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WEED CONTROL OPTIONS FOR STRAWBERRIES ON PLASTIC

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Growing strawberries as an annual crop on black plastic requires a different weed management strategy than the perennial matted row strawberries. When black plastic is combined with fumigation by methyl bromide, excellent control of most weeds in the row can be expected. However, weeds that have hard seed coats, such as vetch and clover, emerge for long periods of time and can establish in the row. They emerge in late fall or spring, grow under the plastic for a period of time, and emerge from any holes in the plastic.

In 2006, a Critical Use Exemption was issued for methyl bromide in strawberry. This Critical Use Exemption allows the use of methyl bromide in strawberry nursery fields (North Carolina and Tennessee) and fruit production fields (North Carolina, South Carolina, Tennessee, Virginia) that meet the following requirements. In a nursery field, there must be an occupied structure present within 250 ft. of a field the size of 100 acres or less. In a fruit production field, methyl bromide can be used with a moderate to severe yellow or purple nutsedge infestation and/or the presence of an occupied structure within 250 ft. of a field the size of 100 acres or less.

With the loss of methyl bromide, alternative methods for weed control will be needed. Possible options include application of preemergence herbicides to the preformed bed before laying the plastic, postemergence herbicide(s) applied over the top of the strawberry crop, and hand removal.

When strawberries are planted year after year in the same field, an increase in weeds that are not controlled by the current weed management program should be expected. Rotation into different fields can prevent increases in persistent weeds. Avoid fields that have been previously treated with herbicides that have potential to persist and cause damage to strawberries. Information on crops that can be planted after herbicide use can be found on the herbicide label.

Three areas where weeds can easily establish in strawberries grown on plastic are as follows:

1. The middles between the rows have excellent fertility and moisture and, thus, can support weed growth easily. Once these weeds become established, they can easily shade strawberry plants growing in the row.

The best practice is to apply a preemergence herbicide in the middles between the rows prior to weed emergence. Another option is to apply a postemergence herbicide to young, actively growing weeds. At this stage of weed growth, postemergence herbicide application is safest and most effective. NOTE: All herbicide applications between rows should be banded and not applied over the plastic. Herbicides can remain active on the plastic and crop injury can occur if herbicides are applied over the plastic. A third option for row

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middles is to seed ryegrass immediately after laying the plastic. In addition to weed suppression, ryegrass limits soil, wind and water erosion from the middles. Prior to strawberry harvest, the ryegrass can be suppressed then killed with sethoxydim (Poast). Growers sometimes apply wheat straw to middles. If straw is applied to the middles, use straw that contains no weed seeds.

2. Weeds often emerge from the hole around the strawberry plant. Weeds growing in this area compete with strawberries, often reducing growth, yield and quality. Additional stress can result in crop death. Thus, frequent scouting and hand removal are necessary to prevent this from happening. With the loss of methyl bromide. Small-seeded, broadleaf

weeds will likely become more prevalent in the strawberry row. Alternative methods of control include applying a preemergence herbicide to the preformed bed prior to laying the plastic, applying a postemergence over-the-top herbicide, or hand weeding.

3. Weeds such as curly dock, vetch, horseweed, sow thistle and prickly lettuce often establish at the ends of fields. If these weeds are not controlled, they will produce seeds that are capable of moving into the production field. Thus, always scout non crop land such as the ends of fields, fence rows, and ditches, and implement cultural and/or chemical control measures when needed. Control weeds prior to flowering to prevent weed seed production.

The following herbicides are registered for use in strawberries.

Weed Management Strawberry (Plasticulture)

Weed/Timing	Material	Amount of Formulation per Acre	Crop Restrictions	REI (hrs)	Comments
PREPLANT Annual broadleaf weeds including Carolina geranium and cutleaf evening primrose	Oxyfluorfen Goal 2XL	1 to 2 pt	Apply to soil surface of preformed beds at least 30 days before transplanting.	24	Plastic mulch should be applied soon after Goal application. Best results occur when plastic is applied immediately after herbicide application. Incorporation is not necessary but it may result in less crop injury. Avoid soil disturbance as much as possible after Goal application for best results.
PREPLANT Annual grasses and broadleaf weeds	Methyl bromide Various brands and concentrations	240 lb active ingredient	Apply at least 2 weeks prior to planting	48 See label for details	Inject into soil at a depth of 4 to 6 in and cover with a tarp. Soil moisture should be near field capacity and soil temperature should be at least 50oF. Allow 2 weeks after application before transplanting. Disking after tarp removal will facilitate aeration.
PREPLANT Annual grasses and broadleaf weeds	Devrinol 2EC	Up to 8 qt	Spray plant beds prior to planting.	12	For new plantings, preplant incorporate to a weed-free soil before laying plastic. Incorporate within 24 hours of application. If weed pressure is from annual broadleaf weeds, apply Devrinol to the soil surface immediately prior to laying plastic. If soil is dry, water or sprinkler irrigate with sufficient water to wet to a depth of 2 to 4 inches.
PREEMERGENCE	Devrinol 2EC	Up to 8 qt	Direct to middles between plastic.	12	Apply with a shielded sprayer to a weed-free soil surface. Mechanically incorporate or irrigate to a depth of 1 to 2 inches within 24 hours of application.
PREEMERGENCE Annual grasses and small-seeded, broadleaf weeds	D CPA Dacthal Flowable Dacthal 75-W	8 to 12 pt 8 to 12 lb	Direct to middles between plastic.	12	Apply for preemergence weed control in the middles. Fall application can injure ryegrass (emerged and not emerged) seeded in row middles for erosion prevention. Small grain will be controlled if applied prior to emergence. Rainfall or irrigation is needed within 24 hours of application for herbicide activation.

Weed Management Strawberry (Plasticulture) (continued)

Weed/Timing	Material	Amount of Formulation per Acre	Crop Restrictions	REI (hrs)	Comments
POSTEMERGENCE Non-selective weed control	Glyphosate Roundup WeatherMax 5.5 SL	11 to 22 oz	Apply with hooded sprayer or wiper applicator	12	To prevent severe crop injury, use application equipment and technique that will prevent contact with any portion of the crop or plastic. Strawberries are most susceptible to Roundup damage in fall. Do not apply within 14 days of harvest.
POSTEMERGENCE Non-selective weed control	Paraquat Gramoxone Max 3L Gramoxone Inteon 2 L	1.3 pt 2.0 pt	Apply with hooded sprayer or shields to protect crop	12	Contact kill of all green foliage. Do not allow drift or spray solution to contact crop or severe injury or crop death will occur. The addition of a non-ionic surfactant at 0.25 % v/v (1 pt/50 gal of spray solution) is required for optimum results. Apply in a minimum spray volume of 20 gal per acre. Do not make more than 3 applications per year.
POSTEMERGENCE Broadleaf weeds including mustard spp., prickly lettuce, and shepherd's purse	Carfentrazone Aim2EC	0.51 to 1.6 oz	Apply with hooded sprayer to protect crop.	12	Contact herbicide with minimal residual activity. Coverage is essential for satisfactory performance. Apply to actively growing weeds up to 4 inches tall and rosettes less than 3 inches across. Crop injury will occur when spray is allowed to come in contact with green stem tissue, leaves, flowers or fruit.
POSTEMERGENCE Broadleaf weeds including ragweed, clover, vetch, dock, cocklebur, dandelion, sowthistle, thistle, and nightshade.	Clopyralid Stinger 3 EC	0.33 to 0.67 pt	Broadcast application	12	The use of Stinger in strawberry is issued on a state-by-state basis; therefore, it may not be registered for use in all states using this guide. Apply in the spring before harvest or post-harvest. Do not apply within 30 days of harvest. Do not use surfactant with Stinger. Do not apply in combination with other pesticides.
POSTEMERGENCE Annual and perennial grasses	Clethodim Select 2EC or Arrow 2 EC	6 to 8 oz	Newly planted or established plantings	12	Use high rate and sequential applications are for perennial grasses (bermudagrass grasses or johnsongrass). The addition of a non-ionic surfactant at 0.25% v/v (1 qt/100 gal of spray solution) is required. Total use during season cannot exceed 32 oz per acre/year. Do not apply within 4 days of harvest.
POSTEMERGENCE Annual and perennial grasses	Sethoxydim Poast	1 to 1.5 pt	Newly planted and established plantings	12	Sequential applications will be necessary for perennial grass control. The addition of a non-ionic surfactant (1 qt/100 gal of water) or crop oil concentrate (1 gal/100 gal. of water) is necessary for optimum results. Do not apply within 7 days of harvest. Total use cannot exceed 2.5 pt per acre per year.