Looking into ag's high tech crystal ball

WASHINGTON, D.C. — Advances in agricultural research and technology will play an increasingly larger role in the life of farmers, a U.S. Department of Agriculture research official said today.

"American agriculture will continue to be one of the large users of high technology in the years ahead," said Terry B. Kinney, Jr., administrator of USDA's Agricultural Research Service.

Kinney cited such technologies as genetic engineering, computer modeling, satellite forecasting and laser beams.

"All of these and future technological developments," he said, "will lead to payoffs to farmers by making agricultural production more economical and efficient."

One of the most important challenges facing agricultural research, said Kinney, is to help find solutions to the problems of soil erosion, water losses and competition for water use. One of the new technologies for erosion control, he said, involves laser-guided machinery for leveling large areas of cropland to minimize soil and water runoff.

Soil, Water Research

He listed a few developments in soil and water research:

— Computer systems (1) help rangeland managers predict water runoff, soil erosion, yields and livestock production; (2) monitor and forecast the rate of soil erosion and the soil's ability to produce crops; (3) determine how slopes of a watershed will erode following stripmining by heavy equipment (4) help farmers select effective conservation tillage practices.

— Satellite data will lead to more accurate predictions of freezes and floods.

— Irrigation systems such as (1) cablegation, a new, energy-saving, automatic surface irrigation system can help growers who need a low-cost alternative to sprinkler systems; (2) a semi-automated pipe irrigation system can increase water application efficiency; (3) subsurface trickle irrigation already has yielded 13 to 31 tons more per acre of tomatoes than those irrigated by furrow systems.

— Experiments link removal of crop residues to reduction in corn and soybean yields.

Among studies aimed at improving the quality of crops and production efficiency are:

— Development of a nationwide computer network that will provide information exchange on germplasm for such crops as cotton, alfalfa, beans, fruits, nuts, forage grasses and legumes.

Genetic Engineering

— Research in genetic engineering can (1) regenerate mutuant plants from tumor cells, which then can be regenerated into leaves and roots that carry the new gene; (2) recombinant DNA technology can alter the genetic material of wheat to enhance the quality and quantity of other crops as well; (3) increase soybean yields by improving nitrogen-fixing bacterial that extract nitrogen from the air for use by plants as fertilizer; (4) conduct experiments on newly discovered DNA plasmids in corn land sorghum that may lead to new disease resistance in improving these crops; (5) develop future disease-resistant hybrids from two new corn breeding lines from Central American wild corn.

— Development of sex attractant phermones against important pests of cotton, tobacco, corn, and velvet and western beans.

— Chemical, cultural and crop rotation practices control wild oats in wheat, barley, sunflower, soybeans and other crops. This already has resulted in a $500 million annual increase in farm income.

Animal Production

In animal production, current studies include:

— Vaccine research seeks, (1) a new combination vaccine that controls the more virulent strains of Marek's disease in chickens; (2) control of pseudorabies, a herpes disease that can cause 100 percent mortality in young swine, and parvovirus infection, which causes significant losses from reproductive failures; (3) an antibody that is an important first step to a vaccine against coccidoiosis, which costs the nation's poultry producers almost $300 million a year.

— A new synthetic control kills fire ants, a major pest of farm animals.

— Controls are sought for bluetongue disease, a serious viral infection of sheep, cattle, goats and wildlife.

Dairy Efficiency

— Research will improve dairy production efficiency by (1) development of a computerized dairy herd management system to diagnose mastitis, which causes about $2 billion in annual losses; (2) determining energy and feed requirements for crossbred cows based on genetic potential for mature size and milk production; (3) a cheese-yield-milk-pricing system that will allow dairy porducers to improve the fat and protein content of milk to raise their earnings.

Studies in food processing and consumer services include:

— New cold treatment technology for citrus, strawberries and cherries to replace fumigation with ethylene dibromide on some commodities. These measures can help assure continuation of the $200 million U.S. export market for these commodities in Japan.

— A rapid microwave treatment for producing salmonella foods in bagged corn-soy-milk blends.

— Development of standards and analytical methods to keep mold toxins out of cereal foods, milk and animal feeds.

— A new detection system for pest infestation of fruits, vegetables and meats in packages and travelers' baggage entering the United States.

Human Nutrition

Among current human nutrition studies are:

—Use of a new multi-element analyzer that can simultaneously analyze as many as 16 minerals and trace elements in one food sample.

— Experiments showing effects of fiber-rich diets on hormonal balance and as preventatives of bone disease.

— Procedures for determining vitamin K deficiency in the elderly.

— Research on the relationship between chromium deficiency and imparied glucose tolerance.

From these research projects, and many others, said Kinney, innovative and revolutionary new technologies will come to American farmers through USDA's Agricultural Research Service, the state Agricultural Experiment Stations, the Cooperative Extension Services at state universities and USDA's Extension Service.

Feeder pig show, sale on April 16

FELTON, Del. — A feeder pig show and sale is scheduled for Saturday, April 16, at Carroll's Sale Barn in Felton, Del. The event is sponsored by the Delaware Pork Producers Association and the Delaware Cooperative Extension Service.

The show is open to producers who are consigning pigs to feeder pig sales in Delaware, Maryland and Pennsylvania. Pigs must have Delaware or Maryland tags, however. These are available from the state veterinarian's office in Dover or from the Sussex County extension office in Georgetown, Delaware.

The event starts with check-in and weighing of pigs from 7:30 a.m. to 9 a.m. Judging begins at 9:15 a.m. There are two weight divisions – 41 to 50 pounds, and 51 to 60 pounds. Prizes of $50, $25 and $15 will be awarded to the top three pens in each division. An entry consists of six pigs per pen. Producers may enter one pen in each weight division.

The sale takes place at 11 a.m. This will be a good opportunity for FFA and 4-H club members to buy pigs for the 1983 Delaware State Fair hog shows. A training session for 4-H and FFA members will begin at 9 a.m. in the sale barn.

For more information and entry forms, contact Richard Fowler, University of Delaware extension livestock specialist at 738-2505. Entries must be in by April 8.