Virginia Cooperative Extension
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GRAZE 300
Virginia Cooperative Extension

# The Fenceline

**November 30, 2020**

# Got Moldy Hay? Keep Calm and Feed On

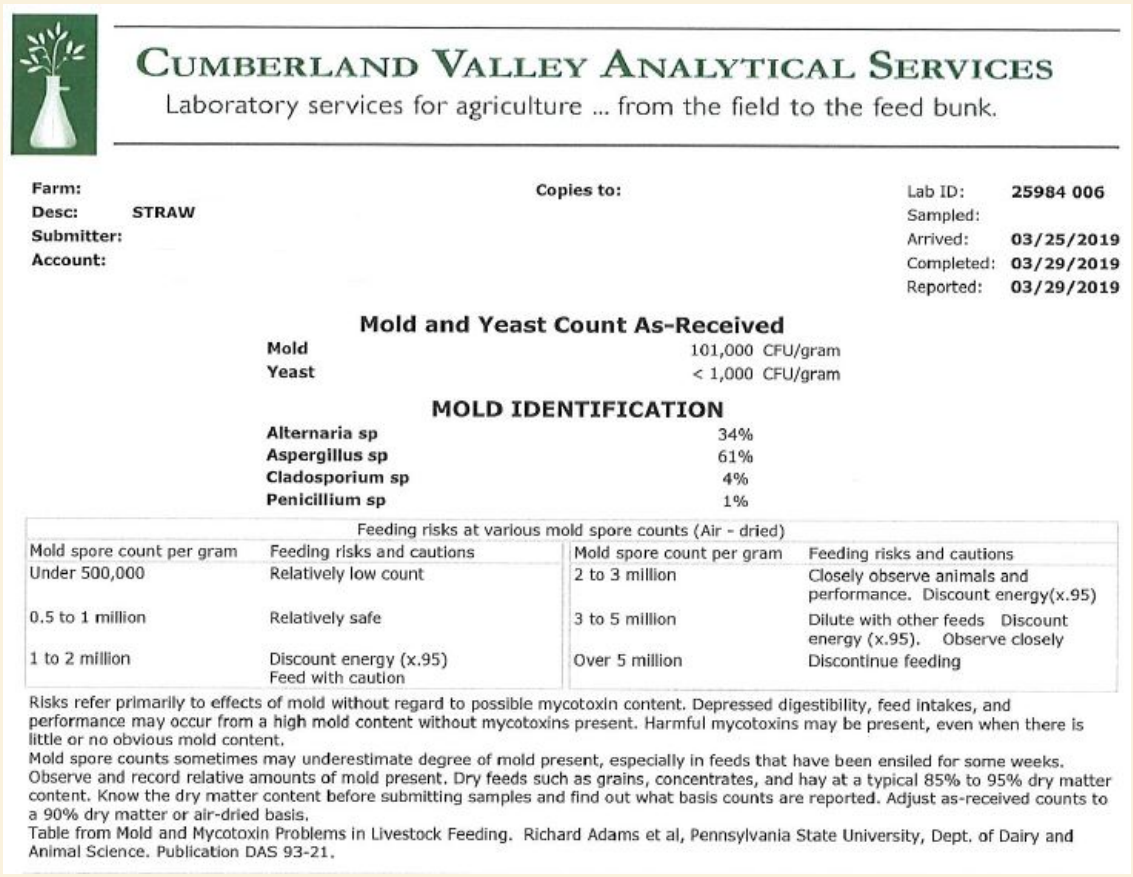
*Matt Booher, Virginia Cooperative Extension*

So you've got moldy hay. Are there impacts on feed value, and are there health risks to your livestock? These are common questions, and as usual, the answer is "it depends." Molds are a type of fungi, and mycelia is the mass of threadlike strands that grow through your hay...they are the body of the fungal (mold) colony. Spores are the seed-like reproductive units produced by mycelia. Mycelia can also produce mycotoxins. It is important to realize that you can have mycelia present without having spores or mycotoxins, so the presence of molds does not necessarily indicate a problem. Even abundant mold or spores doesn't indicate the presence of a toxin.

The most common complaint about moldy hay is the loss of palatability or livestock going off feed. This could be due to taste, dustiness, or loss of feed quality, but all three are likely factors. Research findings in the feeding of moldy hay are, on the whole, varied--in some cases mold dramatically reduces feed consumption, in other cases the same level of mold biomass has no effect. Mold growth often results in the loss of dry matter and energy content of the hay, but it is not always a dramatic reduction. In fact, two hay lots can have almost the same feed value and one be moldy and the other not. Standard forage quality analyses will tell you the nutritional value of the hay, even if they do not tell you anything about the presence of mold or of the hay's palatability. In a worst-case scenario, the presence of mold indicates that moisture levels were high enough that mycotoxin-producing fungi could grow and produce mycotoxins. It is the presence of mycotoxins that can cause major issues like poor fertility and abortions. While the possibility is scary, in reality it is rare,

since most hay molds do not produce mycotoxins. Mycotoxins are relatively rare in dry hay, and more common in high moisture hay (e.g. sweet hay or baleage) in which oxygen was not adequately excluded.

You can test hay for molds--but it may not tell you exactly what you'd expect. The traditional method to describe mold levels has been through spore counts and mold identification, which does not necessarily reflect the amount of mycelia present.  If you would like to have your hay analyzed to identify mold types and spore counts, Cumberland Valley Analytical is probably the most commonly used option for Virginia producers--expect to pay anywhere from $40-$60 per sample. To give you an idea of what kind of information and recommendations you would receive, here is an example report with recommendations for feeding moldy hay.



**CUMBERLAND VALLEY ANALYTICAL SERVICES**

Laboratory services for agriculture ... from the field to the feed bunk.

**Farm:**
**Desc:** **STRAW**
**Submitter:**
**Account:**

**Copies to:**

Lab ID: **25984 006**
Sampled:
Arrived: **03/25/2019**
Completed: **03/29/2019**
Reported: **03/29/2019**

**Mold and Yeast Count As-Received**

| | |
|---|---|
| **Mold** | 101,000 CFU/gram |
| **Yeast** | < 1,000 CFU/gram |

**MOLD IDENTIFICATION**

| | |
|---|---|
| **Alternaria sp** | 34% |
| **Aspergillus sp** | 61% |
| **Cladosporium sp** | 4% |
| **Penicillium sp** | 1% |

Feeding risks at various mold spore counts (Air - dried)

| Mold spore count per gram | Feeding risks and cautions | Mold spore count per gram | Feeding risks and cautions |
|---|---|---|---|
| Under 500,000 | Relatively low count | 2 to 3 million | Closely observe animals and performance. Discount energy(x.95) |
| 0.5 to 1 million | Relatively safe | 3 to 5 million | Dilute with other feeds Discount energy (x.95). Observe closely |
| 1 to 2 million | Discount energy (x.95) Feed with caution | Over 5 million | Discontinue feeding |

Risks refer primarily to effects of mold without regard to possible mycotoxin content. Depressed digestibility, feed intakes, and performance may occur from a high mold content without mycotoxins present. Harmful mycotoxins may be present, even when there is little or no obvious mold content.
Mold spore counts sometimes may underestimate degree of mold present, especially in feeds that have been ensiled for some weeks. Observe and record relative amounts of mold present. Dry feeds such as grains, concentrates, and hay at a typical 85% to 95% dry matter content. Know the dry matter content before submitting samples and find out what basis counts are reported. Adjust as-received counts to a 90% dry matter or air-dried basis.
Table from Mold and Mycotoxin Problems in Livestock Feeding. Richard Adams et al, Pennsylvania State University, Dept. of Dairy and Animal Science. Publication DAS 93-21.

In the end, moldy hay is one of those things we have to live with--and usually it doesn't cause a problem.

- Visually inspect hay and note any hay for which you have concerns
- If you are feeding very moldy hay, consider diluting with other feeds (e.g. commodity pellets, good hay, pasture).
- Let the livestock tell you how any molds are affecting them--monitor manure consistency and feed intake

- Avoid feeding very moldy hay to more sensitive animals like pregnant cows or horses

**Horses seem to be much more sensitive to mold than other livestock; this article is mainly applicable to ruminant livestock, so if you have horses, please seek additional information specific to equine.*

**References:**
Merck Veterinary Manual, 9th Ed.
S. Smith, University of Manitoba. *Understanding and Reducing Mold Growth in Hay*.

## Increase Your Success When Frost Seeding

*Matt Booher, Virginia Cooperative Extension*

Frost-seeding clover seed is about as easy as it gets, and it's mostly very effective. However, I'd like to share a couple things that may make your efforts more successful.

- **Soil Fertility**. Good soil fertility is requirement for clover to effectively fix-nitrogen and thrive. Soil pH should be at least 6.0, but in my experience you should try to maintain it closer to 6.5, otherwise you risk getting into a cycle where your field's pH dips below optimum until you get lime applied and it fully reacts. Phosphorus is also very important for legumes. Soil P should be maintained at a rating of least "*medium*" as shown on your soil test. If soil pH and phosphorus are not optimum you

will likely see clover seedlings emerge, and seedlings may even persist, but they will not be as abundant or as vigorous as you want.

- **Temperature**. Clover seeds can germinate in as little as 2 days at temperatures as low as 40 degrees.* Frost seeding is typically associated with late-February/early March because it gives seed exposure to freezing and thawing cycles that move seed into the soil; at the same time any seed that germinates is likely to survive late winter frosts and grow well in spring. I think late-winter timing is a good recommendation, and though I think there are opportunities for seeding in December and January, the mild winters we've had at times worry me a little. Clover seeded too early could potentially germinate during warm spell and then die if followed by intense cold.
- **Seed into bare fields.** Recent research by Dr. Ben Tracy at Virginia Tech has shown that frost seeding is much more successful when seed is broadcasted into fields that have been grazed tightly to remove plant residue that might keep seed from reaching the ground.
- **Seeding rate and variety selection.** The commonly recommended seeding rate for frost seeding into grass pasture is about 5 lbs. of red clover and 2 lbs. of white clover per acre--this recommendation already accounts for the typical seed purity of coated seed, so there's usually no need to adjust your rate based on seed purity. Try to purchase pre-inoculated seed, and look for an improved variety--just about any variety with a name is an improvement over VNS (variety not stated) seed like *medium red* or *white Dutch*
- **Control competition from grasses the following spring.** Grazing or mowing grass at least once during mid spring will help to get light to

legumes and greatly increase establishment success. Don't apply any nitrogen to fields that you have frost seeded.

*Baxter et.al. 2019. *Optimizing Temperature Requirements for Clover Seed*. Agrosystems, Geosciences, and Environment.

You may remember the Dos Equis' Most Interesting Man in the World, but do you know...

## The *most* Advanced Grazier *in the* World

- He once decided to frost seed clover in July…the resulting cold snap froze corn two counties away.
- When he buys clover seed…he finds even the hard seed to be easy.
- Any time a variety trial is conducted…they call him in as an expert witness.
- He knows how to fix nitrogen better than anyone…who do you think broke it in the first place?
- The last time he did soil testing…the soil test report rated him as optimum.
- He once saw a summer slump…until summer caught sight of him, and snapped to attention.
- His three-geared fence reel has six gears.
- He once tried to get his cow herd to carry and use grazing sticks, and it would have worked…if his cows didn't already prefer to use falling plate meters.
- His grazing records all went platinum.
- Lightning once struck his fence energizer.  After a few seconds of intense sparks, the cloud blew up.
- Physicists fear that If he were to allow his herd to backgraze, it would likely cause the Earth to spin in reverse.

**He is….the Most Advanced Grazier in the world.**

**Have issues or topics you'd like to see addressed? Please email me at mrbooher@vt.edu.**

Questions? Feel free to contact me.

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