

# **AGR-75 SUCKER CONTROL IN BURLEY AND DARK TOBACCOS**

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Removing the tops of tobacco plants removes the dominant influence of the terminal shoot over lateral shoots or "suckers." If left unchecked, suckers can severely reduce yield and quality of tobacco. Manual control of suckers has almost totally given way to less expensive and more efficient chemical control.

Three types of chemical sprays for controlling sucker growth on tobacco plants are:

- Systemic--These chemicals are absorbed by plants and move inside the plant to active growth sites,
- Contact--These chemicals are not absorbed by plants and must be used so as to contact the suckers directly.
- Local systemic--This chemical runs down the stalk and is absorbed by the suckers.

Topping times and application methods for the 3 types of chemicals differ and are discussed separately.

## **Chemical Sucker Control on Burley Tobacco**

### **Systemic Chemicals**

Suckers in burley tobacco can be chemically controlled with relative ease and certainty. Burley tobacco is harvested 3 to 4 weeks after topping and, therefore, requires a shorter control period than tobaccos that have a longer duration between topping and harvesting. However, individual burley varieties may respond differently to chemical sucker control and the degree of control may vary.

The systemic chemicals contain maleic hydrazide (MH) as the active ingredient. Maleic hydrazide used at the proper rate does not kill suckers but prevents additional growth. Normal growth of small upper leaves also may be retarded. Therefore, plants should be topped to a leaf that is no smaller than 6 inches long.

### **When to Use**

When a systemic sucker control chemical is to be used, plants should be topped when 50% or fewer plants in the field have at least one flower open (Fig. 1). Any suckers present should be removed when the plants are topped. Sucker control effectiveness is not reduced when untopped plants are sprayed with MH, then topped within two days.

### **How to Apply**

When applying MH, the required amount of chemical (1.5 to 2 pt per 1,000 plants or 1.5 to 2 gal per acre) should be added to water to achieve a total spray volume of 20 to 40 gal per acre. It is not necessary to spray the entire plant when using a systemic chemical. The solution should be sprayed as a fine mist onto the upper portion of the plant (Fig. 2).

### **Warnings**

- Growers should be careful not to exceed the label recommendation of maleic hydrazide. Excessive residues on the cured leaf have in the past discouraged foreign buyers of burley tobacco. Experiment station field tests have shown that higher-than-suggested rates of a systemic spray or spraying two or more times does not improve sucker control or increase tobacco yields. However, if rain occurs within 12 hours after spraying, sucker control may be reduced. Plants should be inspected daily to determine if sucker growth is beginning. If suckers are green and growing, re-spray using the same amount of chemical that was used the first time.

- Tobacco plants that have been growing under drought conditions absorb maleic hydrazide more slowly and, consequently, sucker control may be less effective than in a normal season.
- Poor sucker control may occur because of poor plant coverage if improper nozzles or less than 20 gal of solution per acre are used.
- Chance of chemical burn increases if plants are sprayed on bright sunny days when the temperature is above 90°F. This type of injury can be prevented by spraying on a cloudy or hazy day, or in morning if the weather is clear and hot.

### **Contact Chemicals**

The contact-type sucker control chemicals contain "fatty" alcohols (FA) as the active ingredient. The suggested topping time when a contact chemical is to be used is when plants are in the button to early flower stage.

### **When to Apply**

A contact-type chemical can be applied immediately before or after topping or within 2 days after topping. Suckers longer than one inch should be removed at topping. Contact chemicals work quickly to kill suckers and if no rain occurs within an hour after spraying sucker kill should be completed.

### **How to Apply**

This type of chemical must be applied as a coarse spray so that it runs down the stalk and contacts the young sucker buds. Two and one half gallons of chemical in 50 gal of total spray solution are sufficient for one acre of tobacco.

- When power equipment is used, a 3-nozzle arrangement with TG3 and TG5 full cone tips or equivalent should be used (Fig. 3); pressure should not exceed 20-25 psi. The center nozzle (TG5) should be directed straight down and the side nozzles (TG3) should be 8 to 10 inches to each side and directed in toward the upper part of the plant.
- If a backpack or knapsack type sprayer is used, direct a coarse spray toward the upper end of the stalk; it is not necessary to cut off the spray between plants.

To reduce leaf damage, keep the nozzles of either type of sprayer at least 12 inches above the upper leaves while spraying.

### **Warnings**

- Poor sucker control often occurs if plants are not in an upright position, because the chemical will not come in contact with all the sucker buds on a leaning or crooked plant. If possible, leaning plants should be straightened prior to spraying.
- During prolonged periods of high temperature and humidity, contact chemicals can cause some loss of lower leaves because of stem rot. This problem may be worse if higher-than-suggested rates or improper concentrations are used.
- Do not mix contact sprays with insecticides for application.
- Use nozzles that will deliver a coarse spray. If power equipment is used, a 3-nozzle arrangement over each row is necessary to get good coverage.

In special situations the use of both a contact and a systemic chemical may be justified. For example: Irregular Flowering-If flowering times of plants in a field seem likely to vary by a week or more, top the earliest maturing plants when about 50% of the plants are in the button to early flower stage and spray the entire field with FA. About 7 days later, top all plants not previously topped and spray the entire field with MH.

### **A Local Systemic**

The only local systemic sucker control chemical currently available is Prime+®. This material is applied to the top of the plant so that it runs down the stalk and into each leaf axil where it systemically controls the suckers. The method of application is similar to that used for contacts, and Prime+® has, therefore, been used more extensively in dark tobacco regions where contact use is common.

### **When to Apply**

Prime+® should be applied when most tobacco plants are in the elongated button to early flowering stage. That's important because the number and size of suckers should be small. Suckers more than one inch long must be removed at topping.

If flowering is uneven, early flowering plants should be topped and treated with Prime+®. If suckers are present, they should be removed before application.

### **How to Apply**

For best results, this chemical must be hand-applied to each individual plant. This can be accomplished by 3 different methods (dropline, backpack and jug). Prime+® can be applied with power equipment, using a coarse spray nozzle arrangement similar to that used for the contacts. However, sucker control maybe less than that achieved by the hand methods.

**Dropline-** This involves equipping the sprayer (trailer, tractor mounted, or hi-boy) with droplines for each row (Fig. 4). About 6 to 10 ft of pressure hose, equipped with a cutoff valve and a large volume nozzle, is attached to each sprayer outlet. One person operates each dropline, following the sprayer down the row, treating plants that have reached the elongation bud stage.

**Backpack-** This method is similar to the dropline with regards to application methods. The backpack consists of a spray tank and a wand attachment with a nozzle body that can be adjusted or fitted with a coarse spray nozzle (Fig. 5). The wand attachment allows the spray to be directed to the top of each plant. Small acreage growers prefer this or the jug method of application.

**Jug-** This method involves adding the chemical to a gallon jug and pouring on about 1/2 oz of the solution per plant (Fig. 6).

**Rate-** One gal of Prime+® should be mixed in 49 gal of water, regardless of the application method. An equivalent amount for the jug method is 2.5 oz of Prime+® in one gal of water. If a hand application method is used, no more than 30 gal of spray solution per acre should be used. With power equipment, a volume of 50 gal per acre is necessary.

### **Warnings**

- Sucker escapes may occur when using Prime+®. MH escapes tend to grow slowly from leaf axils low on the plant, and remain concealed. Prime+® escapes, however, grow only from axils that did not receive adequate treatment, and will grow unchecked until removed. Correct application of Prime+® will result in only scattered escapes that are highly visible. However, if the spray volume is inadequate for contact of all buds or if plants are not in an upright position, the number of escapes can be excessive.

Removing escapes two weeks after application is recommended.

- Exceeding spray volume recommendation may result in carryover injury to cover crops or other sensitive rotational crops. The spray volume should be enough to contact each leaf axil without the spray material reaching the ground in sufficient quantities to injure a subsequent crop.
- Prime+® should not be mixed with fungicides or insecticides.
- Failure to apply Prime+® at the recommended flower stage can result in upper leaf distortion if applications are made too early. Poor sucker control may result if applications are made at full flower or later when suckers have already begun to grow.

### **Chemical Sucker Control on Dark Tobacco**

The dark tobaccos produced in Western Kentucky are harvested 4 to 5 weeks after topping. Early topping, a long interval between topping and harvesting, and wider plant spacing in the field result in the growth of many large suckers that must be removed either manually or by chemical treatment.

Good sucker control can be achieved with MH in dark tobacco by using 3 pt per 1000 plants of the 1 1/2 lb/gal formulation. Apply the indicated amounts of MH, in 20 to 40 gal of water per acre, as a fine mist to cover the upper 1/3 to 1/2 of the plant.

Although MH does a good job of controlling suckers on dark tobacco, using it immediately after topping may reduce expansion of the upper leaves. Also, many growers object to the yellowing of upper leaves resulting from MH used at topping time. To minimize these undesirable effects of MH, many growers use a contact type chemical (FA) just before or after topping and delay the MH treatment for about 7 days. Another alternative is to use two applications of FA, 5 to 7 days apart, and use no MH. Fatty alcohols should be mixed for dark tobacco the same as for burley-2 gal of FA in 48 gal of water. However, because of lower plant populations of dark tobacco, only 30 to 40 gallons per acre of the mixture is needed. Spray applications can be made the same as for burley (see contact type spray used for sucker control on burley tobacco). The same precautions noted for burley tobacco should be taken when using FA for sucker control on dark tobacco.

Prime+® can be applied in the same manner described for burley tobacco. Prime+® does not cause premature yellowing that may occur with MH use and will control suckers longer than the fatty alcohols. An adjustment in spray volume should be made for the shorter growth habits of dark tobacco. When using power equipment, the volume of solution should not exceed 30 gal/acre. Follow the same precautions noted for burley tobacco when applying Prime+® to dark tobacco.

# AGR-154 Dark Tobacco Sucker Control

Bill Maksymowicz

**Topping tobacco** — removing the terminal bud — results in growth of suckers from leaf axils. If suckers are not controlled both yield and quality will be severely reduced. Research has shown that tobacco topped at bud-elongation stage will yield 300 or more pounds per acre compared to tobacco that is topped at full bloom. Hand suckering has been replaced with more efficient and effective chemical control programs.

## Types of Sucker Control Chemicals

**Fatty alcohols** — "contacts" — have no systemic activity. These products kill suckers which are less than 1" long within 1 hour of application. The chemical must run down the stalk and contact the sucker for control. Even current one-sucker varieties can have 3 to 4 buds per leaf axil, so multiple applications (two to three) of a contact material or a sequential application of a local systemic or systemic product is necessary.

**Local systemic chemicals** must run down the stalk and contact each leaf axil for control. These products are "systemic" within the axillary area and will control all sucker buds within each leaf axil contacted. At present Prime+® is the only local systemic labelled for use.

**Systemic chemicals** are absorbed by the plant through the foliage and translocated to the actively growing areas (suckers). Maleic hydrazide (MH) is the active ingredient in systemic sucker control products.

## Topping Dark Tobacco

Dark tobacco is topped to 12 to 16 leaves, depending on variety and growing conditions. Maximum yields are obtained when plants are topped in the bud elongation stage, before any flowers are opened. A single topping is desirable from a management standpoint, but uneven growth often necessitates two to three topplings.

Do not assume that uneven growth is weather related. If unevenness is a consistent problem check for other causes, such as disease, nutrition, or soil-related causes. Plants should fully mature and ripen before harvest. Variety, weather conditions, soil type, and nitrogen fertilization will affect ripening. As a general rule, dark tobacco should stand in the field a minimum of 4 weeks after topping. Improvement in yield and quality may continue for 6 to 8 weeks after topping.

## Methods of Application

### Power Spray Equipment

**Contact chemicals.** A 4 to 5% solution is applied as a coarse spray in 50 to 60 gallons of water per acre. Use three hollow-cone nozzles per row directed to the bud area. Pressure must not exceed 25 psi. High rates applied on hot days or under high pressure may cause leaf injury. Rain within one hour of application can reduce control.

**Local systemic chemicals.** Use 30 to 50 gal/acre of a 2% solution, applied as described for contacts. Adjust finished spray volume to avoid puddling at the base of the plant, which could stunt or kill the cover crop.

**Systemics.** Apply 1 to 1.5 gal/acre (1.5 to 2.25 lb/acre active ingredient) in a finished spray volume of 20 to 30 gal/acre. Apply as a fine mist to the upper portion of the plant. Maleic hydrazide should not be applied to leaves smaller than 8 to 10 inches long. High rates of MH can cause yellowing.

Applications made when plants are weather stressed may result in poor performance. Do not apply in the heat of the day; morning applications are usually more effective. Sucker control can be reduced if rain occurs within 8 hours of application.

### **Backpack and Garden Sprayers, Jugs, and Droplines**

These application methods can greatly enhance the effectiveness of contact and local systemic materials. Increase in efficacy and yield may offset the additional expense of a manual sucker control application method.

Apply either at rates listed for "Power Spray Equipment" or as a coarse spray to the top of the stalk. Little pressure is needed. Take time to "calibrate" your application technique to ensure that finished spray is not puddling.

### **Suggested Sucker Control Programs**

- Apply a contact (1 gal in 20 to 25 gal of water) at bud stage and top plants that are ready. Repeat application at 5 to 7 day intervals two to three more times. Try to complete topping after the second application.
- Make a first contact application and top as described in (1). Make the second (final) topping in 5 to 7 days and treat the entire field with either Prime+ or maleic hydrazide. The longer the MH application can be delayed the less likelihood there will be of yellowing or yield reduction.
- If using dropline, jug, or hand sprayers plants can be topped at the bud elongation stage and sprayed with Prime+. Plants topped at the second (and third) topping are treated with Prime+ when topped. Do not repeat Prime+ application to plants already treated at the base of the stalk. Generally one-half to three-fourths ounces per stalk will be enough to contact all leaf axils.

### **Use Precautions**

In developing a sucker control program that will work under your cultural conditions, remember these basic points:

- Absence of excessive pesticide (including sucker control) residue is an important quality element to tobacco buyers. Always read and follow label directions. Using a labeled product at rates exceeding those on the label, or using products not labeled for use on tobacco, renders that crop ineligible for price support.
- No sucker control material will control suckers over 2" long, and those approaching 2" in length may escape under some weather-related stress conditions.
- Remove suckers larger than 1" by hand at topping to avoid an extra trip through the field at a later date.
- Use a sucker control system that does not inhibit upper leaf expansion, cause off-color, or damage leaves.