

# **Weed Management for Reduced Tillage Production Of Vegetables in New York**

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## **INTRODUCTION**

Weed management strategies in reduced till vegetables are similar to conventional till systems. Both herbicides and cultivation play important roles, depending on the crop, the farming approach and weather. The attached weed management guidelines are identical to those provided in the Cornell Integrated Crop and Pest Management Guide (<http://www.nysaes.cornell.edu/recommends/>). In some cases, herbicide recommendations suggest application to clean cultivated soil. In those cases, undisturbed between-row areas in reduced till may not be suitable for these materials without some cultivation first. Always check the label or the Cornell Guide to determine herbicide rates, application strategies or any rotation or application restrictions.

Most vegetable cultivation equipment can also be used in reduced till systems. Growers relying primarily on cultivation for weed management should anticipate challenges from surface cover crop or crop residues in a reduced till system. Shallow cultivation can be used in all crops to reduce weed pressure and break up crop residue, while stimulating soil nitrogen mineralization.

Managing crop residues and dealing with perennial weeds may require unique strategies in a reduced till system. Undisturbed areas of soil in a reduced tillage system provide niches for the establishment of perennial weeds. Fall and spring management of these perennials is a critical to success with zone tillage. Rotate the choice of burn-down herbicide to minimize resistance development in weeds.

## **FALL PERENNIAL WEED CONTROL**

Roundup Weather Max (glyphosate), Rely (glufosinate-ammonium) or growth regulator herbicides (2,4 D) can be used in the fall when weeds are actively growing after the crop has been harvested. An alternative includes Gramoxone (paraquat).

## **SPRING PERENNIAL WEED AND COVER CROP CONTROL**

Roundup plus crop oil can be used to kill cover crops and perennial weeds 2-3 weeks prior to zone building. This will allow adequate time for roots to start breaking down. This will reduce residue clogging during tillage and improve the seedbed. If using mowing to kill overwintering cover crops, time the mowing for when the crop is flowering to maximize plant death.

## SWEET CORN

*Herbicides used in reduced tillage are similar to conventional tillage systems.*

*Check Cornell Guidelines for rates and additional materials.*

*Check herbicide labels for rates and application restrictions.*

<b>Pre emergence weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
AAtrex-Nine-O and AAtrex 4L (atrazine)	annual broadleaf weeds and grass suppression	Corn is tolerant at all stages but weeds are most sensitive during germination and prior to emergence. Use of an oil adjuvant will increase weed control.
Dual II Magnum (s-metholachlor)	annual grasses and selected broadleaf weeds	Surface application works well provided rainfall occurs within 3-5 days. Soil texture and organic matter are important factors in selecting an appropriate rate. Not for use in Suffolk and Nassau counties.
Prowl (pendimethalin)	velvetleaf and triazine resistant common lambsquarters	May be applied pre or post. Apply when corn has 2 or less leaves and velvetleaf is less than 1". Check label for crop rotation restrictions.
Callisto (mesotrione)	broadleaf weeds	The label suggests addition of 0.5 ai/A of atrazine to enhance burndown effects and to provide residual control of broadleaves.

<b>Post emergence weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Impact (topramezone)	several broadleaf weeds including triazine resistant lambsquarters, ragweed, nightshades and velvetleaf and annual grasses	The label suggests addition of 0.5 ai/A of atrazine to enhance burn down effects and to provide residual control of broadleaves. Uses of oil concentrates (MSO, COC) and a nitrogen fertilizer UAN or AMS are required.
Laudis (tembotrione)	pigweed spp., chickweed, hairy galinsoga, common lambsquarters, mustard spp., nightshade spp., common ragweed, velvetleaf , several grasses	Can be applied until corn is in the V7 stage but not after 12" tall. The label suggests addition of 0.5 ai/A of atrazine to enhance burndown effects and to provide residual control of broadleaves.
Permit (halosulfuron)	pigweed, ragweed, velvetleaf and yellow nutsedge	Crop oil concentrate or non-ionic surfactant is required.

## DRY BEANS

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<b>Pre emergence weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Permit (halosulfuron)	yellow nutsedge, galinsoga, lambsquarters, mustard/radish species, redroot pigweed, ragweed, and velvetleaf	May be applied to direct seeded dry beans either preemergence or as a row-middle application
Dual II Magnum (s-metholachlor)	annual grasses and selected broadleaf weeds	Surface application works well provided rainfall occurs within 3-5 days. In dry periods, shallow incorporation is necessary. May be used on all categories of dry beans, including black beans. Soil texture and organic matter are important factors in selecting an appropriate rate. Not for use in Suffolk and Nassau counties.
Reflex (fomesafen)	pigweeds, mustards, ragweed, and purslane, and suppressing nightshades	May now be used twice during the growing season but the total quantity applied may not exceed the maximum use rate for New York (1.25 pts/A). Pre-emergence applications should be made shortly after planting, before beans have begun to crack the soil surface.

<b>Post emergence weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Reflex (fomesafen)	pigweeds, mustards, ragweed, and purslane, and suppressing nightshades	Make the first postemergence application when the beans have at least one fully expanded trifoliolate leaf. A second application must be made before bloom. No more than two applications should be made per season.
Basagran (bentazon)	ragweed, yellow nutsedge, velvetleaf, nightshade	Use postemergence to control weeds that escape preemergence herbicides. Activity is reduced in cool weather.
Select Max (clethodim)	annual and perennial grasses	Apply with adjuvant when grasses are 2-6 inches tall and actively growing. Do not apply more than 0.5 lb ai per season.
Poast (sethoxydim)	annual and perennial grasses	Apply when grasses are actively growing and not under stress.
Assure II (quizalofop p-ethyl)	annual and perennial grasses	Apply when grasses are 2-6 inches tall, actively growing and not under stress.

## WINTER SQUASH AND PUMPKINS

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<b>Pre emergence weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Sandea (halosulfuron)	galinsoga, lambsquarters, mustard/radish species, redroot pigweed, ragweed, and velvetleaf. Yellow nutsedge is suppressed but not controlled.	Can be applied to direct-seeded crops. Apply pre-emergence after planting but prior to ground cracking. Use lower rate on light textured soils.
<b>PUMPKINS ONLY</b> Dual II Magnum (s-metholachlor)	annual grasses, yellow nutsedge, galinsoga, suppression of nightshades and other broadleaf weeds	Apply Dual Magnum pre-emergence before crop or weeds have emerged, post-transplant (within 72 hrs) or post emergence to a crop having at least 4 true leaves, following cultivation. Surface application works well provided rainfall occurs within 3-5 days. Soil texture and organic matter are important factors in selecting an appropriate rate. Growers need to have a 24 c label in their possession to use. Not for use in Suffolk and Nassau counties.

<b>Post emergence weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Strategy (clomazone + ethalfluralin)	annual weeds and most broadleaves	Banded application to clean cultivated soil. Rates of application are based on soil type as stated on the label.
Sandea (halosulfuron)	yellow nutsedge, galinsoga, redroot pigweed, mustard/radish species, ragweed and velvetleaf.	Apply after the crop has 2 to 5 true leaves but before female flowers appear. Use lower rate on light textured soils.
Select Max (clethodim)	annual and perennial grasses	DO NOT apply more than 0.5 lb ai per acre per season. Application on LONG ISLAND is restricted to no more than 0.25 lb ai per acre per season. Always use only 0.25% v/v non-ionic surfactant (NIS) with Select Max.

## CABBAGE

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<b>Pre emergence / Pre Transplant weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Goal or Goaltender (oxyfluorfen)	hairy galinsoga, redroot pigweed, common purslane, common lambsquarters, carpet weed, mustards and Pennsylvania smartweed	Apply prior to transplanting. Read the label carefully regarding transplant size and age to minimize the risk of injury.
Dual II Magnum (s-metholachlor)	annual grasses, yellow nutsedge, galinsoga, suppression of nightshades and other broadleaf weeds	Apply pre-transplant surface (not incorporated) or post-transplant within 48-72 hours, the latter is often less injurious. Growers need to have a 24 c label in their possession to use. Not for use in Suffolk and Nassau counties.

<b>Post transplant weed control</b>		
<b>Trade Name (common name)</b>	<b>Target Weed</b>	<b>Comments</b>
Select Max (clethodim)	annual and perennial grasses	DO NOT apply more than 0.5 lb ai per acre per season. Application on LONG ISLAND is restricted to no more than 0.25 lb ai per acre per season.
Goal or Goaltender (oxyfluorfen)	common groundsel, lambsquarters, pigweed spp., common purslane, shepherdspurse, and annual sowthistle	For transplanted crops, applications may not be made until a minimum of two weeks after transplanting. Do not use with surfactants, adjuvants, liquid fertilizers, or other pesticides. Severe crop injury can occur when weather conditions are cool and cloudy.