LONGWOOD UNIVERSITY

INTEGRATED PEST MANAGEMENT (IPM) PLAN

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INTRODUCTION

Integrated Pest Management (IPM) establishes a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks.

Longwood University has adopted an Integrated Pest Management Plan for all the landscaping and grounds the University manages. This plan outlines procedures to be followed to protect the health and safety of students, faculty, staff and visitors from pest and pesticide hazards. The plan is designed to voluntarily comply with policies and regulations by the US Department of Agricultural for University Facilities.

Objectives of this IPM plan include:

- Elimination of significant threats caused by pests to the health and safety of students, faculty, staff and the general public.
- Prevention of loss or damage to landscape or property by pests.
- Protection of environmental quality inside and outside buildings.

The goal of the plan is not the total elimination of a pest, but to minimize problems to an acceptable level.

This IPM plan is maintained in the office of the Director of the Landscape and Grounds Department.

IPM COORDINATIOR

The Director of Landscape and Grounds, or a specified designee, shall be Longwood University's IPM Coordinator and will be responsible for the implementation of the IPM plan and

coordination of all pest management-related communications between Longwood University, service providers, faculty, staff and students.

PLAN REVIEW

This plan will be reviewed and revised annually by the Director of Landscape and Grounds and all Landscape and Grounds Managers, with input from Department Supervisors and the University's Sustainability Manager.

POSTING AND NOTIFICATION OF PESTICIDE APPLICATIONS

When pesticide applications are scheduled on Longwood University-managed grounds, pesticide applicators will provide posting and notification in accordance with product label instructions. All students, faculty and staff will be notified through Campus-wide e-mail and have access to pesticide application information through the University's Facilities Department website, under Landscape and Grounds.

Use of least toxic pesticides or self-contained non-rodent bait does not require notification. If restricted pesticides other than least toxic pesticides are used, building occupants will be notified not less than 72 hours before the pesticide is applied on surrounding grounds under normal conditions and within 24 hours after application of a pesticide in emergency conditions.

RECORD KEEPING & PUBLIC ACCESS TO INFORMATION

The Landscape and Grounds Department of Longwood University will maintain records of all service provider visits and pest control treatments for at least (3) years. Information regarding pest management activities will be made available to the public at Longwood University's Landscape and Grounds Office in the Bristow Building.

TRAINING

All Landscape and Grounds full-time staff will be trained, at a minimum, as registered Spray Technicians and be required to maintain certification with the Virginia Department of Agriculture and Consumer Services. Periodic information and question/answer sessions may be offered to interested faculty, staff and students to provide an overview of the University's Integrated Pest Management Activities.

IPM STRATEGIES

Pest management strategies may include education, exclusion, sanitation, maintenance, biological and mechanical controls, and pre-approved, site-appropriate pesticides.

An integrated Pest Management decision at Longwood University shall consist of the following steps:

1. Identify pest species.

2. Estimate pest population and compare to established action thresholds.

3. Select the appropriate management tactics based on current on-site information.

4. Assess effectiveness of pest management actions.

5. Keep appropriate records.

Decisions concerning whether or not pesticides should be applied in a given situation will be based on a review of all available options. Efforts will be made to avoid the use of pesticides by adequate pest proofing of facilities, good sanitation practices, selection of pest-resistant plant materials and appropriate horticultural practices.

When it is determined that a pesticide must be used in order to meet pest management objectives, the least-hazardous material, adequate for the job, will be chosen.

All pesticide storage, transportation and application will be conducted in accordance with the requirements of the Federal Insecticide, Fungicide and Rodenticide Act (7 United States Code 136 et seq.), Environmental Protection Agency Regulations in 40 CFR, Occupational Safety and Health Administration Regulations, Longwood University Policies and Procedures and local ordinances.

No person shall apply, store or dispose of any pesticide on Longwood University-managed property without an appropriate pesticide applicator license. All pesticide applicators will be trained in the principles and practices of IPM and the use of pesticides approved for use by the University. All applicators must comply with this IPM policy and follow appropriate regulations and label precautions when using pesticides in or around University facilities.

Pest-specific strategies will be included in the IPM Program Specifications made available to each service provider.

PEST-SPECIFIC STRATEGIES

The following strategies will be used for frequently encountered pests:

Broad-leafed or grassy weeds in sidewalk cracks, curbs, patios.

Threshold: Any

When manual removal is not practical, spot treat as early as possible with a mixture of both a non-selective weed killer and a pre-emergent weed preventer, such as 2.6 ounces of glyphosate 48% plus 1.0 ounce of S-metolachlor 83.7% per gallon of water.

Weeds in mulch beds:

Threshold: Any

1. When possible, pull or dig weeds up manually, being sure to remove root material before the weed are mature enough to produce seeds.

2. Apply pre-emergent weed preventer, such as FREEHAND ™ or SNAPSHOT ™ granules according to label directions, to all beds February-April and June-July. This is most effective if applied to bare ground before re-applying mulch and watered in thoroughly. All granules will be immediately swept or blown off sidewalks, patios, roads, etc., before the applicator leaves the treatment area.

3. Maintain 2-4 inches of clean mulch cover to inhibit weed growth and retain moisture.

4. When applying dye, such as Mulch Magic to mulched areas, a liquid pre-emergent weed preventer, such as PENNANT™ (S-metolachlor 83.7% one ounce per gallon of water), may be added to the dye mix for areas where granular pre-emergent weed preventer has not been applied for the season.

Grassy weeds in ornamental grass such as Liriope (see 1, 2, and 3 above):

When manual removal is not practical, spot treat as early as possible with a selective grassy weed herbicide such as SETHOXYDIM™ (Sethoxydim 13%) mixed with 2.9 ounces per gallon of water or equivalent. Manual removal of Bermuda grass is seldom effective, due to extensive rhizomes.

Nutsedge or broad-leafed weeds in ornamental grass such as Liriope (see 1, 2, and 3 above):

When manual removal is not practical, spot treat as early as possible with a selective herbicide labeled for Nutsedge and broad-leafed weed control, such as BASAGRAN™ (Sodium salt of bentazon 44%) mixed with 0.75 ounces per gallon of water or equivalent. Manual removal of Nutsedge is seldom effective, due to extensive underground rhizomes.

NOTE: BASAGRAN™ and SETHOXYDIM™ can be mixed together in the same tank to control Nutsedge, broad-leafed weeds and grassy weeds in Liriope beds where this is needed.

Broad-leafed or grassy weeds in open mulch areas (see 1, 2, and 3 above):

When manual removal is not practical, spot treat as early as possible with a non-selective herbicide, such as ROUNDUP PRO MAX™ glyphosate 48% mixed with 1.5 ounces per gallon of water or equivalent.

Poison Ivy near walkways and parking lots:

Threshold: Any

When manual removal is not practical, spot treat as early as possible with herbicide labeled for poison ivy control, such as ROUNDUP PRO MAX™ glyphosate 48% mixed with 1.5 ounces per gallon of water or equivalent.

Weeds in Turf Areas

General turf areas

Threshold: Weed thresholds in general turf areas are HIGH. The need for pre- and post-emergent herbicide applications may be made on a case-by-case basis.

High priority cool-season turf areas – Fescue (Front High Street, Wheeler/Lancaster Mall, etc.)

Cultural practices such as fall fertilization, in accordance with the **Longwood University's Cool Season Nutrient Management Plan for Campus Turf,** and aeration and over-seeding can improve fescue turf health, thereby minimizing opportunities for weeds to establish.

Apply pre-emergent weed preventer, such as a turf fertilizer containing BARRICADE™ (Prodiamine), according to the manufacture's label directions during February-March and April-May. Granular pre-emergent herbicides should be thoroughly watered-in with at least ½ inch rainfall or irrigation. DO NOT apply pre-emergent weed preventer within 90 days prior to over seeding. Consult the product label to insure non-interference with future over-seeding operations. All granules will be immediately swept or blown off sidewalks, patios, roads, etc., before the applicator leaves the treatment area.

When broad-leafed weeds appear, spot treat with a broad-leafed weed killer, such as LESCO THREE-WAY (Dimethyl amine 30.56%, Methyl – 4 Chlorophenaxy 8.17 %, Dicamba 2.77 %), mixed with 0.91 to 1.29 fluid ounces in .5 to 5.5 gallons of water to treat 1000 sq. ft. **For fine fescues such as Creeping Red or Chewing's, DO NOT apply until the turf is 3 years old and use the lower rate.**

High priority warm-season turf area – Bermuda, Zoysia - such as the Lancer Park Sports Field, Bedford Tiered Lawn, Brock Commons, etc.

Cultural practices such as spring fertilization, in accordance with the Longwood University's Warm-Season Nutrient Management Plan for Campus Turf, aeration and over-seeding can improve turf health, thereby minimizing opportunities for weeds to establish.

Apply pre-emergent weed preventer, such as LESCO RONSTAR .95% PLUS FERTILIZER™ (Oxadiazion 0.95%) at the rate of 50lbs per 6900 square feet. Granular pre-emergent herbicide should be thoroughly watered-in with at least ½ inch of rain or irrigation. DO NOT apply pre-emergent weed preventer within 90 days prior to over-seeding. Consult the product label to insure non-interference with future over-seeding operations. All granules will be immediately swept or blown off sidewalks, patios, roads, etc., before the applicator leaves the treatment area.

When broad-leafed weeds appear, spot treat with a broad-leafed weed killer, such as LESCO THREE- WAY (Dimethyl amine 30.56%, Methyl – 4 Chlorophenaxy 8.17 %, Dicamba 2.77 %), mixed 0.91 to 1.29 fluid ounces in .5 to 5.5 gallons of water to treat 1000 sq. ft. The higher rate can be used on dormant turf. Use the lower rate when warm season turf is actively growing. Consult the product label to insure non-interference with future over-seeding operations.

Bare grounds weed control.

Threshold: Any grass or weeds

Apply PRAMITOL™ 25E non selective Herbicide at label rates for bare ground weed control, around storage areas, fence, fuel tanks, Machinery, gravel parking lots, roadways, and industrial sites. NOT FOR LANDSCAPE AREAS.

Insects, fungus, other diseases damaging ornamental plants.

Prevention is the primary method of pest and disease control, including:

- Choosing plant varieties that are hardy and well-suited to the micro-environment where they will be placed.
- Inspecting new plants prior to planting to insure they are healthy.
- Amending soil in planting areas as indicated by soil testing, to provide optimum conditions for plants to thrive, making them more resistant to diseases. Critical factors include maintaining optimum soil pH and nutrient balance for specific plants.
- Placing ornamental plants with sufficient space around them for adequate light and air circulation in their mature size.
- Assuring adequate water and fertilizer are applied to keep plants healthy and resistant to attack.
- Careful pruning and cleanup of clippings.
- Cleaning of pruning tools with isopropyl alcohol to prevent spread of insects, fungi and other diseases.
- Early detection and quick treatment is essential to minimize the need for pesticide application. In addition to periodic surveys by the Integrated Pest Management Specialist (IPMS), ornamentals plants will be checked by all Landscape staff who will alert the IPMS to suspected problems including spotting and yellowing of leaves, leaf drop or other visible evidence of pest or disease.

Lace bugs damaging azaleas or rhododendrons:

Threshold: Significant stippling and yellowing of leaves

If the infestation affects small areas or portions of plants, apply contact insecticide such as insecticidal soap or horticultural oil mixed with water according to the label. If needed, repeat applications at 2 week intervals.

If the infestation is severe or does not subside after repeated treatments with regular insecticides, apply a foliar contact insecticide such as ASTRO™ (Permethrin 36.8%) mixed 4 to 8 ounces per 100 gallons of water in the spring when pupae are emerging and adult flies are present.

Leaf miners in boxwoods:

Threshold: Noticeable leaf damage.

Apply foliar contact insecticide, such as ASTRO™ or PERMETHRIN SFR™ (PERMETHRIN 36.8%), mixed 4 to 8 ounces per 100 gallons of water in the spring when pupae are emerging

and adult flies are present. **This pesticide is highly toxic to bees exposed to direct treatment or residues on crops or weeds. Do not apply this product or allow it to drift to crops or weeds on which bees are actively foraging.**

Japanese beetle Grubs in turf:

Threshold: 10-12 grubs per square foot (cut and peel back the sod layer to inspect during July-August).

Apply appropriate insecticide in accordance with the manufacture's label directions.

ADD MORE PESTS AS APPROPRIATE

Revised 7/1/2021

References:

IPM Institute of North America, Inc. Sample Integrated Pest Management Plan 4510 Regent St. Madison, Wisconsin 53705 USA, 608-232-1410 www.ipminstitute.org

Barksdale, Robert (2012) Nutrient Management Plan Prepared For Longwood University Commonwealth of Virginia Department of Conservation and Recreation,

Virginia Cooperative Extension Service (2013) Pest Management Guide – Horticultural & Forest Crops 2013. Virginia Tech and Virginia State University, National Institute for Food and Agriculture, United States Department of Agriculture.

Virginia Cooperative Extension Service, video education module Integrated Pest Management for Plan Diseases in the Home Garden and Landscape, Learning Module I: Integrated Pest Management, http://pubs.ext.vt.edu/PPWS/PPWS-14/PPWS-14.html.