W 1094

ORDERING/CASING BURLEY AND DARK TOBACCO — POST-CURING MANAGEMENT PRACTICES

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Key Points

- Cured leaves become pliable (in order or case) at approximately 15% moisture.
- Relative humidity of 70% is necessary to proceed with market preparation after curing.
- Avoid applying excessive moisture to cured leaf to reduce potential for excess moisture at delivery and increased tobacco-specific nitrosamines (TSNA) in stored tobacco.
- The most useful moisture gauge is grower experience.

Introduction

Market preparation of burley and dark tobacco involves removing cured tobacco from the curing facilities (takedown), removing the stalks from the stick (bulking), removing cured leaves from tobacco stalks (stripping) and packaging for the market (baling). These processes can only be performed when cured leaves are sufficiently pliable to avoid breakage. This characteristic is referred to as "order" in the traditional dark tobacco belt and "case" in the traditional burley tobacco belt. Order/case occurs at approximately 15% moisture content in cured leaf, which is the targeted moisture content to proceed with removal of tobacco from curing facilities (takedown) and removal of leaves from stalks (stripping). Ambient relative humidity above 70% is necessary to proceed with takedown from the curing facility to avoid leaf breakage.

In the tobacco belt of Tennessee and Kentucky, takedown of air-cured tobacco types will take place from September through February. During this time, ambient humidity is often too low for extended periods to allow takedown of tobacco from curing facilities. Growers and researchers have attempted to mist air-cured tobacco in the barn with limited success, making natural takedown important. Adding artificial moisture once tobacco is down can enable further preparation of the crop for market. The process of adding moisture is called "ordering" or "casing." A natural order/case with fog or a rain event can result in an abundance of bulked tobacco that can lose order/case if not stripped in a timely manner and may need to be brought back in order/case artificially. Furthermore, many producers need to provide a consistent workload for the labor crew to avoid costly downtime. These preceding examples lead producers to use artificial ordering/casing methods to continue market preparation of cured leaf.

Post-Curing Procedures in Air-Cured Tobacco

Once a curing facility has natural order/case, air-cured tobacco can be removed and consolidated. The act of consolidating is known as bulking, which allows for tobacco to be transported to the stripping facility. Bulking can occur with or without the tobacco stick and assists with maintaining moisture for stripping. Bulking with the stick can help with moisture management in the bulk as well as subsequent handling. Growers should constantly check the bulks to ensure that tobacco is not heating from bacterial growth where moisture levels are too high. If the bulk is heating,

tobacco sticks can be inserted between piles to ventilate and promote moisture diffusion. In severe cases, bulks may need to be broken and restacked to prevent spoilage if stripping is delayed. Tobacco should be bulked on a clean, dry surface such as a wagon bed or plastic on the floor of the facility. Bulks can be covered with clean plastic when relative humidity is low and uncovered when humidity conditions are adequate for tobacco handling.

Adding moisture can be performed using various methods including misting and steaming. Most air-cured producers have preferred misting in recent years. Misting refers to adding moisture via a low-volume water source with a fine mist (e.g., garden hose, battery-operated sprayer, hand-held pump sprayer) lightly and evenly applied to the tobacco after takedown. Drier tobacco may need to be misted twice, with the second mist occurring several hours after the first. Steaming is much less common in air-cured tobacco but is commonly used in fire-cured tobacco. This occurs when tobacco is taken down and placed in a room with a steaming system. Steaming often involves the use of scaffold wagons.

Image 1. *Steaming dark fire-cured tobacco. (Photo courtesy of Mitchell Richmond, UT.)*

Image 2. *Steaming dark fire-cured tobacco. (Photo courtesy of Mitchell Richmond, UT.)*

Potential Issues with Added Moisture

Studies have been conducted investigating the impact of leaf moisture and tobacco-specific nitrosamines (TSNAs). TSNAs are nitrogenous compounds formed from tobacco alkaloids, some of which are known carcinogens. TSNAs are formed mainly during curing, specifically during the late yellowing to early browning stages of the cure. Producers should avoid applying excessive moisture to cured leaf; studies have shown that TSNAs can increase in stored, high-moisture tobacco. Because of this, natural ordering/casing is preferred, if possible; however, studies have shown no differences between adding moisture by steaming or misting compared to natural order, provided artificial ordering is not excessive. It is recommended that growers use the ordering/casing method that is best suited to their curing facility and management.

Moisture should be added in a way that avoids pockets of excessive moisture and prevents wet spots in bales. In addition, tobacco bales should be delivered as soon as possible to avoid long periods of storage on the farm. Mist should be applied several hours (up to a day) before stripping to allow sufficient time for moisture to be absorbed into the leaf and distributed through the bulk of tobacco. Misting with a finer spray droplet size is preferred over coarser droplets to avoid getting the tobacco too wet. There should be no free water on the leaf surfaces at the time of stripping and baling. The time required for the leaf to absorb the free water is impacted by air temperature and will take longer in cooler temperatures. There are currently no inexpensive tools that exist for accurate and rapid moisture determination in cured tobacco. Therefore, grower experience is the best tool to avoid excessive moisture and adhere to moisture limits specified in the marketing contract. A simple test of proper leaf moisture is to see if a cured leaf squeezed in the hand doesn't crumble and slightly springs back and unfolds after releasing. The base of the midrib/stem should remain brittle and will snap if doubled over.

Image 3. *Artificial ordering/casing burley tobacco with a fine mist. (Photo courtesy of Colin Fisher, UK.)*

Image 4. *Natural order/case of burley tobacco in the barn. (Photo courtesy of Colin Fisher, UK.)*

Conclusion

Market preparation of air-cured burley and dark tobacco involves ambient relative humidity and grower experience. After the curing facility is brought into natural order/case, artificial moisture in the form of steam or mist can be utilized to maintain order/case for stripping and baling. This allows for a more efficient use of natural order/case as more tobacco can be taken down and bulked for further preparation for market. There are no known issues as related to TSNAs with either ordering/casing method if moisture is added properly. Therefore, producers should use the method that is better suited for their facilities and be careful to avoid overwatering. Be sure to use good judgment to avoid excessive moisture, which can lead to rejection at delivery and increased TSNA.

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