

WEED MANAGEMENT INSIDE AND OUTSIDE GREENHOUSES

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Weed management inside the greenhouse and around the greenhouse perimeter is one of the most important sanitation practices you can perform. Weeds serve as hiding places for thrips, mites, aphids, and whiteflies. They also serve as reservoirs for tomato spotted wilt virus and impatiens necrotic spot virus. Western flower thrips that feed on a particular weed species that harbors a virus can transmit the virus to your crop. In addition, weeds can detract from the quality of your plants. Some weed species such as creeping woodsorrel (*Oxalis* spp.) rapidly produce large amounts of seeds that can germinate inside pots or under benches. As a result, early weed prevention is desirable rather than trying to manually remove weeds from pots and/or under benches. Two common weed management techniques are physical and chemical.

PHYSICAL

Physical weed management consists of pouring concrete floors, using geotextile fabrics covered with decomposed gravel, or using decomposed gravel alone. This will minimize weed establishment by reducing germination of their seeds. Weeds can be removed manually by hand or by hoeing. If you remove weeds manually, don't leave them on the floor. Insect and mite pests harbored in the weed cover can readily leave drying weeds and move onto your crop. Place weeds in a bag and dispose of them outside the greenhouse. Manually remove large weeds that are about to go to seed, because at this point it is too late to use a herbicide.

CHEMICAL

There are four post-emergent (after weeds emerge) herbicides registered for use

inside greenhouses. These are: Roundup Pro[®], Finale[®], Scythe[®], and Reward[®]. Roundup Pro[®] has replaced Monsanto's Roundup[®]. It contains an improved surfactant that enhances foliar penetration and absorption. Roundup Pro[®] is a non-selective, systemic herbicide. It kills many annual and perennial grass and broadleaf weeds. It is best used when the greenhouse is empty. You can use Roundup Pro[®] in continuous production systems, but you need to exercise extreme caution because any spray drift can injure the crop. If drift occurs, wash down the sides of the greenhouse or condensation containing Roundup Pro[®] can potentially drop onto plants and result in damage. Roundup Pro[®] takes time to kill weeds, so pests can continue to use weeds as refugia and then migrate off when weeds die down. Finale[®] is a non-selective contact herbicide with limited systemic activity. It kills emerged annual and perennial grass and broadleaf weeds. Scythe[®] is a non-selective contact herbicide that works best on newly emerged young, succulent weeds. Older, larger weeds are burned but not killed. It works best when air temperatures are 80°F or above. Reward[®] is another non-selective contact herbicide that works best on small, young annual grass and broadleaf weeds. Older, larger weeds are burned but not killed. Any spray drift from contact herbicides will cause cosmetic damage to your crop, but will not kill entire plants. Currently no residual or pre-emergent (before weeds emerge) herbicides are labelled for inside greenhouses.

Methods of weed management outside the greenhouse include mowing or weed-trimming, herbicides, or an artificial barrier. Mowing and/or weed-trimming should be done before weeds go to seed so they don't get blown into the greenhouse by wind. When mowing or weed-trimming be sure to close all vents, windows, and doors. Greenhouse managers can use Surflan[®] a pre-emergent/residual herbicide mixed with one of the previously mentioned

post-emergent herbicides around the greenhouse perimeter. This combination will kill existing weeds and prevent weeds from emerging later on. A geotextile fabric covered with decomposed gravel or decomposed gravel alone can be used to create an artificial barrier around the greenhouse perimeter. It is best to maintain a 20 to 30 foot weed-free barrier around the greenhouse perimeter to prevent weed seed germination and entry of new weed seeds through unscreened vents and doors.

RECOMMENDATIONS FOR EFFECTIVE WEED MANAGEMENT

- Read the label and use the appropriate rate.
- Make sure the target weed(s) are on the herbicide label.

- Wear protective clothing and eye protection.
- Apply herbicides early in the morning or late afternoon.
- Turn fans off when applying herbicides inside or outside the greenhouse.
- Close all vents and windows to prevent spray drift from entering the greenhouse.
- Avoid spray contact with desirable crops.
- Kill weeds when they are small, and before they flower and/or go to seed.
- Avoid leaving piles of soil or potting media on floors or in flats on benches as these are sites where weeds can germinate.

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