

Alternative Sucker Control Methods

By Gary Palmer

Sucker control in Kentucky has not changed much in the last 50 years. Since the introduction of Maleic Hydrazide (MH), most tobacco producers have treated burley tobacco with a fine mist of spray material containing some formulation of MH. Since its introduction, MH has had many critics due to the chemical residue left on the cured leaf. Although the Environmental Protection Agency evaluated the potential risk associated with MH residue and found it to be of little concern, many foreign customers still regard MH residue as a negative aspect of U.S. tobacco. Changes in the burley tobacco industry have opened the door for producers to improve the marketability of their product in the eyes of some international buyers. Reducing and in some cases eliminating MH residues is one way producers might make their product more marketable. There are two types of chemicals that producers could use to eliminate MH residues, contacts or fatty alcohols, and local systemic chemicals like Prime+, Butralin or Flupro.

Local Systemic

Local systemic products include Prime+, Butralin, and Flupro. Their mode of control is localized to leaf axillary areas where contact is made with actively growing sucker buds. Like the fatty alcohols, they must come in contact with each sucker bud to be effective. They do not burn the sucker, but control sucker growth by stopping cell division in the developing bud.

Due to the mode of action of these products application methods must be different than those used for MH alone. In general, a coarser spray pattern than those previously used for MH is required. Applications made with fine tip nozzles are ineffective producing poor sucker control. Applications can be made using a jug (Picture 1) for smaller growers, handheld or backpack sprayer, or power driven tractor mounted or high clearance sprayer. The concentration labeled for all local systemics is a 2% solution or 1 gallon in 49 gallons of water. Spray pressure should be in the 20 to 25 psi range not to exceed 30 psi.



Picture 1



Picture 2

For jug applications or backpack sprayers, mix 2.5 fl oz per gallon and apply at approximately $\frac{1}{2}$ to $\frac{2}{3}$ fl oz per plant depending on crop the 20 to 25 psi range not to exceed 30 psi. height. Excessive spray mix that puddles on the ground below the plant can have an adverse effect on the cover crop following the tobacco. For tractor mounted or high clearance sprayers, applications can be made using drop lines, over-the top using a three nozzle arrangement or a straight boom with the same 2% solution. Each method has pros and cons.

Drop lines (Picture 2) generally provide the best control and consist of a line running from the spray boom with a spray trigger and a coarse spray nozzle that can be operated by a worker walking behind the sprayer. The application rate should be between $\frac{1}{2}$ and $\frac{2}{3}$ fl oz per plant but care must be used to prevent excess chemical from reaching the ground to avoid cover crop injury. This method provides more direct sucker contact and generally provides better control, but is labor intensive and requires a slower pace to accommodate workers. Practice may be required for workers to become accustomed to the appropriate rate of application. On tall tobacco, missed suckers can be common in the top of the plant, but misses are less common than in other methods.

The **three nozzle arrangement** has reduced labor requirements, requiring a spray operator only, and provides the second best control. Control, however, is dependent on good alignment of the spray boom with the tobacco rows. This method will provide better results on crops with uniform row spacing particularly if that row spacing is similar to the spray boom nozzle spacing. Solid cone nozzles provide the best coverage and should be arranged so that a higher spray volume nozzle is over the row and lower volume nozzles are dropped slightly and directed toward the plant on either side of the row. Nozzles such as TG-5's can be used over the row with TG-3's direct toward the plant. However, should the directed nozzles fall over the top of a row anywhere along the boom, control may be reduced on those plants that get a reduce amount of spray material. A slight misalignment can result in a few misses in the tops of plants and may require hand labor for removal and re-treatment of missed plants using the jug or backpack method.

The **straight boom method** provides more uniform coverage and is less dependent on uniform rows, but may not provide the same level of control as the three nozzle arrangement. The straight boom has coarse nozzles spaced 19 to 20 inches apart for the length of the boom. The boom should be positioned approximately 18 inches above the crop. Either TG-5 or TG-3 nozzles can be used for the entire length but not both. Use TG-3's for tractor mount sprayers and for high clearance sprayers used on more hilly terrain where traveling speeds are in the $2\frac{1}{2}$ to $3\frac{1}{2}$ mph range. For high clearance sprayer on flatter ground where speed can be increased to 4 to 5 mph, use TG-5's or equivalent. Re-treatment using the jug or backpack method may be necessary where escapes occur. Treat only the area where the sucker developed to prevent excessive residue in the rest of the plant. Cover crop damage should be less of a problem even though some of the chemical may reach the ground.

The local systemic type sucker control chemicals offer some benefits over MH-containing products other than reduced MH residue. They provide extended control which can last for 5 to 7 weeks after application depending on weather, growing conditions and crop requirements. Rain occurring within 2 hour may reduce control. Top leaves longer than eight inches treated with Prime+ or Butralin tend to spread more than in plants treated with MH. However, leaves less than eight

inches in length could be distorted by application of a local systemic. Cured leaf color is usually darker than in plants treated with MH since Prime+, Butralin, or Flupro cause bronzing in the tops of burley plants unlike MH.

Some concerns do exist when using a local systemic for sucker control. Escapes or missed suckers can grow uncontrolled if not addressed. Escapes must be removed and re-treated. Ground suckers will begin to grow again once the plant is topped. Ground suckers too large for coverage by chemical rundown may grow unchecked. Crops with excessive ground sucker development may not be ideal candidates for a Prime+, Butralin, or Flupro spray program. Excessive spray volume can damage cover crops and a conscious effort must be made to apply the correct amount to achieve complete rundown that contacts each leaf axil without excess spray material reaching the ground. Symptoms of Prime+, Butralin or Flupro carryover in a cover crop includes a reduced stand, purple leaves on grasses, and nubby roots on affected plants.

Fatty Alcohols

Picture 3



The fatty alcohols are a true contact type chemical that must contact the small sucker bud causing a contact burn (Picture 3) which controls sucker growth temporarily. Fatty alcohols are marketed by several manufacturers and labels should be followed closely for the specific product chosen. Application can be made with either handheld, backpack, or power driven equipment such as tractor mounted or high clearance sprayers. Rates may vary but generally are in the range of 3 to 4% in volume. A rate of 3% initially may provide better crop safety, but can be followed by 4% later. Pressure should be in the 20 to 25 psi not to exceed 30 psi. The three nozzle arrangement over each row is recommended for power driven equipment with a coarse nozzle such as a TG-5 or similar nozzle over the row and two coarse nozzles such as TG-3 or similar nozzles on a short drop on either side of the row directed in toward the plant. Crops with irregular row spacing may result in reduced control if the spray boom does not align well with each row of plants. Application of too little of the fatty alcohol could result in reduced control while excessive rates can cause leaf

damage. Agitation before and during application is necessary to reduce potential burn. Avoid application during the middle of the day in hot weather to reduce leaf burn. If the temperature exceeds 90° F, leaf drop can occur. Applications should not be made to tobacco that is wet from rainfall or dew to avoid reduction in control.

Fatty alcohols can be applied either prior to or after topping. Any suckers longer than one inch should be removed prior to application in either case. Applications after topping should be made within two days of topping. Multiple applications may be needed and should be made prior to new

sucker development. Failure to re-apply before sucker development exceeds one inch in size could lead to sucker control failure. Rainfall within one hour of application may reduce control.

Application of a fatty alcohols may improve sucker control if applied initially at the elongated bud stage at a 3% rate followed in five days by a combination of fatty alcohol at a 4% rate and any of the local systemics at the full rate. Adding a fatty alcohol to a local systemic may improve rundown of the local systemic and improve sucker bud contact.

Irregular Flowering

Tobacco crops that bloom irregularly may require special attention. Plants that are blooming well in advance of the rest of the crop should be topped, suckers removed by hand and treated with a fatty alcohol or local systemic. If considerable time occurs between toppings, a local systemic is advised to prevent sucker re-growth. The rest of the crop can be treated with a fatty alcohol or, if a fatty alcohol was used for the initial treatment, Prime+, Butralin, or Flupro can be used for the second application. Do not apply a local systemic to tobacco previously treated with a local systemic.

Lodged or Leaning Tobacco

Poor sucker control can occur in tobacco that is not in an upright position due to weather or other reasons, since both types of chemicals require a complete rundown that contacts all sucker buds. Any sucker buds that do not come into contact with the chemical will grow unchecked. In this situation, treatment of individual plants using the drop line or backpack method is more effective since the applicator can direct the spray application to problem areas on each plant.