

Mold on Curing Tobacco

By Andy Bailey, Extension Dark Tobacco Specialist

The presence of mold on cured tobacco can significantly reduce the quality and marketability of the crop. Mold growth is a fairly common problem that occurs during extended periods of high humidity (>70% RH) at temperatures anywhere between 50 and 90F. However, mold growth typically increases as the temperature increases. Most species of mold are ubiquitous organisms that can grow almost anywhere if favorable conditions exist. Like most living organisms, mold needs a source of free water and food in order to grow. Any source of simple carbon and protein with favorable salts can serve as a food source for mold and any humid environment where organic materials remain moist for more than 24 hours will provide free water for mold growth. Tobacco hanging in a curing barn during extended periods of high humidity can provide an ideal environment for mold growth.

The most common types of mold found in nature are of the genera *Cladosporium*, *Penicillium*, *Alternaria*, *Aspergillus*, and *Mucor*. Different types of mold can be identified by texture and color, although colors may vary somewhat with species and time. *Cladosporium* is the most common of the molds found in nature and produces a gray to black colony with a powdery appearance. *Penicillium* produces a velvety colony that is white initially and later turns to greenish blue. *Alternaria* produces a downy or woolly colony that is grayish white initially and turns to dark olive green or brown. *Aspergillus* has a powdery appearance and can have various colors such as yellow, blue, or green. *Mucor* molds have a fluffy, cottony appearance that is initially white or yellow then turns to dark gray or grayish brown.

Although some growers have claimed to have some success against mold on tobacco by making direct, undiluted applications of various alcohols, primarily denatured ethyl alcohol (ethanol) or bleach, no such compounds are currently registered for control of mold on curing tobacco. Any fungicide that would control mold would have to be applied in the field and then have sufficient residues to last through curing and marketing. Some fungicides have this type of residual activity but tobacco companies cannot accept these residues. Several companies have considered labeling alcohols for mold removal, but their legal departments have advised them against this due to liability issues. Although ethanol or bleach may be effective in reducing mold, we cannot recommend the use of such compounds and therefore the user must assume all liability involved with their use.

Mold problems can often be traced to poor ventilation within the curing barn. Poor ventilation that promotes mold growth can be caused by placing tobacco too closely on the tier rails, lack of suitable ventilators to allow adequate air flow, or poor management of ventilation systems. In most crops, stick spacing of at least 9 inches is usually sufficient to allow adequate air movement through the tobacco and reduce the risk of excessive moisture and mold growth. Lack of air movement from sticks spaced too closely can also lead to bacterial growth (houseburn) and condensation on the leaf surface early in the curing process (“sweating”). Barns should have vents along the bottom of the barn and along the eave in the top to allow air movement into the barn and through the tobacco. Fan systems installed in the top of the barn are also an excellent means of increasing airflow through the tobacco.

Judicious management of the barn’s ventilation system is critical in preventing mold on tobacco, and growers should be even more aware of proper ventilation if mold begins to appear.

Barn doors and vents should be opened on dry, sunny days to drive off moisture and closed at night and during rainy periods to prevent additional moisture from entering the barn. Substantial moisture may also come into the barn through the floor on wet days and at night. This moisture can be reduced by laying plastic on the floor of the barn. Under severe mold conditions, it may be necessary to widen stick spacing in the barn and/or move some tobacco onto scaffold wagons where sticks can be spaced further apart to increase air movement through the tobacco. The use of heat (i.e. coke or propane) under the tobacco will also help to drive away moisture and lessen the chances of mold development. **However, growers should never use heat sources in conjunction with the use of any flammable substance such as alcohol.**

Growers should evaluate the mold colonies present to determine whether mold spores are active or dormant. If mold colonies are dry and powdery, the mold is dormant and measures to promote drying should be continued until mold is eliminated. If mold colonies are soft and smeary, the mold is still active and more intensive steps to promote drying should be taken. Tobacco with substantial mold development should not be stripped and prepared for market until mold is eliminated or at least reduced. Growers should remember that mold can be controlled prior to stripping and baling, but can be nearly impossible to control after stripping and baling.

