Integrated Pest Management
Plan for the
University of North Florida Landscape

INTRODUCTION

Pests are populations of living organism (animals, plants, or microorganism) that damage or interfere with desirable plants or aesthetics, or impact human or ecosystem health. The goal of this integrated pest management plan is to describe University practices to prevent pest occurrence as well as to promote Integrated Pest Management methods in response to the pest occurrences that do arise.

Integrated Pest Management (IPM) is an approach that establishes a sustainable means of Integrated Pest Management Plan for the landscape and Botanical Garden managed by UNF. The plan outlines procedures to be followed to reduce pest infestations by evaluating the biological features contributing to an infestation, thus improving ecosystem health. The plan is designed to comply with policies and regulations published by the Florida Department of Agriculture.

The plan addresses a four-tiered approach to pest management: pest identification, monitoring for pest; intervention action when appropriate (action thresholds); and appropriate cultural, mechanical, or biological controls. Objectives of this IPM plan include:

Elimination of significant threats caused by pests.
Prevention of loss or damage of plant materials by pests.
Protection of environmental quality.
Continual evaluation of the strategies used to access overall cost, efficacy, and value to identify what worked well or needs to be improved.

This IPM plan will be stored in the office of the IPM Coordinator.

IPM COORDINATOR

The Physical Facilities Assistant Director of Landscape and Grounds or designee shall be the IPM Coordinator and be responsible to implement the IPM plan and to coordinate pest management-related communications between administrators, staff, and public.

The IPM Coordinator shall designate an employee to serve as the IPM Site Coordinator for the UNF landscape.

IPM COMMITTEE

The Department of Landscape and Grounds (LG) will maintain an IPM committee with responsibility for annual review of the IPM program, serving as a liaison for LG staff, and for assisting the IPM Site Coordinator in resolving pest-related issues. The committee will address IPM issues as needed and will meet at least annually to update the plan. Minutes will be taken of committee meetings and kept on file by the IPM Coordinator. Membership will include representation from each landscape team and the spray technicians.

management practices to reduce pest infestation chances:

1. New Plant Material/Installation Practices
    a. Right plant, right place
    b. Understand soil PH/ nutrient availability and plant appropriately per findings
    c. Inspection of nursery stock upon arrival to campus to ensure no pest and good plant quality
    d.

groups that are derived from plants or naturally occurring substances (e.g. pyrethrum, insect hormone analogues, or insect growth regulations). Surfactants will be used to help maximize the effectiveness of each appropriate pesticide treatment and to minimize the necessity of retreatment. The LG staff will primarily rely on spot treatment of pesticides. Broadcast treatments will only be used when infestation reaches extreme levels. LG staff will exclusively use low volume spray equipment to reduce overall pesticide use and to minimize environmental impact.

Definitions:
Neonicotinoids: Neonicotinoids are a class of neuro-active insecticides that can negatively affect predatory insect populations.

Surfactants: Surfactants are a form of adjuvant that increase the efficacy and spreadability of many herbicides and pesticides.

Red List: The United States Environmental Protection Agency (EPA) rates all pesticides and assigns labeling to enable enforcement of pesticide requirements. The red list contains all of the worst in class materials that can be used for different applications. In this instance Red List is the most harmful class of pesticides as rated by the EPA.

Green List: The Green List contains all of the best in class materials that can be used for different applications. In this instance Green List is the least harmful class of pesticides as rated by the EPA.

Yellow List: The Yellow List contains materials that have some negative harmful effects, but not negative enough to be placed within the Red List. In this instance, the Yellow List is a class of somewhat harmful pesticides as rated by the EPA.

Plant Sanitation: Removal of diseased plants, and cleaning pruning shears to prevent spread of infections

Appendix A – Infestation Report Form; Spray Log

Appendix B - IPM work-flow

Appendix C – Fertilizing SOP

Appendix D – Pest Identification, Thresholds, and Actions

TURF IPM FIELD REPORT FORM

Location: ________________________

Date: ___________________________

[redacted]	[redacted] Species	[redacted] or %	[redacted] Treatment	Diseases Species	Diseases No. or %	Diseases Treatment	Insects Species	[redacted]

[redacted]

UNF Spray Log

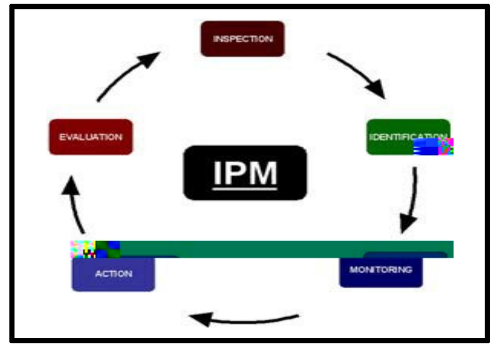
Date	Chemical	Area	Pest	Rate	Amount Product	Amount Used	Wind Speed	Temp	Hrs Spent

Pestknowledge/Database
Spray techs
Grounds personnel

Scouting/Monitoring
Reporting

Spray Team
Diagnose

IPM Workflow Management Example (LG IPM Committee)



Select corrective action(s) based on:

LG Standard Operating Procedure for Pesticides, Herbicides and Fertilizers

Knowledge

- This SOP is in addition to LG's Integrated Pest Management Plan. Familiarity with this plan is essential to this SOP.
- Integrated Pest Management:
    - The University of North Florida's Integrated Pest Management consists of a process to balance the use of cultural, biological, and chemical procedures that are environmentally compatible and economically feasible to reduce pest populations to tolerable levels. Monitoring involves regular checking of an area, early detection and

Application Schedules and Products Used

- Application Schedules: The table below outlines the schedules for pesticides, herbicide, and fertilizers:
- Turf applications include all irrigated turf. These applications will not be completed around pond buffers and non-irrigated turf, such as the frontages.

Beds	Turf
Spring (March, May)	
Targeted post-emergent herbicide on weeds.	Broadcast post-emergent mixed with pre-emergent herbicide.

Fertilizer Details:

The table below outlines the schedules and products for fertilizers:

Beds	Turf	Palm Trees
SPRING (April)		

Products Used

Pre-emergent herbicides commonly used in landscape beds.

Trade Name	Active Ingredients	Comments
Barricade 4FL, Quali-Pro 4FL, or Regalkade 0.5G	prodiamine	Fairly broad spectrum weed control including annual grasses, spurge, chickweed, henbit, oxalis and others. Granule (Regalkade G) is much safer than the spray (Barricade). Only a few bedding plants are on the label
Pre-M	pendimethalin	Fairly broad spectrum weed control including annual grasses, spurge, chickweed, henbit, o (d)-1.215 (,)]457a.128 (n)-1

Post-emergent herbicides commonly used in landscape beds.

Trade Name	Active Ingredients	Comments
Fusilade II	fluazifop-P	This is a post-emergent herbicide for annual grass and perennial weed control.
Lontrel	clopyralid	This post-emergent herbicide controls certain broadleaf weeds in turf and ornamentals grasses in nurseries and landscapes.
Image	imazaquin	This product is a pre-emergent or post-emergent herbicide for annual grasses, broadleaf weeds, and sedges. Avoid using within the drip line of trees.
Certainty	Sulfosulfuron	This product is a pre-emergent or post-emergent herbicide for annual grasses, broadleaf weeds, and sedges in turf grass area. Avoid using within the dwieeseeseesceesroadleaf
-	-	

Insecticides commonly used in landscape beds.

Trade Name	Active Ingredients	Comments
Sevin	Carbaryl	This broad-spectrum insecticide kills as a contact and stomach poison. Carbaryl is used to manage armyworms, leaf-feeding beetles, caterpillars, centipedes, cutworms, loopers, millipedes, pillbugs and sowbugs.
Advion Fire Ant Bait	Indoxacarb	For control of imported fire ants, bigheaded ants, pavement ants, and turfgrass ants on lawns, recreational areas, golf courses and fenced pastures grazed by horses and other companion animals
Orthene Turf & Ornamental	Acephate	organophosphate: It is labeled for many insects in greenhouses and nurseries, including fire ants
Temp SC	Cyfluthrin	pyrethroid ester: This is broadly labeled for insects in greenhouses, nurseries, and landscapes.
Avalon	Bifenthrin	Avalon Insecticide controls a wide spectrum of insects and mites on trees, shrubs, foliage plants, non-bearing fruit and nut trees, and flowers.
Tenguard	Permethrin	Has a very broad label, killing many types of insects (over 75 listed insects). It is known for an effective bark beetle control product. To be applied in turf only and avoid pollinator beds

Fungicide commonly used in landscape beds.

Trade Name	Active Ingredients	Comments
Daconil ZN	chlorothalonil	This fungicide controls powdery mildew, black spot, and rust, to name a few. Great for use on ornamentals, fruits, and vegetables.
Fore 80WP or Manzate T&O	mancozeb	For control of imported fire ants, bigheaded ants, pavement ants, and turfgrass ants on lawns, recreational areas, golf courses and fenced pastures grazed by horses and other companion animals
Subdue	mede6 0 o (n)4.2 (n)4.2 (nxj EMs(a)-5.2 (y)]T-5 (* [(n)- (* [(na)-5.7.52 54.542)7.8	

Image of Pest	Name	Key Identification	Biological Conditions	Threshold (when to treat)	Treatment Options		
					Bio-Control	Chemical	Organic

Image of Pest	Name	Key Identification	Biological Conditions	Threshold (when to treat)	Treatment Options		
					Bio-Control	Chemical	Organic
	Laurel Wilt Fungus: Raffaelea Lauricola	Wilted stems and leaves -Dark streaking in wood -Discoloration	Mesic		No treatment, some preventive options, like sanitation, trap-out attract and kill macro infusion with fungicide		
	Mushroom/Toadstool	The fleshy spore-bearing fruiting body of fungus, typically produced above ground or on its food.	Wet (Damp and Humid Region)	If it is too dry they loose water and desiccate. If it is too wet and humid they choke off	Reduce Water, Fertilize, Removal, Most lawn mushrooms do not harm your lawn nor cause any damage. They are simply, and quietly, decomposing organic matter and releasing nutrients that are then available for plant growth back into the soil		
	Powdery Mildew	Fungi Kingdom (Hyphae Conidia) White powdery look on leaves. Requires a microscope for specific Identification.	Powdery mildew thrives in temperatures between 60 and 80 degrees. Dry, shady conditions are ideal, as are areas with poor air circulation	Level 1 as soon as spotted. As soon as needed to improve aesthetics	milk/water (1-10) ratio Contact fungicide (Neem oil)		Organic Neem oil is a broad spectrum fungicide
	Rhizoctonia Fungus (Brown Patch)	Gray purplish bordered ring "Frogeye" appearance - Appearance: white mycelium early A.M. tan to brown lesions on leaf blades.	Extended periods of high humidity and temperature	First sign of symptoms		Daconil Fore	M-Pede
	Take All Patch	Yellowish leaves, thinning turf, 3'-20' patches dead and dying roots, black.	Wet Moderate Temperature Spring, Winter, Fall	Immediately			Organic Neem oil

Insects

Image of Pest	Name	Key Identification	Biological Conditions	Threshold (when to treat)	Treatment Options		
					Bio-Control	Chemical	Organic
	Fire Ants	Three body parts with two elbowed antennae and six legs	Mesic				

Asian Cylad Scale	Female -Oval waxy covering. Male Elongated armored covering -

Weeds

Goose Grass	Dark green, co|s !6 <ws —IR tw÷!2 s w àqsàqA7;1 !1 !:!> ‘ q s÷ !77Å !97 s ÇS³sp Ôg gŽÌÒGoose