

**WEED CONTROL OPTIONS FOR TRANSPLANTED NON-BELL PEPPERS  
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Peppers, non-bell are normally grown from transplants; therefore, this review of herbicides registered or pending registration on May 30, 2003 will be applicable to transplants and not seeded-peppers.

Currently, most non-bell peppers are started in speedling-type trays and have a relatively small stem and foliage. The fresh weight of the stem and leaves is about 1 to 3 grams. Therefore, these extremely small plants are potentially susceptible to injury from some soil applied herbicides.

Use optimum fertility with adequate minor elements for rapid pepper establishment and growth. Rapid early growth will reduce potential herbicide stunting and increase plant size for improved weed competition and cultivation effectiveness. Cultivation when weed escapes appear is essential to maintain weed-free fields. Effective cultivation requires at least one or two days of dry conditions for drying of uprooted weeds; therefore, cultivations must be scheduled prior to anticipated rainfall or irrigation. Relatively shallow cultivation of about 2-3 inches depth should minimize redistribution of buried weed seeds into the soil surface zone where they may cause a new weed problem.

**Table 1. Weed Species Controlled by Soil Applied Herbicides Registered (or pending) for Peppers**

	<b>TREFLAN</b>	<b>COMMAND</b>	<b>DUAL MAG.</b>	<b>DEVIRINOL</b>	<b>SANDEA</b>
GRASSES	G	G	G	G	N
PIGWEEED	F	N/P	G	F/G	G
LAMBSQUARTERS	F/G	G	P	F/G	G
RAGWEED	N	F/G	N	P/F	G
NIGHTSHADE	P	N	G	N	N
PURSLANE	G	G	F/G	G	N
MORNINGGLORY	P/F	P	N	N	N
NUTSEEDGE	N	N	F/G	P	G

The attributes of herbicides labeled for peppers are as follows:

**Devrinol** (napropamide) (50 WP) A safe herbicide for peppers for soil surface application pre or post transplant (at 2 to 4 lb product/A). Devrinol may also be preplant incorporated before transplanting. Combinations of Devrinol with Command or Treflan have

acceptable crop tolerance and will extend the duration of acceptable weed control. Control of specific weeds will be improved by some combinations. For example, Command will control ragweed; whereas, Devrinol does not; therefore, the combination should be used for ragweed infested fields. Command plus Devrinol would also control pigweed; whereas, Command alone would not control pigweed. Weed control is improved with irrigation of about 0.33 inches for activation of Devrinol applied to the soil surface.

Devrinol persistence in soil may cause stunting of cereals in the fall; however, soil surface application at 2 to 3 lb product/A on light soil usually dissipates more rapidly than when incorporated. Moldboard plowing may reduce potential for cereal stunting.

**Command** (clomazone) 3 ME – apply at 2/3 to 2 pint/A to the soil surface before transplanting or pre-transplant soil incorporated treatment. Command, as a postemergence application will not injure peppers; however, this application timing is not labeled. Command is a safe herbicide for peppers and should not affect early growth and vigor.

Command will control annual grasses, velvetleaf, lambsquarter, ragweed, purslane, smartweed and jimsonweed. However, morningglory pigweed species, yellow nutsedge and nightshade species are not controlled. Command is equally effective for weed control as an incorporated or soil surface applied treatment.

Combinations of Command plus Dual Magnum, Treflan or Devrinol would increase the spectrum of weed species controlled by Command.

If cereals are planted in the fall after peppers, use the minimum rate for the soil type to reduce risk of carry-over injury.

**Dual Magnum (registration pending)** – (S-metolachlor) (7.62 E) – Apply pre-transplant to the soil surface and use 2/3 to 1 pint/A. Do not pre-plant incorporate. Dual Magnum may be applied as a directed spray to the soil surface after transplanting.

Dual Magnum has poor control of lambsquarters, morningglory, ragweed, velvetleaf, smartweed and jimsonweed. However, pigweed, nightshade, galinsoga, yellow nutsedge and all annual grasses are controlled by Dual Magnum, generally for the entire season. Extremely large populations of pigweed may not be adequately controlled. Transplanted nightshade weeds are not controlled.

For most pepper fields, Dual Magnum should be combined with another herbicide for improved broadleaf weed control. Dual Magnum plus Command is an ideal combination for a broad spectrum of weed control. Sequential applications of Treflan or Dacthal with Dual Magnum are potential combinations for improved broadleaf weed control. Treflan and Dacthal would require an additional spray application because the method and time of application are different from Dual Magnum. The weed control spectrum of Dual Magnum and Devrinol are similar and the combination would not provide significant benefits.

**Treflan, Trilin, etc** – (trifluralin) (4 E) – must pre transplant incorporated at 1 to 2 pints/A. Peppers have good tolerance to Treflan.

Treflan controls annual grasses, purslane, pigweed, lambsquarters, but should be combined with another herbicide such as Command for improved broadleaf weed control. Treflan pre-plant incorporated and followed by Dacthal 4 to 6 weeks after pepper transplanting, could be applied for improved broadleaf weed control. Treflan tank mixed with Command and pre-plant incorporated would control most broadleaf and grass weeds except yellow nutsedge, nightshade species and morningglory.

**Dacthal** (DCPA) 75% WP – Delay application until 4 to 6 weeks after transplanting. Use 8 to 14 lb/A broadcast over well established peppers. Dacthal controls most annual grasses, lambsquarters, pigweed species and purslane. Therefore if other weed species are present, it should be used in conjunction with other herbicides.

However, in fields with limited weed species populations, Dacthal can be used to extend weed control. Dacthal usually provides 6 weeks of weed control and grasses are usually the first weeds to escape control by Dacthal.

**Sandea** (75 W) (halosulfuron) – apply to row middles, 0.5 to 1.0 oz product/A as a directed spray. Add surfactant at 2 pints/100 gal. Halosulfuron was approved for the 2003 season only as a directed spray to row middles applied after transplanting. The spray solution should not contact any part of the pepper plants. The directed application doesn't require shields or a hood. Therefore, a halosulfuron residue tolerance was established for pepper fruits to permit marketing when inadvertent drift may occur onto peppers. Sandea may be applied anytime after transplanting, but the pre harvest interval is 30 days.

Sandea, pre-emergence will control pigweed species, common ragweed, lambsquarters, jimsonweed, galinsoga, Pennsylvania smartweed, velvetleaf and mustards, and suppression of yellow nutsedge and purslane. Postemergence, Sandea will control pigweed species, common and giant ragweed, galinsoga, Pennsylvania smartweed, velvetleaf, yellow nutsedge, pokeweed and mustards.

However, post-emergence halosulfuron will not control lambsquarters, purslane, jimsonweed but morningglory is suppressed.

**NOTE:** the post-emergence control recommendations are based on 1 to 3 inch height weeds.

For most Delmarva soils the 0.5 oz. product/A rate will provide optimum control. Higher rates would not be expected to significantly improve weed control and increase potential pepper injury. Also higher rates could cause problems in crop rotations; therefore, review the rotational crop information chart on the label. Examples of crop rotation plant-back intervals are as follows: soybeans and potatoes- 9 months; cabbage – 15 months; onions – 18 months and spinach -24 months.

**NOTES: Concerning Sandea applications...**

1. Rainfast period = 4 hours.
2. Delay sprinkler irrigation 2-3 days after post application.
3. Do not apply Sandea to crops treated with soil applied organophosphate insecticides.
4. Do not apply a foliar organophosphate insecticide within 21 days before or 7 days after any Sandea application.
5. Use only non-ionic surfactant at 1 to 2 quarts /100 gal. Do not use oil concentrates or silicon surfactants.
6. Do not apply more than 2 oz/A during the crop cycle and do not apply more than 2 oz/A per 12 month period.

**Gramoxone Max 3SC** (paraquat) (3 lb ai/gal) – apply 1.3 pints/A Gramoxone or 0.4875 lb ai/A as a directed spray in 10 gal/A spray volume. Do not allow spray to contact pepper plants. Spray contact on the stem will kill the plants. Use nozzle pressures of less than 30 psi. The XR series of flat-fan tips are operational at the low pressure of 15 psi. Do not apply more than 3 times per season. Add non-ionic surfactant at 1 pint of a 75% or more surface active agent per 100 gal of dilute spray solution or use 1% v/v crop oil concentrate.

Gramoxone Max may be used at 1.3 to 2.7 pints/A for pre-plant contact kill of weeds prior to transplanting in undisturbed soil. This is called a stale seed-bed system (if applied to soil previously tilled) or no tillage. Gramoxone Max could be used to kill emerged weeds on raised beds before transplanting. Use the higher rates for extremely dense weed populations or large weeds. This could be a banded application to kill weeds in the planting area zone. Use 10 gal /A spray volume.

**Roundup Weathermax** (glyphosate) (4.5 lb ae/gal of the glyphosate acid or 5.5 lb ai/gal of the potassium salt of glyphosate). (ae – acid equivalent) (Other glyphosate product labels should be reviewed for pepper registration before use).

Roundup Weathermax at 11 to 32 fl. oz/A, may be applied at least 3 days before transplanting to control emerged weeds. Hooded or shielded spray application and wiper applications may be made to row middles. Hooded/shielded spray applications must be performed with care to prevent spray drift contact with peppers. When applying Weather Max prior to transplanting into plastic mulch, residues on the plastic must be removed by 0.5 inch irrigation or rain before transplanting and the wash water flush must not enter transplant holes.

The rate of 16 fl oz/A Roundup Weathermax is equivalent to the Roundup Original, 3 pints/A rate. Roundup Weathermax rates range from 11 to 32 fl. oz/A, for control of specific weed species or sizes (see label).

For rope or sponge wick applications to the row middles, solutions ranging from 33 to 75% of Roundup Weathermax in water may be used. Over-the-top wipers cannot be used on peppers.

**Touchdown** (glyphosate) (3.0 lb ae/gal of glyphosate acid) (glyphosate is the diammonium salt form) – Touchdown is labeled for pretransplant and spot spray application in peppers. Avoid spray contact to all pepper plant parts with Touchdown. The broadcast herbicide rate range is 12 to 48 fl oz/A. Wait 3 days after Touchdown application before transplanting peppers. The spot spray dilutions are 0.5 to 3.0% v/v. See label for specific weed species and sizes for Touchdown rates for control.

When applying Touchdown prior to transplanting into plastic mulch, residues on the plastic must be removed by 0.5 inch irrigation or rain before transplanting and the wash water flush must not enter transplant holes.

**Graminicides** - is a generic term for post-emergence herbicides for control of monocotyledon plants in the Grass Family (Gramineae).

**Poast** (1.5 EC) (sethoxydim) -- apply 1 to 1.5 pint/A with oil concentrate at 1% v/v (1 gal/100 gal water).

**Select** (2 EC) (clethodim) – apply 6 to 8 fl oz/A with oil concentrate at 1% v/v (1 gal/100 gal water).

These graminicides control most grasses regardless of size; however, small grasses and low rates of herbicide are the preferred application conditions to reduce cost and prevent grass competition with peppers.

Labels of both products provide rates required for control of most grasses at several sizes. Therefore, know the grass species and size to select the correct herbicide rates. Crabgrass is relatively easy to control at the 1 to 2 leaf stage of growth but becomes more tolerant to graminicides after tillering.

Oil concentrate additive will improve graminicide control of grasses under drought stress or extremely large grasses. Since peppers are grown with irrigation, drought stress is unlikely to occur; therefore, oil concentrate rates can be reduced or eliminated to reduce concerns of pepper leaf scorch from oil concentrates on very bright, hot days. The substitution of nonionic surfactants for oil concentrates will also reduce potential risk of pepper injury. However, most small succulent grasses in irrigated fields are usually controlled by graminicides without additives.

Graminicides often require 10 to 14 days after application for grasses to appear in decline and eventually die.

Erratic goosegrass control has occurred with Select; therefore, evaluate grass species before application. Select provides better control of larger crabgrass than Poast.