

'There Is Nothing In This Experience To Prevent Me From Using It'

Biotechnology Conference Explores Somatotropin

BY MARTHA J. GEHRINGER
PHILADELPHIA — Bovine growth hormone or bovine somatotropin — the milk production enhancer by any name arouses just as much interest. The second day of the Biotechnology Conference, held in conjunction with the National Dairy Herd Improvement Convention, focused on the controversial substance.

Tom Craig of Murmac Farms, Bellefonte, recently used bovine somatotropin in his herd as part of a 15-month field trial. "It provided me the opportunity to ask what bovine somatotropin can do for me," Craig explained in his conference presentation.

From his first-hand experience with somatotropin, Craig concluded: "I'm convinced that if it becomes available, I'll be one of the first one to adopt it. But there are still problems to be answered." He added, "There was nothing in the experience to prevent me from using it."

Until BST does become commercially available, Craig noted he needs to improve his nutrition program, improve his economic knowledge, and improve his dry cow management to maximize the effect of BST in his herd.

Craig estimated an added income per cow per lactation of \$185 by using BST. He calculated this savings with numbers from his farm, a milk price of \$11.50 per hundredweight, and an estimated BST cost of \$70 per cow.

"BST does not require large outlays of money," Craig noted. "Most industry people project that BST will provide a minimum return of \$2 for every \$1 that dairymen invest," he added. Craig called the product "self-financing" since the milk check may come before the bill for BST.

Somatotropin will benefit all dairymen regardless of the size of the producer's farm, the Bellefonte dairyman said, as it increases the efficiency of production. However, he cautioned, "BST with inefficient management practices equals disaster." He urged his fellow producers to fine-tune their management skills before using BST.

"If BST becomes available, it will be well worth your time and effort," he advised.

Public Perception

One of the keys to making BST commercially available is the public's perception of the product, he commented. The dairy industry needs to educate the consuming public of the facts of BST produced milk, Craig explained.

A key point that the public needs to understand is that BST occurs in all milk at low levels. And the amount of BST in milk from treated cows is not significantly different than milk from untreated cows, he said. "Education is important to make BST produced milk a marketable commodity."

"Everyone has already

prejudged this material," said Dr. James Crowley, University of Wisconsin professor and extension specialist. He noted sociologists have denounced the product by claiming it will create a rural crisis by causing unemployment for farmers.

He discounted this by explaining that without BST cow numbers have decreased by 60 percent from 1945 to 1979 and production has more than doubled.

Public perception of the product will hinder the Food and Drug Administration's approval of BST. "Consumers need to be convinced to drink milk with bovine growth hormone," Crowley said.

"This is the first time people are petitioning the FDA not to license a product because it works too well," said David Walton, American Cyanamid marketing manager. "BST has become a potential political football."

Washington activists are threatening to boycott dairy products made from BST produced milk. Some want to shut down the field trials, he explained. The Washington activists want to let food safety become an emotional issue not scientific, Walton continued.

Milk consumption has been adversely influenced on the University of Wisconsin campus, Crowley explained, because the college herd participated in an experiment with BST. A warning was circulated which cautioned against drinking milk by injecting cows with hormones, he noted.

Some producers will be unable to sell milk produced with BST, Crowley said, because of the public opinion. Dairies will not accept the milk.

Craig noted that the FDA scrutinized his practices and encountered some resistance in marketing his milk and cull cows from the experiment.

Walton stressed the need to educate consumers about BST. He noted the facts as: BST becomes biologically inactive in the digestive system because it is a protein. Enzymes in the digestive system break proteins into harmless component amino acids. BST offers potential benefits to both the consumer and producer.

"The real issue in my mind is whether dairymen have a choice to use it or not use it in the 1990s. Can the industry afford to shut out cost reducing technology," Walton commented. He emphasized the need to keep technological freedoms.

Not all cows are a candidate for BST injections, Crowley said. He questioned if 2-year-old cows respond sufficiently to BST to make use of the product economically feasible. Also problem cows, or nervous cows would not be candidates for the injections due to difficulty in administering the shots and less than

expected returns. Not every cow responds to the product, he added.

"Even in herds that want to use the product can only realistically expect to use BST on half of the cows," Crowley stated. He cautioned against too much optimism with use of the product. If dairymen expect a 20 percent response from the product, this will yield an actual 10 percent annual increase in rolling herd average.

"We don't have all the answers, that's why we're still researching," he said.

Research

A leading researcher, Dr. William Chalupa, University of Pennsylvania professor of nutrition, explained "BST is a naturally occurring protein found in all animals and produced in the pituitary gland." BST works by coordinating the cow's metabolism to direct nutrients to milk instead of body tissue. This is the same response which is seen in genetically superior cows, he said.

BST research started in 1936, Chalupa noted, when investigators found that by taking crude pituitary extracts they could stimulate milk production.

A study which involved four universities and in which Chalupa participated showed no effect on the fat or protein composition of milk, he said, when energy and protein were balanced in the ration. "I have never seen tests where the fat was lower in BST treated cows," Chalupa said. He speculated the fat test could increase with BST depending on the cow's ration.

Feed intake increased correspondingly to production increase, he noted. "Cows responded like higher producing cows would."

Cows in the test produced more milk per unit feed consumed, Chalupa said, because of increased feed efficiency.

Long-term studies indicated no health problems, he commented. Reproductive factors remained the same or improved. "At 50 milligrams there was a small but significant increase in the SCC. There was no difference in smaller doses," Chalupa said.

While there were no adverse effects on health or reproduction in the university studies, "34 cows don't tell the whole story," he noted. Larger studies are in progress, Chalupa added.

A Management Tool

He described somatotropin as a management tool. It can convert good producers to better producers, better producers to excellent producers. In field trials, Chalupa said, increases of eight to 15 pounds of milk per cow per day were recorded.

Walton explained a likely production increase of 10 to 20 percent per cow could be expected from use of the protein.

"This is the first significant product of biotechnology for the dairy industry," he said. "The keyword here is bovine somatotropin potentially increases efficiency." Increased efficiency will increase income and decrease costs, he added.

He predicted a maximum adoption rate of BST by 50 percent of the dairymen in five years following approval by the FDA.

Echoing Chalupa's comments, Walton said that BST provides dairymen with other options. "It's a management tool."

With the use of BST there is no new capital investment and there is an immediate payback, he noted.

The degree of profit depends on the management level of the producer, Walton said. "To survive, dairymen need to work on efficiency. That's what BST is designed to do."

Presently, the FDA has not made any dosage recommendations. Nor has the product been priced, Walton added. The product must be priced fairly to yield profits for dairymen.

Dr. George Conneman, Cornell University professor of agricultural economics, speculated the adoption rate of BST would be slow. He added, the impact on the dairy industry would occur over a long period of time, not immediately.

Impact

"Some say that bGH will have a significant and immediate impact on the dairy industry," he said. He posted the following worst case scenario which many individuals accept as fact:

- Adoption by 85 percent of dairymen within three years after product introduction.

- A 25 to 30 percent increase in milk production per cow resulting in a "glut" of milk and increasing the surplus.

- A large decrease, of \$1 to \$2 or greater per hundredweight, in the price of milk.

- A 25 percent decline in the number of dairy farms and a 30 percent drop in cow numbers.

- A drastic one time increase in production of over 25 percent with

immediate adoption.

He posted what he believes will likely happen:

- Routine use of bGH is further in the future than is suggested.

- FDA approval will take considerably longer than anticipated because of extensive field trials and consumer concern.

- A slower than predicted farmer adoption rate.

- Per cow responses will vary from 0 to 25 percent.

- The aggregate impact will be more like a 10 to 15 percent increase in milk per cow.

On the opening day of the Biotechnology Conference, Monday, Dr. Kenneth Butcher, manager DRPC, gave an outline of the DHIA data base that includes: genetic evaluation, production information, reproduction information, somatic cell count, health, cows leaving the herd, replacement females and herd survey comparisons.

Dr. Michael Tomaszewski from Texas A & M University, sought to creatively use the static data base that gives historical information and turn it into an intelligent projection base that will help dairymen make management decisions. "Profit equals sales minus cost," Tomaszewski said. "We should use our computers to help us forecast our business outcome."

Stephen Spencer, Penn State University, showed the progress in milking machine systems from buckets to pipelines and gave ideas on how new management possibilities might happen with milking systems automation.

Philip Dukas, director of technical development National DHIA, discussed milk weighing devices and identification. Dr. Paul Thompson, president of Dairy Equipment Company, had the topic milking systems. And Dale Gordon, product manager of Babson Brothers, discussed milking and feeding systems. Robert Kindig, Pennsylvania DHIA president opened the session and Glenn Shirk, Lancaster County dairy agent, was the moderator for Monday's session of the Biotechnology Conference.



Dr. William Chalupa



Dr. James Crowley

Gray Named Legislator Of The Year

WASHINGTON, D.C. — Congressman William H. Gray, III, 2nd district, has been recognized by the Pennsylvania Farmers union as Legislator of the Year for 1986.

Chester L. Reed, Executive Director of the general farm organization, said Gray received the award "because of his voting record and the understanding he has shown toward family farmers when Farmers Union visited with him over the last session of Congress."

"Congressman Gray has an appreciation for agriculture that you would expect from rural

representatives," Reed said. "With farmers making up only a small percentage of the population, getting our message through to urban and suburban Congressmen like Representative Gray is essential," he added.

According to Reed, the message which all twenty-three Farmers Union state organizations carry to Congress is that family farmers are a vital part of the American economy, and they need a fair price for their product in order to survive.

"Farmers don't want government handouts," Reed said, "they just want a fair chance to compete."



Tom Craig



David Walton



Dr. George Conneman