Milk production can be helped with buffers

PISCATAWAY, N.J. - With Spring here, hot Summer weather is just around the corner, bringing with it production problems in dairy cattle, says Dr. R. W. Stanley, chairman of the animal science department at the University of Hawaii.

Stanley's studies have shown that dairy cattle gain excess weight, consume less roughage and show a drop in butterfat test and milk production when temperatures soar above 80 degrees.

Although Hawaii is blanketed by 80 degree temperatures all year, dairy cattle in the Midwestern and Northern states also suffer from reduced production brought on by high temperatures and humidity in the Summer, Stanley says.

In general, a dairy cow subjected to high Summer temperatures is a poor bet to work efficiently for a dairyman, he says.

Research has shown acid builds up in the rumen when cows are subjected to high temperatures, he adds, and that contributes to reduced appetites and feed efficiency.

Excessive stomach acids are usually neutralized by sodium bicarbonate, a natural buffer contained in cows' saliva. But when acid levels build under high heat conditions, additional sodium bicarbonate may have to be fed, Stanley says, to bring rumen pH back into balance. Supplemental sodium bicarbonate is highly soluble, and helps natural sodium bicarbonate combat excess rumen acid.

"That's when I advise putting it in feed. Under high heat, if you hold that butterfat up you're in good shape," he says.

In an 18-week study done by Stanley and Dr. L. Kung of the University of Hawaii, cows fed sodium bicarbonate gave more milk and butterfat, rid themselves of excess body fat and were more feed efficient than those without sufficient sodium bicarbonate.

Holstein cows 60 to 90 days into their lactations were split into three groups in the study. One group--the control--wasn't fed sodium bicarbonate; a second group received sodium bicarbonate at a level equal to 1.8 per cent of its grain ration; and a third group was fed sodium bicarbonate at a 2.8 per cent level.

All Holsteins received a corn silage, grain and pineapple bran ration. Pineapple bran--the pineapple fruit's dried hull and core--is high in energy, contains soluble sugars, not much fiber and contributes to acidic conditions in the rumen, Stanley says.

Cows fed sodium bicarbonate outperformed the control group in butterfat percentage. "Under high heat conditions we can modify the ration by feeding sodium bicarbonate to enhance fat test and get a more efficient and persistent animal," says Stanley.

Those Holsteins fed 1.8 per cent sodium bicarbonate did best in butterfat production. Their milk contained 3.55 per cent butterfat on the average, while the control group averaged 3.29 per cent. The third group averaged 3.32 per cent butterfat.

Butterfat percentages are lower in tropical zones than they are in temperate ones, Stanley points out. "Cows constantly in high temperature conditions don't test as well," he says. "In Hawaii, we don't consider a Holstein's drop in butterfat critical until it gets below 3.2 or 3.3 per cent. We've had some drop below 2 per cent."

More milk was produced by buffered cows; those receiving 2.8 per cent sodium bicarbonate did best, averaging 52.49 pounds of milk per day. The control group averaged 51.74 pounds per day.

Both groups fed sodium bicarbonate lost weight, indicating increased metabolic efficiency, Dr. Stanley feels. "An efficient animal mobilizes nutrients and loses weight. We want to eliminate fat depots, but increase butter fat test and milk production," he explains.

The control group gained an average of 3.56 pounds during each trial period, while the low and high level sodium bicarbonate groups lost an average of 8.6 and 3.01 pounds, respectively.

The ration dairy cows receive--and how much is fed--determines the amount of supplemental sodium bicarbonate necessary to neutralize excessive acids, Dr. Stanley suggests.

At a pH of 6.82, rumen content was most acidic in the control group. Cows fed 1.8 per cent sodium bicarbonate averaged a pH of 7.11, the most alkaline of all groups.

"The level of fed sodium bicarbonate has to be regulated with the levels of acids in the digestive system," Dr. Stanley says.

In an earlier study, lactating dairy animals at the University of Hawaii were fed up to 0.75 pounds of sodium bicarbonate per head per day with pineapple green chop in their ration. "Pineapple green chop is quite acidic," Stanley adds. "There are indications that the more acidic the rumen, the more bicarb is needed."

Stanley suggests dairymen deciding to try the buffer to start feeding it at a low level--0.25 pounds per day--as a general rule of thumb.

"Increase in at increments until you hit an optimum level, then keep it there," he explains, if results are noted.

Maintaining roughage levels during high temperature periods will help keep butterfat tests from dropping. Says Stanley: "The manner in which you handle them during the high heat period affects how your cows will do later. If you feed them more grain to 'do them a favor' you may mess them up for eight to nine months."

Balanced rumen pH is especially important in early lactation stages to maintain high butterfat percentage tests. If butterfat is allowed to slip because of increased acidity, cows in early lactations "will be so geared to being inefficient that you won't get higher butterfat and milk production by feeding them more later in their lactations," Stanley adds.

In a separate field trial study done by Drs. Stanley and Kung, no significant difference was noted in reproductive efficiency among test groups.

"If you enhance performance and keep her body weight down, this animal is going to be a better breeder, although we haven't seen significant differences as of yet," Stanley adds.

Norman C Shertzer and his son, Philip, with Doug Good, Manager, Prince and James Street Office.