

## Bromelain—Health Food for Bossy, Too

Many dairy cows lumber along with chronic mammary gland infections that jack up the number of infection-fighting white blood cells in their milk—especially during the dog days of summer.

Milk quality is based on that cell count. And U.S. dairy producers get paid an extra 20 cents per 100 pounds for milk having a white blood cell count under a specified level. That level ranges from about 200,000 to 300,000 per milliliter, depending on which state testing is done in.

Producers can't sell milk with cell counts that exceed the legal limit. In the United States, that's 750,000 cells/ml. Canada and Europe have lower limits—500,000 and 400,000, respectively. "And there is a move afoot to lower the limit in this country," says ARS dairy scientist Max Paape, who is with the Immunology and Disease Resistance Laboratory in Beltsville, Maryland.

That's why Paape agreed to test bromelain supplied by Tokyo, Japan, manufacturer Ajinomoto Co., Inc., on cows with chronic mastitis.

A mix of enzymes extracted from the stems of pineapple plants, bromelain is sold in health foods stores under claims that it combats heart disease, arthritis, and many other maladies. In animals, it appears to reduce inflammation by interfering with the synthesis of prostaglandins and other inflammatory substances, says Paape.

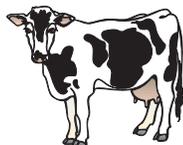
He divided 10 cows into two groups having average cell counts a little over 300,000. For 4 weeks, group 1 got pellets containing 75 grams of bromelain in their feed; group 2 got no bromelain. A week after this first trial ended, Paape reversed the treatment, with only group 2 getting the bromelain.

Bromelain reduced cell counts by 100,000 on average during each trial, Paape says. Moreover, cell counts never surpassed the legal U.S. or Canadian limits when the cows got bromelain, as they did when left untreated.

"With bromelain, dairy producers will have more days with cell counts in the premium price range—under 300,000," says Paape.

Milk with a low white blood cell count has more milk protein, or casein. Cheesemakers prefer to buy high-casein milk because the protein allows the cheese to set properly.—By **Judy McBride**, ARS.

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## For Late Plantings, Tropical Corn



Everybody likes variety in food—even cows. And who doesn't love Mexican cuisine?

Tropical corn from Mexico and Central America looks pretty much like its temperate relatives. It won't replace U.S.-bred lines, but it could be a crop that growers choose in addition to forage sorghum.

Farmers usually plant sorghum when it gets too wet or too late in the season to plant temperate corn. So tropical corn could be a good alternative, because it grows well in heat and resists pests.

And when it comes to silage, a fermented wet winter feed, cows seem to prefer tropical corn over sorghum. ARS researchers found dairy cows ate more of the tropical corn silage—so much more, their milk production increased by 10 to 20 percent.

"We also tested tropical corn's nutritional value on 24 steers," says ARS plant physiologist Joseph C. Burns. "Tropical corn may have had a slightly lower digestibility than forage-type sorghum, but the steers seemed to like it better and ate more of it, so it evened out."

Tropical corn actually yields about 87 percent more dry matter than sorghum, making each acre more productive. It can also help control erosion.

Tropical corn's season is: Plant in June, harvest in October. It works best in the southern United States, which approximates its native climate.

Farmers would make and store the tropical corn silage in October. In the corn stubble, they'd plant winter wheat or barley. Alternating tropical corn and the winter crop would protect the ground from erosion and give cows two quality feeds.

Burns is in the ARS Plant Science Research Unit at Raleigh, North Carolina. The test herds were provided by North Carolina State University.

ARS scientists are currently working with a university economist to see if following this practice could also mean extra money for farmers.

"There are about 60,000 acres in tropical corn right now," says Burns. "If it helps improve profits, it might become an even more attractive alternative to sorghum."—By **Jill Lee**, formerly with ARS.

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