

## Director's Digest



FRED D. BISPLINGHOFF, D.V.M.  
Director Technical Services

7150 ESTERO BLVD. • APT. 906  
FT. MYERS BEACH, FL 33931  
AREA CODE 813 — 463-4744

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### BST RESEARCH IS TEACHING US MORE ABOUT FEEDING COWS

Dr. Michael F. Hutjens  
University of Illinois  
Urbana, Illinois

Despite the controversy over bovine somatotropin, BST research has provided valuable guidelines for high-producing cows, herds shifting to three time-a-day milking or herds experiencing milk increases of 8 to 10 percent in a year. Using BST sends more nutrients to the mammary gland for milk synthesis resulting in measurable production responses to nutritional changes. The research has created new feeding concepts and reaffirmed some existing guidelines.

#### Milk Drives Consumption

Within days after BST injection, cows respond with 6 to 25 percent more milk. Dry matter consumption gradually increases 3 to 15 percent but lags behind milk changes by four to six weeks. This is similar to peak milk and peak dry matter trends in early lactation.

Eventually, dry matter increases will meet nutrient needs, but initial milk changes must be covered from body weight losses (energy) or higher nutrient concentrations in the dry matter eaten (protein and minerals).

High producing cows must and will eat more given the opportunity. There must be quality feed available in a balanced ration with good bunk management.

Protein level and degradability in the ration will affect responses. Indiana

BST researchers reported 9.7 pounds more milk with a 40 percent undegraded protein ration compared to 5.9 pounds more milk with a 33 percent undegraded protein ration.

Cows fed 17 percent protein with BST produced 9 pounds more milk, while cows fed 14 percent crude protein milked 6.6 pounds more with BST compared to controls. Canadian workers found similar results with higher protein rations.

Energy consumption will be the first limiting nutrient with BST-treated cows. Wisconsin research showed that BST cows fed higher energy rations (more grain) produced more milk compared to high forage rations. Heifers produced 1,683 pounds more, and older cows produced 1,890 pounds more.

#### Fat Can Help

Adding energy with protected, supplemental fat resulted in 6.8 pounds more milk than BST-treated control cows without added fat and 14.3 pounds more milk than cows not given BST. But a Pennsylvania study with a 5 percent hydrolyzed blend of animal and vegetable fat with BST had little effect. Feed supplements may react differently in BST-treated cows.

Studies with supplemental sodium bicarbonate found BST and buffer responses were additive...more fat-corrected milk with both treatments than either one alone.

Body condition will need watching more closely because cows will direct more nutrients to milk and less to body reserves. Minnesota researchers reported that BST cows gained 4 to 10 percent less weight than controls. Body condition scores (1, thin; 5, fat) at the end of lactation dropped from 3.7 (control) to 3.0 for cows given 10.3 milligrams (mg) BST per day and to 2.4 for cows given 41.2 mg BST. The amount of body protein did not change.

Dry cow feeding may change to encourage modest weight gain...1 to 1½ pounds per day.

#### Consider These Strategies

- Feeding must be fine-tuned considering undegradable protein, protected fats, nonstructural carbohydrates, fiber fractions and other factors for the best nutrient balance. (See the table).

- High-quality forage will be an absolute necessity to balance rations and allow maximum feed consumption.
- Bunk management must be excellent to maintain feed consumption. Provide palatable feed, encourage multiple meals and minimize competition between cows.
- Total mixed rations will allow more control and monitoring of feeding programs.
- Body condition scoring and strategies to replace lost body weight will improve success with BST.
- Lower milk fat and milk protein tests will mean that ration energy and protein tests will mean that ration energy and protein needs are not being met.
- Current feeding guidelines (NRC requirement tables, feed intake guides and digestibility values) still will apply but at higher production levels.
- The levels of higher milk yield appear favorable compared to extra feed costs. The cost of BST and labor to administer it will determine whether it will pay.
- Someone, either you or a consultant, feed company representative, veterinarian or extension agent, will have to monitor rations and consumption carefully. Continuous forage testing and ration balancing will be high priorities.

#### Example ration for high-producing cows on BST

Ration ingredients	Pounds dry matter
Allalfa haylage (20% C.P.).....	13.5
Corn silage (0.72 Mcal NEL).....	13.2
Shelled corn (dry).....	13.4
Whole cottonseed (linted).....	5.5
Protected fat (100% fat).....	1.0
Blood meal, meat bone or fish meal.....	2.8
Soybean hulls.....	2.7
Soybean meal (48%).....	1.8
Limestone.....	0.4
Commercial (16:16) mineral.....	0.6
Buffer.....	0.4

#### Nutrient composition (100% dry matter basis)

Dry matter (lbs.).....	55.1
Crude protein (%).....	18.4
Undegraded protein (% total protein).....	40
Net energy-lactation (Mcal per lb. D.M.).....	0.81
Fat (%).....	7.0
ADF (%).....	19.7
NDF (%).....	30.9
Nonfiber carbohydrate (%).....	39.1
Calcium (%).....	0.93
Phosphorus (%).....	0.48

