



**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](http://www.lancasterfarming.com) home page. Look for them.

**Induced Lactation as a Tool to Increase Dairy Farm Profitability**

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Profitability on a dairy farm is defined by the simple equation Profit = (price/cwt of milk - cost/cwt of milk) X volume. Reducing the cost of milk

production offers the most promising opportunity for dairy producers to increase profitability, and has been the subject of recent research within Penn State's Department of Dairy and Animal Science in the College of Agricultural Sciences. Most dairy producers realize there are a limited number of strategies to increase the price they are paid for milk. The volume of milk produced per farm has steadily increased in recent decades, and

will continue to increase as limited by land mass, nutrient management regulations, and the availability of cows, facilities and labor. Therefore, controlling the cost of producing milk plays a significant economic role at the farm.

One factor that increases cost of producing milk is the significant involuntary cull rate on the dairy farm. This often occurs when otherwise healthy cows do not conceive in a timely way, and need to be culled from the herd. Options include replacing them with heifers from the farm, or purchasing a pregnant heifer or cow that is near calving. This reduces profits on the farm and it is our goal to reduce this cost.

Dairy producers are well aware that the primary reason to rebreed a cow is to gain the resulting calf, and to prepare the cow for another lactation. It is the lactation that has the greatest impact on farm

profitability, as most income results from sale of milk. The goal of our research is to treat those open cows in a manner that creates a brief "artificial pregnancy", in order to stimulate udder development and induce them to have another lactation.

The basic methods in this procedure were introduced 25 years ago by research at Ohio State University but were not refined to the point of 100% success rate. Furthermore, no company or organization attempted to take the method through the process of approval required by the U.S. Food and Drug Administration (FDA). FDA approval is essential if a technology like this is to be widely used in the industry.

Research at Penn State modified earlier methods in terms of estrogen and progesterone (the natural hormones of pregnancy) administration. In addition, we utilized hST after the cows began to produce milk. Results were very encouraging as the induced

cows produced an average of 60 pounds of milk/day for 305 days. Furthermore, most of these cows which were problem breeders at the start of the trial, conceived during the induced lactation. Thus, they have returned to the regular herd, and continue to be profitable animals.

We then compared the profitability of retaining these cows in the herd to the alternative of raising replacement heifers. Results showed that the average dairy farm could increase profit by about \$520 every time a cow is induced to lactate rather than replace her with a heifer. Depending upon the size of the farm, the impact could be very significant.

In addition, we hope to extend our studies to determine if these technologies can be applied to young heifers to get them producing milk earlier in their lives and improve lifetime milk production. Since this procedure is not approved by FDA, we must

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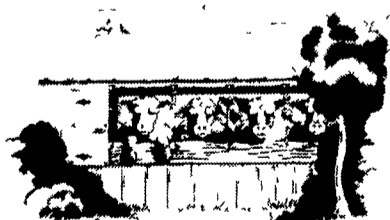
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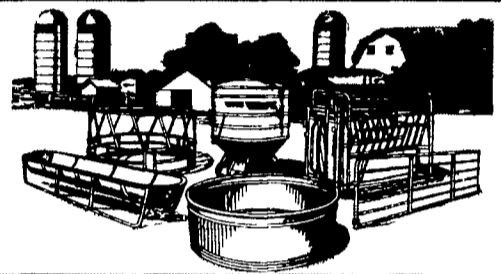
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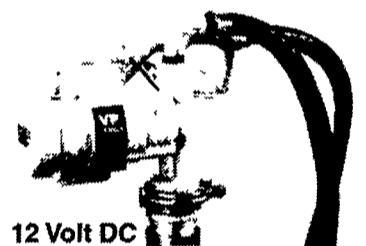
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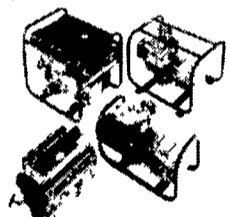


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