

Harvesting, Curing, and Preparing Dark Fire-Cured Tobacco for Market

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Harvesting

Dark fire-cured tobacco is ready for harvest when the leaves are mature but not overripe. This normally is between five and seven weeks after topping. Mature leaves will be thick with somewhat of an oily texture, may show faint yellowing or “ripe” spots, and will crack readily when folded during the hot part of the day.

Tobacco harvested immature or “green” will be thin and more difficult to cure and will have reduced yield and quality compared to mature tobacco. Tobacco that is overripe will be brittle and difficult to handle, and yield and quality can be reduced due to leaf breakage if the tobacco is not handled carefully.

Leaf breakage can be minimized if cutting does not begin until after all dew has evaporated from the leaves. Large, heavy-bodied tobacco should be allowed to field wilt on the ground after cutting to facilitate handling before placing stalks on sticks. Tobacco that is properly field wilted should be lying nearly flat, and leaves will be flexible, allowing easier spiking with minimal leaf breakage. Care must be taken during this wilting period to avoid sunburn, which results in a crude green color being set in the cured leaf. Under clear, hot conditions, tobacco will wilt quickly and may need to be spiked within 30 minutes to an hour of cutting to prevent sunburn (Figures 1 and 2). Under cool, overcast conditions, tobacco may require three to four hours or more to wilt with little risk of sunburn. Cutting the tobacco

late in the afternoon and allowing it to lie overnight before spiking can also work well, provided rain does not occur during the night to splash mud onto the leaves.

Placing cut tobacco in piles of five to six plants makes spiking easier, but these piles can accumulate more heat and increase the chances of scalding if not watched closely. Unless tobacco is unusually small, do not place more than five to six plants on each stick to allow easier loading and housing and promote airflow through the tobacco following housing.

After spiking, tobacco can be allowed to field wilt further on the stick either in the field for a short time period or on a scaffold wagon for as much as 48 hours before housing. Tobacco placed on flatbed wagons should be housed as soon as possible to prevent heat accumulation in the tobacco. Scaffold wagons should be placed in the shade or protected from sunlight with shade cloth or a loose fabric material to prevent sunburn prior to housing.

Tobacco that is fully wilted will be easier to handle when housing, will be less likely to sweat and house burn, and will yellow and cure better.

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Figure 1. Sunburn in the field.



Figure 2. Sunburn effect on cured leaf.

Housing

Tobacco should be housed when maximum wilting is achieved to allow leaves to hang straight down the stalk. Proper housing practices will facilitate good coloring and finishing, minimize the risk of house burn and sweating, and improve cured leaf chemistry. Plants should be spread apart equally on sticks while housing to promote air movement around plants.

Stick Placement

Depending on the degree of wilt, sticks should be placed 8 inches apart in newer barns with wider tier spacing where average-sized tobacco does not overlap between tiers. In older barns with narrower tier spacing, sticks should be placed 12 inches apart also not to overlap between tiers.

Tier spacing in older barns may only accommodate tobacco topped to 11 or 12 leaves, whereas tier spacing in newer barns will accommodate tobacco topped to the current market standard of 16 to 17 leaves. To avoid curing problems with larger tobacco, sticks may be hung on every other tier. If you are hanging tobacco on every tier, be sure to regulate the vertical placement of sticks when housing so that the tobacco from an upper tier does not lie directly on tobacco from a lower tier.

For best results, fire-curing barns should be completely filled in as short a time frame as possible. Trying to cure tobacco at different stages of yellowing in the same barn can be extremely difficult and is not recommended. If a barn does have to be filled over a period of several days, fill the barn by sections beginning at one end rather than by tiers across the entire barn beginning at the top. This method will allow sections of the barn to be fired differently to accommodate the condition of the tobacco.

Curing

Although some aspects of curing dark-fired tobacco are well understood, it still remains more of an art than a science. Weather conditions, barn type and location, and the condition of the tobacco coming out of the field can all affect how the crop will cure. An average crop in the field can be improved dramatically with good curing practices in the barn. Alternatively, an outstanding crop in the field can be ruined with poor curing practices in the barn.

The fire-curing process can be broken down into four phases:

- yellowing
- setting color
- drying
- finishing.

Yellowing

The degree of yellowing that occurs before fires are started will affect the color of the cured leaf. Tobacco should be allowed to yellow as much as possible without heat, managing ventilators carefully to prevent house burn and sweating.

Firing should begin when yellowing is nearly complete (yellow spots appear or the majority of the leaf lamina has reached a solid yellow color) (Figure 3). This usually occurs between five and eight days after housing.

Initial fires should not exceed 100°F. Fires that are too hot too soon will cause “bluing” of the tobacco, which results in a crude, green color that will remain after curing is completed (Figure 4). Top ventilators are usually left open during this phase of curing, and fires are mostly smoke with low heat.



Figure 3. Yellowing phase reached prior to first firing.



Figure 4. “Blued” leaf from hot fire too early.

Setting Color

When yellowing is completed, temperatures are increased with additional fires to set leaf color. Ventilators are usually closed, and temperatures should be kept between 100°F and 115°F. These conditions should be maintained until the leaf shows a solid brown color. Depending on tightness of the barn and weather conditions, this may be done with one firing or may take several firings over a 7- to 14-day period.

Ventilators should be opened completely between firings to allow the tobacco to obtain some order (i.e., having just enough moisture to be somewhat pliable) before re-firing. When the tobacco has a clear, solid brown face and the stems are dried and browned from one-half to two-thirds of the way up the leaf, it is time to complete drying.

Drying

Tobacco is brought in order, ventilators opened, and heat increased until the midribs are completely drawn down and darkened. Heat during the drying phase should not exceed 130°F. Look for these signs to determine when drying is complete:

- there should be very little or no green pigment left in the stalks,
- the tobacco should crumble to the touch, and
- there should be no sign of puffiness of the leaf midrib near the stalk. Puffy stems that remain after the drying phase will not normally be drawn down during the final finishing phase.

Finishing

After the stems and stalks are dried and darkened, temperatures are reduced to no more than 120°F, and smoke volume is maximized to add “finish” to the leaf surface (Figure 5). The finishing phase usually requires one to two slow firings over a 10- to 14-day period but may vary depending on the amount of finish desired by the buyer.

Tobacco takes finish much better when in order, so ventilators should be opened for several nights prior to finishing to allow moisture to enter the barn. Finishing fires should contain minimal slabs and heavy sawdust to maximize smoke with little or no ventilation. The sawdust, barn floor, and walls may be dampened to produce a moist smoke that will help keep the tobacco in order longer to increase finish.

Firing Materials and Methods

Hardwood slabs and sawdust are the traditional firing materials used for dark fire-cured tobacco. Seasoned hardwood materials are preferable since they tend to burn more slowly and evenly than softer types of wood. Materials such as sulfur or salt should not be used in the yellowing and drying phases, and other materials such as molasses or brown sugar should not be used during the finishing phase in an attempt to increase finish of the cured leaf. Where these materials are used, the result may be tobacco that is excessively sticky and difficult to handle or not usable by the industry because of off-flavor.



Figure 5. Dark fire-cured tobacco with normal finish.

Initial fires during the yellowing and color-setting phases usually consist of slabs being placed in narrow rows on the floor of the barn and covered completely with sawdust, except for a small opening exposing slabs on alternating ends of each row where fires are started. Slabs should be overlapped so that fires will burn continuously to the end of each row. Later firings during the drying phase require increased heat, and slabs may be stacked higher and in wider rows or placed solid throughout the floor of the barn with sawdust covering the slabs.

Fires may be started on both ends of each row or at several locations. Finishing fires usually have minimal slabs placed either in rows or solid with increased amounts of sawdust to produce maximum smoke volume. Hardwood chips may also be used in combination with sawdust during later firings to help fires burn more slowly with increased smoke volume.

Unfavorable Curing Conditions

“Ideal” curing conditions for tobacco include warm days early, regular fogs later to frequently give the tobacco some order, and no extremely hot or freezing temperatures. These ideal conditions rarely occur, so close attention should be given to the changing condition of the tobacco and the outside environment, and curing management should be adjusted to ensure a good cure and finish.

Warm-Weather Curing

During warm-weather curing (mean daytime temperatures >80°F), the yellowing phase will be more rapid, and fires should usually be started by the fifth day after housing. Smaller fires should be used during coloring, and damp sawdust should not be used unless the tobacco begins to dry too fast.

High humidity in the barn can be a serious problem in warm-weather curing. Humid air can promote house burn and sweat early in the cure. Top and bottom ventilators may need to be open during initial low fires to help drive off excess moisture, maintain the correct temperature, and lower the humidity.

Cold-Weather Curing

In cold-weather curing (mean daytime temperatures 50° to 60°F, night temperatures below 45°F), tobacco may dry out too quickly or not stay in order long enough to reach the desired color, resulting in green, yellowish, or mottled colors. Under these conditions, the tobacco should be yellowed using low heat, and temperature should be gradually raised to induce coloring. If tobacco begins to dry out before a solid color is reached, all ventilators should be closed and wet sawdust used on fires to produce a moist smoke.

Preparation for Delivery

Following the last firing, bottom vents and doors should be opened for several nights to allow the tobacco to come in order. The floor and the walls of the curing barn should be lightly sprayed down with water, and fresh wood chips or sawdust should be spread over the entire floor. This will help bring the tobacco in order for takedown and will also help keep the tobacco clean and free of ashes before and during takedown.

Although a natural season is the most desirable means of bringing tobacco in order, the use of overhead misting systems or steamers is often needed to facilitate taking down dark fire-cured tobacco in a timely fashion. Care should be taken to avoid excessive moisture from misting or steaming, which can wash off finish and lead to staining or spoilage.

Tobacco should be taken down and stripped as soon as possible after curing. However, tobacco that is in too high order should remain hanging in the barn until moisture levels are

reduced. When proper order is reached, tobacco can be taken down onto a scaffold wagon or bulked onto a flatbed wagon. Bulked tobacco should remain off the floor with tips slightly lapping in the middle of the bulk.

If the tobacco is covered before stripping, be sure to use a breathable fabric cover rather than plastic, which may cause condensation and staining of the tobacco.

Care should be taken in stripping and handling the crop following takedown. Tobacco should be stripped into three distinct stalk positions (lug, second, and leaf), and any green tobacco should be separated from the rest of the tobacco. Lugs can be further classed into good lugs and trash lugs based on dirt and ground injury. If there is excessive dirt or mud on the leaf or seconds, a separate grade for dirty tobacco should be made. Any mud caked on the tails of leaves should be removed during stripping. Each stalk position and grade should remain segregated through delivery.

Care should also be taken to ensure that tobacco, either before or after stripping, is not placed near contaminants such as pesticides or other chemicals. Tobacco should remain clean and free of trash or other non-tobacco-related material during market preparation.

Between stripping and delivery, tobacco should be stored in a clean, dry, and well-ventilated location that will protect the tobacco from contamination or other damage. Only tobacco from the current crop year should be delivered, and tobacco should be protected from weather damage during hauling and delivery.