

IPM Plan for Campus Landscape

Statement of Purpose

The purpose of this integrated pest management (IPM) plan is to guide the use of environmentally sensitive pest management strategies and least-toxic control methods at University of California Davis to enhance the health and safety of campus landscape users, and protect the environment.

Goals

The goals of the IPM program at UC Davis are:

1. Protect human health and the surrounding environment by employing a range of preventative strategies and using least-toxic products for pest control and eradication.
2. Inspect and monitor pest populations to enhance control strategies.
3. Minimize the quantity and toxicity of chemicals used for pest management.
4. Minimize environmental impacts by using species-specific pesticides and targeting application areas carefully.
5. Establish clear criteria for acceptable circumstances in which using a pesticide other than a least-toxic pesticide is necessary; toxic pesticides shall only be used when there is a threat to public health and safety, or to prevent economic or environmental damage, and only after other alternatives have been implemented and are shown to be ineffective.
6. Provide campus landscape users with advanced notice of IPM activities involving use of a pesticide other than a least-toxic pesticide.

IPM Response Plan

One of the characteristics of an IPM approach that makes it so effective is that the basic decision making process is the same for any pest problem in any location. The strategies and tactics may change, but the steps taken to decide if and when treatment is needed and which methods to use are the same each time. The UC Davis IPM program is built around the following components:

- Monitoring the pest populations and other relevant factors
- Accurate identification of the pest
- Determining injury and action levels that trigger treatments
- Timing treatments to the best advantage
- Spot treating the pest (to minimize human and other non-target organism exposure to pesticides)
- Selecting least disruptive tactics
- Evaluating the effectiveness of treatments to fine tune future actions

Pest Name:	Actions taken to control the problem						
Pest Location:							
This pest is a (circle all that apply):	Monitor Pest Population	Determine Injury & Action Level	Remove Pests' Food & Water	Reduce Pest Shelter	Monitor for Pests	Treat the Problem	Follow- Up
Health Concern							
Safety Issue							
Nuisance							
Other:							

Setting Injury and Action Levels

Before any course of action can be determined, it is first important to determine the injury level. The injury level is the level of damage or the level of pest population that causes unacceptable injury. Once the injury level has been determined, an action level must be set. The injury level will always be higher than the action level, meaning that action should occur before the situation progresses the point of unacceptable injury (see Fig. 1). The action level is the level of pest damage or number of pests that triggers treatment to prevent pest numbers from reaching the injury level.

Aesthetic injury applies mainly to the damage of plants. This is injury that affects the appearance without affecting the health of the plant.

Economic injury refers to pest damage that causes monetary loss.

Medical injury relates to human health problems caused by pests.

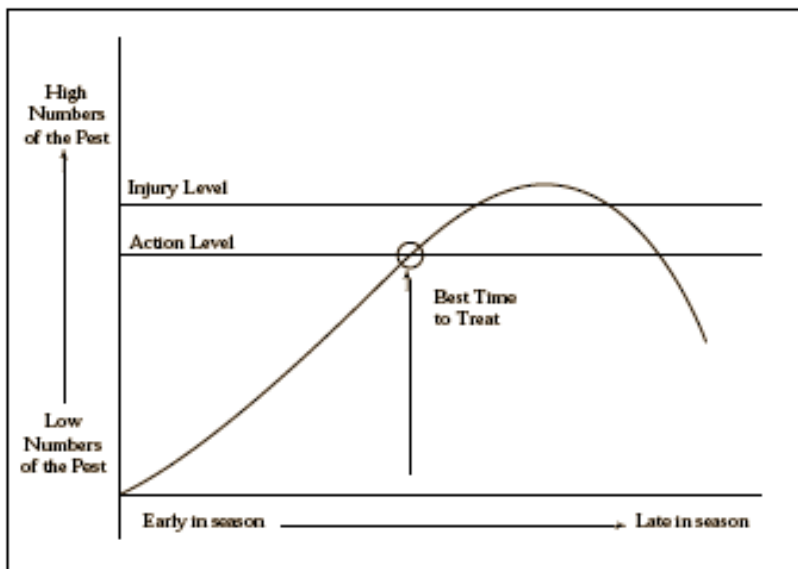


Figure 1. Injury & Action Level

Criteria for Selecting Treatment Strategies

Once the IPM decision making process is in place and monitoring indicates that pest treatment is needed, the choice of specific strategies can be made. Choose strategies that are:

- Least hazardous to human health
- Least disruptive of natural controls in landscape situations
- Least toxic to non-target organisms other than natural controls
- Most likely to be permanent and prevent recurrence of the pest problem
- Easiest to carry out safely and effectively
- Most cost effective in the short and long term
- Appropriate to the site and maintenance system

Treatment Options

Education. Education is a cost effective pest management strategy. Information that will help change people's behaviors, including planting pest-resistant landscape plants, will play a part in managing certain pests.

Habitat modification. Pests need food, water and shelter to survive. If the pest manager can eliminate or reduce the resources pests need to flourish, the environment will support fewer pests. Examples of habitat modification include: design or redesign of structures and landscape plantings; improved sanitation; eliminating water sources for pests; and eliminating the pest habitat.

Physical controls. Methods of physical control (or direct removal of pests from an environment) include trapping and removing pests by hand.

Biological controls. A biological control uses a pest's natural enemies to attack and control the pest. Biological control strategies include conservation (conserving the biological control application), augmentation (artificially increasing the number of biological controls in a given area) and importation (importing foreign controls).

Least toxic chemical controls. Least toxic pesticides are those with all or most of the following characteristics: they are effective against the target pest, have a low acute and chronic toxicity to mammals, biodegrade rapidly, kill a narrow range of target pests and have little or no impact on non-target organisms. These include materials such as the following:

- Pheromones and other attractants
- Insect growth regulators
- Repellents
- Desiccating dusts
- Pesticidal soaps and oils
- Some botanical pesticides

The following criteria should be used when selecting a pesticide:

- Safety
- Species specificity
- Effectiveness
- Endurance
- Speed
- Repellency
- Cost

Definitions

Emergency – A pest outbreak that poses an immediate threat to public health or will cause significant economic or environmental damage.

Least-toxic pesticide – Any pesticide product that meets UCD’s Tier 3 hazard criteria is low hazard, and considered a least-toxic pesticide. Tier 3 products are the next line of defense against pests after preventative measures are exhausted.

Pesticide – Any substance, or mixture of substances, used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, which may be detrimental to vegetation, humans, or animals.

Tiered Materials – UCD’s pesticide classification system based on hazard potential. Products are evaluated against comprehensive list of hazard criteria including carcinogenicity, reproductive toxicity, endocrine disruption, acute toxicity, hazard to birds/fish/bees/wildlife, persistence, and soil mobility, and are placed within the Tier structure based on the evaluation results.

Tier 1: Highest concern

Tier 2: Moderate concern

Tier 3: Lowest concern

Tier 4: Insufficient information available to assign to above tiers

Record Keeping

Monitoring the effectiveness of the IPM plan over time requires diligent tracking of several items: pest populations and locations; management strategies employed; quantities and types of chemicals and products used; and the outcome of pest management activities. The pest control applicator is responsible for maintaining records that include the information below. See the appendix for the Record Keeping form that shall be used at UC Davis to standardize all record keeping activities.

1. Target pest
2. Prevention and other non-chemical methods of control used
3. Type and quantity of pesticide used
4. Location of the pesticide application
5. Date of pesticide application
6. Name of the pesticide applicator
7. Application equipment used
8. Summary of results

Campus Landscape User Notification

Notifying campus landscape users of pesticide applications other than a least-toxic pesticide is a critical component of the IPM plan. Providing users with the appropriate information at the appropriate time enables individuals to take precautions as they see necessary to protect their personal health. At UC Davis, a 24-hour advance notice to campus users is required for the application of any pesticide other than a least-toxic pesticide. Advance notice procedures shall take the following form:

1. Post signs at least 24 hours before application of the pesticide product, and leave signs in place for at least 3 business days after application.
2. Signs must be standardized and easily recognizable. See the appendix for the approved notification sign template.
3. Each sign must contain the following information:
 - a. The name and active ingredient of the pesticide product
 - b. The targeted pest
 - c. The application date
 - d. The signal word indicating the toxicity category of the pesticide product
 - e. The name and contact information of an individual that is responsible for fielding questions regarding the application.
4. Each sign must be in both English and Spanish.
5. Copies of posted signs shall be retained for record keeping purposes for one year.

General Preventative Practices

General preventative practices are simple landscaping procedures that eliminate sources of food, water and shelter that attract pests to the building grounds. UC Davis shall use the following methods as the first and primary means for controlling pests and preventing outbreaks:

1. Use mulch and other landscaping best practices to promote soil and plant health.
2. Use weed-free soil amendments.
3. Maintain and plan landscape features to eliminate safe havens for pests and rodents.
4. Clean up plant debris, especially from fruit-bearing trees.
5. Remove invasive plants that are known to harbor or provide food for pests.

Materials for Use – Least Toxic Pesticides

Chemical pesticides are considered a last resort under the tenets of IPM. This control strategy is to be used at UC Davis only after general preventative practices and non-chemical options are exhausted. Pesticides that meet the requirements of Tier 3 are considered least-toxic and may be applied without campus user notification when chemical product use is required. To qualify as a Tier 3 material, all of the following statements must be true:

1. Product contains no known, likely, or probable carcinogens
2. Product contains no reproductive toxicants (CA Prop 65 list)
3. Product contains no ingredients listed by CA DTSC as known, probable, or suspect endocrine disrupters
4. Active ingredients has soil half-life of thirty days or less
5. Product is labeled as not toxic to fish, birds, bees, wildlife, or domestic animals

Which Pesticides are the Least Toxic?

The term “least toxic” refers to pesticides that have low or no acute or chronic toxicity to humans, affect a narrow range of species and are formulated to be applied in a manner that limits or eliminates exposure of humans and other non target organisms. Fortunately, there are an increasing number of pesticides that fit within this least toxic definition. Examples include products formulated as baits, pastes or gels that do not volatilize in the air and that utilize very small amounts of the active ingredient pesticide and microbial pesticides formulated from fungi, bacteria or viruses that are toxic only to specific pest species but harmless to humans.

Least toxic pesticides include:

- (a) Boric acid and disodium octobrate tetrahydrate

- (b) Silica gels
- (c) Diatomaceous earth
- (d) Nonvolatile insect and rodent baits in tamper resistant containers
- (e) Microbe based pesticides
- (f) Pesticides made with essential oils (not including synthetic pyrethroids) without toxic synergists and
- (g) Materials for which the inert ingredients are nontoxic and disclosed.

The term least toxic pesticides does not include a pesticide that is:

- (a) Determined by the U.S. EPA to be a possible, probable or known carcinogen, mutagen, teratogen, reproductive toxin, developmental neurotoxin, endocrine disrupter or immune system toxin
- (b) A pesticide in U.S. EPA's toxicity category I or II
- (c) Any application of the pesticide using a broadcast spray, dust, tenting, or fogging application.

Responsible Parties

Director of Grounds & Landscape Services is responsible for overseeing the implementation of the IPM plan and ensuring compliance.

All pest control vendors contracted to work at UC Davis are responsible for adhering to this policy.

All pesticide storage, transportation, and application will be conducted in accordance with the requirement 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, UC Davis policies and procedures, and local ordinances.

No person shall apply, store, or dispose of any pesticide on UC Davis managed property without an appropriate pesticide applicator license.

APPENDIX

NOTICE OF PESTICIDE APPLICATION

For further information regarding this notice please contact the Director of Grounds & Landscape Services: (530) 752-4206

The following pesticide will be used at University of California Davis:

<i>Pesticide Common Name</i>	<i>Pesticide Trade Name</i>	<i>EPA Registration Number</i>
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The Office of Pesticide Programs of the United States Environmental Protection Agency has stated: "Where possible, persons who potentially are sensitive, such as pregnant women, infants, and children, should avoid any unnecessary pesticide exposure."

Location of the pesticide application:

Reason for the pesticide application:

Date of pesticide applications:

Description of the possible adverse effects of the pesticides as per the Material Safety Data Sheets for the pesticides to be used, if available:

Pesticide(s) product-label instructions and precautions related to Public Safety:
