Managing Weeds in the Greenhouse

Leanne Pundt

Extension Educator – Commercial Horticulture

Maintaining weed-free growing conditions is necessary to produce high quality greenhouse crops. Insects and diseases can be kept to a minimum only if proper weed control practices are carried out regularly, along with the appropriate control measures. Weeds such as creeping woodsorrel, *(Oxalis corniculata)*, hairy bittercress *(Cardamine hirsuta)*, prostrate spurge *(Euphorbia humistrata)*, chickweed *(Stellaria media)* and others are persistent problems in greenhouses. These annual weed species reproduce primarily by seed, with several generations occurring per year. It is critical to remove weeds before they flower and produce seed.

Weeds may also compete with desirable crop plants for light, water and nutrients. The presence of weeds also reduces the aesthetic value of the crops grown and creates a poor impression to customers. Weeds are also a primary source of insects such as aphids, thrips, mites and whiteflies. Many common greenhouse weeds may be reservoirs of impatiens necrotic spot virus (INSV) while not showing any visible symptoms.

An integrated weed management program will help to effectively manage weed populations. This includes the use of cultural controls (prevention and sanitation), mechanical controls (hand

pulling), physical controls (physical barriers) and the selective use of chemical control (postemergence herbicides).

To prevent weed seeds from being blown into the greenhouse, maintain a 10- to 20-foot weed free barrier around the greenhouse. A geotextile fabric can be used both inside and outside the greenhouse to prevent weed growth. Control weeds with herbicides or by mowing. Close the greenhouse vents during herbicide applications to prevent drift inside to sensitive crops.

Using Herbicides in the Greenhouse

Few herbicides are labeled for use in a greenhouse due to the potential for severe crop injury to occur. This injury may occur in a number of ways including: 1) spray drift may occur if fans are operating at the time of application and 2) herbicides can volatilize, changing from a liquid to a gas. Herbicide vapors can then be easily trapped within an enclosed greenhouse and injure desirable plant foliage. Always be sure the herbicide selected is labeled for use in the greenhouse.

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. **Currently, there are no preemergence herbicides labeled for greenhouse use.**

Table 1. Herbicides labeled for use within a greenhouse.

Trade Name	Chemical Name	EPA Reg. No.	Manufacturer	Mechanism of Action	REI in hours
Envoy	Clethodim	59639-78	Valent USA Corporation	Selective, contact, meristemic inhibitor	12
Finale	Glufosinate-ammonium	45639-187	AgrEvo	Semi-selective, cell membrane disruptor	12
Reward	Diquat dibromide	10182-404	Zeneca Professional Products	Non-selective, contact, cell membrane disruptor	24
Roundup DryPak	Glyphosate	524-436	Monsanto Company	Non-selective, systemic	12
Roundup Pro	Glyphosate	524-475	Monsanto Company	Non-selective, systemic, aromatic	4
Scythe	Pelargonic acid	53219-7	Mycogen Corporation	Non-selective, contact	12

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 (See Table 1). Contact herbicides such as Scythe and Reward are best applied to small succulent seedlings. Envoy, a selective herbicide is best applied to actively growing grasses beneath greenhouse benches. Systemic herbicides such as Roundup are best applied to actively growing weeds when temperatures are above 50°F. **However, Roundup can only be used in an empty greenhouse between crops.**

Editors note: If any information in the tables is inconsistent with the label, follow the label. The information in the tables in accurate as of publication but is subject to change.

References

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Table 2. Herbicides and their characteristics.

Trade Name	Common Name	Target Weeds	Rate/1 gal.	Comments
Envoy	Clethodim	Annual and perennial grasses	0.65 to 1.3 fl. oz.	Does not control sedges or broadleaf weeds. Apply to actively growing grasses from two to 6 inches tall (See label for specific weeds controlled). Do not apply postemergence broadleaf herbicides within one day following application.
Finale	Glufosinate-ammonium	Annual and perennial grasses, broadleaf weeds	1.5 fl oz.	Apply to actively growing weeds under greenhouse benches. Air circulation fans must be turned off during application. Apply as a directed spray, using a large droplet, low pressure type nozzles. **Avoid drift and direct contact with desirable vegetation.** Do not use in greenhouses containing edible crops.

Reward	Diquat dibromide	Annual weeds	0.75 oz	Apply to actively growing, succulent weeds beneath greenhouse benches. Avoid contact with desirable foliage as injury may occur. Do not use on food crops. Relatively high mammalian toxicity.
Roundup DryPak	Glyphosate	Annual grasses and broadleaf weeds	1 packet	Do not mix, store, or apply in galvanized steel containers. Desirable vegetation must not be present during appli cation. Air circulation fans must be turned off.
Roundup Pro	Glyphosate	Annual and perennial weeds	1.3 to 2.6 fl. oz. Use higher rates outside the green-house.	Do not mix, store, or apply in galvanized steel containers. Desirable vegetation must not be present during application. Air circulation fans must be turned off. Temperatures should be above 50°F.
Scythe	Pelargonic Acid	Annual and perennial broad-leaf and grass weeds as well a most mosses	6.5 to 13 fl. oz. For mosses use 4 to 6 2/3 fl. oz. per gal.	Apply to young, succulent weeds. Cool or cloudy weather may slow down activity. Thorough coverage needed. Provides no residual weed control. Do not use over desirable plants for moss control.