

## **Recommendations for Controlling Suckers Without Using MH**

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Successful sucker control without using maleic hydrazide (MH) relies on reaching the maximum potential from the remaining tools at our disposal. The following is a discussion of using contacts and flumetralin to control suckers in the absence of MH.

### **Contact Fatty Alcohols**

The purpose of contact fatty alcohol applications is to provide sucker control between early topping and the time at which the upper leaves are large enough to be sprayed with flumetralin without causing leaf distortion. Another major advantage of contact alcohols, especially where multiple applications are made, is to shorten the period for flumetralin to control suckers after topping. Successful sucker control without MH starts with proper application rates and timing of contacts. Poor control with contacts cannot be corrected by flumetralin.

### ***Timing***

You should make the first contact application as soon as 50 to 60 percent of the plants have a visible button. Timing of chemical application is important since neither contacts nor flumetralin will adequately control suckers longer than 1 inch. Contacts are more effective if applied three to five days apart when humidity is low and leaf axils are fully exposed—that is, generally between 10 a.m. and 6 p.m. on sunny days, except when the plants are wilted and temperature exceeds 90°F. Contacts should not be applied to plants wet with heavy dew or to those severely drought-stressed.

Coverage of leaf axils and stalk rundown are essential for contact applications. Contacts should be applied with three nozzles per row (TG3-TG5-TG3 per row or equivalents), at a low pressure (20 to 25 psi), and with a 50 gallon per acre delivery volume. Nozzle selection, pressure, and delivery volume are critical for proper droplet size which leads to good stalk rundown and coverage.

### ***Concentration***

The degree of sucker control with contact alcohols is directly related to the ratio of chemical to water. Therefore, it is extremely important to mix a specific amount of contact chemical with an exact amount of water. The suggested ratio for the first application of C<sub>8</sub>-C<sub>10</sub> contact alcohol products (Off-Shoot T, Fair 85, Kleen-Tac, Sucker Plucker, Royaltac-M, etc.) is 2 gallons in 48 gallons of water; this makes a 4 percent solution. A 5 percent solution is suggested for subsequent applications of C<sub>8</sub>-C<sub>10</sub> contact alcohol products; this is 2.5 gallons in 47.5 gallons of water. The suggested ratio for the C<sub>10</sub> products (Antak, Fair-Tac, Royaltac, Ten-Tac) is 1.5 gallons in 48.5 gallons of water; this makes a 3 percent solution. The mixtures should be strong enough to kill both of the tiny suckers in each leaf axil when the solution wets suckers less than 1 inch long. Using more than the suggested amount of water will weaken the mixture, and you will

not obtain good control. Using less than the suggested amount of water will strengthen the mixture and may cause leaf burn on tender crops.

Weak contact solutions, those less than 4 percent for the C<sub>8</sub>-C<sub>10</sub> products or less than 3 percent for the C<sub>10</sub> products, often control only one of the two sucker buds in each leaf axil. A good general rule is to apply a contact solution that chemically tops 5 to 10 percent of the small, late plants in a field. If no chemical topping occurs during the first application, the solution is too weak to provide maximum sucker control or the application was too late. Some growers worry about leaf drop with contact alcohol solutions. This is not likely to be a problem unless the crop has been over fertilized with nitrogen and the season is unusually wet for several days after application. Generally, the benefits of increased sucker control from full-strength contact applications far outweigh any negative effects of leaf drop.

### **Flumetralin (*Prime+*, *Flupro*, and *Drexalin Plus*)**

#### ***Mechanical Application of Flumetralin (over-top sprays)***

Flumetralin should be applied like a contact solution. The objective is to apply flumetralin so that it touches the small suckers just like contact solutions because, unlike MH, flumetralin does not move to sucker buds through the leaves. Flumetralin must first wet the suckers like a fatty alcohol contact before it can stop cell division like a systemic. Therefore, flumetralin is referred to as a *contact-local systemic*. It has no true contact activity, and the controlled suckers do not turn brown or black but rather look yellow and deformed for several weeks after treatment.

Because flumetralin needs to run down the stalk and wet the suckers, it should be applied with contact nozzles (TG3-TG5-TG3 per row or equivalents), with a 50 gallon per acre delivery volume, and at a low pressure (20 to 25 psi). Flumetralin does not completely control suckers longer than 1 inch, so you should remove larger suckers before application. Full-season sucker control can be expected on small suckers wetted by the flumetralin solution, but missed suckers will continue to grow and should be removed by hand. Missed leaf axils with flumetralin are typically in the top of the plant and may result from leaning stalks, leaves covering the leaf axil, or both preventing proper “rundown” of flumetralin into the leaf axil.

Even though the flumetralin label allows for application up to one gallon per acre, the general recommendation has been for application rates of 2 quarts per acre. Increasing flumetralin rates from 2 quarts per acre to 3 quarts or 1 gallon in a single mechanical application has not consistently improved sucker control, primarily because control is so dependent on coverage of all leaf axils, which is not improved by increasing flumetralin rates. However, application of 2 quarts of flumetralin followed by 1 quart of flumetralin seven days later improves sucker control compared to 3 quarts of flumetralin applied in a single application. This would indicate that increasing rates of flumetralin above 2 quarts per acre is only advantageous if the flumetralin is applied in a split application. It is likely that split applications reduce the number of missed leaf axils—the main cause of poor sucker control when MH is not used.

Soil residues of flumetralin applied to tobacco may contribute to stunted early-season growth of later crops, especially small grains, some vegetable crops, and corn but also nonrotated tobacco,

particularly if excessive rates are used for sucker control on light, sandy soils. The carryover potential may be greater when a dinitroaniline is used for both weed and sucker control on sandy soils. (See product labels for comments on carryover residues and possible rotation crop injury.)

### ***Dropline Applications of Flumetralin***

Dropline applications are generally the most effective way to apply flumetralin because they allow for the most consistent ability to apply the flumetralin solution to each leaf axil. However, dropline applications require more labor, which is not always available on the farm depending on the scope of the farming operation and/or the degree of mechanization of other farming operations. Even though the best sucker control from flumetralin is achieved with dropline applications, growers must make the decision on whether such application methods are feasible and practical on a case by case basis depending on their individual situations.

A dropline application is made manually, with a single line per row, coming off of a powered sprayer (typically a high clearance sprayer). Multiple lines can be used at one time and each line has a valve (trigger) and a single TG nozzle. Flumetralin is then applied on a plant by plant basis by manually holding the nozzle over the center of the plant and opening the valve or “trigger” long enough to apply a desired amount of solution to each plant.

Dropline applications should be initiated when approximately half of the plants are in the elongated bud to early-flowering stage. Plants should be topped and then flumetralin applied within 24 hours. In many cases, both topping and applying flumetralin with a dropline can be accomplished at the same time. Where uniformity is a problem and some plants are later to mature, a second trip through the field to top and dropline flumetralin only on those plants may be needed. If a second trip is needed, it can usually be accomplished at a faster speed than the original dropline application. Only apply flumetralin with a dropline once per plant per season.

Another advantage of dropline applications is that they can reduce the need for contact applications because dropline applications of flumetralin can be made at topping. In many cases contact applications, when used in conjunction with a dropline application of flumetralin, are only used to allow the crop to “even out” so that all plants are at the correct stage for flumetralin application and only one trip across the field with droplines is needed. Contacts may also be used in this scenario to delay flumetralin applications for better management of labor resources by controlling sucker growth until labor is available.

In a dropline application, flumetralin should be mixed the same as with mechanical applications, 2 to 3 quarts of flumetralin in 49.5 to 49.25 gallons of water, respectively. The flumetralin solutions should be applied alone to deliver 1/2 to 2/3 of a fluid ounce of solution per plant. Dropline applications of flumetralin require personal protective equipment (PPE) to be worn by workers. Read the label for each source of flumetralin carefully (Prime +, Flupro, Drexalin Plus) to determine the requirements for dropline applications.