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WEED CONTROL IN PEPPERS

by

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Small Farms and Integrated Pest Management*

Weed control is one of the most serious concerns for commercial pepper growers. It is a serious problem in both transplant seedbeds and in the field. It is therefore important that a cost-effective weed control program is put in place before establishing a plant bed or planting transplants to the field.

FACTORS AFFECTING WEED CONTROL

From the standpoint of weed control, there are several factors that must be considered before venturing into pepper production. If peppers are grown in seedbeds for transplants, then the approaches to weed control are different from that of peppers grown in the field. For the production of transplants from seedbeds, it is important to select a sterilized soil mixture or use a land area that does not have a history of troublesome weeds or weeds that will be resistant to chemical control methods. For the production of peppers transplanted to the field, it is important that several factors be considered. The best land possible should be selected. This land should not have a history of troublesome weeds, especially weeds that can be expected to germinate in mid to late growing season. Some of these weeds include: sicklepod, yellow and purple nutsedge, pigweed, cocklebur and morningglories. Land with an infestation of perennial weeds such as common bermudagrass and johnson-grass should also be avoided. Weed identification is important since the total weed control strategy will depend on weed species and the degree of weed infestation. A good approach is to know the weed history of the field and if possible to draw a weed map showing areas with the infestation of different weed species. By having a weed map, control strategies can be more effective.

Crop rotation is also important to maintain land free of troublesome weeds. During the process of rotation, land treated with herbicides to which peppers may be sensitive should be avoided. Many of the herbicides used for weed control in agronomic crops (soybeans, corn, cotton, grain sorghum) have not been thoroughly tested for pepper sensitivity. The residual soil life, particularly of the newer compounds, has not been fully established. It is imperative that a record of the herbicides used on fields to be planted to peppers be kept and the herbicide labels checked for crop rotation guidelines. The following table lists herbicides with the potential to

*Rotational time after application required to prevent injury to pepper.

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cause severe injury or stand loss in pepper fields if sufficient rotation time is not allowed.

Herbicides Which May Cause Severe Pepper Injury or Stand Reduction Because of Carry-Over

<u>Herbicide</u>	<u>Estimated Waiting Period*</u>
Atrazine	one year
Lexone/Sencor	six months
Bladex	one year
Princep	one year
Surflan	six months**
Cotoran/Lanex	two years
Karmex/Direx	one year to 18 months
Classic	one year (possibly more)

**Buildup of surflan with continuous yearly usage may result in injury even after a six-month waiting period.

METHODS OF WEED CONTROL

SEED BED: The first step in avoiding a weed problem in pepper seedbeds is to select a weed-free soil mixture or a land area which does not have a history of a severe weed problem. Once this is done, two approaches may be taken for further controlling weeds in a seedbed.

- (1) *Fumigation:* The seedbed is tightly covered with an airtight tarp or plastic. A registered fumigant is then injected under the cover and the seedbed is left undisturbed for three days. The cover is then removed and the soil allowed to aerate for seven days before planting pepper seeds. A properly applied fumigant penetrates the soil and kills most existing viable seeds. In general, registered fumigants are restricted use chemicals and must be handled carefully by a certified applicator. Apply all fumigants in full compliance with label recommendations and precautions.
- (2) *Herbicides:* Certain herbicides may be used (with or without fumigation) for weed control in seedbeds. Contact herbicides may be used via the “Stale Seedbed Method.” This method allows the application of a contact non-residual herbicide prior to planting of seeds or after the planting of pepper seeds, but before emergence. This method allows weeds to germinate and to be killed before crop emergence. Preemergence herbicides may be applied immediately after planting, but before crop and weeds emerge.

IN FIELD: Hand weeding is the safest and least damaging to the crop; however, only growers with small acreage and abundant labor can depend on this approach.

- (1) *Mechanical:* Mechanical control is very effective during early growth; however, once plants begin to bear mechanical cultivation is not practical. Tractor wheels and cultivators easily damage crops. Also, mechanical cultivation usually requires supplementary hand weeding for removing weeds in the rows.
- (2) *Soil Applied or Post Emergence Herbicides:* Herbicide control is currently limited to materials recommended by Tennessee State University and the University of Tennessee. (See PB 1282)
- (3) *Stale Seedbed:* Stale seedbed control is a chemical method that is used to destroy weeds that emerge before peppers are transplanted. A contact herbicide is applied prior to transplanting peppers. This approach kills weeds that have germinated during the 7 to 10-day period after a preplant incorporated herbicide was applied.
- (4) *Fumigation:* Fumigation for weed control is expensive and dangerous. It must be handled by trained personnel. Usually, the soil is covered with a nonperforated material such as plastic or a tarp. All edges are then sealed with soil. The cover remains in place for three days after fumigation. The cover is removed and the soil allowed to aerate for seven days before the peppers are planted.
- (5) *Plastic Mulch:* Plastic mulch with trickle irrigation is a weed control method that is expanding rapidly. Black plastic is the most effective mulch because the color prevents light penetration which is needed for weed seeds to germinate. The edges of the plastic mulch must be properly embedded in the soil to prevent wind disturbance. Areas between mulched beds should be treated only with a preemergence or postemergence herbicide registered for pepper use, since the root system of the pepper plant has the capability of extending into the treated zone.

CONVERSION TABLE FOR HERBICIDES ON SMALL AREAS			MEASURING TABLES FOR HERBICIDES
Rate per Acre	Rate per 1000 Sq. Ft.	Rate per 100 Sq. Ft.	Herbicides are often bought in large packages or containers which do not have specific instructions for mixing smaller amounts to treat small areas. The following table compares various measurements that are needed to make smaller amounts of spray: 3 teaspoons (tsp.) = 1 tablespoon (Tbs.) 2 tablespoons = 6 teaspoons = 1 fluid ounce 4 tablespoons = 1/4 cup = 2 fluid ounces 1 cup = 16 tablespoons = 8 fluid ounces 2 cups = 1 pint = 16 fluid ounces 2 pints = 1 quart = 4 cups 4 quarts = 1 gallon = 16 cups 16 ounces = 1 pound
Liquid Materials			
1 pt.	3/4 Tbs.	1/4 tsp.	
1 qt.	1 1/2 Tbs.	1/2 tsp.	
1 ga.	6 Tbs.	2 tsp.	
25 gal.	4 1/2 pts.	1 cup	
50 gal.	4 1/2 qts.	1 pt.	
75 gal.	6 1/2 qts.	1 1/2 pts.	
100 gal.	9 qts.	1 qt.	
Dry Materials			
1 lb.	2 1/2 tsp.	1/4 tsp.	
3 lbs.	2 1/4 Tbs.	3/4 tsp.	
4 lbs.	3 Tbs.	1 tsp.	
5 lbs.	4 Tbs.	1 1/4 tsp.	
6 lbs.	4 1/2 Tbs.	1 1/2 tsp.	
8 lbs.	2/5 cup	1 3/4 tsp.	
10 lbs.	1/2 cup	2 tsp.	
100 lbs.	2 1/4 lbs.	1/4 lb.	
<i>Precautionary Statement</i>			<i>Disclaimer Statement</i>
<p>In order to protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.</p>			<p>Pesticides recommended in this publication were registered for the prescribed uses when printed. Pesticides registrations are continuously reviewed. Should registration of a recommended pesticide be canceled, it would no longer be recommended by Tennessee State University. Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar suitable composition, nor does it guarantee or warrant the standard of the product.</p>

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