



Current Report

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Weed Control in Vegetables - 1993

J.E. Motes
Extension Vegetable Specialist

Dean McCraw
Extension Horticulturist-Vegetables

Weed control with herbicides in vegetable crops is complex because of the large variation in crops, planting depths and methods and the numerous weeds that are a problem. No one herbicide can be used safely to control all weeds. The information on the label is very important in determining which weeds a herbicide has the potential for controlling.

Herbicides are not a practical method of weed control in a small home vegetable garden where several crops will be grown in a small area. Mulching, hoeing, and hand weeding are more practical. See Fact Sheet 6005, "Mulching Vegetable Garden Soils" and 6015, "Weed Control in the Home Garden."

No one method of weed control is best under all conditions. Preparation of seedbeds will kill existing weeds and provide favorable conditions for germination and early growth of the crop. A high plant population will provide effective shading to discourage weed growth later in the season. Herbicides should be used along with effective tillage and good crop management to control weeds that severely compete with the vegetables. The time of planting of the crop and effective management practices for optimum growth are important for maximum herbicide effectiveness with minimum crop injury. For information on varieties, time of planting, and fertility suggestions see Fact Sheets 6000, 6004, 6007, 6009, 6032, and 6015.

The number of herbicides that can be used in most vegetable crops is less than many agronomic crops because the small seed size of many vegetables dictates depth of planting. Shallow planted seeds are more likely to receive herbicide levels high enough to cause injury than seed that can be planted deeper.

Herbicide Selection

Several herbicides that have been found to be effective and relatively safe for use in vegetable crops are listed in the table on page 3. There are other

herbicides approved for use in some of these crops that are not listed here. The herbicides that are listed in the table have been tested in Oklahoma and surrounding states and have been found to be effective. The rate of herbicide to use is not given in this table. Detailed information about the rate and method of use is explained on the label and should be consulted prior to use.

There are several factors that are important in selecting and using herbicides:

(1) The choice of a herbicide or herbicides for a weed control program depends on the crop being grown, the expected weed infestation, the equipment required for adequate application, the length of weed control desired, the cropping sequence, and the cost.

(2) Read the label for precautions, limitations, and directions for use. Use only a herbicide that has been registered for use on the crop to be grown.

(3) New herbicides should be tried on a small area the first time. This is often referred to as a *trial use* in Extension Service publications.

(4) Apply at the rate suggested for your soil type and for the stage of crop or weed growth. Apply uniformly over the treated area. Accurate calibration of equipment is necessary to obtain the desired rate of application. See Fact Sheet 1206 on "Precision Calibration of a Sprayer" if a liquid formulation is used.

(5) Application time is important with herbicides. *Preplant herbicides* are usually applied before a crop is planted and mixed (incorporated) with the top 1 1/2 to 2 inches of soil. *Preemergence herbicides* are applied before crop and weed seeds germinate and kill the weeds as they germinate. They should be applied to a weed-free soil for effective control. *Postemergence herbicides* are applied to young growing weeds. Herbicides approved for pre-transplanting applications are usually mixed with the soil before transplanting. *Post-transplanting herbicides* are applied after the plants are

transplanted. Some chemicals are approved only after the plants are established whereas others can be applied immediately after transplanting the crop. Many post-transplanting and postemergence herbicide applications must be directed away from the crop foliage to prevent injury. A few herbicides are approved for use only at certain times of crop growth such as post-harvest or at the time of certain tillage operations such as time of drag-off in potatoes or at lay-by when vine crops have three-five true leaves.

The term "stale seedbed" planting is becoming more common. By this method, the final seedbed is prepared 4 to 6 weeks prior to planting. Emerged weeds are killed with nonselective herbicides (e.g., Gramoxone and Roundup) before, during, or after planting but prior to crop emergence. The planting operation is done with minimal soil disturbance. Check labels for clearance.

(6) Always check the label for rotation restrictions prior to application of herbicides. The herbicides that can be used without injury to the next crop may be limited or not available. Some herbicides remain in the soil long enough to injure certain crops up to two years after application. Cropping sequence can play an important role in choosing a herbicide program.

Discussion of Herbicides

Gramoxone, a contact herbicide, is approved for use in several vegetable crops. A contact herbicide will kill most vegetation it hits. It is important to use enough water to thoroughly wet the foliage that is sprayed. A contact herbicide is used to control small weeds that germinate before the crop is planted or after planting but before it comes up. It does not control weeds that germinate after it is applied. Therefore, it is necessary to apply a preemergence herbicide in addition to a contact herbicide to control those weeds that germinate later.

Most of the preplant herbicides, such as Treflan or Prefar, are volatile. They will escape if not incorporated soon after application. Immediate sprinkler irrigation after application can be used instead of incorporation for some of these herbicides. When sprinkler irrigation is available some herbicides that are usually applied preplant and incorporated can be applied after planting. Check the label for approval before considering this alternative. If incorporation is used, it is important to do a good job of mixing the herbicide with the top one or two inches of soil immediately after an even application of the herbicide. Use any tool that will do a good job of mixing the herbicide with the soil. This usually requires going over the field twice with a tillage tool, the second time at right angles to the direction travelled the first time.

Use of preemergence herbicides requires moisture soon after application to activate the chemical. When rainfall does not occur soon after application and sprin-

kler irrigation is available, a light irrigation will activate the chemical. If weeds do germinate after herbicide application, a light cultivation will kill the first crop of weeds. It will also help activate the herbicide to kill later germinating weeds.

Some herbicide manufacturers are electing to drop various crops from their product's labels. Before a new container of herbicide is purchased always check the label for the target crop. If the crop is not listed on the label, that product or formulation cannot be legally used. In most cases earlier manufactured product which includes the target crop can be used.

Asparagus Weed Control

The herbicides listed for use in asparagus are used in different situations. Gramoxone can be used for direct seeded asparagus in crown beds or in field seeding. Gramoxone is used prior to, during, and after planting, but before asparagus seedling emergence.

Princep, Karmex and Sencor or Lexone are preemergence type herbicides that can be used in spring before harvest. Princep and Karmex can also be used after harvest. Princep manufactured for the 1993 season will not have asparagus on the label. Only products with asparagus on the label can be used. Follow the label for rate information when two applications of Karmex are used in one season. They must be applied to a soil free of weeds for effective control. Do not use herbicides on newly planted crowns.

Poast and Fusilade are translocated herbicides approved for postemergence control of grasses in nonbearing asparagus, i.e., spears may not be harvested within one year of application. Good growing conditions for the grasses at the time of application are important for effective control.

The amine form of 2,4-D can be used to control broadleaf weeds but will not control grasses. This herbicide should be used with drop nozzles to keep the spray off the asparagus plants. It is very important to follow directions closely so that drift will not reach surrounding vegetables or other crops.

Roundup can be used before harvest or immediately after the last harvest to control emerged annual and perennial weeds. If Roundup is used during fern growth, it should be applied as a directed or shielded spray in order to avoid contact of the spray with ferns, stems and spears.

Beans and Peas

Several preplant and preemergence herbicides can be used in beans or peas. Selectivity of these crops is better with many herbicides than vegetables with small seeds because these larger seeds can be planted deeper. The choice of which herbicide to use will depend primarily on the weed problems and the method of application that best fits the user's situation. Since

Weed Control Table

Time Of Use in Vegetable Crops*

HERBICIDE	Asparagus	Beans	Beets	Carrots	Cole Crops	Eggplant	Greens	Lettuce	Okra	Onion	Peas	Pepper	Potato	Spinach	Sweet Corn	Sweetpotato	Tomato	Vine Crops
Alanap (naptalam)																		2
Antor (diethatyl ethyl)			1,2											1,2				
Aatrex (atrazine)															2,5			
Balan (benefin)								1										
Basagran (bentazon)		5									5				5			
Bladex (cyanazine)															2			
Command (dimethazone)											1							1
Curbit (ethalfuralin)																		2
Dacthal (DCPA)		2			2,3,4	2,4,8	2			2,4,8	2	2,4,8	2,6,8			4,8	2,4,8	8
DeFol 6 (sodium chlorate)		9									9							
Devrinol (napropamide)	2					3						1,3					1,3	
2,4-D amine	5,7														2,5			
Diquat													9					
Dual (metolachlor)		1									1		1,6		1			
Eptam (EPTC)		1,8											1,6,8			1,4		
Fusilade (fluazifop-butyl)	5			5						5				5		5		
Goal (oxyfluorfen)					2,3					5								
Gramoxone (paraquat)	1,2							1,2				1,2	1,2				1,2,5	1,2
Karmex (diuron)	7																	
Kerb (pronamide)								1,2										
Lasso (alachlor)		1													1,2			
Lorox (linuron)				2,5									6					
Poast (sethoxydim)		5			5	5		5		5	5	5	5	5			5	5
Prefar (bensulide)					1			1		1,2		1,2					1	1
Princep (simazine)	7																	
Prowl (pendimethalin)		1									1		2,6					
Pursuit (Imazethapyr)											1,2,5							
Pyramin (pyrazon)			1,5															
Ro-Neet (cycloate)			2											1				
Roundup (glyphosate)	7	1,2	1,2	1,2	1,2,3			1,2	1,2	1,2	1,2		1,2	1,2	1,2	3		
Lexone or Sencor (metribuzin)	2			5									2,5,6				1,5	
Spin-Aid (phenmedipham)			5											5				
Sutan (butylate)															1			
Treflan (trifluralin)		1		1	1,3		1		1		1	3	6				3,8	8

*Numbers in the table indicate time of use of herbicides as follows:

1. Application prior to planting. Some are incorporated into the soil.
2. Preemergence application.
3. Application prior to transplanting.
4. Apply herbicide after transplanting crop—sometimes as directed application.

5. Postemergence application.

6. Application at time of dragoff.

7. Post-harvest and/or prior to harvesting.

8. Lay-by, sometimes as directed application.

9. Harvest aid.

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there are several types of beans and peas, be sure to check the label before using a herbicide to determine if it is approved for the type of beans or peas that you are growing.

Cole Crops

Cole crops for which herbicides listed in the table are approved are broccoli, cabbage, and cauliflower. If other cole crops are grown, be sure to check the label for approval before using any of these herbicides.

Greens

The greens usually included in this category are mustard, turnip, collard, and kale. Spinach is listed separately in the table since most of the herbicides approved for use in other greens cannot be used in spinach. If other greens are grown, be sure to check the label for approval before using one of these herbicides. The rate suggested for many herbicides for greens is lower than those that can be used with the same herbicides for many other crops. Note that Treflan is not labeled for turnip roots.

Irish Potatoes

There are several preplant and preemergence herbicides that can be used for weed control in potatoes. Most of these herbicides are approved for use at the time of drag-off. This process of dragging off the top of the soil kills any germinated weeds. A herbicide applied at that time acts as a preemergence herbicide to kill weeds that germinate later. If the same herbicide had been applied before this time, it probably would be ineffective because it would be diluted and scattered with the drag-off operation.

Gramoxone can be used to kill seedling weeds that germinate before the crop comes up or weeds that germinate before preemergence herbicides are activated.

Sweet Corn

Most of the herbicides that will control weeds for a long time in sweet corn are different from those that are used in other vegetables.

Sutan is a short residual herbicide that can be used for the control of grasses. It does not last long enough in the soil to carry over into later crops. It must be incorporated immediately after application for effective control.

Lasso and Dual will control many grasses and several species of broadleaf weeds. They are short residual herbicides and can be lightly incorporated preplant or used in preemergence applications. They can also be used in mixtures with herbicides that are effective for broadleaf weed control.

Aatrex gives excellent control of many broadleaf weeds, but does last a long time in the soil. Use Aatrex in areas where crops other than corn or sorghum will not be planted within the next 18 months after application. Other formulations of atrazine are available and may be approved for use in sweet corn.

A postemergence herbicide, 2,4-D, will control only broadleaf weeds. Stage of growth of corn at the time of application is an important factor. Late applications may not be effective. Either early or late applications may result in corn injury.

Tomatoes and Peppers

There are several herbicides that can be used in tomatoes and peppers. All preplant and preemergence residual herbicides listed in the table control annual grasses better than broadleaf weeds. It is important to check the instructions on the label to determine whether to use these herbicides for direct seeded beds or transplants. Small seedling plants that germinate near the soil surface would be much easier to injure with herbicides than plants large enough to transplant.

Vine Crops

The vine crops most often discussed are cantaloupe, cucumber, squash, and watermelon. Some of the products listed in this publication cannot be used on all four crops. Some of the herbicides have special instructions of use on the label for vine crops that do not apply to any other crop. Alanap is good for control of many broadleaf weeds whereas Prefar provides good annual grass control.

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