

DAIRY PIPELINE

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“Pasteurized milk is an excellent, nutritious, and safe product containing many essential nutrients.”

Photo courtesy of Dr. Christina Petersson-Wolfe.

RAW MILK: RISK OR REWARD?

—Dr. Christina Petersson-Wolfe, Extension Dairy Scientist, Milk Quality & Milking Management, cspw@vt.edu

The consumption of raw milk has gained considerable popularity in recent years, yet still remains a source of great debate regarding the potential health impacts. The Food and Drug Administration as well as the Centers for Disease Control and Prevention report the well-known risk for contracting foodborne disease from the presence of human pathogens in raw milk. A recent review article goes into great detail about the history of pasteurization, the prevalence of foodborne pathogens in milk and the claims associated with the consumption of raw milk (Lucey 2015). Pasteurization was developed over 100 years ago to reduce the transmission of disease through milk, in particular, tuberculosis. In 1938 it was reported that 25% of all disease outbreaks related to food/water were from milk, compared to less than 1% today and now tuberculosis is not of concern due to the implementation of pasteurization.

Recent surveys have reported the prevalence of pathogens to be as high as 13% for bacteria such as *Campylobacter jejuni* and *Listeria monocytogenes*. Considering it takes as little as 5-10 bacterial cells to cause foodborne disease for some pathogens, this prevalence draws great concern. Another important consideration is raw milk can be contaminated with pathogens even when the cow is healthy and the milk appears normal. These pathogens can be in the gland or come from post-harvest contamination, for example, milking equipment. It is not necessarily associated with cleanliness of the farm, whether the cows are on pasture or how often and/or how well the producer cleans the milking equipment. These are simply inherent risks associated with the production of milk.

However, despite the well-known health benefits of pasteurization, some consumers seek the purchase of unpasteurized milk, or raw milk. Consumers of raw milk report they prefer the taste, feel there are

added health benefits to consuming the bacteria present in raw milk, and suggest increased nutritional value. Taste preference is an individual consumer decision. Unfortunately we do not have objective measures for taste to evaluate this scientifically, as taste varies so greatly from one person to the next. Consumers report the added health advantages of consuming the beneficial bacteria in milk. Although milk can contain non-harmful bacteria, the risk for pathogenic bacteria is of greater concern for human health. If consumers are interested in consumption of beneficial bacteria for gut health, products containing live cultures including some yogurts should be considered. These products contain strains considered to be highly beneficial for the gut and known to be advantageous.

Another suggested health benefit of the consumption of raw milk is increased nutritional value. However, studies have reported no significant change in the nutritional content of milk following pasteurization (Andersson and Oste, 1995). Minor levels of whey protein denaturation have been shown, but that has no impact on nutritional quality. No change in the concentration of minerals occurs following pasteurization, as these are very heat stable. Pasteurization can cause a very minor loss (<10%) in vitamin B₁₂, but does not change the concentration of riboflavin (B₂) or the fat soluble vitamins including A and E (MacDonald et al., 2001). Pasture grazing can greatly influence milk composition, however, this is not necessarily associated with raw milk. There are many pasture grazed animals whose milk goes for conventional or organic sale.

Several large epidemiological studies have shown growing up in a farm environment to have protective effects against the development of asthma and allergies (van



Upcoming Events

See [VTDairy](#) for details.

November 2015 & January 2016

[Holistic Management & Risk Assessment Workshops for Dairy Farmers in the Southern Region \(Workshops 1 & 2\)](#)

Workshop 1

Nov. 4, 2015—Amelia Co.
Nov. 6, 2015—Franklin Co.
Nov. 11, 2015—Rockingham
Nov. 13, 2015—Smyth Co.

Workshop 2

Jan. 20, 2016—Amelia Co.
Jan. 22, 2016—Franklin Co.
Jan. 27, 2016—Rockingham
Jan. 29, 2016—Smyth Co.

January 13, 2016

Calf meeting,
Rockingham Co.

February 17-19, 2016

VSFA Convention and VT Dairy Science “Cow College”—Roanoke, VA

February 20-21, 2016

Atlantic Coast Calf College, Blacksburg, VA

March 8-11, 2016

Area Dairy Conferences

If you are a person with a disability and require any auxiliary aids, services or other accommodations for any Extension event, please discuss your accommodation needs with the Extension staff at your local Extension office at least 1 week prior to the event.

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Neerven et al., 2012; Braun-Fahrlander and von Mutius, 2010; and Loss et al., 2011). Some suggest this is associated with the early ingestion of raw milk, but no scientific evidence supported this. More recently the studies have pointed to the “hygiene hypothesis” as the reason behind this protective effect. The hygiene hypothesis suggests that the ingestion of low levels of healthy bacteria may help to beneficially regulate the immune system. The development of an individual’s gut microflora begins at an early age and is associated with things like type of milk consumed (breast vs formula), can influence this development which in turn, could impact the develop-



PLAN YOUR FORAGE UTILIZATION FOR THE COMING YEAR

—R. E. James, Extension Dairy Scientist, Dairy Nutrition, jamesre@vt.edu

Now that most crops are in storage it’s time to plan the forage utilization for the coming year.

It is tempting to rely on previous experience in determining forage needs. However, this can lead to some costly management mistakes.

Forage quality has a large impact on feed cost, animal performance and health. As an example, high quality corn silage with low fiber (<25%ADF, <35% NDF) and high energy (>0.76 Mcal/lb. of DM) supplies nutrients very economically. Rations using this forage as compared to average quality corn silage might consist of 3 more lb. of DM from corn silage and replace needed supplemental energy from corn grain or other energy sources. For every 100 cows this would amount to 156 more tons of corn silage used annually. High utilization might result in depletion of the inventory before the next year’s crop is harvested. Likewise poorer quality silage will be used in lower amounts but will require more supplemental energy sources and higher purchased feed costs.

To prevent these mistakes:

- Estimate supply for each forage type. Within forage types it is advantageous to store varieties (BMR vs. conventional corn silage) and cuttings of hay crops separately so that they can be used most effectively. Inventories can be estimated by counting truck loads or using spreadsheets such as

ment of allergies.

In the end, dairy producers take extreme caution to ensure the milk they sell is of the highest quality with the lowest bacterial load possible. However, raw milk is still not inherently safe to drink, despite these extreme control measures. Foodborne disease from milk can come from the consumption of only a few bacterial cells, from milk that looks and appears normal, from cows that are healthy and from farms that are clean. The beneficial health claims of the consumption of raw milk do not have scientific merit and the risks far outweigh any potential benefit. Pasteurized milk is an excellent, nutritious, and safe product containing many essential nutrients.

the Silocap spreadsheet available from the Virginia Tech Dairy Extension website (www.vtdairy.dasc.vt.edu). Don’t forget to incorporate liberal estimates of shrink!

- Estimate forage quality by sampling forages prior to ensiling with the understanding that small changes in nutrient content may occur. This practice allows considerable advance planning for forage utilization.
- Allocate best quality in the following order: close-up and fresh cows, high, medium and low producers. Grouping cows according to nutrient requirements will return economic benefits.
- Calves less than 4 months of age should receive the highest quality hay crop forages to stimulate intake and rumen function.
- The poorest quality forages (every farm has some poorer quality forage) is relegated to bred heifers and far off dry cows that require less nutrient dense rations.

Allocating time to estimate available forage supply and quality will enable the best utilization of the forage inventory. If a forage deficit is anticipated, it’s easier to acquire needed forage in the fall than in the spring when forages to purchase may be in short supply.

For more information on Dairy Extension or to learn about current programs, visit us at VTDairy —Home of the Dairy Extension Program at: www.vtdairy.dasc.vt.edu.

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