

## Weed Control in Tomato<sup>1</sup>

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Although weed control has always been an important component of tomato production, its importance has increased with the introduction of the sweet potato whitefly and development of the associated irregular ripening problem. Increased incidence of several viral disorders of tomatoes also reinforces the need for good weed control. Common weeds, such as the difficult-to-control nightshade, and volunteer tomatoes (considered a weed in this context) are hosts to many tomato pests, including sweet potato whitefly, bacterial spot, and viruses. Control of these pests is often tied, at least in part, to control of weed hosts. Most growers concentrate on weed control in row middles; however, peripheral areas of the farm may be neglected. Weed hosts and pests may flourish in these areas and serve as reservoirs for re-infestation of tomatoes by various pests. Thus, it is important for growers to think in terms of weed management on all of the farm, not just the actual crop area.

Total farm weed management is more complex than row middle weed control because several different sites, and possible herbicide label restrictions are involved. Often weed species in row middles differ from those on the rest of the farm, and

this might dictate different approaches. Sites other than row middles include roadways, fallow fields, equipment parking areas, well and pump areas, fence rows and associated perimeter areas, and ditches.

Disking is probably the least expensive weed control procedure for fallow fields. Where weed growth is mostly grasses, clean cultivation is not as important as in fields infested with nightshade and other disease and insect hosts. In the latter situation, weed growth should be kept to a minimum throughout the year. If cover crops are planted, they should be plants which do not serve as hosts for tomato diseases and insects. Some perimeter areas are easily disked, but berms and field ditches are not and some form of chemical weed control may have to be used on these areas. We are not advocating bare ground on the farm as this can lead to other serious problems, such as soil erosion and sand blasting of plants; however, where undesirable plants exist, some control should be practiced, if practical, and replacement of undesirable species with less troublesome ones, such as bahiagrass, might be worthwhile.

Certainly fence rows and areas around buildings and pumps should be kept weed-free, if for no other

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reason than safety. Herbicides can be applied in these situations, provided care is exercised to keep them from drifting onto the tomato crop.

Field ditches and canals present special considerations because many herbicides are not labeled for use on aquatic sites. Where herbicidal spray may contact water and be in close proximity to tomato plants, for all practical purposes, growers probably would be wise to use Diquat only. On canals where drift onto the crop is not a problem and weeds are more woody, Rodeo, a systemic herbicide, could be used. Other herbicide possibilities exist, as listed in Table 1. Growers are cautioned against using Arsenal on tomato farms because tomatoes are very sensitive to this herbicide. Particular caution should be exercised if Arsenal is used on seepage irrigated farms because it has been observed to move in some situations.

Use of rye as a windbreak has become a common practice in the spring; however, in some cases, adverse effects have resulted. If undesirable insects such as thrips build up on the rye, contact herbicide can be applied to kill it and eliminate it as a host, yet the remaining stubble could continue serving as a windbreak.

The greatest row middle weed problem confronting the tomato industry today is nightshade. Nightshade has developed varying levels of resistance to some post-emergent herbicides in different areas of the state. Best control with post-emergence (directed) contact herbicides is obtained when the nightshade is 4 to 6 inches tall, rapidly growing and not stressed. Two applications in about 50 gallons per acre using a good surfactant is usually necessary.

With post-directed contact herbicides, several studies have shown that gallonage above 60 gallons per acre will actually dilute the herbicides and therefore reduce efficacy. Good leaf coverage can be obtained with volumes of 50 gallons or less per acre. A good surfactant can do more to improve the wetting capability of a spray than can increasing the water volume. Many adjuvants are available commercially. Some adjuvants contain more active ingredient than others and herbicide labels may specify a minimum active ingredient rate for the adjuvant in the spray

mix. Before selecting an adjuvant, refer to the herbicide label to determine the adjuvant specifications.

## Postharvest Vine Desiccation

Additionally important is good field sanitation with regard to crop residue. Rapid and thorough destruction of tomato vines at the end of the season always has been promoted; however, this practice takes on new importance with the sweet potato whitefly. Good canopy penetration of pesticidal sprays is difficult with conventional hydraulic sprayers once the tomato plant develops a vigorous bush due to foliar interception of spray droplets. The sweet potato whitefly population on commercial farms was observed to begin a dramatic, rapid increase about the time of first harvest in the spring of 1989. This increase appears to continue until tomato vines are killed. It is believed this increase is due, in part, to coverage and penetration. Thus, it would be wise for growers to continue spraying for whiteflies until the crop is destroyed and to destroy the crop as soon as possible with the fastest means available. Gramoxone Inteon is labeled for postharvest desiccation of tomato vines. Follow the label directions.

The importance of rapid vine destruction can not be overstressed. Merely turning off the irrigation and allowing the crop to die will not do; application of a desiccant followed by burning is the prudent course.

**Table 1.** Chemical weed controls: tomatoes.

Herbicide	Labeled Crops	Time of Application to Crop	Rate (lbs. AI./Acre)	
			Mineral	Muck
Carfentrazone (Aim)	Tomato	Preplant Directed-hooded Row-middles	0.031	0.031
<b>Remarks:</b> Aim may be applied as a preplant burndown treatment and/or as a post-directed hooded application to row middles for the burndown of emerged broadleaf weeds. May be tank mixed with other registered herbicides. May be applied at up to 2 oz (0.031 lb ai). Use a quality spray adjuvant such as crop oil concentrate (coc) or non-ionic surfactant at recommended rates.				
Clethodim (Select 2 EC) (Arrow) (SelectMax)	Tomatoes	Postemergence	0.9-.25	----
<b>Remarks:</b> Postemergence control of actively growing annual grasses. Apply at 6-16 fl oz/acre. Use high rate under heavy grass pressure and/or when grasses are at maximum height. Always use a crop oil concentrate at 1% v/v in the finished spray volume, or a non-ionic Surfactant with SelectMAX. Do not apply within 20 days of tomato harvest.				
DCPA (Dacthal W-75)	Established tomatoes	Posttransplanting after crop establishment (non-mulched)	6.0-8.0	----
<b>Remarks:</b> Controls germinating annuals. Apply to weed-free soil 6 to 8 weeks after crop is established and growing rapidly or to moist soil in row middles after crop establishment. Note label precautions against replanting non-registered crops within 8 months.				
EPTC (Eptam 7E)	Tomatoes	Pretransplant	2.62-3.5	----
<b>Remarks:</b> Labeled for transplanted tomatoes grown on plastic mulch. Apply 3-4 pints/A to the bed top and shoulders immediately prior to the installation of the mulch. Do not transplant the tomato plants for a minimum of 14 days following the application. A 24c special local needs label for Florida.				
Glyphosate (Roundup, Durango, Touchdown, Glyphomax)	Tomatoes	Chemical fallow Preplant, Preemergence, Pretransplant	0.3-1.0	----
<b>Remarks:</b> Roundup, Glyphomax and Touchdown have several formulations. Check the label of each for specific labeling directions.				
Halosulfuron (Sanda)	Tomatoes	Pretransplant Postemergence Row middles	0.024-0.036	----
<b>Remarks:</b> A total of 2 applications of Sandea may be applied as either one pre-transplant soil surface treatment at 0.5-0.75 oz. product; one over-the-top application 14 days after transplanting at 0.5-0.75 oz. product; and/or postemergence application(s) of up to 1 oz. product (0.047 lb ai) to row middles. A 30-day PHI will be observed. For postemergence and row middle applications, a surfactant should be added to the spray mix.				
Lactofen (Cobra)	Fruiting vegetables	Row middles	0.25-0.5	----
<b>Remarks:</b> Third Party label for use pre-transplant or post transplant shielded or hooded to row middles. Apply 16 to 32 fluid oz per acre. A minimum of 24 fl oz is required for residual control. Add a COC or non-ionic surfactant for control of emerged weeds. 1 pre and 1 post application may be made per growing season. Cobra contacting green foliage or fruit can cause excessive injury. Drift of Cobra treated soil particles onto plants can cause contact injury. Do not apply within 30 days of harvest. The supplemental label must be in the possession of the user at the time of application.				

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Herbicide	Labeled Crops	Time of Application to Crop	Rate (lbs. AI./Acre)	
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S-Metolachlor (Dual Magnum)	Tomatoes	Pretransplant Row middles	1.0-1.3	----
<b>Remarks:</b> Apply Dual Magnum preplant non-incorporated to the top of a pressed bed as the last step prior to laying plastic. May also be used to treat row middles. Label rates are 1.0-1.33 pts/A if organic matter is less than 3%. Research has shown that the 1.33 pt may be too high in some Florida soils except in row middles. Good results have been seen at 0.6 pts to 1.0 pints especially in tank mix situations under mulch. Use on a trial basis.				
Metribuzin (Sencor DF) (Sencor 4)	Tomatoes	Postemergence Posttransplanting after establishment	0.25 - 0.5	----
<b>Remarks:</b> Controls small emerged weeds after transplants are established or when direct-seeded plants reach 5 to 6 true leaf stage. Apply in single or multiple applications with a minimum of 14 days between treatments and a maximum of 1.0 lb ai/acre within a crop season. Avoid applications for 3 days following cool, wet or cloudy weather to reduce possible crop injury.				
Metribuzin (Sencor DF) (Sencor 4)	Tomatoes	Directed spray in row middles	0.25 - 1.0	----
<b>Remarks:</b> Apply in single or multiple applications with a minimum of 14 days between treatments and maximum of 1.0 lb ai/acre within crop season. Avoid applications for 3 days following cool, wet or cloudy weather to reduce possible crop injury. Label states control of many annual grasses and broadleaf weeds including, lambsquarter, fall panicum, <i>amaranthus</i> sp., Florida pusley, common ragweed, sicklepod, and spotted spurge.				
Napropamid (Devrinol 50DF)	Tomatoes	Preplant incorporated	1.0-2.0	----
<b>Remarks:</b> Apply to well worked soil that is dry enough to permit thorough incorporation to a depth of 1 to 2 inches. Incorporate same day as applied. For direct-seeded or transplanted tomatoes.				
Napropamid (Devrinol 50DF)	Tomatoes	Surface treatment	2.0	----
<b>Remarks:</b> Controls germinating annuals. Apply to bed tops after bedding but before plastic application. Rainfall or overhead-irrigate sufficient to wet soil 1 inch in depth should follow treatment within 24 hours. May be applied to row middles between mulched beds. A special Local Needs 24(c) Label for Florida. Label states control of weeds including Texas panicum, pigweed, purslane, Florida pusley, and signalgrass.				
Oxyfluorfen (Goal 2XL) (Goaltender)	Tomatoes	Fallow bed	0.25-0.5	----
<b>Remarks:</b> Must have a 30-day treatment–planting interval for transplanted tomatoes. Apply as a preemergence broadcast to preformed beds or banded treatment at 1-2 pt/A or 1/2 to 1 pt/A for Goaltender. Mulch may be applied any time during the 30-day interval.				
Paraquat (Gramoxone Inteon) (Firestorm)	Tomatoes	Preemergence; Pretransplant	0.62-0.94	----
<b>Remarks:</b> Controls emerged weeds. Use a non- ionic spreader and thoroughly wet weed foliage.				
Paraquat (Gramoxone Inteon) (Firestorm)	Tomatoes	Post directed spray in row middles	0.47	----
<b>Remarks:</b> Controls emerged weeds. Direct spray over emerged weeds 1 to 6 inches tall in row middles between mulched beds. Use a non-ionic spreader. Use low pressure and shields to control drift. Do not apply more than 3 times per season.				

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Paraquat (Gramoxone Inteon) (Firestorm)	Tomatoes	Postharvest desiccation	0.62-0.93	0.46-0.62
<b>Remarks:</b> Broadcast spray over the top of plants after last harvest. Gramoxone label states use of 2-3 pts. Use a non-ionic surfactant at 1 pt/100 gals to 1 qt/100 gals spray solution. Thorough coverage is required to ensure maximum herbicide burndown. Do not use treated crop for human or animal consumption.				
Pelargonic Acid (Scythe)	Fruiting vegetables (tomato)	Preplant Preemergence Directed-shielded	3-10% v/v	----
<b>Remarks:</b> Product is a contact, nonselective, foliar applied herbicide. There is no residual control. May be tank mixed with several soil residual compounds. Consult the label for rates. Has a greenhouse and growth structure label.				
Pendimethalin Prowl H <sub>2</sub> O	Tomatoes	Post-directed Row Middles	0.0475-0.72	----
<b>Remarks:</b> May be applied pre-transplant but not under mulch. May be applied at 1.0 to 1.5 pts/A to row middles. Do not apply within 70 days of harvest.				
Rimsulfuron (Matrix)	Tomatoes	Posttransplant and directed-row middles	0.25-0.5 oz	----
<b>Remarks:</b> Matrix may be applied preemergence (seeded), postemergence, posttransplant and applied directed to row middles. May be applied at 1-2 oz. product (0.25-0.5 oz ai) in single or sequential applications. A maximum of 4 oz. product per acre per year may be applied. For post (weed) applications, use a non-ionic surfactant at a rate of 0.25% v/v. for preemergence (weed) control, Matrix must be activated in the soil with sprinkler irrigation or rainfall. Check crop rotational guidelines on label.				
Sethoxydim (Poast)	Tomatoes	Postemergence	0.188 - 0.28	----
<b>Remarks:</b> Controls actively growing grass weeds. A total of 4 1/2 pts. product per acre may be applied in one season. Do not apply within 20 days of harvest. Apply in 5 to 20 gallons of water adding 2 pts. of crop oil concentrate per acre. Unsatisfactory results may occur if applied to grasses under stress. Use 0.188 lb ai (1 pt.) to seedling grasses and up to 0.28 lb ai (1 1/2 pts.) to perennial grasses emerging from rhizomes etc. Consult label for grass species and growth stage for best control.				
Trifloxysulfuron (Envoke)	Tomatoes (transplanted)	Post directed	0.007-0.014	
<b>Remarks:</b> Envoke can be applied at 0.1 to 0.2 oz product/A post-directed to transplanted tomatoes for control of nutsedge, morningglory, pigweeds and other weeds listed on the label. Applications should be made prior to fruit set and at least 45 days prior to harvest. A non-ionic surfactant should be added to the spray mix.				
Trifluralin (Treflan HFP) (Treflan TR-10) (Trifluralin 4EC)	Tomatoes (except Dade County)	Pretransplant incorporated	0.5	----
<b>Remarks:</b> Controls germinating annuals. Incorporate 4 inches or less within 8 hours of application. Results in Florida are erratic on soils with low organic matter and clay contents. Note label precautions against planting noncrops within 5 months. Do not apply after transplanting.				