

# Best Management Practices for Interior & Exterior Weed Control

## Rationale

Weeds (unwanted plants) can harbor pests that have the potential to spread to greenhouse crops. It is important to remove weeds within and in the immediate exterior greenhouse environment. Appropriate use of cultural, mechanical and physical controls will reduce the need to apply chemical controls, thus minimizing potential runoff of pesticides to surface and ground waters. New York State

commercially certified applicators apply herbicides as needed; priority is placed on least toxic chemicals and appropriate application timing to minimize environmental impact. Greenhouse staff applies interior herbicide applications. Cornell Greenhouse staff (NYS3A certified) apply exterior herbicide applications. Proper notifications, record keeping and reporting are required.

**Environmental Principle:** Environmental impact is reduced when care is taken to prevent over-application and improper use of herbicides.

Operational Aspects	Environmental Assurance		
	Level 1	Level 2	Level 3
<b>Overview</b>			
Emergency Preparedness	Exterior & Interior: staff educated and written protocols exist for proper procedures to handle emergencies: spills, drift and plant material over-exposure	Exterior & Interior: staff educated and written protocols exist for proper procedures to handle emergencies: spills, drift and plant material over-exposure	Exterior & Interior: staff educated and written protocols exist for proper procedures to handle emergencies: spills, drift and plant material over-exposure
Environmental Awareness	Exterior & Interior: staff are trained and made aware of the hazard to surface and groundwater from over application and toxic herbicides	Exterior & Interior: staff are aware of hazards, and hazards are being reduced through physical and mechanical weed controls, use of less toxic chemicals and application timing, and use of barriers	Exterior & Interior: staff are aware of hazards, and hazards are being eliminated through physical and mechanical weed controls, use of less toxic chemicals, application timing and use of barriers
Training	Exterior & Interior: herbicide applicators are trained and are required to be at least a NYS pesticide apprentice under direct supervision of a NYS commercially certified applicator and have had hazards training	Exterior & Interior: herbicide applicators are trained and are required to be NYS commercially certified applicator and have had hazards training	Exterior & Interior: herbicide applicators are trained and are required to be NYS commercially certified applicator with recertification coursework in IPM and have had hazards training

Operational Aspects	Environmental Assurance		
	Level 1	Level 2	Level 3
Communication	Exterior & Interior: greenhouse staff communicate application schedule and equipment needs with other greenhouse staff and/or greenhouse users; verbal notification in immediate area	Exterior: date, location, time and chemical to be applied communicated and agreed upon amongst greenhouse staff and greenhouse managers Interior: greenhouse staff communicate application schedule and equipment needs with other greenhouse staff and/or greenhouse users in the immediate area of application and must comply with required posting for pesticide application	Exterior: date, location, time and chemical to be applied communicated and agreed upon amongst greenhouse staff and greenhouse managers Interior: greenhouse staff and managers communicate application schedule and equipment needs with other greenhouse staff and/or greenhouse users in immediate area through postings/written and verbal communications
<b>Management</b>			
Physical & Mechanical Controls	Exterior: mow and/or hand weed Interior: gravel floor; benches free of soil media; weeds hand pulled	Exterior: gravel around greenhouse structures; mechanical trimming and hand weeding Interior: gravel floors use ground cover under gravel; benches free of soil media; weeds hand pulled and gravel raked	Exterior: ground cloth underlying gravel around greenhouse structures; occasional mechanical trimming and hand weeding Interior: concrete flooring; welded wire benches; drains & floor cracks free of soil media; weeds-specific research material grown in a greenhouse with concrete floors
Chemical Selection	Exterior & Interior: any NYS registered herbicide product, appropriate for the weed species with low residual activity	Exterior & Interior: any NYS registered herbicide product, appropriate for weed species with low residual activity; product chosen for effectiveness against particular weed species	Exterior & Interior: NYS registered herbicide products, appropriate for weed species with low residual activity; product chosen for efficacy against particular weed species; product selected is the least toxic (relatively high LD <sub>50</sub> ) and least environmentally persistent among options
Application Timing of Herbicides	Exterior & Interior: during normal work hours avoiding conditions for drift; following the label requirements; closing vents and turning fans off during application if conditions are right until after leaves are dry/spray dissipates	Exterior: early morning, late afternoon, or early evening when greenhouse fans can be shut down with no winds outside Interior: late afternoons after final water for the day is complete or sunny day	Exterior: early morning, late afternoon, or early evening when greenhouse fans can be shut down; applicator has knowledge of interior locations of herbicide-sensitive and research plants Interior: when greenhouse is free of plant material

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	Level 1	Level 2	Level 3
Application Frequency	Exterior: routine for maintenance Interior: as needed for maintenance	Exterior: periodically; consideration given to plant material in the greenhouse Interior: as needed for maintenance, consideration given to plant material in the greenhouse; scheduled break between greenhouse use/crop cycles, if break not possible during “down time”	Exterior: only as needed based on surveys Interior: IPM Practices followed with consideration given to plant material in the greenhouses
Application Equipment for Herbicides	Exterior & Interior: hand-held or backpack sprayer	Exterior & Interior: hand held pump sprayer or backpack sprayer with a gauge	Exterior & Interior: backpack sprayer with gauge; control application with calibrated equipment
Application Notification	Exterior & Interior: treated areas posted with signs as required by NYS DEC	Exterior: treated area posted with signs as required by NYS DEC; application posted inside building Interior: applicators provide notification by posting signs up to 24 hours in advance	Exterior: treated area marked with signs as required by NYS DEC; application posted inside building and occupants notified of application before it occurs Interior: applicators provide notification by posting signs up to 24 hours in advance
Record Keeping & Reporting	Exterior & Interior: complies with NYS regulations	Exterior & Interior: complies with NYS regulations; scouting occurs and some records kept as needed	Exterior & Interior: complies with NYS regulations; scouting occurs; records of problems and solutions kept for multiple years