all or most residue. However, two trips over the field with a tandem disk would incorporate 75 percent or more of the residue into the soil leaving less than 1000 pounds per acre on the surface. "The result would be an excellent opportunity for excessive soil loss due to water erosion,", added Hotchkiss.

Soil covered with plant residue is the secret to good erosion control. No-till farming leaves the greatest amount of cover and the best protection.

For more information about protecting your cropland soil, contact the Soil Conservation Service office at 550 Cleveland Avenue, Chambersburg, or phone 264-7013.

Cornell Lecture Series To Explore Biotechnology

ITHACA, N.Y. — The Boyce Thompson Institute for Plant Research at Cornell University is establishing a distinguished lecture series to examine a wide range of research advances in biotechnology and other areas in the life sciences.

The annual series will feature 20 American and foreign scientists as speakers; the inaugural lecture is set for mid-January, BTI President Ralph W. F. Hardy announced.

"The purpose is to bring to our Institute a breadth of distinguished scientists at the rapidly expanding frontiers of life sciences to discuss the latest research advances and share the opportunity with members of the broader Cornell community as well as the general public," Hardy explained.

Hardy, whose field is life sciences and who is an authority on biotechnology, said that the lectures by scientists here and abroad will have an impact on the Institute's future research directions, with particular emphasis on modern genetic techniques and related areas of biotechnology.

"From these new thrusts in life sciences will come the technology not only to revitalize agriculture in the United States but to help developing countries become self-sufficient in food production," he said, adding that the Boyce Thompson Institute is "positioning itself to be at the frontier in facilitating this change among the developed as well as the needy nations of the world."

Established in 1924 in Yonkers, N.Y., BTI moved to the Cornell campus in 1978. The Institute is dedicated to improving food and fiber production and maintaining environmental quality through research focusing on biological control, environmental biology, plant stress, and nitrogen and crops yields. Hardy became BTI's president and chief executive officer on Sept. 1.

He said that two lectures will be presented each month throughout the year, except July and August.

In addition to lectures, the speakers will have the opportunity to hold an informal meeting, during lunch hours, with Cornell students, including those assigned to BTI scientists for research work. All lectures will take place in the Institute's auditorium at 3 p.m. on Wednesdays. Specific dates will be announced later.

The first lecture in the Boyce Thompson Institute Distinguished Lecture Series will be given by Robert B. Goldberg, professor of biology at the University of California at Los Angeles. He will discuss his efforts to improve the quality and quantity of seed proteins in food plants through genetic engineering techniques.

Other scientists on the speaker list thus far are Roger N. Beachy of Washington University in St. Louis; Leroy E. Hood of the California Institute of Technology; Peter H. Quail, University of Wisconsin at Madison; George H. Lorimer, E. I. du Pont de Nemours & Co.; Thomas Kaiser, Rockefeller University; Thomas E. Wagner, Ohio University at Athens; Wendell L. Roelofs, New York State Agricultural Experiment Station at Geneva; George P. Georghiou, University of California at Riverside; and David Botstein, Massachusetts Institute of Technology.

Tentative topics include developing disease-resistant plants through genetic engineering; gene sequencing in plants, animals and humans; light regulation in plants; plant enzymes known to play key roles in photosynthesis; engineering crops with adequate resistance to herbicides; making farm animals more efficient through genetic engineering techniques; analysis of insect sex attractants at the molecular level; pesticide resistance; and fungal genetics.

For more information about the lecture program, telephone Hardy's office at (607) 257-2030.

Wisconsin Scientists

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domestic potatoes have four sets of chromosomes, a characteristic known as tetraploidy.

Yerk and Peloquin want to use the wild pollen to transfer characteristics to domestic species, but they also want to keep the wild potato traits more apparent in hybrid progeny. To accomplish this, they use a derivative of domestic potatoes to capture and preserve desirable traits from individual wild potatoes.

"We're not trying to introduce any specific characteristics into domestic potatoes," Yerk says. "We're trying to get a feel for ways to use the wild species and the differences that exist among and within them."