

Penn State gives new buffer the 'acid test'

BY JACK HUBLEY

UNIVERSITY PARK — Every dairyman knows that today's high producing dairy cow is one of the most efficient manufacturing

plants known to man.

Just add raw materials, in the form of quality feed and clean water, and she'll work three shifts a day to turn out milk, manure,

methane and urine in copious amounts.

A lesser known, but no less important, by-product of all this digestive chemistry is saliva. A

Holstein cow could fill a 50-gallon spittoon daily if she chose to, but she knows it's vitally needed elsewhere.

In addition to lubricating food for easy passage, saliva provides about three-fourths of the water required by the rumen, and also keeps the pH of the rumen within acceptable bounds by producing sodium bicarbonate, an important buffering agent.

The type of food being consumed can have an effect on saliva production, which in turn affects rumen pH. High fiber diets increase salivation, while grain or silage diets that require less chewing may result in lower saliva production, and an acid condition in the rumen.

Being aware of the important buffering role played by sodium bicarbonate, many dairymen add the compound alone, or in combination with magnesium oxide, to their rations.

"Probably over 50 percent of the dairymen are feeding buffers," says Penn State professor Dr. Larry Muller, adding that too much acid in the rumen can result in lower milk production and a lower fat test.

Although sodium bicarb and magnesium oxide have been the

dairyman's traditional insurance policy, preliminary research conducted by Muller and Dr. Tom Sweeney, also of Penn State's Dairy and Animal Science Department, indicates that there might be a way to get the same job done cheaper.

The study began last summer when the researchers set up a small-scale trial testing the effects sodium bicarbonate (SB) and sodium sesquicarbonate (SSC) during the last half of lactation. They found no significant differences in milk yield or composition, between the two compounds. And the cows accepted SSC as readily as SB, leading the researchers to suspect that the former was just as palatable.

Last fall another trial was initiated testing the effects of SSC on 30 high producing cows during the first third of their lactation.

The numbers from this trial aren't in yet, but Muller suspects that SSC may prove to be an attractive alternative to BC for two reasons.

First, with a pH of 9.9, SSC is a more powerful buffering agent than BC with its pH of 8.6. (A measure of acidity and alkalinity, the pH scale establishes 7 as neutral, with acidity increasing on the descending scale and decreasing on the ascending scale.) Theoretically, this means that less SSC will be needed to keep rumen pH within its optimum range of 6.2 to 6.8.

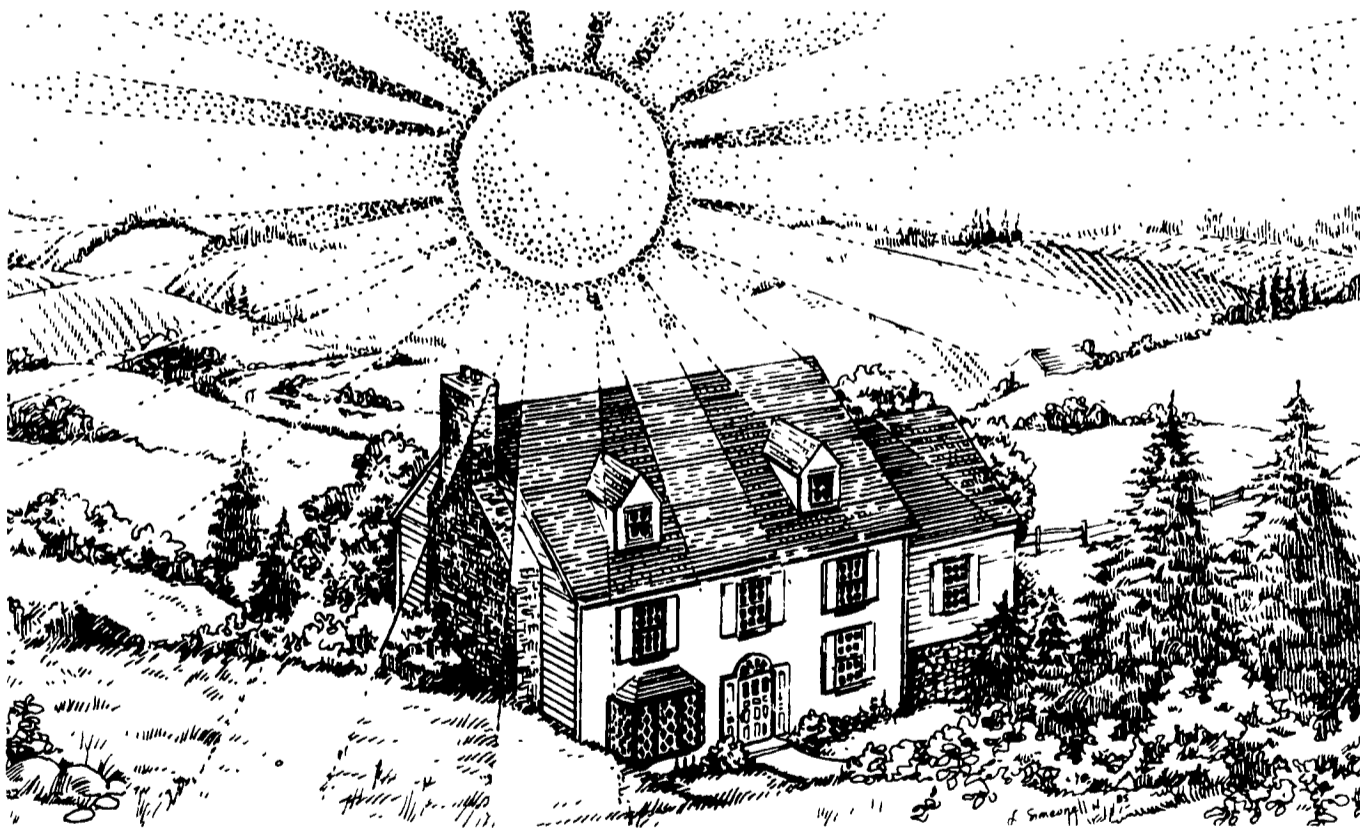
And second, Dr. Muller reports that sodium sesquicarbonate is projected to cost less than sodium bicarbonate. "The bottom line is it offers another buffering material that may be just as effective as bicarbonate yet less expensive," concludes Muller.

And more for less is, after all, the bottom line in today's farm economy.



Penn State research may reveal a buffering agent that's cheaper yet just as effective as bicarb, says Dr. Larry Muller of the University's Department of Dairy and Animal Science.

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