Farmers Use Technology To Limit, Utilize Waste

AMES, Iowa — According to a report just released, as environmental regulation of waste disposal tightens, scores of technologies are being developed and refined to limit agricultural waste and to convert it into marketable products.

The report was released by the Council for Agricultural Science and Technology (CAST), a leading consortium of more than 30 professional scientific societies.

Dr. Larry Boersma, professor of soil science at Oregon State University, and Ishwar P. Murarka of the Palo Alto Electric Power Research Institute cochaired the 22-person task force report, "Waste Management and Utilization in Food Production and Processing." The authors state that virtually all waste products in agriculture have the potential to be useful as crop nutrients, pet foods, or feed ingredients.

Because fertilizer is a primary expense in crop production, efforts are ongoing to develop better tests of fertilizer need. "Precision farming" uses satellite technology to determine fertilizer application rates. A relatively simple approach being used by many farmers interested in saving on the fertilizer bill is to leave crop residue — which helps recycle nutrients back to the soil — on the field.

In the near future, crop residue also will be used for fuel on-farm or within a few miles of it. And evolving technologies and economic conditions well may lead to increased and more effective use of crop residue as animal feed.

Almost all solid by-products of poultry processing plants are being converted into animal by-product meals. Anaerobically fermented feathers offer a new process for feather waste treatment that may provide a valuable new protein for monogastric animals.

One use of a number of poultry wastes is land application. Poultry manure could supply a considerable portion of the nation's fertilizer requirements for a variety of crops. Another alternative use of poultry manure is in the production of biogas.

Pork production annually generates 30 percent of methane emissions from U.S. livestock and poultry. And about 150,000 tons of hog carcasses must be disposed of annually in the United States.

Hog carcasses are being rendered into meat and bone meal, animal fat, and plastics. Raw hog waste combined with corn and fermented is being used as a component of animal rations.

Beef cattle and calves on U.S. farms produce approximately 97 million tons of manure per year. But although concentrating animals in feedlots — instead of letting them roam — has economic advantages, it increases the potential for water and air pollution.

Methods being used to control air pollution from cattle feedlots include watering unpaved roads, watering feedlot surfaces with mobile tankers or solid set sprinklers, and controlling stocking rate in relation to rainfall and evaporation.

Manure collected from cattle feedlots contains nitrogen, phosphorus, and potassium, three primary fertilizer inputs. By using sprinkler irrigation instead of furrow irrigation, some farmers are controlling runoff while using manure to help fertilize fields.

Minimizing waste is especially important in the dairy industry because great quantities of water are used in production. Farmers are finding that the best opportunities for decreasing daily water usage arise during preparation and manual flushing of concrete surfaces.

Automatic shut-off valves on water-supply hoses in milking parlor, milk house, and barnyard have proved the most effective means of helping control waste.

Milking center waste can be used in many ways — for example, as animal feed. The liquid from plants is being used in irrigation, some solids are being used as bedding, and waste is being by-processed to capture energy for heating the milk house or for sanitizing hot water.

Several processing practices in the seafood industry require great amounts of water. The potential exists to capture and concentrate this liquid and to use it as a natural flavoring agent. Fish fertilizer is becoming economically and environmentally desirable to crop growers. Additionally, waste generated from crustaceans such as crabs is being used in aquaculture feeds because it contains a red pigment desirable in some aquatic species.

Most waste loss in the fruit and vegetable industries occurs as a result of insect damage, mechanical problems during harvest, and poor growing conditions. Promising opportunities to limit waste therefore involve plant genetics. Ripening processes also can be controlled in this manner. Some genetic engineers are making plant skins tougher to minimize bruising during harvest.

Processors of oils routinely dispose of soapstock in a variety of ways. Some use it to produce fatty acid. Some sell it raw on the open market, and others spray it on meal as a fat additive.

In the last two decades, food processing firms have decreased their outputs of pollutants. At the same time, a new emphasis has been placed on converting wastes to marketable by-products.

There is a considerable quantity of waste with the potential to enhance world food supplies. Recycling of food by-products is more likely when traditionally used materials are scarce or expensive. Improved waste recycling is possible through continued technological development.

AJCA Reports

(Continued from Page A36)

lactation Mature Equivalent (ME) average of 25,528M, 1,039F, and 816P.

Auburnvue Berretta Carmel, the second high seller, was purchased by Travis Ferreira, LeMoore, Calif., for $4,400. "Carmel" was consigned by Auburnvue Jerseys. Greensboro, Ala. She has a PA of +1,232M, +25F, +52P, +158P$, +190CY$, +2.1 Type, and +284 PTI. A daughter of Mason Boomer Sooner Berretta, PTI +399, the dam is Auburnvue Sky Line Carmine, with a projected ME of 18,180M, 746F, and 658P at 1 year 10 months.

John Nash, Ephrata, Wash., purchased the third-high-selling animal when he bid $3,700 for Molly Brook Berretta Money, consigned by Molly Brook Farms, West Danville, Vt. "Money" has a PA of +1,097M, +39F, +48P, +152P$, +182CY$, +2.6 Type, and +295 PTI. Like "Carmel," she is sired by Mason Boomer Sooner Berretta. Her dam is Molly Brook Duncan Monique, Excellent-90 percent with a three-lactation ME average of 20,509M, 1,010F, and 753P.

Jersey Jug

In other business, Bachelors B Sooner Jessie was named the National Jersey Jug Futurity champion. She is owned by Max and Steve Bachelor and family, of Angola, Ind. The Bachelors received $2,055 and numerous trophies and banners.

The winner is sired by Soldierboy Boomer Sooner of CJF, PTI +252. Her dam is Bovi-Lact Justins A Jess 23X, Excellent-90 percent. "Jessie" has a one-lactation Mature Equivalent (ME) average of 16,043M, 718F, and 629P. She was bred by Max and Steve Bachelor and Family.

The second place cow was Sooner Elise of SSF, Excellent-90 percent. She is a daughter of Soldierboy Boomer Sooner of CJF and her dam is Washington Elise of SSF. She is owned by George and Karen Hanford, Marcellus, N.Y., and was bred by Susan Luchsinger, Syracuse, N.Y.

Third place was awarded to Maple Lawn Lester Loni, owned by Jeff D. Schweigert, Tremont, Ill. "Loni" is sired by Highland Duncan Lester, PTI +301. Her dam is Maple Lawn Justin Joni, Excellent-92 percent. "Loni" has completed one lactation, which had an ME of 24,162M, 903F, and 837P. She was bred by John C. Schweigert, Tremont, Ill.

The Jersey Jug Futurity began in 1954 when 24 females were nominated for the show. In 1956, the Jug was given a wider scope when it moved from Delaware, Ohio, to the Ohio State Fair. Then in 1959, the Jersey Jug became a national event when it came under the sponsorship of the American Jersey Cattle Association.

Animals are nominated as calves with hopes that in three years they will be a winner. The total nomination fee is $56 during the three-year process and the exhibitor is guaranteed that money in premiums if the animal is shown in the Jersey Jug. This year there was $9,770 to be divided between the 34 final entries.

John Batchelder, Quarryville, Pa., served as the judge and Don Josi, Tillamook, Oregon, was the associate judge for the day.