

## Weed Management in Tomatoes, Peppers and Eggplant

Bradley A. Majek  
Rutgers Agricultural Research & Extension Center  
121 Northville Road  
Bridgeton, NJ 08302

Good weed control in peppers and eggplant begins the same as any other crop, before the crop is planted. Know the weeds that are a problem in the field. Control established perennials before planning to plant peppers in the field. Use cultural, mechanical, and chemical weed control techniques in a coordinated manor to reduce the risk of interference with the crop. Choose herbicides that control the weeds in the field, apply the proper rate for the soil texture and organic matter in the field, and spray and incorporate herbicides to minimize the risk of crop injury and maximize weed control. Several effective herbicides are registered for use in transplanted peppers. Each a slightly different spectrum of weeds, and has certain disadvantages.

Tillam is an effective yellow nutsedge herbicide with good crop safety and a label in tomatoes. Care is needed when applying and incorporating is being carried out. Tillam evaporates from the soil surface quickly after application, so incorporation must immediately follow application. Tillam cannot remain on the soil surface for more than twenty minutes without significant loss. Either mount the spray boom on the incorporation equipment and spray and incorporate in a single pass, or be sure the spray rig waits for the incorporation equipment at the end of each row before spraying the next pass.

Treflan is labeled for tomatoes, peppers and eggplant, and controls annual grasses, pigweed, common lambsquarter, and a few other weeds. Mechanical incorporation within eight hours of application is necessary to prevent loss by breakdown by sunlight. Yellow nutsedge and many large seeded broadleaf weeds are not controlled by Treflan. Crop injury is a concern when cool and wet conditions prevail after transplanting.

Devrinol is labeled for tomatoes, peppers and eggplant, and controls a similar weed spectrum to Treflan, but crop injury is less of a concern with Devrinol when weather conditions are not favorable after planting. Incorporation is necessary, but can be accomplished with equipment or irrigation, and must occur within two days of application. Yellow nutsedge and many large seeded broadleaf weeds are not controlled by Devrinol. Carryover may affect certain crops such as lettuce up to two years after use.

Command is an effective herbicide with good crop safety in peppers, is not labeled in and should not be used for weed control in tomatoes or eggplant. Care is needed when applying and incorporating is being carried out. Command can drift as spray or after application as vapor and affect adjacent vegetation. Injury symptoms are a distinct whitening of the affected plants, and stunting when the injury is severe. Although recovery usually occurs in several weeks, affected crops may be unmarketable, and injury to ornamental vegetation must be prevented. Command controls most grasses, and many broadleaf weeds. Yellow nutsedge, pigweed, carpetweed, and morningglory species are not controlled.

Good results depend on good incorporation. The herbicide must be mixed thoroughly and uniformly to the depth recommended by the manufacturer. Treflan or Tillam are usually incorporated two to three inches deep. Devrinol and Command can be incorporated more shallowly, no more than one to two inches deep. Planting on a raised bed or ridge is a good cultural technique used to improve drainage and reduce disease problems, but raised beds and ridges complicate herbicide incorporation. Building the bed or ridge after incorporation increases the herbicide rate and depth of incorporation. The raised bed or ridge must be built first, and the incorporated herbicide mixed to a uniform depth in the irregular field shape. An alternative is to apply the herbicide to the soil surface, plant and incorporate with irrigation.

Prefar 4EC is also labeled for use in peppers and eggplant to control annual grasses and a few broadleaf weeds. Prefar is most commonly used in peppers and eggplant to control weeds under plastic mulch to provide flexibility for the grower. The label for Prefar includes many cucurbit crops, cole crops, lettuce crops, onion crops and others in addition to peppers and eggplant. Note that tomatoes are excluded from the label. Apply 6 quarts per acre in a band immediately prior to laying the plastic. Condensation on the underside of the mulch will activate the herbicide.

Dual Magnum can be used in tomatoes as a pre-transplant surface treatment, or post-transplant as a shielded directed spray. Dual Magnum is a preemergence herbicide used to control annual grasses nightshade species, galinsoga, and pigweed species, and suppresses or controls yellow nutsedge. Irrigation is needed to “activate” the herbicide. Use

between rows of plastic mulch is a very effective treatment, but application under mulch is not usually recommended. Temporary stunting and delayed maturity has been observed when Dual Magnum is sprayed under plastic mulch.

In certain states, Dual Magnum has been granted a Special Local Needs 24C label for use on bell peppers. Additional states, including New Jersey, have been granted a Special Local Needs 24C label for use on bell and certain non-bell types of peppers. Due to the concern of the manufacturer, growers must sign an indemnification agreement stating that the grower will not hold the manufacturer responsible for crop damage. Dual Magnum is applied to weed free soil pretransplant, or posttransplant as a spray directed at the base of the pepper plant to control annual grasses, yellow nutsedge, and certain annual broadleaf weeds, including galinsoga. Irrigation is used to “activate” the herbicide.

Sencor is an effective annual broadleaf weed herbicide in tomatoes that can be applied before transplanting tank-mixed with a preplant incorporated annual grass herbicide, postemergence, or both. Repeated postemergence applications will suppress annual nutsedge. Temporary crop injury can sometimes be observed when Sencor is applied following several days of warm cloudy humid rainy weather that promotes fast “soft” growth. Delay application until at least three bright sunny dry days have past before applying Sencor. The addition of nonionic surfactant to postemergence applications increases the risk of crop injury slightly, and the use of oil concentrate increases the risk further, so tank-mixes with other herbicides requires caution. Sencor is a triazine herbicide herbicide, so weeds that are resistant to atrazine and other triazine herbicides will not be controlled.

Matrix, formerly marketed in tomatoes as ShadeOut, is a herbicide that controls many weeds in tomatoes. A key to using Matrix successfully is the addition of nonionic surfactant, and application when the target weeds are small, less than one inch tall. Tank-mixing with Sencor will increase the spectrum of weeds controlled, assist in weed resistance management, and is recommended. Matrix is an ALS inhibitor. Herbicides in this class of chemistry have a single site of action in susceptible plants. Always use sequentially or in tank-mixed with other herbicides with a different site of action to prevent or delay the development of resistant weed populations.

Sandea 75WDG is labeled for use in tomatoes, peppers, and eggplant to control broadleaf weeds and yellow nutsedge. Sandea may be applied to suppress or control certain broadleaf weeds and yellow nutsedge pre-transplant under plastic mulch, postemergence or post directed between rows of plastic mulch in tomatoes, but only post directed between rows of plastic mulch in peppers and eggplant.

In tomatoes, apply pre-transplant under plastic mulch, or banded between rows of plastic mulch before weeds emerge to control many broadleaf weeds and to suppress yellow nutsedge. Irrigate to activate the herbicide if rainfall is not imminent after application. Weed control failures may occur if activating moisture is not provided. Sandea will not control grasses, and may not control or only suppress common lambsquarter and certain other broadleaf weeds. Tank-mix Sandea with other herbicides to control annual grasses and broadleaf weeds present but are not controlled by Sandea.

Broadcast Sandea postemergence in tomatoes in fields without plastic mulch or apply in a band as a directed and shielded spray between rows of plastic mulch to control yellow nutsedge and certain broadleaf weeds, including smooth pigweed and galinsoga. Do not spray broadcast over the top of plastic mulch. Add nonionic surfactant to be 0.25% of the spray solution. Do not use oil concentrate. The number of broadleaf weeds controlled by Sandea applied postemergence is less than the number controlled by preemergence applications, but yellow nutsedge control is more consistent when treated postemergence. When the target is susceptible broadleaf weeds, apply Sandea when the crop has been transplanted at least 14 days and the broadleaf weeds are less than 2 inches in height. Delay the application when yellow nutsedge is the target to allow the perennial sedge more time to develop a leaf canopy to intercept the spray. Use the lower rate and apply Sandea twice when both broadleaf weeds and yellow nutsedge are target weeds.

Extensive testing at Rutgers and other universities has established that the margin of crop safety for Sandea is good when it is used to control weeds in tomatoes. Some temporary crop injury has been observed when postemergence treatments are applied when the crop is growing rapidly and “soft” growing conditions prevail. The injury appears about 5 to 7 days after treatment, and is seen as a light green or yellow color in the new growth. The color of the shoot tips recovers quickly and appears normal within a week with no affect on yield.

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the development of resistant weed populations.

When plastic mulch and trickle irrigation are used, weed control becomes more complicated. The area under the plastic and between the rows of mulch must be treated separately. The soil under the plastic mulch should be sprayed separately from the soil between the rows of mulch. Apply herbicides preemergence to preformed beds before laying the plastic mulch, or spray the soil while laying the mulch by adding saddle tanks and a spray nozzle(s) to the plastic layer. Growers producing vegetables on plastic mulch should all have shielded sprayers capable of directing a banded application between rows of plastic mulch. Build a good functional shielded sprayer during the “off season”. Both conventional and organic growers have products that are labeled and approved for use as banded, directed, shielded sprays that are non-residual, non-selective, and able to “burn off” emerged weed seedlings between the rows of mulch. The shielded sprayer should treat only one row of plastic at a time, or no more than the same number of rows that the plastic applicator can lay in one pass. The sprayer and shields should not treat the entire area between two rows of plastic in one pass. Rather, the sprayer should treat the soil on both sides of one piece of plastic about two thirds of the way across to the next row of plastic. This will compensate for small variations in the distance between rows due to driver variability. The overlap in the center of the between row soil strip is not important. The boom should be between the front and rear wheels of a high clearance tractor if possible where the applicator has optimum view and control of the boom and shields. The shields should cover the front, back, sides and top of the spray nozzle, have “soft” lower sides so contact with the plastic does not tear the mulch, and not absorb the spray solution. Plastic strips or “plastic” burlap on the bottom of the shield works well. The nozzles should be even flat fans operated at the minimum pressure for adequate performance, 30 PSI or less. A low drift additive should be used, especially when a non-selective herbicide such as Gramoxone Max (conventional growers) or Sharpshooter (organic growers) is being applied. Applications should be made during “zero wind” conditions ONLY!

Under the plastic mulch in peppers, Command at half the rate used without mulch is safe and effective. Devrinol can also be used effectively under plastic mulch in peppers or eggplant. Treflan should never be used under plastic. Dual Magnum, which is only labeled and recommended in peppers, has performed erratically under plastic mulch, probably due to the large volumes of water applied by trickle irrigation in dry years. Between the rows of mulch can be treated like a crop grown without mulch, except growers should recognize that mechanical incorporation of herbicides and cultivation is impossible to accomplish without tearing the edges of the plastic. In addition, Sandea, Prowl H<sub>2</sub>O (peppers), Gramoxone Max, and Sharpshooter (organic growers) can be used between rows of plastic mulch.

Sandea 75DF has been labeled for use in peppers and eggplant grown on plastic mulch to control weeds between the strips of mulch. Apply 0.5 to 0.66 ounces of product per acre (0.024 to 0.031 lb ai/a) in a band as a directed and shielded spray between rows of plastic mulch to control yellow nutsedge and certain broadleaf weeds, including smooth pigweed and galinsoga. Do not spray broadcast over the top of plastic mulch. Add nonionic surfactant to be 0.25% of the spray solution. Do not use oil concentrate. The number of broadleaf weeds controlled by Sandea applied postemergence is less than the number controlled by preemergence applications, but yellow nutsedge control is more consistent when treated postemergence. When the target is susceptible broadleaf weeds, apply Sandea at 0.66 ounces of product per acre when the crop has been transplanted at least 14 days and the broadleaf weeds are less than 2 inches in height. Delay the application when yellow nutsedge is the target to allow the perennial sedge more time to develop a leaf canopy to intercept the spray. Use the lower rate, 0.5 ounces of product per acre, and apply Sandea twice when both broadleaf weeds and yellow nutsedge are target weeds.

Prowl H<sub>2</sub>O can be used between the rows of plastic mulch in peppers (ONLY) as a banded directed shielded spray. Apply 1 to 3 pints of Prowl H<sub>2</sub>O per acre and activate with one half inch of rainfall or irrigation to control most annual grasses and certain annual broadleaf weeds. Prowl H<sub>2</sub>O is chemically related to and similar to Treflan, but is not sensitive to sunlight so applications can be made to the soil surface and activated with moisture. Do NOT apply under plastic mulch, “over the top” of peppers, or to peppers grown on bare soil, or crop injury may result.

Grass control can also be accomplished postemergence with Poast. Remember to treat when the grass weeds are small. Never tank-mix Poast with other pesticides unless labeled, or crop injury or poor weed control may result. Poast will not control yellow nutsedge, which is a sedge, not a grass.

Gramoxone Max and Sharpshooter (organic growers) is also registered for use to control weeds between the rows of peppers and eggplant grown on plastic mulch. The herbicide must be applied after weed emergence as a directed shielded spray. Drift on to the crop will cause injury and must be avoided. Always add a nonionic surfactant to

Gramoxone Max and a drift control agent. Spray relatively high water volumes at low pressure. Build a good functional shielded sprayer during the “off season”.