

# DAIRY PIPELINE

Volume 40, No. 4 May 2019

**SPECIAL EDITION:**  
Exploring Alternatives



## All the hype about hemp—Can hemp be used for livestock feed?

—Cynthia Martel, Extension Agent, Rockingham County; [cmartel@vt.edu](mailto:cmartel@vt.edu)

“The latest Farm Bill legalized hemp at the federal level allowing Tennessee to amend its Commercial Feed Law to include hemp. Other states are looking into the same changes due to the nutritional and tonnage properties in hemp for livestock.”

Industrial hemp is everywhere in the news lately! Farmers in all sectors of agriculture are looking into growing hemp as either supplemental income or getting out of their current business to focus exclusively on hemp production. As a result, Extension agents across Virginia are hosting informational meetings on industrial hemp production in the state. In the 1930s, Popular Mechanics magazine declared hemp “the new billion dollar crop” with production potential for over 25,000 products ranging from dynamite to cellophane. Hemp cultivation dates as far back as 8,500 years ago in China, but has recently come back into the spotlight for the use of CBD oils to treat arthritis, seizures, and more in people. This is not a new crop for the United States; in the 1840s hemp was grown in several states in the US for its fiber use in making sailcloth and other items used during both the Civil War and WWI. Hemp could also have the potential to be used as a feed ingredient in livestock feed in the United States. At this time, U.S. commercial animal feed does not allow the use of hemp as a livestock feed because it is not recognized by American Feed Control Officials.

The use of hemp in cattle feed has spiked interest in scientists and producers alike due to the high fiber tonnage potential of the plant, as it can grow up to 25 feet tall. Hemp is also high in the much-desired fatty acids: Omegas 3, 6, 9, and specifically Gamma linolenic acid. Hemp is also very high in proteins, containing every amino acid. As of January 2019, 40 states have joined Colorado in a closer look into the potential of hemp for livestock feed. Hemp is a nitrogen-fixing legume that can improve soil properties, reduce soil erosion, conserve soil water, and recycle plant nutrients much like the summer cover crop Sunn hemp (no relation to hemp). Some believe that hemp fed to livestock improves digestion, increases life expectancy and improves meat flavor. More research is needed to investigate these claims. Hemp oil has long been used for food

supplement and personal care items. Production of hemp seed cake, protein flour, animal feeds, and/or the use of hemp in animal feed is currently illegal in Virginia. The latest Farm Bill legalized hemp at the federal level allowing Tennessee to amend its Commercial Feed Law to include hemp. Other states are looking into the same changes due to the nutritional and tonnage properties in hemp for livestock.

A recent hemp informational meeting in Franklin County, Virginia had 80 eager participants ready to learn more about rules, regulations and listen to current producer pros and cons. The group also heard from Virginia Tech PhD student, Kadie Britt from the Department of Entomology. Participants learned about ongoing research with hemp and destructive insects. Since the use of pesticide is currently not allowed in hemp production, the only recommendation is ‘management from the beginning’. Hemp is subject to many of the same destructive insects that devastate soybeans and corn. Key advice participants received from Ms. Britt was be cognizant of proximity to surrounding corn and soybean fields.

Whether you are looking into hemp for oil, fiber, or seed production remember the following:

1. A permit is required in each state; in Virginia, you can obtain the permit through VDACS.
2. You cannot go to the bank and ask for an operating loan to get the business started. Banks with FDIC accreditation cannot work with you.
3. Crop insurance is a no-go at this time.
4. Only plant what you can afford to lose. If the hemp plant tests above the legal level, you will be required by law to destroy the plants.

For more information reach out to your local extension office.



## Upcoming Events

See [VTDairy](#) for details.

**May 2, 2019**

Next Generation Product  
NutriTek with Diamond V

**May 4, 2019**

[Dairy Judging 101](#)

Rockingham Fairgrounds

**May 11, 2019**

[State Youth Dairy Judging  
Workshop](#)

**May 17, 2019**

Eastview Farms dispersal

**May 20, 2019**

[Hokie Cow Classic Golf  
Tournament](#)

**June 8, 2019**

Franklin County Open Youth  
Livestock Show

**June 15, 2019**

State 4-H/FFA Dairy Youth  
Field Day  
(Clarke & Frederick Counties)

**June 17, 2019**

State FFA Milk Quality &  
Products CDE (Youth)

**June 18, 2019**

State FFA Dairy Cattle  
Evaluation & Management  
CDE (Youth)

**June 18, 2019**

State FFA Dairy Handlers  
Activity (Youth)

**June 27, 2019**

Franklin County DHIA Ban-  
quet 6:30 PM

*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.*

*For more information on Dairy Extension or to learn about current programs, visit us at VT Dairy—Home of the Dairy Extension Program on the web at: [www.vtdairy.dasc.vt.edu](http://www.vtdairy.dasc.vt.edu).*



*Christina Petersson-Wolfe, Ph.D.  
Dairy Extension Coordinator &  
Extension Dairy Scientist,  
Milk Quality & Milking  
Management*

## Could essential oils alleviate consumer pressure for more “natural” dairy production?

—Jacquelyn Prestegaard, PhD Student with Dr. Mark Hanigan; [mhanigan@vt.edu](mailto:mhanigan@vt.edu)



Fleeting trends in health and nutrition are a dime a dozen today. In fact, trendiness seems to drive recent consumer hype surrounding essential oils – natural “essences” extracted from

thyme, oregano, or cinnamon. Many of these products claim wholesomeness and/or healing in humans when ingested, inhaled, or applied to the skin. As eccentric as they sound, these compounds are actually fed to dairy cattle across the world. Consequently, there is value in exploring the potential merit of essential oils in dairy health and nutrition.

The use of essential oils in livestock production is primarily targeted at replacing ionophores. In particular, the ionophore, monensin (trade names Rumensin, Bovatec, etc.), works directly to promote growth of propionate-producing bacteria, which ultimately increase energy supply to the cow. Indirectly, monensin inhibits growth of methane-producing microbes. As a result, feeding monensin increases fat-corrected milk (FCM) production efficiency (lbs of milk per lb of dry matter consumed) by an average of 2%, and simultaneously improves rumen health. Further, its antimicrobial effects in the rumen help mitigate ketosis, displaced abomasum, and other related metabolic diseases in transition cows (Duffield et al 2008).

Monensin is an antibiotic by definition: it’s an artificially-manufactured product that kills “unfavorable” rumen microbes. However, antibiotic use in livestock production is not universally accepted or understood by consumers. While it is still legal to feed monensin in the US without a veterinarian’s prescription, its use to promote efficiency is banned in the European Union over (arguably unfounded) concerns over antibiotic resistance. As such, researchers have sought “natural” ionophore alternatives – such as essential oils – to replace monensin in rations.

“Unlike societal trends, researchers’ search for balance between consumer and producer is not fleeting.”

Developers of these plant extracts, such as those derived from thyme, cinnamon, and oregano, claim the compounds act upon rumen microbes in the same fashion as ionophores. However, the breadth of studies attempting to explore their impact on production efficiency and cow health yield mixed results. For example, a 2014 study at University of Delaware reported a 2% increase in FCM efficiency of cows fed 1.2 grams per day of an essential oil blend of thyme and black pepper essence (CRINA® Ruminants; Gland, Switzerland). Conversely, cows fed the same product at 0.75 grams per day in a similar study showed an 8.5% decrease in FCM production efficiency (Benchar et al 2006). Further, most studies report no difference in efficiency at all in response to essential oil supplementation (Yang et al 2006).

Essential oil companies also assert the reduction of metabolic disorders in transition dairy cows in response to supplementation. However, studies linking the plant compounds with cow health are scarce, and the few that exist do not show much promise for current commercially-available essential oil products. One study that mirrors most others of its kind reported that monensin was actually more effective in reducing transition cow ketosis than essential oils, as monensin decreased ketosis prevalence by an average of 20% relative to cows consuming an essential oil blend (CRINA® Ruminants; Gland, Switzerland; Drong et al 2015).

The novelty of essential oil research means that only a few relatively short-term supplementation studies exist. Therefore, the current lack of consistent evidence surrounding these so-called “nutraceuticals” means dairy producers should not rush to trade monensin for them.

For the time being, the FDA’s rule of veterinarian-prescribed only antibiotics does not extend to ionophores. However, societal perception surrounding the popular feed additive is volatile. Unlike societal trends, researchers’ search for balance between consumer and producer is not fleeting. As such, investigation of essential oils as natural compromises to improved feed efficiency continue worldwide.