

Weather conditions prior to, during first cutting, and while making hay have been very moist. Many areas have 2 or more inches of above normal precipitation. Much hay has been rained on or left lying in the field for prolonged time periods due to cool and humid conditions which reduced drying rates. The long drying periods with high humidity allowed field growth of mold on the hay. We will try to state some facts and offer some recommendations for hay producers and livestock producers.

### What is the “black dust” that covers my mower or swather?

- The black dust is most likely spores produced by fungal organisms. Spores are how the fungi reproduce and are always present but usually at lower concentration. The black dust on a mower or swather indicates that fungal growth was present prior to cutting.

### What is the “black dust” on the hay in the windrow, and coming out of my baler or forage harvester?

- The dust is partially fungal spores which have been produced at any point prior to harvest; but most likely, spores were produced after mowing in the windrow, under high moisture levels.
- Another source of the dust is pulverized and decomposed plant material after drying.

### What can I do to prevent fungal growth in the crop prior to mowing?

- There are few options to prevent fungal growth in uncut forage. There are no current registered fungicides for alfalfa forage use, other than Apron™ for seed treatment at planting. Furthermore, it is probably not economic to treat even if you could forecast long term weather problems. For periods with high precipitations, adjust your watering schedule, prevent over irrigation, and allow plants to dry up faster.

### You can prevent further mold growth in harvested hay and silage!

- To improve drying and solar radiation on forage: 1) make a wide windrow, 2) mow in sunny weather, 3) rake or invert the windrow at about 40% moisture.
- Hay preservatives such as propionic acid products and other mold inhibitors can reduce or stop further mold growth in hay and silage, at least temporarily, when applied at baling or chopping. These products will not reduce the damage done before harvest, they merely stop new growth.

### What effects do molds have on animals?

- The spores can produce undesirable physical responses from humans and livestock from the physical dust and an allergic response of animals. Horses and other non-ruminants are generally more susceptible to this problem than cattle.
- Feed intake is reduced.
- The spores indicate a possibility of mycotoxin producing organisms.

For more information on mycotoxins and molds, see the fact sheet “Moldy Hay” by



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Undersander et al. 2009.

A mycotoxin is a toxic secondary metabolite produced by an organism of the fungus kingdom, including mushrooms, molds, and yeasts.

We have cultured fungal spores from *Phoma* (alfalfa spring black stem and leaf spot) and *Colletotrichum* from alfalfa in the Kimberly area. These genera are not known to produce mycotoxins, however, there other toxin producing fungi may be present.

Molds commonly found in hay include *Alternaria*, *Aspergillus*, *Cladosporium*, *Fusarium*, *Mucor*, *Penicillium*, and *Rhizopus*. These molds **can produce spores that cause respiratory problems**, especially in horses or other animals fed in poorly ventilated areas and, **under some conditions, will produce mycotoxins**. There is much confusion about mycotoxins in forages because several mycotoxins may be present, diagnostic methods are not consistent, and treatment and control recommendations lack needed research. While most molds do not produce mycotoxins, the presence of mold indicates the possibility of mycotoxin presence and animals being fed moldy hay should be watched carefully for mycotoxin symptoms.

If you suspect the hay has mycotoxins consult your veterinarian or nutritionist.

#### **Strategies for the utilization of moldy hay:**

- If hay is dusty (from mold spores) avoid feeding it to sensitive animals and those in areas with poor ventilation. If mycotoxin symptoms are observed, check with a nutritionist to make sure the ration is properly balanced and possibly with a veterinarian to eliminate other disease/health problems. Quick test kits (ELISA kits) are available (listing at <http://www.ces.ncsu.edu/gaston/Agriculture/mycotoxins/mycotest.html>) to determine presence of a limited number mycotoxins but they can give false positives. Some forage testing laboratories will provide other mycotoxin tests.
- Often, the best strategy is to remove a suspected mycotoxin-contaminated feedstuff from the diet and see if symptoms disappear. If mycotoxins are present, the feedstuff can often be fed at a diluted rate and/or with approved feed additives.
- Dilute the suspected feed by starting with a small amount, gradually increase the proportion, and observe animal behavior and health closely.
- Allow animals to sort through the hay and reject molded forage, and then remove the rejected forage.

#### **In summary:**

- ◆ Most molds are harmless - not producing known mycotoxins.
- ◆ Many of the commonly diagnosed mycotoxins are produced in the field prior to harvest.
- ◆ The physical dust problem associated with moldy forage can be reduced by ensiling, mixing with a high moisture feed or wetting the hay, but these actions will not reduce mycotoxins if present.