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# Dairy Pipeline

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## It's a strange new world – Look for the opportunities

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A lot has changed in the world in the last few months, but at the same time things on your farm have probably remained steadily similar. You are probably harvesting small grains and first cutting hay, planting corn and prepping for the summer heat to come. These are things that you would do every year and yet there are so many uncertainties around.

We need to look around even harder for opportunities when things are unclear. The effects of COVID-19 will last for many years and some things may never be exactly the same. What kinds of things will be changing?

Fluid milk consumption has been up dramatically in retail stores for the past 2 months. Whole and chocolate milk, particularly, are up. Although total dairy consumption in the United States is down as restaurants and schools closed, there is opportunity to push for more milk consumption in homes and a higher quality product in schools. It has become clear during this pandemic that people want real dairy products in their homes. Domino's Pizza has also committed to adding an extra two ounces of cheese to their pizzas! These are small wins for dairy consumption and when restaurants and schools reopen some of these trends will continue. There is a huge opportunity to bring the goodness of real milk back into more homes.

USDA has released some of their aid packages with a focus on providing food to food banks. A big portion of this is dairy products. They have committed over $120 million just to buying dairy product to be provided through the food banks.

There will also be some direct payments coming to producers. The details of these payments have not yet been released. Check with your local FSA or extension office for details as they become available. We will be doing a webinar with the details after we know what they are.

So, what will your opportunities in the future be? Will there be a higher demand for farmstead processing? Will there be a higher demand for fluid milk? Local dairy products? I don't have all of the answers, but I am confident that there will be some opportunities for producers to take advantage of—we just have to find them.

If you haven't done so already, now would be a good time to for a farm management team to help identify future opportunities.

## COVID-19 Resources

Virginia Cooperative Extension has established a web presence to provide information related to COVID-19 (https://ext.vt.edu/covid-19updates/resources.html).

Links to the Virginia Department of Agricultural and Consumer Affairs (https://www.vdacs.virginia.gov/about-emergency-information.shtml), the Virginia Department of Health (https://www.vdh.virginia.gov/coronavirus/), Farm Bureau—Virginia (https://www.vafb.com/FarmerResources), and Extension Disaster Education Network (https://extensiondisaster.net/) are listed as well.

These sites provide official, up-to-date information for an extensive range of topics. Please take the time to visit them, peruse their topics and find answers to many frequently asked questions.

# Relationship between enteric methane emissions and forage characteristics

*Authored by Alexis Hruby, PhD student with Dr. Mark Hanigan, mhanigan@vt.edu; co-authored by Jacquelyn Prestegaard, PhD student with Dr. Mark Hanigan*

The topic of greenhouse gases – and more specifically, methane – is a hot button issue to anyone who grows or consumes food. Social and news media often report misleading methane estimates by animal agriculture, and consequently vilify the dairy and beef industries. As such, cattle are targeted frequently as primary offenders of methane buildup in the atmosphere. There are three standout reasons why methane garners so much attention as a greenhouse gas. First, it is around 25 times more effective in trapping heat in the atmosphere than carbon dioxide. Additionally, the majority of methane comes from anthropogenic sources. Finally, it has a much shorter half-life than other greenhouse gases (9.1 years for methane vs. 100 years for carbon dioxide). However, in the United States, methane makes up only 10% of all GHGs, with 3.8%* of total methane emissions originating from enteric fermentation of dairy cattle. Although a seemingly small impact, dairy industry researchers are still working to provide solutions.

Ruminants, such as dairy cows, generate hydrogen through microbial enzyme activity in the reticulorumen, often resulting in methanogenesis. Within the rumen, there are microbes that prefer structural carbohydrates, such as the ones in forages, and microbes that prefer non-structural carbohydrates, such as the ones in grains. The shifts in microbe type are extremely dependent on the rumen pH—high concentrate diets are known to drop pH while incorporating forages helps maintain a healthy microbiome. Methanogens, methane generating microbes, die with a drop in pH; thus, grain-preferring bacteria produce the volatile fatty acid, propionate, instead, which is a great alternative hydrogen acceptor. On the other hand, microbes that are responsible for producing methane are of the forage-preferring variety. As a result, a higher inclusion of forage, rather than grains, in the diet generates greater methane excretion by dairy cows.

When identifying methane mitigating forages, there are a few easily-adjustable variables: amount, type, and quality. For example, Aguerre and colleagues at the University of Wisconsin investigated how an increased forage to concentrate ratio impacts methane yield in lactating dairy cows. When NDF digestibility decreased in higher forage to concentrate diets, methane yield increased. However, this study did not test differences among forage type.

Regarding forage type, Arndt and others also at the University of Wisconsin conducted a study with differing alfalfa silage (AS) to corn silage (CS) ratios. This study demonstrated that increasing AS also increased NDF digestibility, but the impacts on methane yield weren't as simple as the previous study. Rather than a simple linear effect, the increasing AS:CS had an increase followed by a decrease in methane yield, indicating that the fermentation of CS NDF yielded more methane than the fermentation of AS NDF.

Finally, forage maturity can impact enteric methane emissions. Warner and colleagues at Wageningen University evaluated effects of different maturities of grass silage. Their results showed late maturity silage had a lower NDF digestibility and higher methane yield than those at early and medium maturity. Further, maturity also impacts corn silage, but in a different way. Hatew and others at Wageningen University indicated that although the stalk of the corn becomes less digestible, starch content increases in the corn kernels causing methane yield to decrease with maturity.

In conclusion, forage characteristics are important to consider when focusing on the methane contributions by dairy cattle. When feeding forages, we should consider amount, type, and quality to make better environmental decisions on the farm, but we must maintain a balance to prevent rumen toxicity.

* Calculation performed using the following numbers—58% of total methane comes from anthropogenic origin, 26.7% of the anthropogenic methane comes from enteric fermentation of livestock, and 24.7% of the total enteric methane originates from dairy cattle (US EPA, 2019).

# Upcoming Events

**June is Dairy Month Poster Contest (Youth)**
For additional details, see www.youth.dasc.vt.edu.

**Friday Dairy Extension Calls:**
Calls will last approximately 15 minutes. Please send questions ahead of time to Jeremy Daubert at jdaubert@vt.edu or 540-564-3083. Available recordings for previous calls are linked below.

**June 5:** "Breeding for A2 and Slick Genes, What's the Future?", Mark Yeazel, Ja-Bob Holsteins

**June 12:** "Lean Dairying", Jeff Bewley, Alltech

**June 19:** "Milk Contracting Basis", Christine Brodeur, DFA

**June 26:** "Heat Stress Strategies", Jeremy Daubert, VCE

**Sept. 29—Oct. 1, 2020**
2020 Annual Meeting and Professional Improvement Conference of the National Association of County Agricultural Agents

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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