

Integrated Pest Management Program

An IPM Program for the University of Illinois Urbana-Champaign

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Introduction

The mission of the University of Illinois Urbana-Champaign (U of I) is to enhance the lives of citizens in Illinois, across the nation, and around the world through our leadership in learning, discovery, innovation, engagement, and economic development. The mission of [Facilities & Services \(F&S\)](#) is to provide and maintain “a physical environment that is conducive to supporting learning, discovery, engagement, and economic development at the University of Illinois and is an active partner in research, teaching, and learning.” F&S is responsible for oversight and maintenance of the U of I grounds.

The U of I formally committed to environmental sustainability in 2008 by signing the [Climate Leadership Commitments](#) with Second Nature. The Illinois Climate Action Plan (iCAP) is the campus strategic plan for meeting these commitments. As a part of this plan, F&S has implemented a thorough Integrated Pest Management (IPM) program to reduce the use of pesticides outdoors on the main campus. This IPM program fulfills the final portion of objective #7.2 in the iCAP and fulfills one of the university’s state Municipal Separate Storm Sewer System (MS4) stormwater permit requirements.

Integrated Pest Management Program

This document outlines the fundamental aspects of U of I’s IPM strategy, including the following:

- Acceptable pest levels
- Preventive cultural practices
- Monitoring
- Mechanical controls
- Biological controls
- Pesticide restrictions

All employees who apply pesticides go through rigorous training and education to become State Licensed Public Pesticide Operators or Applicators. This high level of training, along with monthly meetings, ensures that F&S employees understand and follow the IPM strategy.

Acceptable Pest Levels

Transforming university campuses into “living laboratories” is part of the iCAP, and F&S supports this sustainability effort by providing opportunities to interact with the campus landscape and expose students to a variety of situations to learn and observe. Thus, the emphasis is on control of pests on campus, not eradication. IPM also holds that wiping out an entire pest population is often impossible, and the attempt can be expensive and environmentally unsafe.

The F&S Grounds department typically uses pesticide treatment only for targeted turf maintenance. Insecticide usage is minimal and is generally utilized on landscape plants (shrubs, perennials, annuals, and turfgrass) only if the pest has affected the plant to the point that it is causing significant harm. F&S does not spray any insecticides or fungicides on campus trees. In addition, Grounds eliminated all insecticide/herbicide use at the President’s House grounds (+/-7 acres) in May 2015. The goal is to keep the pests in check using a combination of methods, with pesticides being the last resort.

Preventive Cultural Practices

Selecting varieties best for local growing conditions and maintaining healthy crops is the first line of defense for optimum cultural practices. Grounds is working to replace the outdated Kentucky Bluegrass/Ryegrass mix in favor of a more durable Turf Type Tall Fescue mix in all lawn panels. This shift will allow for more sustainable irrigation practices and lawns that are more resistant to high levels of foot traffic. Furthermore, Grounds does not mow the grass below 3.5 inches in height during the summer. This practice allows the grass to better compete with weeds and tolerate drought stress. Staff also avoid removing more than one-third of the leaf surface at any one mowing and accomplish this by using higher mowing heights and regular mowing cycles.

In addition to choosing diverse and local crops to implement on the main campus, F&S uses techniques such as plant quarantine and crop sanitation. This includes practices such as removing diseased plants and regularly cleaning pruning shears to prevent the spread of infections. F&S grounds workers remove leaves and herbaceous plant material that have died and transport them to the maintenance facility. The material is placed in windrows, where it gets turned a few times each year until it has broken down into compost. F&S also removes any infected plants/trees and/or limbs identified on campus.

Monitoring

Regular observation is the cornerstone of IPM. Observation is broken into two steps: inspection and identification. The Grounds department consistently inspects the different areas of campus; all of the staff are trained and knowledgeable on what to look for and how to identify the presence of pests. There are three main indicators that pests have reached a level of economic and ecological threat:

1. When the plant is dying (e.g., turfgrass that is infected with grubs to the extent of large brown patches).
2. When the plant is defoliating prematurely due to an insect infestation (defoliation from fungal reasons are treated with sanitation methods only).
3. When a plant's foliage is being eaten to a point where aesthetics are being negatively affected (i.e., off-color, not blooming, appears defoliated, etc.).

If the plant or grass is in the historic core of campus and has aesthetic/marketing/intrinsic value, F&S would consider applying pesticides when any of the above is present.

To use pesticides/herbicides on campus, F&S grounds workers are licensed by the Illinois Department of Agriculture; the licenses, which are valid from January 1 through December 31, must be renewed every year. A retest is required every third year. Employees attend a "general standards training" before taking a thorough exam. Grounds workers must have, at minimum, the general standards pesticide operator license, and supervisors must obtain a pesticide applicator license. Grounds workers must pass a general standards plus a category exam (turf, right of way, ornamental, and/or aquatics). This serves U of I well, as staff can help identify and address pests and outbreaks on the campus.

Mechanical Controls

Mechanical controls are another important line of defense in pest management. Should a pest reach an unacceptable level, mechanical methods are the first option, including using string trimmers to reduce the level of weed growth.

Additionally, F&S utilizes large amounts of green waste wood chips in the planter bed areas of campus to suppress weeds. Application of the wood chips helps to reduce the amount of germination from weed seeds in the soil while also moderating moisture levels. For difficult sites to maintain, a layer of crushed granite may be used in lieu of mulch to suppress weed growth. The previously mentioned sanitation, in addition to the mulch regimen, greatly assists the overall pest management.

The university can also leverage public assistance with mechanical controls of weeds as part of a social and educational forum. F&S is one of the sponsors of the [Boneyard Creek Community Day](#). The purpose of the event is “to engage the community in awareness and responsibility of naturalizing and sustaining our waterways through organized litter clean up, education, and removal of invasive species to restore natural habitat and showcase the amenity value of a healthy ecosystem.”

Biological Controls

Natural biological processes and materials can provide control with minimal environmental impact, often at a lower cost. The focus here is to promote beneficial insects that eat or parasitize target pests. The U of I planting designs incorporate specific types of flowering plants that attract predator insects to encourage an acceptable natural predator/pest balance. The planned Turf Type Tall Fescue mix is one example of this type of control.

Pesticide Restrictions

When required, F&S Grounds uses only the safest, lowest toxicity products possible for effective control of pests. The university is committed to encouraging and protecting pollinators, and therefore Grounds limits the use of herbicides that contain neonicotinoids. Primarily these products are used in the Main Quad’s lawn panels during high-stress seasons. Because they are used exclusively in a limited lawn panel area and in granular form, impact to the local pollinator community is minimized. If and when an area is treated, Grounds will place lawn markers immediately after the application, informing the public to stay off the grass until dry, as well as providing a contact number if further information is desired.

Synthetic pesticides are only used as required and often at specific times in a pest’s life cycle. Many of the newer pesticide groups are derived from plants or naturally occurring substances (e.g., pyrethrum and insect juvenile hormone analogues), but the toxophore or active component may be altered to increase biological activity or stability.

Applications of pesticides must reach their intended targets. Matching the application technique to the crop, the pest, and the pesticide is critical. The use of low-volume spray equipment reduces overall pesticide use as well as labor costs.

Pesticide use at the U of I complies with local, state, and federal regulations, including the following activities:

- Licensed pesticide applicators apply pesticides
- Products properly labeled
- Inventory and use records maintained
- Illinois Department of Agriculture lawncare permits obtained
- Illinois Department of Agriculture permitted rinse pads with no discharge route are used for pesticide storage, washing, and handling
- Illinois EPA General NPDES permit for pesticide application point source discharges
- Pesticide disposal is coordinated through the University Division of Research Safety
- No “restricted use” pesticides will be used