



Dairy Newsletter

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Nov/Dec 2006

Corn Silage Variety Selection Tools

Harvest of 2006 corn silage should be complete and logically attention will turn to planning for the 2007 growing season. There are many things to consider when making an informed decision about which variety of corn to plant and there is enough information from the different seed companies to either help or confuse most producers. Fortunately, there are tools available to help "wade through" the information and make informed decisions. Milk 2006 (<http://www.wisc.edu/dysci/uwex/nutitn/spreadsheet/sprds.htm>) from the University of WI and Corn Picker® (<http://www.msu.edu/user/mdr/>) from Michigan State University takes a partial budgeting approach to selecting varieties.

Milk for Good Health

Instead of the industry focusing on the apparent trend of consumer preference for natural or "organic" food products, more effort should be put forward in educating consumers on the benefits of milk (all milk, regardless of whether it is produced organically or conventionally, with or without the use of bST) for good nutrition and health. At the Cornell Nutrition Conference (2006), Drs. Dale Bauman (Cornell) and Adam Locke (University of Vermont) provided an excellent review about animal products and human health, with particular emphasis on qualities of milk that lend itself to be marketed as a functional food. Here are some key points from this paper.

The dogma that intake of fats from animal products are associated with increased risk of cardiovascular disease (CVD) has recently been challenged. More evidence suggests that drinking milk may actually be associated with a small but worthwhile reduction in heart disease and stroke risk. The reduction in CVD over that last 30 years in several industrialized countries including the United States has been due to improved medical interventions and reduced smoking rather than a significant reduction in fat intake.

Trans fatty acids (TFA) have been associated with the risk of CVD. However the association can be explained entirely by the intake of TFA from partially hydrogenated vegetable oils that have been used extensively in many prepared foods such as bakery products, cooking fats, and margarine. This year the FDA mandated that the TFA content of foods be listed on nutrition labels.

Milk contains TFA, mostly in the form of conjugated linoleic acid (CLA) and vaccenic acid. These naturally produced TFA are much different than the industrial TFA. In fact these fatty acids derived from ruminant products such as milk have been shown in animal model experiments to elicit positive health benefits including cancer prevention, a decrease in atherosclerosis, improved plasma lipoprotein-cholesterol profiles, enhanced immunity, and improved bone health.

Vaccenic acid could be considered a functional food component in dairy products with potential benefits to human health. Vaccenic acid is a precursor to CLA and can be converted to CLA in the human body.

The education of the public that not all fatty acids are equal is required.

A New Way to Measure Effective Fiber

Miner Institute, Chazy NY, Dr. Rick Grant and Kurt Cotanch have developed a new method for measuring physically effective NDF (peNDF) on the farm. It is called the "Z-Box" method. The Z box consists of a box with 2 interchangeable screens with 3.18 and 4.76 mm diameter holes (other sizes were tested as well). The 3.18 mm screen works best for corn silage and TMR and the 4.76 mm screen works best for hay crop silage. A 50 g sample of feed is placed in the box and weighed. The box is then shaken (not stirred) vertically 50 times, rotating the box ¼ turn after each 10 shakes. The proportion of material retained on the screen after shaking is used to determine peNDF. It is recommended to run 3 replicates and average the results. The

results were validated against the Merten's reference method using a 1.18 mm screen with a Ro-Tap vertical shaker. Instructions for ordering the Z-box will be listed on the Miner Institute Web Site sometime in Nov 2006 (<http://www.whminer.org>).

How Much Methane do Dairy Cows Emit?

Methane is one of the greenhouse gases and with concern about global warming has led to scrutiny of animal emissions. Dr. Larry Chase from Cornell recently did some calculations on how much methane dairy cows contribute to the world's atmosphere. Globally, it has been estimated that total yearly methane emissions are 500-600 million metric tons. Ruminant animals are estimated to contribute 14-20% of this total (the highest percentage contributors are landfills and natural gas systems). Cattle in the US emit 5.5 million metric tons of methane per year. Dairy cattle account for about 23% of this or 1.26 million metric tons. On a global basis, therefore, US dairy cattle emit about 0.2-0.25% of total methane. Although there are ways to reduce this, additional decreases in methane emissions from US dairy cattle would have an insignificant impact on total greenhouse gases.

BMR Corn Silage Should Also be Kernel Processed

University of Delaware research compared processed and unprocessed BMR corn, and processed non-BMR corn. Compared to unprocessed BMR corn silage, cows fed processed BMR silage had better starch digestibility, less than one-sixth the number of kernels in the manure, higher dry matter intake, and greater milk production. Compared to processed non-BMR silage, cows fed processed BMR silage had greater milk production, but few other differences. Perhaps the most meaningful result in the study was a 6.4 lb. difference in milk production between cows fed BMR and control corn silage: 97.5 vs. 91.1 lbs/cow. (From Miner Institute Newsletter, Oct 2006).

Aged Corn Silage is Better

Researchers at Provimi harvested 15 corn silages (in bunker silos) on different commercial farms in The Netherlands, covering wide range

in concentrations of DM and starch. Whole corn plants, of known variety, were ensiled in Sep/Oct 2003. Each silage was sampled at 5 intervals of 2 months from Dec 2003 to Aug 2004. Starch digestibility at 3 hours was measured in situ. Starch digestibility increased with time in storage (up to 10 months). The increase in starch digestibility was more pronounced for corn silage that was harvested at >30% DM.

Higher ruminal starch availability can increase energy availability to the animal and increase microbial protein synthesis, both of which can lead to higher milk production. On the flip side of this coin, if diets are formulated in the fall with new corn silage (with higher levels of supplemental starch to drive production), take care that cows are not pushed into acidosis as the starch in the corn silage becomes more available over time.

Function of fatty acids

Akey milk replacers contain a blend of short chain, medium chain, and essential fatty acids that have been shown repeatedly in controlled research to improve the rate of body weight gain and reduce the days the calves scoured. These fatty acids have a metabolic effect on the calf as measured via various plasma constituents. Calves fed this blend of fatty acids, replacing part of the animal fat in the milk replacer, had increased plasma amylase (indicating increased pancreas maturation and function), increased plasma alkaline phosphatase (indicated increased bone growth), increased plasma creatinine (indicating increased muscle mass), and decreased plasma urea nitrogen (indicating more efficient use of nitrogen and more nitrogen deposition into muscle).

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