MANAGING WEEDS IN YOUR GREENHOUSE

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Now is the time, with greenhouses becoming empty, to thoroughly eliminate weeds and algae, and sanitize benches and work areas to prevent problems in the next crop cycle.

Weeds are a persistent problem in both retail and wholesale greenhouses. Weeds are unsightly and harbor insects such as whitefly, aphids, thrips, and other pests such as mites, slugs and diseases. Studies conducted through The UMass Greenhouse IPM Program have shown that chickweed, oxalis, bittercress, jewelweed, dandelion and ground ivy are hosts for impatiens necrotic spot virus (INSV) which may be vectored to susceptible host crops by thrips. Therefore, the removal of weeds from greenhouse floors is important for the purpose of pest management as well as aesthetics.

Integrated Weed Control

An integrated weed management program will effectively manage weed populations using cultural, non-chemical controls and selective use of chemical herbicides (pre and postemergence). Cultural controls include hand weeding, physical barriers (fiber cloth), and emptying the range and allowing weeds to dry up (solarization).

The most important means of managing weeds is prevention. This involves using weed block fabric to cover the floor and removing any weeds that grow in along the edges. Weed seedlings can be removed either manually or by using a herbicide before weeds go to seed. It is best to leave the fabric covered floor bare so it can be easily swept. Some growers have covered the fabric mulch with gravel or other material. Unfortunately, this creates a nice environment for weed seedlings to germinate after media has fallen on the floor and settled in the gravel.

It is important to remember that cultural controls and herbicides will only remove the vegetation which is present, but will not prevent reestablishment from seed which will also be present. Even solarization rarely produces sufficient heat to effectively kill weed seed.

Using Herbicides in the Greenhouse

Few herbicides are labeled for use in a greenhouse due to potential crop injury or death. This injury may occur in a number of ways including 1) spray drift when the fans are operating at the time of application and 2) volatilization (herbicides changing from a liquid to a gas). Herbicide vapors can easily buildup within an enclosed greenhouse and injure susceptible plants.

Herbicides currently labeled for use in the greenhouse are listed in Table 1. (*If any information in the table is inconsistent with the label, follow the label instructions*). Always be sure the chosen herbicide is labeled for use in the greenhouse and carefully follow label instructions and precautions. Herbicides are generally classified according to the stage of weed growth affected. Preemergence herbicides are applied before weeds emerge and provide residual control of weed seedlings. There are currently no preemergence herbicides labeled for greenhouse use. (Note: Surflan (oryzalin) is no longer registered for use in enclosed greenhouses).

Postemergence herbicides are applied after the weeds have emerged. In the greenhouse, several postemergence herbicides can be used under greenhouse benches and on the floors. Contact herbicides such as Scythe and Reward are best applied to small succulent seedlings. Large weeds will be burned but not killed. Envoy, a selective herbicide, is best applied to actively growing grasses beneath greenhouse benches. Irrigating crops too soon after applying a herbicide can wash it off and reduce its effectiveness. Also, since the listed herbicides are generally nonselective, they should not come in contact with crop foliage.

Systemic herbicides such as Roundup are best applied to actively growing weeds when temperatures are above 50 degrees F. Note that Roundup can only be used in an empty greenhouse between crops. Finale is similar to Roundup, in that it is a translocated, nonselective herbicide. However, in contrast to Roundup, Finale produces symptoms more rapidly (often within 48 hours compared to about 7 days with Roundup) but may not control selected perennial weeds as well as Roundup.

Outside the Greenhouse

Managing weeds outside the greenhouse is important. Eliminating a major source of air borne weed seed and preventing perennial weeds such as bindweed from growing under the foundation and into the greenhouse is essential. Weed control around the greenhouse will also reduce populations of flying insect pests. There are several options for controlling these weeds. One option is mowing. Mowing, when done regularly, can prevent the majority of weed seed formation.

A better solution, if possible, is to maintain a weed free barrier around the greenhouse. Some sources suggest that a 10 to 20 foot weed free barrier around the greenhouse is adequate. Weed block fabric mulch of postemergent and soil residual herbicides may be used. Surflan (orzyzaline) has been used successfully for residuel weed control or Surflan combined with Reward, Finale or Roundup can be used for post and preemergent weed control. Do not use auxin-type herbicides, such as those labeled for broadleaf weed control in turf, near greenhouses. While spraying weeds around the greenhouse with any herbicide, close windows and vents to prevent spray drift from entering the greenhouse.

If weeds are currently growing close to the greenhouse and the plan is to eliminate those weeds, use a knockdown insecticide on the weeds first. This will kill flying insects and prevent them from leaving the weeds and entering the greenhouse through vents. Then, use a postemergence, non-selective herbicide to kill existing vegetation.

Since so few herbicides are available for controlling weeds in the greenhouse, it is important to practice exclusion and sanitation as part of a routine integrated crop management program.

Mark Your Calendar
Southeast Greenhouse Conference
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Table 1. Herbicides labeled for use inside greenhouses.

Trade Name	Common name	Use with crop in house	Target Weeds	Comments
Envoy	Clethodim	Yes	Selective, contact post-emergence weed control. Annual and perennial grasses.	Does not control sedges or broadleaf weeds. Apply to actively growing grasses from 2"-6" tall. 12 hour REI.
Final AgrEvo USA	Glufosinate-ammonium	Yes	Nonselective, systemic, postemergence weed control. Annual and perennial grasses, broadleaf weeds.	Apply to actively growing weeds under benches. Avoid drift and direct contact with desirable vegetation. Do not use in greenhouses containing edible crops. Lacks residual and preemergence activity. 12 hour REI.
Reward Zeneca Professional Products	Diquat dibromide	Yes	Nonselective, contact, postemergence weed control. Annual weeds.	Apply to actively growing and small succulent weeds beneath benches. Avoid contact with desirable foliage. Do not use of food crops. Lacks residual and pre-emergence activity. 24 hour REI.
Scythe Mycogen Corp.	Pelargonia Acid	Yes	Nonselective, contact, ;postemergence weed control. Annual and perennial broadleaf and grass weeds as well as most mosses and cryptogams.	Apply to young, succulent weeds. Cool or cloudy weather may slow down activity. Thorough coverage needed. Do not use over desirable plants. Lacks residual and preemergence activity.
Roundup DryPak Monsanto Co.	Glyphosate	No	Nonselective, systemic, postemergence weed control for non-crop areas. Annual grasses and broadleaf weeds.	Do not mix, store, or apply in galvanized steel containers. Desirable vegetation must not be present. Air circulation fans must be turned off. Lacks residual and pre-emergence activity. 12 hour REI.

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