



From the Department of Dairy and Animal Science

This regular column from Penn State's Department of Dairy and Animal Science features the research findings, student opportunities, and reports on other important topics generated in the Department. The back issues of the column are archived on Lancaster Farming's Internet www.lancasterfarming.com home page. Look for them.

Biotechnology in the Barnyard

**Terry D. Etherton
Department Head**

With the world population expected to double in the next 40 years, it has become increasingly evident that biotechnological developments in a variety of scientific and engineering disciplines will be crucial.

It has been estimated that the supply of food required to adequately meet human nutritional needs over the next 40 years is quantitatively equal to the amount of food previously produced throughout the entire history of humankind! This poses a daunting challenge for several reasons.

First, virtually all land suitable for farming world-wide is being farmed. Secondly, destruction of tropical rainforest - or wildlife habitat is not a viable option for environmental considerations. The only feasible solution is to

develop new biotechnologies that enhance food production efficiency, either providing an increase in the quantity of milk produced per unit of feed consumed or, in the case of meat animals, an increase in lean tissue (muscle) gain per unit of feed consumed.

To develop these technologies requires an investment in "discovery research." Discovery research, as the phrase implies, is the process of discovering new findings that may lead to the development of an innovative product or service. Universities, such as The Pennsylvania State University, and private sector companies conduct a large amount of discovery research.

The process is exceedingly formidable! A lot of good ideas are not practical, and the investment in the process is sizeable. One of the essential elements of early discovery research is to determine a concept's efficiency - does it

work, how well does it work? After establishing the effectiveness, great effort is spent to develop the discovery into a product that can be used on the farm.

A great deal of work is done to test safety (both animal and human), to evaluate environmental issues and to develop least cost production systems. It is not uncommon for a company developing a product to spend over \$100 million on the discovery and development phases! This expenditure does not include capital costs that may be necessary to build the facilities to produce large quantities of the new compound.

The time from discovery to release of a biotechnological product can take as long as 10 to 15 years! Much of this time is devoted to seeking and gaining regulatory approval from the Food and Drug Administration (FDA). The FDA has oversight for evaluating all animal biotechnologies to assure that they are: 1) effective; 2) do not pose any increased risk to the animal and 3) that consumption of meat and milk from animals treated with a novel biotechnology product is safe for consumers. The FDA takes their mandate very seriously. We are fortunate to live in a country that has the best regulatory agency in the world for evaluating new animal biotechnologies, to ensure their safety.

There are important ramifications associated with the cost of developing a

biotechnology product for commercial application at the farm. It is a long term process! We simply cannot wait until problems arise with the food supply in the future and expect a "quick fix." Given the expanding world population the question is not is there going to be a problem with food availability but when the problem will begin.

A sensible solution is to make the necessary investment today and continue our discovery and development of novel biotechnologies that will improve food production efficiency. Based on past progress, many animal and food scientists believe that we can adequately feed the world in the future, provided we continue to invest in research.

Farm And Home Field Day Aug. 11

NEWARK, Del. — Take a day to enjoy summertime in the country at the University of Delaware's Farm and Home Field Day, Wednesday, Aug. 11, from 8:30 a.m. until 1:30 p.m. at the Research and Education Center in Georgetown.

The annual event offers many fun-filled, educational activities, tours, interactive exhibits and demonstrations for homeowners and farmers alike.

Field tours by wagon will highlight agronomic and vegetable crops. Farmers can consult with extension specialists about the latest research on watermelon varieties, weed and pest controls, fertility, as well as strategies for integrated pest control.

Visitors to Farm and Home Field Day can drop by the Sussex Master Gardeners demonstration

garden to view a wide array of plantings. What began as a yearly one-day display has blossomed into a large permanent exhibit for plants, including herbs, shade-loving plants, annual flowers, perennial ground covers, decorative grasses, roses and asters.

Local 4-H clubs will set up a petting zoo and food booths. Consumer, environmental, and commodity groups will staff informational booths in the Grove. Carriage and pony rides will round out the morning's activity.

Farm and Home Field Day is free and open to the public. Tickets for a traditional fried chicken lunch at noon can be purchased at the registration table.

For more information, call Mark Isaacs a (302) 856-1997 or Jay Windsor at (302) 856-7303.

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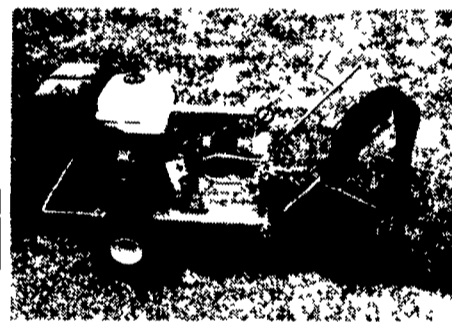
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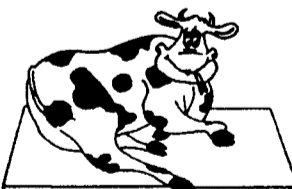
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