Researchers get more milk from growth hormone

UNIVERSITY PARK — Cows in plexiglass isolation chambers are helping unravel the mystery of why lactating cows produce more milk after injections of bovine growth hormone, Henry Tyrrell, a USDA scientist, reported at the recent American Dairy Science Association meeting held at Penn State.

In experiments at the Beltsville Agricultural Research Center, in Maryland, milk energy production increased 26 percent, even though the cows ate slightly less feed. Tyrrell said the higher output of milk resulted from the cows' metabolism being shifted to production of milk at the expense of body tissue such as fat.

In this joint Agricultural Research Service-Cornell University study, lactating cows in the special plexiglass chambers were injected daily with natural growth hormone, Tyrrell said.

The chambers aided scientists to measure the amount of feed, water, and oxygen the animals consumed, and how much the animals excreted as urine, feces, methane, and carbon dioxide. The amount of milk produced and tissue gained or lost as fat and protein were also precisely measured using these chambers and supporting equipment.

Tyrrell said that although the increase in milk production using growth hormone is impressive, obtaining information on what happens metabolically during lactation appears an even more important consequence of this research.

Dale E. Bauman, a nutritional biochemist at Cornell University, said that because of the scarcity and high cost of naturally occurring growth hormone, the treatments to date have lasted only a few weeks. For this reason the long term effects on the cow and on milk production are not yet known.

The growth hormone used in these experiments was extracted from cow pituitary glands obtained from meat-packing houses. Such hormone is rare and expensive. However, more economical growth hormone produced by bacteria through genetic engineering may soon be available, Bauman noted.

Use of growth hormone on the average dairy farm is not anticipated anytime in the near future, Tyrrell estimated. A number of improvements in administering the hormone, and understanding of the mechanism of action, and demonstration of its safety will be required before practical application would be possible.