

V. OPERATING INSTRUCTIONS

A. Operation of Adjustable Air Flow System

The Adjustable Air Flow System controls the amount of air supplied by the Powell Bulk Curing/Drying furnace. Position 1 supplies the least amount and position 7 supplies the largest amount of air. Positions 2 through 6 vary from smaller amount of air to larger amount of air.

The amount of electricity used by a Powell furnace is directly related to the amount of air supplied. Position 1 uses the least electricity and position 7 uses the most electricity. Good efficient management of the Adjustable Air Flow System will result in substantial energy savings.

The Adjustable Air Flow System, now standard with all Powell furnaces, is a real breakthrough as an aid in curing tobacco. The proper amount of air can be used throughout the cure. A small amount of air is needed initially to remove surface moisture slowly so that the tobacco in the top will not tighten up due to evaporative cooling. However, too much air can cause improper wilting and is not as efficient. After wilting takes place, a large amount of air is needed to remove moisture from the tobacco and speed up the drying process.

The following is a suggested schedule for the Adjustable Air Flow System:

LOADING THE SYSTEMPOSITION 4
REMOVAL OF
SURFACE MOISTUREPOSITION 7
COLORINGPOSITION 1 OR 2
WILTINGPOSITION 3 TO 7
DRYING LEAFPOSITION 3 TO 7
DRYING STEMPOSITION 3 TO 7
ORDERINGPOSITION 3 TO 7

B. Bright Leaf Curing In Powell Bulk Curing/Drying System

1. Coloring

Highly important chemical transformations and physical changes which are necessary for obtaining quality tobacco occur during coloring. An understanding of these changes as influenced by curing environment is extremely helpful to anyone who cures tobacco. It enables the operator to visualize what is happening inside the leaf and gives him confidence in managing the cure.

A ripe leaf taken directly from the stalk is a living biological system which is complex in nature. It normally contains from eighty (80) to ninety (90) percent water along with numerous biochemical compounds, pigments, minerals, cell tissue, etc.

Important changes occur during the coloring period. First, through a small opening in the leaf called stomata, a continuous exchange of gases occurs such as oxygen entering the leaf from the curing

environment to combine with green pigment which is called chlorophyll. Chlorophyll disappears and the yellow pigment in the leaf becomes visible. Carbon dioxide and water are the major gases given off by the leaf during curing.

A second important change is the breakdown of starch into simple sugars. The leaf at the beginning of the cure is rich in starch and during coloring the starch combines with water and forms three simple sugars known as glucose, fructose, and sucrose, thus decreasing the starch and increasing the sugar in the leaf. A small portion of these sugars is oxidized during this phase and given off as carbon dioxide, water, and heat energy. Part of this energy is used to further reactions in the leaf and the remainder is lost to the environment.

The third important change that occurs during coloring is the breakdown of long-chain protein molecules. Water combines with protein to form simple acids. These and other chemical transformations are necessary for the development of a high quality cure.

In order for these changes to occur satisfactorily, the leaf must retain a high percentage of its initial moisture during the entire coloring phase. If a leaf is allowed to remain alive long enough, it will take on a yellow-orange color which is very desirable and indicates quality flue cured tobacco. When a tobacco leaf is dried green, it is harsh, bitter, and totally undesirable for smoking. Chemical changes that take place during coloring constitute a mellowing process which makes the smoke milder, sweeter, and less irritating when smoked.

Since the coloring phase is so important in producing quality tobacco, we must not be anxious to shorten it. Sufficient time should be allowed for the chemical changes to progress far enough in the leaf to give maximum quality. Some varieties color very slowly and actually need additional time in coloring for achieving this maximum quality. Tobacco that has been colored for an insufficient period of time or has not been exposed to proper temperature and humidity during the coloring phase may appear slick, starchy, and immature when cured.

2. Color Setting Phase

Biochemical changes continue to occur until arrested by leaf drying on high temperatures. Once the leaf has been colored sufficiently, the main objective is moisture removal at a speed that is not injurious to the leaf quality established during the coloring period. The amount of moisture to be removed from each unit load of tobacco is approximately 85% of the green weight of the tobacco (20,000 lbs. (9072 kg) of green tobacco, 17,000 lbs. (7711 kg) of water).

3. Leaf Drying

The early stage of leaf drying is a great concern due to the fact that undesirable changes may still take place in the leaf. Leaf browning, scalding, sponging, slickness and/or pressed out appearance are generally the undesirable changes that may occur during the early part of the leaf drying. The above mentioned conditions are due to the leaf temperature being advanced too rapidly and the moisture content of the leaf being too high. Complete browning can occur within five minutes at a temperature of between 100° F (43.3° C) dry-bulb and 124° F (51.1° C) dry-bulb; however, it is generally insignificant at or below 110° F (43.3° C) dry-bulb. In order to prevent undesirable discoloration, slickness and/or pressed out appearance, it is necessary to dry the leaf tissue to a safe level before raising the dry-bulb temperature above 124° F (51.1° C). A higher air velocity during leaf drying will speed the process. When the leaf becomes dry, all major biochemical changes cease.

4. Stem Drying (Killing Out)

The only function of the stem drying phase is to remove all moisture from the midribs or stems to assure safe storage. The high heat that is required in the killing out state does cause the loss of some leaf oils; however, the weight losses may be considered negligible. Temperature should not be raised above 170° F (76.7° C) dry-bulb because sugar caramelization or reddening starts at about 170° F (76.7° C) dry-bulb. A lower air velocity during stem drying will save energy in a Powell furnace.

5. Ordering/Casing Tobacco

As soon as the stems are dry, the heat should be shut off and the unit allowed to cool. To order the cured tobacco, the dampers are opened to bring in outside air. The air is circulated through the tobacco, and the dry tobacco leaf absorbs moisture and becomes pliable. Ordering may be done on warm humid nights, and takes approximately 8 to 10 hours.

If the air is very dry and/or cold, moisture may be added to the air with the special Powell Fogging Device (optional) or the Powell High Pressure Ordering Device (optional). The Powell Fogger or the High Pressure Ordering Device can be put into operations as soon as the temperature drops to 110° F (43.3° C). This will drop the temperature in the structure faster, speeding up ordering. The dry-bulb temperature in the structure may be set at 100° F (37.8° C) and held at this temperature. The special Powell Fogging Device can be attached to a standard garden hose and water supply with approximately 40 PSI (276 KPA) and turned on. The High Pressure Ordering Device can be attached to a standard garden hose and water supply with 20 to 60 PSI (276 KPA) clean water supply. The Humidity Controller or the Modulating Humidity Controller should be set so that the furnace dampers remain closed throughout the ordering (casing) operation.

With the Powell Special Fogging Device ordering of the tobacco should take from 6 to 10 hours. With the High Pressure Ordering Device, ordering of the tobacco should take between 2 ½ to 4 hours. When the proper order is secured, the water and burner should be shut off and air continued to circulate for another 30 to 60 minutes to aid in uniform balancing of moisture in the leaf and to aid in cooling the tobacco. Tobacco removed from the bulk curing/drying system when the temperature is 90° F (32.2° C) - 100° F (37.8° C) will dry out on contact with cooler dry outside air. Therefore, the temperature should be lowered to outside temperature before removing ordered tobacco from the structure.

C. Kinds of Tobacco

1. Low Stalk Tobacco
2. Normal Tobacco
3. Rank and/or Heavily Fertilized Tobacco
4. Over-ripe Tobacco

NOTE: POWELL OFFERS A SUGGESTED BULK CURING/DRYING SCHEDULE ON PAGE 41 TO SERVE AS A GUIDE IN CURING YOUR CROP. THIS CURING GUIDE IS ONLY A SUGGESTION.

1. **LOW STALK TOBACCO** is usually primed before it is mature. Drowned tobacco may be yellow in the field due to excess water stunting the plant. Burned tobacco may be yellowed in the field due to the tobacco receiving no water and the tips of the leaves burning up. Low stalk tobacco usually has very little weight and is not ripe. Curing this tobacco is difficult because it tends to brown easily at low temperatures. A lower temperature is suggested during coloring to remove as much moisture from tobacco as possible so that it will take higher heat with less browning. The Low Stalk Tobacco Curing Schedule on page 41, column 1, is suggested for this tobacco.
2. **NORMAL TOBACCO** is easily cured in Powell Bulk Curing/Drying Systems. This dependable system gives control of cure from start to finish. The Normal Tobacco Curing Schedule on page 41, column 2, is suggested for this tobacco.
3. **RANK AND/OR HEAVILY FERTILIZED TOBACCO** is usually heavily fertilized and may have had little water early in the growing season. When the tobacco does receive water late in the season, it turns green, grows rank, and will not ripen properly. Curing is difficult since there is a tendency to brown easily at low temperatures. The Rank Tobacco Curing Schedule on page 41, is suggested for this tobacco.
4. **OVER-RIPE TOBACCO** is tobacco that has colored in the field. This tobacco may require a shorter period of time in the coloring stage and may result in a reduced curing cycle. The Over-Ripe Tobacco Curing Schedule shown on page 41, is suggested for this tobacco.

D. Conditions During Cure

1. Brown Spot
2. Browning
3. Surface Moisture on Stems and/or Leaves
4. Lack of Wilting or Flopping
5. Soft Rot
6. Premature Drying
7. Delayed Stem Drying
8. Weather
9. Power Failure

1. **BROWN SPOT** — The higher coloring temperatures allowed in bulk curing tends to retard or kill fungus. If the spreading of this fungus can be prevented during curing, you will get more weight and better quality. It is suggested that the Rank Tobacco Curing Schedule on page 41, column 3 be followed.
2. **BROWNING** — Of tobacco during the coloring phase of the cure usually means that the temperature is being advanced too fast for the amount of moisture in the leaf. The rate that the temperature can be advanced during the coloring and leaf drying phase will depend on the condition of the tobacco being cured. Normally, tobacco will not brown if the tips of the lower leaves are curling up when leaving 105° F (40.6° C). It is suggested the curing schedule that matches your type of tobacco be selected.



CAUTION: IF TOBACCO STARTS TURNING BROWN WHEN LEAVING 105° F (40.6° C) TURN BACK TO 105° F (40.6° C) AND HOLD TWO HOURS THEN START UP AGAIN.

- (A) **Rank or Over-Fertilized Tobacco** is very hard to handle and often has a tendency to brown even at low temperatures. **Rank tobacco that has been in the field for a long period of time** will usually color at temperatures of 105° F (40.6° C) but may require a longer coloring period. The tops of the lower tobacco should be curled by the time 110° F (43.3° C) is reached. It is suggested the Rank or Over-Fertilizer Curing Schedule on page 41, column 3 be followed.
 - (B) **Lugs, Low Stalk and Immature Tobacco** may require 90° F (32.2° C) to 95° F (35° C) temperature during most of the coloring phase. Slower temperature advance is required to prevent browning. It is suggested Low Stalk Curing Schedule, page 41, column 1 be followed.
 - (C) **Drowned or Flopped Tobacco** also has a tendency to brown during the coloring phase. The dry bulb temperature should be kept low [90° F (32.2° C) to 95° F (35° C)], and the coloring phase should be extended. It is suggested that the Low Stalk Curing Schedule, page 41, column 1 be followed.
3. **SURFACE MOISTURE ON STEMS AND/OR LEAVES** at start of cure should be removed by running blower with damper open all the way. If weather conditions are cloudy and rainy, burner should be set 5° F (3° C) above temperature at which burner starts. Set temperature to advance 1°

F (¼° C) per hour until 95° F (35° C) temperature is reached. Hold until surface moisture is removed.

Excessive moisture on leaves after start of curing can be caused by the wet bulb temperature being too high or too low. If the wet bulb is too low in relation to dry bulb (below tobacco) it will cause evaporative cooling on top. To overcome this, the wet bulb temperature should be raised per chart under soft rot.

High wet bulb temperature will cause build up of moisture on leaves. This is caused by wet bulb temperature being too high in relation to dry bulb temperature (below tobacco). This can be corrected by lowering the wet bulb temperature slightly.

4. **LACK OF WILTING OR FLOPPING** is a sign of too much moisture left in leaves. This is caused by non-uniform loading of containers, too great a difference between wet bulb and dry bulb temperature and advancing dry bulb temperature too rapidly. Too much moisture can be corrected by holding 105° F (40.6° C) dry bulb/99° F (37.2° C) to 102° F (38.9° C) wet bulb until bottom tobacco has obtained desired color and wilt. Hold 112° F (44.4° C) dry bulb/102° F (38.9° C) to 104° F (40° C) wet

bulb until middle tobacco has reached desired color and bottom tobacco begins to dry on tips of leaves. Hold 118° F (47.8° C) dry bulb/102° F (38.9° C) to 106° F (41.1° C) wet bulb for approximately 12 hours and top leaves have not properly wilted, raise dry bulb temperature approximately 5° F (3° C) and hold from 4 to 6 hours.

5. **SOFT ROT** — (Stem-rot, barn-rot) is recognized as a water soaked, brownish discoloration at the butt end of leaves. As decay progresses, a strong odor of decaying vegetable matter is noted. It starts with high moisture conditions in the upper portion of curing unit on stems. The soil borne bacteria causing soft-rot enters the leaves and stems through broken places and thrives in warm, humid temperatures.

(MORE MOISTURE MUST BE REMOVED ON THESE UPPER LEAVES). To aid in controlling this condition, the operator must raise the wet bulb temperature 2° F (1° C) to 4° F (2° C) by closing furnace dampers. This increases the wet bulb temperature of tobacco.

If the spread of stem rot has not stopped in three to four hours, the barn should be flushed out. To do this, manually operate furnace dampers. Open the dampers wide for three to five minutes and then close dampers long enough for the temperatures to even out. If the dampers are kept open too long, the top tobacco will be cooled by evaporative cooling. When this happens, tobacco "tightens up" in the

containers and circulation through the tobacco is restricted. "Flushing" by opening and closing the dampers should be repeated about every half-hour until a normal cure is again achieved.

IF THE MOISTURE IS PRESENT ON TOP

LEAVES OR STEM ROT OCCURS BETWEEN 100° F (37.8° C) AND 105° F (40.6° C), THIS MAY BE CORRECTED BY WARMING THE TOP LEAVES. A SUGGESTED GUIDE IS AS FOLLOWS:

DRY BULB TEMPERATURE	WET BULB TEMPERATURE	
105° F (40.6° C)	96° F (35.5° C)	Stem rot present on top leaves
CORRECT BY RAISING WET BULB ONLY		
105° F (40.6° C)	99° F - 102° F (37.2° C - 38.9° C)	Raise wet bulb to warm top leaves and remove moisture. Takes longer to get rid of moisture.
OR-IF COLOR IS GOOD — CORRECT BY RAISING BOTH THE WET BULB AND DRY BULB		
108° F (42.2° C)	102° F - 104° F (38.9° C - 40° C)	Raise both to warm leaves and remove more moisture. BEST PROCEDURE.

6. **PREMATURE DRYING** is caused by running wet bulb temperature too low before color is reached and tobacco is not properly wilted. This can be corrected by raising wet bulb temperature. See curing schedule page 41.

7. **DELAYED STEM DRYING** — When the Powell Bulk Curing/Drying System is properly filled and operated, a cure should be "killed out" is about 5½ to 6 days depending upon the condition of tobacco in the system.

(A) **Non-Uniform Loading** — will cause the cure to "kill out" unevenly. Air will pass through the non-uniform loaded containers or loose areas and cause the tight ones to be very hard to "kill out", causing rotten spots in extreme cases.

(B) **Cures that have not been properly wilted** — may also be hard to "kill out" even at high temperatures. All tobacco should be wilted before leaving 118° F (47.8° C) to 124° F (51.1° C).

8. **WEATHER** — The Powell Bulk Curing/Drying System operates almost completely independent of the outside atmosphere; therefore, weather conditions have very little influence on the curing schedule. This type operation allows the farmer to better plan his work. It reduces the risk of shutting down the cure when adverse weather conditions exist.

9. **POWER FAILURE** — The blower should run continuously throughout the cure. When electrical power failures occur, the failure should be corrected as rapidly as possible. Tobacco is usually not damaged if the power is not off for an extended period of time. However, the blower should not be off longer than absolutely necessary. When the cure is shut down long enough for the dry bulb temperatures to drop more than 5° F (3° C) the temperature controller should be set 5° F (3° C) per ½ hour until the

desired temperature is reached. **EXAMPLE:** If the electricity goes off when the dry bulb temperature is 120° F (48.9° C) and falls to 100° F (48.9° C) advance 5° F (3° C) every ½ hour until 120° F (48.9° C) is reached again.

E. Operation And Setting Up Of The Powell Automatic Curing Programmer

The Powell Automatic Curing Programmer controls the power to the Automatic Advance Temperature and Humidity Controllers. As an "On Tripper" (Silver) rotates by the Pointer, the switch is tripped "on" sending power to the automatic advance mechanism of the Temperature and Humidity Controllers. To control a cure with the Programmer, an "On Tripper" is set at the beginning of each "advance period".

The Automatic Curing Programmer, when properly set, requires very little attention during the cure. When first started, the unit should be watched closely to be sure that it is operating properly and that the cure is progressing to the operator's satisfaction. It is advisable to make periodic checks. The proper coloring of any given tobacco will require attention by the operator. **EXAMPLE:** At the start of each cure, the programmer dial should be set on zero hours. Schedule No. 2 (Normal Tobacco), page 41, of Powell Suggested Bulk Curing/Drying System shows the first advance period to begin at zero hours. Trip the hand trip "ON". This will allow Automatic Controllers to begin advancing. The end of the first advance period comes at 30 hours when the dry bulb temperature has reached 105° F (40.6° C). Set an "Off Tripper" at 30 hours on the programmer dial. (See Figure 26).

The second advance period begins at 34 hours and ends at 60 hours. Set an "On Tripper" at 34 hours and an "Off Tripper" at 60 hours. The third advance period begins at 69 hours and ends at 81 hours. Set an "On

Tripper" at 69 hours on the programmer dial and an "Off Tripper" at 81 hours. The final advance period begins at 87 hours and ends at 99 hours. Set an "On Tripper" at 87 hours and an "Off Tripper" at 99 hours.

If at any time during the cure, the schedule "hold periods" need to be increased, the dial can be turned to the beginning of the "Hold period" that needs to be lengthened. FOR EXAMPLE: If the bottom tobacco needs to color for 4 hours longer after 34 hours of time has expired on the programmer, rotate the dial of Programmer clockwise to 30 hours (almost 1 revolution). IMPORTANT: DO NOT TURN PROGRAMMER DIAL COUNTERCLOCKWISE. If in turning the dial, you rotate past the point desired, turn the dial one (1) revolution until the desired point is reached.

F. Operating And Setting Up Of Powell Automatic Advance Temperature

In the previous section on the Automatic Curing Programmer, we discussed setting up the programmer according to Schedule No. 2 of the SUGGESTED POWELL TOBACCO BULK CURING/DRYING SCHEDULES. The Powell Automatic Advance Temperature and Humidity Controllers must be set in order for the programmer to operate correctly. (See Suggested Powell Tobacco Bulk Curing/Drying Schedule page 41 for your type of tobacco.)

According to Schedule No. 2 the initial dry-bulb temperature setting should be 90° F (32.2° C). Set Tem-

STARTING CURE:

Initial Setting of Temperature Controller

**INSIDE
TEMPERATURE
ABOVE 90° F (32.2° C)**

When dry-bulb is above 90° F (32.2° C) inside the Bulk Curing/Drying System, the calibrated dial may be set at that temperature and the Programmer positioned at number of hours indicated on curing schedule in relation to dry-bulb temperature.

**INSIDE
TEMPERATURE
BELOW 90° F (32.2° C)**

Initial dry-bulb setting should be 5° F (3° C) above inside temperature and should be raised manually 5° F (3° C) per hour to 90° F (32.2° C). At this point, programmer should be set on zero hours.

Initial Setting of Humidity Controller

Set Humidity Controller as per wet bulb temperature as suggested in the suggested Bulk Curing/Drying Schedule in relation to dry bulb temperature.



CAUTION: THE PRECEDING SCHEDULE IS ONLY AN EXAMPLE, TOBACCO CURING SCHEDULES VARY ACCORDING TO CLIMATE, LOCATION, TYPE OF TOBACCO, CULTURAL PRACTICES, DESIRED RESULTS AND OTHER VARIABLES. THE AUTOMATIC PROGRAMMER AND AUTOMATIC ADVANCE CONTROLLERS MAY BE SET TO MEET THE NEEDS OF THE INDIVIDUAL CURING SITUATIONS.

perature Controller manually on 90° F (32.2° C). (See Figure 25). Set Humidity Controller on 88° F (31.1° C). (See Figure 25). Set advance rate on both Temperature and Humidity Controllers to ½° F (½° C) per hour. The wet-bulb temperature is to advance 99° F (37.2° C) to 102° F (38.9° C) in 23 hours; the dry-bulb to 105° F (40.6° C) in 30 hours. The programmer clock is set to allow advance for 30 hours. Therefore, the advance on the Humidity Controller must be stopped before the advance on the Temperature Controller. This is accomplished by setting the advance limit knob (black knob) to 99° F (37.2° C) to 102° F (38.9° C) on the Humidity Controller. Since the programmer will limit the advance of the Automatic Advance Temperature Controller, the advance limit knob on the Temperature Controller must be set on 105° F (40.6° C) or above. IF 105° F (40.6° C) IS SELECTED, THE ADVANCE LIMIT KNOB MUST BE MOVED "UP" BEFORE NEXT ADVANCE PERIOD.

There are two more periods during the cure when the Automatic Advance Controllers need adjusting. The first adjustment comes at 69 hours. The advance rate of the Automatic Advance Temperature Controller should be changed from ½° F (½° C) per hour to 1 ½° F (¾° C) per hour. The second adjustment comes at 87 hours when the advance rate for the Temperature Controller should be changed to 2 ½° F (1 ¼° C) per hour and the advance limit knob (black knob) on the Humidity Controller should be set on 105° F (40.6° C) to 108° F (42.2° C).

G. Operation Of The Automatic Advance Temperature Controller Without Programmer

When using the Automatic Advance Temperature Controller without the programmer, it is important that the advance limit knob (black knob) be set at the temperature desired at the end of each "advance" period. For example, in following Schedule No. 2 for normal tobacco, the black knob would first be set on 105° F (44.4° C) and the advance rate on ½° F (½° C) per hour. When the cure is ready to advance, set the black knob on 112° F (44.4° C), move the black knob to 118° F (47.8° C) dry bulb temperature. When the tobacco is ready advance to 135° F (57.2° C), make sure that the advance rate is following your desired schedule. When the tobacco is ready to advance to 165° F (73.9° C), the black knob should be moved to 165° F (73.9° C) dry bulb temperature.



NOTE: SUGGESTED TOBACCO BULK CURING/DRYING SCHEDULES

HOURS INTO CURE	(1) LOW STALK TOBACCO		(2) NORMAL TOBACCO		(3) RANK TOBACCO		(4) OVER-RIPE TOBACCO	
	DRY BULB (°F)	WET BULB (°F)	DRY BULB (°F)	WET BULB (°F)	DRY BULB (°F)	WET BULB (°F)	DRY BULB (°F)	WET BULB (°F)
0	90 (32.2)	88 (31.1)	90 (32.2)	88 (31.1)	90 (32.2)	88 (31.1)	95 (35)	93 (33.8)
3								
6								
9	1/4 (1/4)	1/4 (1/4)		1/4 (1/4)		1/4 (1/4)		1/4 (1/4)
12								
15								
18	95 (35)	93 (33.8)						
21								
24								
27	1/4 (1/4)	1/4 (1/4)						
30								
33								
36								
39								
42								
45	105 (40.5)	102 (38.8)						
48								
51								
54								
57								
60								
63								
66								
69								
72								
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114								
117								
120								

- * NOTES:
1. DRY BULB TEMPERATURE MUST BE TAKEN BELOW TOBACCO IN CURING SYSTEM.
 2. TWO COLUMNS ARE SHOWN UNDER WET BULB. THE HIGHER WET BULB TEMPERATURES MAY GIVE BETTER, MORE UNIFORM WILTING UNDER SOME CONDITIONS.
- AT START OF CURE, WITH DAMPERS IN CLOSED POSITION, SET A 1/2" (12.5mm) CRACK IN FRESH AIR DAMPERS BY ADJUSTING SET SCREW ON SHORT CONNECTING LINK.
 - AT THE END OF 12 HOURS, IF WET BULB TEMPERATURE IN BARN IS NOT WITHIN 2°F (1.1°C) OF DRY BULB TEMPERATURE, CLOSE DAMPERS BY REVERSING PROCEDURE FOLLOWED IN (A) ABOVE. IN THE EARLY STAGES OF CURE, IT MAY BE NECESSARY, UNDER DRY CONDITIONS, TO RUN THE FOGGING DEVICE TO RAISE THE WET BULB TEMPERATURE.
 - HOLD 105°F (40.5°C) DRY BULB UNTIL BOTTOM 1/3 OF TOBACCO IN BARN HAS OBTAINED DESIRED COLOR. BOTTOM TOBACCO WILL COLOR VERY LITTLE AFTER LEAVING 105°F (40.5°C). WET BULB TEMPERATURE SHOULD BE 99°F-102°F (37.2°C-38.8°C).
 - HOLD 112°F (44.4°C) DRY BULB, 102°F - 106°F (38.8°C - 41.1°C) WET BULB, UNTIL MIDDLE TOBACCO HAS REACHED DESIRED COLOR AND BOTTOM TOBACCO BEGINS TO DRY ON TIPS OF LEAVES.
 - HOLD 118°F (47.7°C) DRY BULB, 102°F - 106°F (38.8°C - 41.1°C) WET BULB, UNTIL TOP TOBACCO OBTAINS DESIRED COLOR AND HAS LOOSENED IN THE CURING CONTAINER. AFTER APPROXIMATELY 12 HOURS, SOME TOBACCO MAY REQUIRE 124°F (51.1°C) DRY BULB TO PROPERLY WILT. IMPORTANT: TOBACCO SHOULD BE WILTED SO THAT IT IS LIMP AND LOOSE IN TOP BEFORE LEAVING 124°F (51.1°C) DRY BULB AND 102°F - 106°F (38.8°C - 41.1°C) WET BULB.
 - IF WET BULB TEMPERATURE CANNOT BE CONTROLLED AS SHOWN ABOVE OR AUTOMATIC DAMPERS TEND TO STAY OPEN LONGER THAN 15 MINUTES, ADVANCE RATE SHOULD BE SLOWED DOWN AND MOISTURE MUST BE REMOVED AT A SLOWER RATE.
 - HOLD 135°F (57.2°C) DRY BULB, 102°F - 106°F (38.8°C - 41.1°C) WET BULB, UNTIL 90-95% OF LEAF IS DRY.
 - WET BULB TEMPERATURE IS A MOST IMPORTANT FACTOR IN CURING QUALITY LEAF AND OPERATING EFFICIENTLY.
 - WHEN LEAF IS DRY, DAMPERS SHOULD BE CLOSED TO SPEED STEM DRYING AND DECREASE FUEL CONSUMPTION.
 - HOLD 165°F (73.8°C) DRY BULB UNTIL STEMS IN TOP ARE DRY.

ADVANCING TEMPERATURE PERIOD
(RATE INDICATED IN DEGREES PER HOUR)

CONSTANT TEMPERATURE PERIOD

REFER TO NOTES ON OPPOSITE PAGE