

# DAIRY PIPELINE

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## Comparative Nutritional Quality of Winter Crops for Silage

—Gonzalo Ferreira, Extension Dairy Scientist, Management, [gofn@vt.edu](mailto:gofn@vt.edu)

In a few past issues of the Dairy Pipeline, I reported the initial stages of a Conservation Innovation Grant (CIG) project of the Department of

Dairy Science, and funded by Natural Resources Conservation Services, in which we were comparing the nutritional quality of different winter crops for silage. For this project we planted 15 different winter crops in three locations within the Commonwealth of Virginia. These crops included the grasses barley, rye, ryegrass, triticale and wheat in monoculture, and the same grasses planted with either crimson clover or hairy vetch. These crops were harvested and ensiled in the laboratory. After 60 days of fermentation, we determined the nutritional composition and the digestibility of the silages in the Dairy Nutrition Laboratory at Virginia Tech. Following are some results and conclusions.



“Deciding which species to plant can be difficult when speaking about winter crops for silage.”

*Nutritional Composition.* Adding legumes increased protein concentration of the silages. Protein concentrations were 14.2% for grasses in monoculture, 16.6% for mixtures including crimson clover, and 18.3% for mixtures including hairy vetch. Similarly, adding legumes reduced fiber concentration of the silages. Neutral detergent fiber concentrations were 53.2% for grass silages and 50.0% for silages including legumes with grasses. These results suggest that adding legumes to grasses improves the nutritional composition of the silages.

*Digestibility.* In vitro dry matter digestibility (IVDMD) was lowest for barley silage (81.9%) and greatest for rye grass silage (89.8%). The in vitro digestibility of the fi-

ber (IVNDFD) was also lowest for the barley silage (70.1%) and greatest for the ryegrass silage (77.3%). The addition of legumes as a mixture decreased in vitro fiber digestibility (68.4 and 72.4% for barley and ryegrass silages, respectively). Based on this decrease in fiber digestibility, one might wonder if adding legumes can be counterproductive to obtain best quality silage. The answer to this question is no. Keep in mind that the fiber digestibility of legumes is typically lower than the fiber digestibility of grasses, but fiber concentration is typically lower in legumes than in grasses. In this study, even though the digestibility of the fiber was reduced, adding legumes increased the concentration of highly digestible non-fibrous components (i.e., cell contents) in barley, rye, triticale and wheat silages. As non-fibrous components are completely and uniformly digestible, for these silages the nutritional composition was actually enhanced.

*Conclusions.* Deciding which species to plant can be difficult when speaking about winter crops for silage. From a nutritional perspective, including legumes can improve the nutritional composition of the silage, especially in mixtures with barley, rye and triticale. For high quality forages, such as ryegrass, the improvements are marginal.

“From a nutritional perspective, including legumes can improve the nutritional composition of the silage, especially in mixtures with barley, rye and triticale.”



## Upcoming Events

See [VTDairy](#) for details.

### October 3 & 5, 2016

Franklin & Henry County Well Water Testing Clinic Homeowners & Farms Encouraged. Contact [cmartel@vt.edu](mailto:cmartel@vt.edu)

### October 4-8, 2016

[World Dairy Expo](#)

### October 15, 2016

VT Dairy Club Showcase Sale

### November 9-10, 2016

Penn State Dairy Nutrition Workshop, Grantville, PA

### November 10, 2016

Manure & Nutrient Management Program Contact [cmartel@vt.edu](mailto:cmartel@vt.edu)

### November 16-17, 2016

[Southeast Quality Milk Initiative](#) Annual Meeting Tifton, GA

### November 18-19, 2016

100th Anniversary of the [Virginia Holstein Association](#) Banquet and Annual Meeting

### December 3, 2016

Virginia Tech Dairy Science Open House, 1810 Litton-Reaves Hall, Blacksburg

### December 6, 2016

Nutrient Management for Animal Operations Southern Piedmont AREC Blackstone. Contact 504-561-2481 or [laurab08@vt.edu](mailto:laurab08@vt.edu).

### December 8-9, 2016

Holistic Management and Risk Assessment Workshops for Dairy Farmers University of Nebraska-Lincoln

### February 15-16, 2017

VSFA & Virginia Tech Cow College, Hotel Roanoke

*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.*



## Biosecurity: Part II

—Jeremy Daubert, Extension Agent, Rockingham County; [jdaubert@vt.edu](mailto:jdaubert@vt.edu)

Biosecurity on a dairy farm requires a plan to minimize the risk of disease outbreak. Some farms consider themselves to be “closed” herds, but even these herds need to take steps to reduce the risk of an outbreak. Unless no people, wildlife or vehicles ever enter the farm, it’s not truly a “closed” herd. Farms that do not regularly bring in outside animals are still at risk.

The first step is a written Biosecurity and Disaster Plan. Being prepared ahead of time will help everyone involved know how to handle a situation. Animals on the farm should be managed to maintain a high level of health using vaccinations and properly balanced diets.

According to the USDA, the following is a list of animal management procedures:

- ◆ If possible, keep animals that are new to the farm in a separate holding area. A quarantine period should be established to facilitate monitoring and testing the health status of new animals. This will also help to prevent the spread of disease to the existing herd from animals that might be harboring a disease without exhibiting any clinical signs.
- ◆ Young animals should be kept in a separate area from more mature animals to minimize the exposure of more susceptible animals.
- ◆ Keep an isolation area that is intended for only sick animals.
- ◆ Meet the standards for pen, stall, or bedded area space per animal in your care.
- ◆ Always handle sick animals last.
- ◆ Vaccinate farm dogs and cats against rabies to protect humans and animals. Consider vaccinating livestock, too.
- ◆ Prevent fence line contact between your livestock and other animals.
- ◆ Remove manure and bedding and disinfect pens, especially maternity and sick pens, between animals.
- ◆ Keep water sources protected from contaminants and clean waterers once a week.

Additionally, sanitation is very important! Vehicles that enter the farm should be clean and loading areas should be near the road and away from the barn areas. Equipment that is used to treat sick animals should be cleaned and disinfected before being used on another animal. Employees who work with sick animals should frequently change and wash clothing and maintain clean hands or wear gloves. Separate equipment should be used to move manure and feed. Service vehicles should not be able to drive through manure and feed alleys.

Finally, if animals are purchased, it may be prudent to not only vaccinate and separate the new animals, but also to test them for common cattle diseases. The following are the most common—and if you are drinking raw milk out of the tank, be mindful that some diseases can be transferred to people via unpasteurized milk:

- ◆ BVD virus (Bovine Viral Diarrhea);
- ◆ Johne’s disease;
- ◆ Mastitis caused by *Staphylococcus aureus*, *Streptococcus agalactiae* and *Mycoplasma bovis* (lactating cows);
- ◆ Bovine leucosis.

Remember, if you haven’t tested them, then you don’t really know if they are carrying any of these diseases—and that goes for the cows currently in the herd, as well.

“Being prepared ahead of time will help everyone involved know how to handle a situation.”

*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).*

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