

INTEGRATED PEST MANAGEMENT SYSTEM
FOR
KENNESAW STATE UNIVERSITY

KENNESAW, GEORGIA

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Introduction

Modern pesticides have not been the panacea as originally thought, and have given rise to a new set of environmental and health problems associated specifically with its use. A few examples of problems associated with pesticide use are pest resistance, hostplant resistances, related human health hazards, and extremely detrimental environmental affects. Only about 1% of the pesticides applied reach the pest and the rest ends up in the environment at large. In light of this, agricultural scientist began to look for safer alternatives to traditional pesticide usage that posed a lower risk to humans, animals, and the environment.

The Integrated Pest Management (IPM) System has been around approximately 20 years, but not until the late 1980's was it given wide consideration. It represents a strategy designed to control pest crops (not to eliminate them) and use traditional pesticides as a last resort. It is the ecological approach to pest control. It uses combinations of control methods and landscaping techniques in an integrated fashion to manage pest populations and a form of habitat management. It is the position of Kennesaw State University (KSU) to develop policies that advocate environmental stewardship. Hence, KSU has developed an IPM System policy that is practical, effective, economical and designed to protect the health of staff and students as well as the environment.

Pest control at KSU is for:

- Aesthetics;**
- Environmental safety such as control of stinging insects and fire ants;**
- For protection of the campus assets such as trees, land, and protected species of plants;**
- For creating safe playing surfaces for sports and recreation.**

More importantly IPM limits the exposure of humans and animals to chemicals. KSU routinely reviews newly developed techniques for the applicability to the KSU pest management program. To this end, this SOP shall be reviewed and revised annually. KSU takes a proactive approach to pest and weed management by using the principles of prevention inherent in IPM.

Principles

The basic tenant of IPM is the use of biological controls supplemented by pesticides used in a fashion which causes as little disruption to the ecosystem as possible. This is in opposition to the old pest management program of applying pesticides on a schedule. Environmental factor that

can be used for biological control are: climate, nature enemies, health of the host plant, cultural control practices and proper planting techniques.

Advantages to implementing an IPM program are:

- Less toxic exposure to humans.
- Less toxic residue and contamination of the environment.
- Prevent host resistance.
- Over all cost savings in landscaping chemicals.

The IPM methodology is practical, effective, economical, and protective of health and the environment. IPM is very effective in ornamental areas because they are not constantly subjected to the disruptive practices of agriculture.

Definitions

Cultural Controls – the modification of management practices so that the environment is less favorable for pest invasion, reproduction, survival and dispersal thereby achieving reduction in pest numbers.

Ecosystem – an ecological community with its environment interacting and functioning as a unit.

Habitat Modification – changing the biophysical environment to reduce the carrying capacity for weeds and pests. This is done primarily by manipulating the water, fertilizer, and sunlight needed by the pests.

Integrated Pest Management (IPM) – a pest management system that in the socio-economic context of farming systems, the associated environment and the population dynamics of the pest species will utilize all suitable techniques in as compatible a manner as possible. This will maintain the pest population low enough to prevent intolerable damage and annoyance. Chemical controls are used as a last resort.

Mulching – Material, organic or inorganic, used to protect soil from water evaporation, erosion, temperature fluctuations, weed invasion and nutrient depletion.

Native Plants – plants suitable to the climate of that region within 35 miles north and south of the area, 125 miles east and west of the area, within 1000 feet altitude and within the natural range of the species.

Pest – a plant or animal that is injurious to other plants or animals. For the purpose of this SOP pest will mean weeds, insects, and diseases.

Pre-emergent – term used to describe a technique of weed control by which a chemical is applied to ornamental beds or turf areas before soil temperature permits weed seed germination. The chemical applied is designed to create a “barrier” that inhibits seed germination for a period of approximately 3-6 months depending upon application procedure.

Restricted Use Pesticide – pesticides which must be registered according to Federal FIFRA laws and The Georgia Pesticide Use and Application Act of 1972 and the Georgia Pesticide Control Act of 1976.

Spot Treatment – applying herbicides to weeds selectively and keeping it off of other vegetation and the soil as much as possible.

Identification of Native Plants and Pest Populations

Selecting native plants for landscaping has many advantages. Native plants are well adapted to the area and are hardy and resistant to the native pest populations. Typically, plants that are not indigenous to the area are easy prey for native pest populations and do not fit into the cycle of natural controls. Based on the principles of IPM, using native plants is least disruptive to natural controls, easiest to establish new plantings and more cost effective than using non-indigenous plants. The content of landscaping can enhance natural controls by promoting plant health, strengthen pest enemy populations and impede pest growth. Planting native plants along with sound maintenance practices promotes pest free maintenance.

The following indigenous plants can be found at KSU: Wax Myrtle, Dogwood, Loblolly Pine, White Pine, Water Oak, White Oak, Red Oak, Azalea, Eastern Redbud, American Holly, Magnolia, Honey Locust, River Birch, Maple, Willow, Mahonia, Crabapple, and Verbena.

The following indigenous pests can be found at KSU:

Insects

Aphids
Lace Bugs
Mealy Bugs
Japanese Beetles & grubs
Fire Ants
Army Worms

Diseases

Brown Patch Fungus
Pythium Fungus
Powdery Mildew

Nuisance Plants

Dandelions
Crabgrass
Nutsage
Common Bermuda
Wild Onion
Henbit

Sound Maintenance Practices Used at KSU

Most pest problems often develop when the ecosystem is out of balance. Pest problems can be addressed by understanding the conditions that allow them to flourish. Healthy vigorous plants will out perform weeds and resist harmful insects. The goal should not be to eliminate the pests but keep the numbers low enough to maintain the aesthetics. Elimination of pests is not desirable as pests are a part of the ecosystem. KSU uses the following sound maintenance practices to keep pest populations under 20%, weed tolerance at 0-5%, and disease tolerance at 5-10%:

- **Proper Plant Selection – choosing native plants suitable to this area. Selection is also based on using plants suitable to existing microclimates found at KSU such as heavily shaded or sunny areas, wet areas and north facing areas to name a few.**
- **Proper Planting Techniques – planting during ideal root growth windows to give plants the competitive edge over pests. Additional techniques are spacing plants properly, timing the application of landscaping chemicals, and using cultural controls.**
- **Cultural Controls – including mulching, aeration, tree thinning, verticutting and improving soil quality based on accurate soil tests.**
- **Proactive Weed Control – using pre-emergent.**
- **Proactive Insecticide Control – for trees and shrubs.**
- **Spot Treatment and Hand weeding – in ornamental beds.**
- **Habitat Modification – by creating less than optimal conditions for the pest to flourish.**
- **Proper Pruning and Mowing Techniques – correct pruning promotes vigorous growth and minimizes decay. The mowing frequency is set so no more than one third of the leaf blade is removed at a time. Grass clippings are recycled and sharp clean blades eliminate plant damage that could promote disease.**
- **Use of Pesticides – Pesticides are used as a last resort. Random or scheduled applications of pesticides other than pre-emergent is not done. Less toxic pesticides such as insecticidal soaps are used first.**

Conclusion

IPM is a pest control system that uses a combined strategy of biological controls, habitat modification, cultural controls, and uses pesticides as a last resort. KSU has determined the level of aesthetic loss and damage it is willing to tolerate and has established a treatment program that can maintain these levels which is least offensive to the environment and protective of humans and animals.

CERTIFIED PEST APPLICATORS (CATEGORY 24) AT KSU

Rick Hofelich, Director of Landscape and Grounds

Certification extends to pesticide application to ornamentals and turf.

References

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Olkowski, William, Shelia Daar, Helga Olkowski. (1991) *Common Sense Pest Control*. 3rd ed. Newton, Ct.: Taunton Press.

The Ortho Problem Solver

***Turf Pest Control Recommendations for Professionals*. The University of Georgia Cooperative Extension Service, College of Agriculture and Environmental Sciences. Bulletin 984, Revised November 1993.**