UNIVERSITY OF
NORTHERN COLORADO

INTEGRATED PEST MANAGEMENT POLICY FOR TURF, ORNAMENTALS AND EXTERIOR SURFACES

LANDSCAPING & GROUNDS

April 2024

UNIVERSITY OF
NORTHERN COLORADO

Integrated Pest Management
For Turf, Ornamental and Exterior Surfaces

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UNIVERSITY OF
NORTHERN COLORADO

Integrated Pest Management Policy
For Turf, Ornamental and Exterior Surfaces

I. General Intent of Policy

It has become necessary to promote safer and more sound practices in the application of pesticides on property owned by the University of Northern Colorado (UNC). Integrated Pest Management fosters practices that reduce the impact on humans, wildlife, and the environment, as well as preserve those beneficial insects and microorganisms that enhance healthy turf, trees, and other plant populations.

II. Definitions

Integrated Pest Management or IPM: This is an approach to pest control that uses regular monitoring to determine when treatments are required and employs physical, mechanical, cultural, and biological tactics to keep pest numbers low enough to prevent intolerable damage or annoyance. The least Toxic chemical controls are to be used as a last resort.

Pests are plants, mammals or insects that can harm or destroy desired turf, trees, and shrubs on university property. They also can reduce the aesthetic value of the campus.

Tolerance Thresholds are subjective in some circumstances and less subjective in others. The presence of dandelions in campus turf has a low threshold as well as old-growth Blue Spruce being infested with Ips Engraver Beetle. Another example is the presence of Puncture vine that has a Zero Tolerance level.

Biological Control is an approach that utilizes non-chemical methods. Examples would include utilizing predatory insects that feed on target pests, using disease-resistant cultivars of turf, trees, and other ornamental plants. It could also include prohibiting the use of turf, trees, and other plants that are hosts of certain diseases and problem insects.

Cultural Control involves practices that promote good plant health that reduce pest populations and the respective need to apply chemical pesticides. These practices may include proper irrigation, fertilization, mowing frequency, and height of mowing. Other controls include the care of soil that involves aerification and applying soil amendments, such as topdressing and compost.

Physical/Mechanical Control is the method of control involving the physical removal of the target pest or pest host by hand or by pruning or digging. For example, trees infested with Bark Beetles must be removed to prevent the spread of the insect and the fungus it carries. This is referred to as sanitation removal. Hand digging weeds would also be an example of this method.

Herbicides are chemicals that either prevent seed germination (pre-emergent) or kill the plant directly (post-emergent). They are also categorized as selective or non-selective. These chemical compounds are available in ranges of low to high toxicity. Highly toxic formulations are “Restricted-Use” and regulated by the Federal Government. Restricted Use pesticides require Licensed applicators to apply.

Insecticides are those chemicals that will control pest insects. Some insecticides are applied as a “preventative” while others are applied to eradicate targeted species. These chemical compounds are available in ranges of low to high toxicity as well. Highly toxic formulations are “Restricted-Use” and regulated by the Federal Government. Restricted Use pesticides require Licensed applicators to apply.

Rodenticides are chemicals that are used to eradicate certain rodent pests, such as prairie dogs, ground squirrels, moles, mice, and rats. Some of these compounds require State or Federal authority. These applications are solely made by third party licensed professionals.

Fertilizers are not pesticides, but are chemical compounds that are applied to turf, trees, shrubs, and other ornamental plants in the landscape. These chemicals come in many formulations and differing analyses. Fertilizers are typically formulated by the following: NPK (Nitrogen, Phosphorous, and Potassium). These are the basic soil nutrients required for plant growth (also referred to as macronutrients). Fertilizers may be liquid or granular, organic or inorganic, slow-release or fast release.

Turf and Ornamentals: Turf refers to our typical bluegrass, perennial rye, or any blends that are on our campus. Ornamentals refer to hardy shrubs, trees, ornamental grasses, groundcovers, and herbaceous flowers.

Exterior Surfaces include but are not limited to sidewalks, parking lots, generator and dumpster enclosures, electrical substations, and outdoor storage facilities.

III. Goals

A. **Define Threshold Tolerances**: Define what are the acceptable standards of turf, tree, and shrub appearance and the respective locations on campus.

B. **Soil Maintenance:** encourage and foster a diverse population of beneficial soil organisms such as bacteria, fungi protozoa, and invertebrates (earthworms, etc.) that provide proper soils percolation/infiltration, fertility, and nutrients.

C. **Irrigation Practices:** Improving methods of irrigation should promote deep healthy root growth for turf, trees, and shrubs. Deeper and less frequent watering is better for turf and ornamental plantings. It promotes good turf density and reduces stress due to heat and traffic. Central control Irrigation system allows for better programming to meet various terrain and soil conditions on our campus.

D. **Fertilization:** A good turf fertilization program is also a good tree and shrub program. Proper fertilization helps build soil nutrient reserves. We will incorporate more synthetic slow-release fertilizers that provide longer residual, greater uniformity in nutrient release, and less “surge growth”.

E. **Mowing and Pruning:** Proper frequency and height of mowing promotes water conservation and turf density. Mulch-mowing returns nutrients to the soil and reduces the amount of fertilizer inputs necessary to the soil. Proper pruning schedules of trees and shrubs promotes plant vigor and encourages resistance to pest infestation.

F. **Chemical Applications** incorporate the least toxic formulations into our arsenal of pesticides to control weeds and insects. Pre-emergent application of herbicides will also reduce the amount of post-emergent (more toxic) applications. RUPs (chemicals with a higher potential hazard) will only be used sparingly as a last resort measure.

G. **Monoculture Planting** utilizes blended turf mixes that have disease-resistant varieties as well as avoiding planting disease/insect-prone species of trees in monoculture plantings. Promote diversified populations of trees and shrubs that are more sustainable and require less or no pesticide applications.

H. **Sanitation Pruning and Removals** involves the removal of disease-prone trees and shrubs from the campus and replacing them with disease-resistant, drought-tolerant cultivars. Pruning and removing insect or disease-infested branches is a viable alternative to pesticides application.

I. **Pest Monitoring Practices** requires training staff in the identification of the pests and respective host plants. Knowing what pests exist on campus and when to look for them is key. Noting plant condition, the occurrence of pests is important. These inspections assist in determining where, when, and how much to apply- or what other control methods to use.

J. **Tactics or Methods of Control.** Incorporating the least toxic methods is our ultimate goal. Tactics should be appropriate to the scale of the specific problem. One concern is to preserve the natural enemies of landscape pests (beneficial insects or organisms). Many chemicals will eliminate both good and bad pests and allow the bad pests to gain a major foothold the following year because all the beneficial organisms that feed on the bad pests have been eliminated. Mechanical and biological controls are also a viable alternative to chemical applications.

K. **Evaluation and Record-Keeping *(Performance Metric)***: *Assessment* of pest eradication is essential to this program. Landscape inspections are conducted 2x per year by the Manager of Landscaping & Grounds to assess the effectiveness of control measures. Effectiveness of control method, appearance, quality of landscape, frequency of pest, and application are all factors that must be considered. Accurate histories, and accurate pesticide or other control measures must be recorded on Pest Application Forms, which include applications of chemical and non-chemical control measures.

IV. Establishing Thresholds

The university currently has **Zero Tolerance for dandelions, puncturevine, thistle, nutsedge, and bindweed.** Existing plants should be pulled when observed. If numbers are greater than 5 plants to 100 sqft. of turf, treatment through spraying is warranted. It is the zone gardener's responsibility to communicate these needs with the chemical applicator as they arise. Ornamental infestations will be dealt with either mechanically or chemically on a case-by-case basis.

Zero tolerance for Ips and Japanese beetle. If turf and or tree damage is observed, notify the spray tech. We are currently treating campus-wide for both pests.

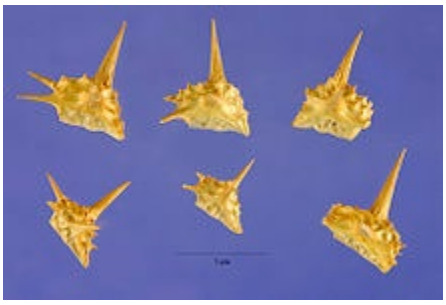
Level 1 infestations include Clover, plantain, certain weed grasses, oxalis, and spurge. Areas with more than a 5% weed to turf ratio warrant chemical treatment. Spot treatment is the preferred approach; however, more extensive infestations require broadcast applications. It is the zone gardener's responsibility to communicate these needs with the spray tech as they arise.

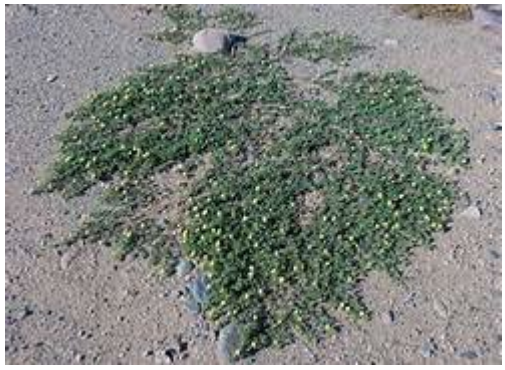
Level 2 infestations include crabgrass, foxtail, and annual bluegrass. These are equally undesirable pests, however due to the cost of treatment, they will only be chemically treated in certain high priority areas on a case-by-case basis. Currently, proper mowing, trimming, fertilization, and irrigation practices are the best methods of control at our disposal.

V. Current and Potential Pest Inventory and Control Methods

Turf Pests

Puncture Vine is a noxious and invasive plant weed that is highly undesirable, and the seeds (shown below) are known to puncture bike tires. They can be difficult to control, early detection is key. Seeds can remain viable for up to 7 years. Also referred to as “goat head”. One plant can generate over 300 seeds.





Chemical control: Pre- and Post-emergent chemical applications are the major control measure of this weed.

Physical /Mechanical hand pulling if numbers are small, or if they plant has reached the flower and/or seeding stage of growth.

Dandelion is the most prominent turf weed, and annual applications are necessary to eradicate this weed.

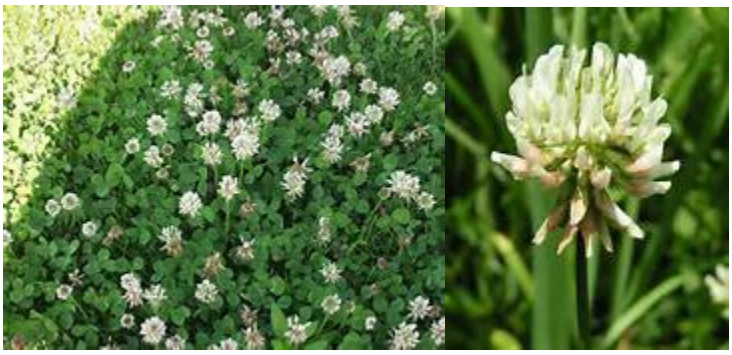
Chemical Control: Fall applications of broadleaf selective herbicide is the most effective control measure. Early spring applications of pre-emergent herbicide can also be a viable option in highly infested areas.

Cultural Control**: Proper** cultural practices that promote healthy turf can reduce dandelion populations but will not totally eradicate. Proper mowing, irrigation, and fertilization will help reduce the amount of chemicals applied.

V. Current Major and Potential Pest Inventory and Control Methods

Turf Pests

White Clover is a weed that is an indicator of poor soil fertility, namely Nitrogen deficiency. Once established it can be difficult to eliminate.



Chemical control: Requires several applications of selective herbicides to eradicate.

Cultural control: The best control measure is to provide proper fertilization and respective irrigation to turf to prevent this weed from getting established.

Plantain is an annual or biannual weed that grows where turf is weak, due to over-watering and low fertility. It is an edible weed with a deep taproot. Again, like clover, it is difficult to control.

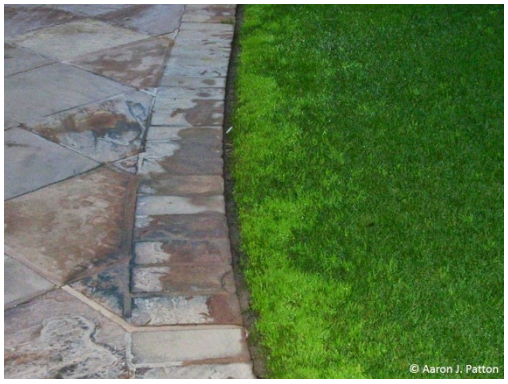
Chemical Control: Requires applications of selective herbicides.

Cultural Control: Proper fertilization, mowing and irrigation is the best method of control.

V. Current Major and Potential Pest Inventory and Control Methods

Turf Pests

Annual Bluegrass (Poa annua) is a winter annual grass that is a difficult-to-control weed in turf. Seeds germinate in late summer, early autumn, and spring. Annual bluegrass is found throughout the United States, particularly in highly compacted, excessively wet soils. Despite having a bunch-type/clumping growth habit (some biotypes have short stolon), it can withstand extremely close mowing heights; this allows the weed to successfully establish in home lawns and other high maintenance turf, such as golf courses or sports fields.



Cultural control: The use of cultural practices to increase the competitive growth and development of the desired turf over annual bluegrass is one of the limited options for cultural control. However, annual bluegrass' ability to tolerate extremely low mowing heights and prolific production of viable seed severely limits a professional turf manager's ability to control the weed using cultural methods.

Biological control: No consistently effective biological control for annual bluegrass although previous research has examined some options.

Chemical control: There are options for controlling annual bluegrass through the use of herbicides; however, those options are generally specific to the species of the desired turf and the use of the area which is being treated (i.e. home lawns, golf course, sports turf, etc.). One could literally write a book on how to control this species. Herbicides: Unfortunately, the economic threshold in relation to efficacy of the chemicals available does not support a large-scale treatment option.

V. Current Major and Potential Pest Inventory and Control Methods

Turf Pests

White Grub are the larvae of the June or May beetle and are always present in turf. Only when present in enough numbers will the grubs cause extensive damage to turf. They typically are attracted to lush, healthy turf where lights are present at night. Keeping turf healthy is a key to control. Turf damage is mainly seen when irrigation and fertility is not maintained. Under good turf conditions, the turf may *"outgrow"* most grub damage.

Chemical control: Spring application (late April through mid-May) of Acelepryn has been shown to provide control of white grubs. If white grubs have fully developed, a granular insecticide (Dylox) that is watered in (drenched) can be used in the infested area only.

Biological control: The application of Nematodes that are natural parasites of grubs may offer limited control.

Cultural control: Consistent Irrigation and fertility practices to maintain good turf health will help turf "outgrow" grub damage.

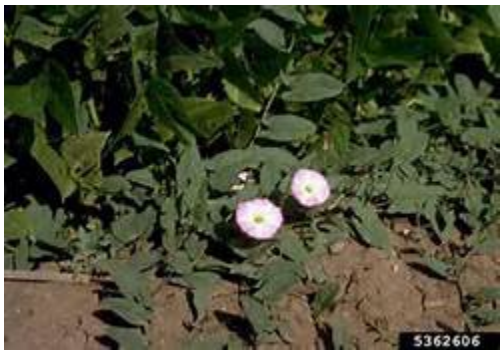
Japanese Beetle is a highly destructive plant pest that feeds on more than 300 host plants, including field crops, ornamental trees and shrubs, garden flowers and vegetables, and turf (lawns, pastures, and golf courses). Some of the preferred host plants of adult beetles found in Colorado are rose, apple, black cherry, cherry, flowering crabapple, plum, linden, elm, and buckeye. Grubs are found primarily in the root zones of grasses. Once established, it can be a difficult and expensive insect pest to control. Currently, we will mix a selective low-hazard insecticide, Acelepryn, to target grubs with our spring fertilizer application to prevent further damage to turf and trees on campus.

V. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests

Are typically found in turf as well but require different control measures. Most ornamentals are broadleaved plants, as are most turf weeds. Different chemical compounds are used to control these weeds, which would typically kill turf grasses.

Bindweed is an invasive and aggressive weed most prevalent in juniper plantings on campus and is the most difficult to control. This plant has an extensive root system, the plant can regenerate from fragments and rhizomes when pulled by hand.



Chemical Control: Repeated applications of Round-up or Glyphosate seem to provide the best means of control at present.

Mechanical control: Hand pulling of the weeds is only temporary and only provides a short-term aesthetic benefit.

Yellow Nutsedge Looks like yellow-colored grass but is not grass. It is another difficult-to-control weed once it is established. It typically thrives in wet areas, where over-watering conditions exist or where there are irrigation breaks or leaks.

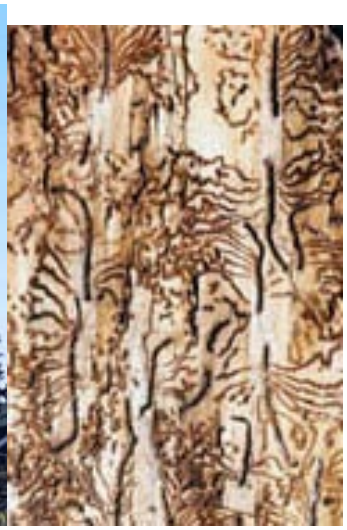
Chemical control: Selective herbicides that specifically target Yellow Nutsedge in turfgrass are available.

Mechanical control: Manual removal involves excavating to depths of over a foot to successfully remove and eradicate this weed. The best control is not to allow it to get established.

V. Current Major and Potential Pest Inventory and control Methods

Ornamental Pests

Ips Engraver Beetles normally attack pine and spruce trees that are stressed due to lack of irrigation (drought Stress) or root damage.



Cultural control: The best control is to promote a good turf Irrigation and fertilization program. If you have good healthy turf, you should have good healthy trees.

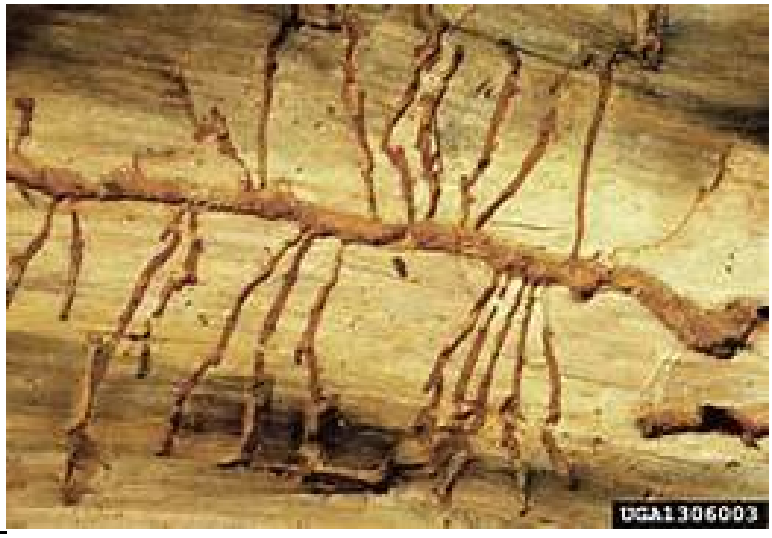
Chemical Control: Preventative sprays *are* normally performed in the spring (Spring Break/March) by a private Certified Applicator Contractor.

Mechanical/Physical control: Sanitation pruning of infected trees can prevent further spread of beetle infestation.

V. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests

Rocky Mountain Pine Beetle is similar to Ips Engraver Beetle but it attacks mostly Pine trees, such as Ponderosa, Jack Lodgepole, and Pinyon pines. Again, trees that are drought-stressed or suffering root damage are more susceptible to infestation. The spread of this insect and respective fungus is complicated by even-aged stands of trees, which is typical in mountain forests.



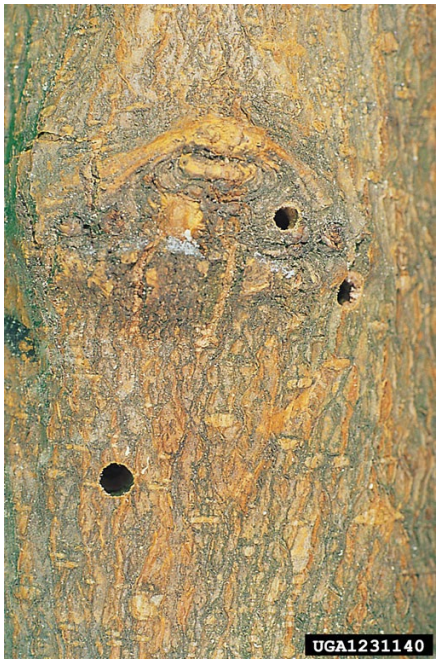
Cultural controls: Avoiding monoculture plantings of pines and spruce in the landscape will reduce infestation rates. Providing good irrigation and fertilization will promote good tree health.

Mechanical/Physical Control. Sanitation pruning does not prove to be a successful form of control. Expedient removal of infested trees is recommended.

V. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests

Ash Borer or Lilac Borer are the larvae of a wasp-looking flying insect that lays eggs on the bark of ash trees. On the campus, White Ash cultivars seem to be more susceptible than Green Ash, but it is present in both species. The larvae bore into the bark and phloem tissue, cutting off nutrient uptake into the tree's canopy and eventually killing the tree. These borers make circular, round holes that are easily seen. There are no feasible control methods once the larvae are inside the tree.



Chemical control**:** Only Preventative applications of insecticides are effective, but timing of application is crucial to be effective. Knowledge of the life cycle of this insect is necessary to determine when to spray. Ash trees are the most prominent tree on the campus, and there is no current program to control this pest due to the extensive cost of application that does not guarantee a high success rate.

Cultural control: Currently, Ash trees are no longer a suggested tree in Weld County, CO, and are no longer planted on the campus.

V. Current Major and Potential Pest Inventory and Control Methods

Ornamental Pests

Emerald Ash Borer has reached Colorado and has arrived due to transporting infested firewood from out east. Currently, there are quarantines in place in Boulder County to help contain this devastating pest. It similarly kills all ash trees as other ash borers. The insect can infect a tree for up to 4 years without there being visible signs of the tree's decline. Because adult Emerald Ash Borers munch on the leaves, signs of an infected tree include sparse branches or leaves, D-shaped exit holes about 1/8-inch wide.

Chemical control: Preventative tree injections have proven to be a viable treatment. These are performed by a third-party contractor. Injections will be performed once every third year. Injections were executed in 2023.

Cultural Control: Expedient removal of infested trees.

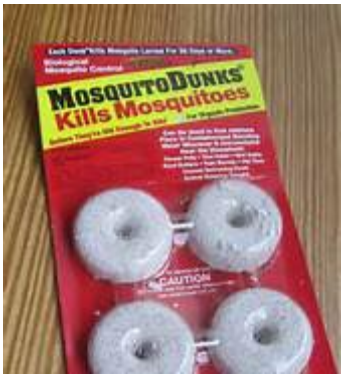
Other Pests

Mosquitoes: In feeding on blood, some of them transmit extremely harmful human and livestock diseases, such as malaria, yellow fever, filariasis, and West Nile Disease.

Cultural control: Eliminating areas of standing, stagnant water, such as clogged gutters, Expedient repair of leaking irrigation breaks; clogged culverts/water drain ways, long-standing puddles. Removal of materials that can hold water, wading pools, tires, trash can lids, etc. and other items. Reducing conditions that harbor mosquito populations such as mowing areas of tall grass and weeds.

Biological Control: *Bacillus thuringiensis* (or Bt) is a Gram-positive, soil-dwelling bacterium, commonly used as a biological pesticide. We apply these donuts to areas of standing water and ponds that are on campus.

Chemical: Personal application to exposed skin with repellents that contain 25% active ingredient of DEET, such as *Johnson Deep Woods Off Insect* Repellent.



APPENDIX A

UNIVERSITY OF
NORTHERN COLORADO

ENVIRONMENTAL HEALTH AND SAFETY

Pesticide Safety and Application Guidelines

UNIVERSITY OF
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Appendix A

Pesticide Safety and Application Guidelines

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Pesticide Application and Safety Guidelines

I. General

The Pesticide Application Guidelines have been developed for the University of Northern Colorado. This plan's purpose is to provide a practical safe working area relative to the hazards that arise from using pesticides on and around campus.

This guideline does not cover all regulatory requirements regarding pesticide safety in the workplace but should be considered as minimum requirements to provide a safe working environment. Anyone using this plan should rely on his or her judgment and seek additional advice of a competent professional in determining a course of action for a given circumstance.

II. Responsibilities

Applicators:

It is the responsibility of the applicators to take extreme caution while applying said pesticides to prevent any cross-contamination to plants that do not need treatment as well as placing pedestrians in harm's way unnecessarily.

Your job as an applicator is to ensure the safety of yourself and those around you.

- Ensure while on the University campus; before applying pesticides near buildings, open windows, and air handlers, you contact the HVAC Manager to get these units shut down to safely apply your treatment.

- Try your best to divert students/staff around your area of application if it is impeding movement along thoroughfares.

- While working with the summer interns, ensure they do not mix pesticides and are under supervision while applying the basic applications.

After applications are complete for the workday:

1. Turn in the Daily Fertilizer / Pesticide Application Record form, (appendices A) to the Facilities Management Grounds Spray Technician with a map attached with the approximate applications areas highlighted.

2. Ensure the equipment is cleaned thoroughly and placed back in its appropriate storage area for the night.

Management/Supervisors

The Facilities Management Grounds department is responsible for ensuring their employees (applicators) receive the required training. Training can be provided by the Environmental Health and Safety department, or through CDA licensure program. Training records will be retained by the Environmental Health and Safety office for three years.

III. Personal Protective Equipment

All pesticide applicators and handlers shall wear the appropriate personal protective equipment (PPE) when handling, mixing, and applying any pesticide.

PPE includes the following items as dictated by label:

- Rubber or chemical resistant gloves (also required while mixing)
- Eye Protection
- Long-Sleeved Shirt
- Long Pants
- Closed Toe Shows
- Tyvek Chemical Resistant Suit or Apron
- Respirator/Dust Mask (If Required by Label)

Applicators must comply with the PPE requirements specified on the pesticide label. Read the label to determine PPE requirements. Labels will be updated and reviewed periodically. Check for new restrictions that pertain to re-entry, exposure, and more specific PPE as new labels come out.

All applicators are to comply with the label directions for PPE according to the attached chart on the label. The chart will be superseded by any new product labels that are received. Read the labels first to check for any changes to PPE requirements.

Required equipment varies according to your application site, your choice of pesticide, and your willingness to work with more complicated application devices.

*Check your PPE Daily to ensure it is in proper working condition

IV. Equipment

The equipment is as important as personal safety during pesticide application. Faulty equipment can create spills and cause the applicators to be put in a dangerous situation. Types of equipment used here at UNC may include

- Hand Sprayers
- Backpack Sprayers
- 25- & 50-Gallon Electric Pump Sprayers
- 50-gallon Wylie Trailer sprayer
- Toro Workman Multi-Pro 200 Gallon Sprayer

It is the responsibility of the applicator and/or mixer to ensure the equipment is in proper working condition. Before every use, ensure the equipment works and there are no leaks. Conduct a water test beforehand to test for leaks.

Consult the pesticide label to ensure the proper equipment is being used.

After an application is complete, rinse out the equipment thoroughly.

V. Mixing and Dilution of Pesticide

Most injuries and exposure occur during the mixing and dilution of pesticides. Most pesticides come in concentrated doses. Follow the PPE requirements and safety practices of the labels while mixing pesticides. To reduce waste, remember only to mix the amount needed to do the job correctly.

- Mixing shall only occur at the Parsons Grounds Garage, Central Campus Garage, Patton Garage, or where water is available with a cross-connection control.
- Only full-time, trained employees shall mix pesticides.

Additional precautions:

1. Fully understand the label before mixing or handling the pesticide.
2. Know the First Aid measures for exposure to the pesticide.
3. Make special note of the toxicity, i.e., “warning,” “caution,” “danger,” and “danger poison.”
4. Never work alone or at the very least, inform either the Grounds Manager or the Spray Technician that you will be mixing a pesticide in case an emergency arises.
5. Know the signs and symptoms of exposure poisoning.
6. Have clean-up materials on hand in case of any spills at the mixing locations.
7. Check your spray equipment and ensure it’s in working order prior to filling. Check the hoses, fittings, valves, and tanks. Use water when verifying discrepancies.
8. While mixing dry pesticides wear an appropriate respirator to prevent the inhalation of harmful dust or vapors.
9. Ensure proper clothing for liquid pesticides to ensure that absorption into skin is mitigated.
10. To prevent spills, place pesticide containers in a secure position when you are opening and handling them.
11. Work only in well-ventilated, well-lit areas.
12. Never stir pesticides with your arms or hands, use proper stir sticks.
13. Never pour pesticides at eye level.
14. Protect your body with proper PPE. (See Section III)
15. Stand with your back to the wind; allow fumes to dissipate away from you.
16. Pour pesticide into water, never water into pesticide.
17. Do not leave a pesticide tank you are filling unattended.
18. After the mixing procedure is complete:

A. Clean any spills that may have occurred.

B. Place all pesticides away in their proper storage location and ensure they are securely locked away.

C. Clean and put away all equipment used to mix or dilute the pesticide. Pour any cleaning water into the tank to minimize environmental exposures. Dispose of rinsate in designated area according to label.

Spills:

Spills should be cleaned up immediately after they occur. For smaller spills such as droplets and small puddles, use dry sweep on the area for larger spills, following these guidelines.

1. Place a diking and/or absorbent material around the spill to mitigate the possibility of it spreading further away from the point of origin.

2. Contact Environmental Health & Safety if a large release is large occurs.

3. Soak up the liquid with dry sweep and once absorbed can be swept into a dustpan and place in a container for proper disposal.

4. Contact the EHS Department for further disposal information.

VI. Pesticide Application and Safety Protocol

The application of any pesticides is a dangerous job that requires training prior to its use. Safety is the top priority for any staff that mixes and applies pesticides on campus. The following are some general guidelines on Pesticide Application and Safety while applying.

When applying any pesticide, compliance with the product label is required.

1. Choose the proper pesticide for the task. Accurate target pest identification is essential for effective control.

2. If a pesticide is needed, select one that is effective against your pest and also poses the least risks to human health and the environment.

3. Do not apply pesticides to blooming plants, especially if honeybees or other pollinating insects are visiting them. If you must treat blooming plants, do so in the early evening and use a non-dust formulation. Do not spray birds' nests.

4. While applying on campus grounds, keep a legible copy of the label on hand or carry the most up-to-date copy of the pesticides SDS (Safety Data Sheet) in case an emergency arises.

Always Read the Pesticide Label……
Essential information regarding the pesticide can be found on the product's label. The label is required for every pesticide registered in the United States. Always keep the product in the original package.

Safety On Campus Is Priority……
Applicators should follow these general principles to ensure safe handling of pesticides:

1. Only qualified employees may handle, mix, or apply pesticides.
2. All applicators are required to read the label in its entirety prior to using the pesticide.
3. The label is the LAW. It is a violation of Federal and State law to mix or apply materials inconsistent with the label instructions.
4. Maintain a copy of the pesticides MSDS or current product label in their possession during the application process.
5. Pesticide applications are not to be performed in close proximity to heavy pedestrian traffic on campus. Be aware of potential drift and exposure to others.
6. Pesticide applications are not to be performed near air vents or operating window air conditioner units. If you are not familiar with the locations of vents and A/C units contact the HVAC Supervisor for further consultation. HVAC supervisor must be contacted to schedule “shutdowns” prior to spraying in these areas.
7. Any questions regarding the use of pesticides or complaints shall be directed towards the Facilities Management Grounds Spray Technician.

VII. Storage and Disposal

A. Storage:

Improper pesticide storage and disposal can be hazardous to human health and the environment. Follow these recommendations:

1. Don't stockpile.

2. Keep pesticides stored in cool, dry areas to avoid temperature extremes. The cabinets in the Grounds Garage are labeled and will be locked at all times.

3. Keep pesticides in a locked cabinet in a well-ventilated utility area or garden shed.

4. Never store pesticides in cabinets with or near food, animal feed, or medical supplies.

5. Store dry pesticides above liquid pesticides.

6. Always store pesticides in their original containers, which include the label listing ingredients, directions for use, and first aid steps in case of accidental poisoning.

7. Never transfer pesticides to other containers.

8. Close and tightly seal the containers after using the product.

9. Do not store pesticides in places where flooding is possible or in places where they might spill or leak into wells, drains, groundwater, or surface water.

B. Disposal

Contact Environmental Health & Safety for assistance in disposing of pesticide products.

VIII. Record Keeping

Application records demonstrate applicator professionalism by documenting legal use, and the safety, care, and concern taken when making the application. Records serve to refresh applicators' memories of procedures, timing, and implemented precautions. They are also extremely important business tools that are useful in tracking inventories and informing the workforce of pesticide applications. When used in conjunction with pest monitoring records they allow the applicator to evaluate the effectiveness of the applications.

Records shall include:

1. Location of Application
2. Area (zone)
3. Target Pest
4. Specific Pesticide Applied
5. Dilution Rate
6. Application Rate

*Refer to Appendix A (Daily Fertilizer / Pesticide Application Record)

- These records will be turned in daily to the Grounds Department Chemical Applicator Qualified Supervisor.

IX. Emergency Information

The University is committed to managing pesticides to minimize the possibility of release into the environment. As part of this commitment, UNC maintains equipment on-site to facilitate spill cleanup.

The University has a Hazardous Materials Incidents Emergency Response Plan maintained by the EHS department. These plans support the spill response and emergencies related to the Pesticide Safety and Application Guidelines (or) application of pesticides on campus.

In case of a spill or release contact UNC Police Department at 351-2245 immediately. The Hazardous Materials Incident Emergency Response Plan will be followed during a release, spill, or incident.

X. Training

All training records must include the dates of training sessions, contents or a summary of the training session, names and qualifications of persons conducting the training, and names of persons attending the training session. Training that is conducted by departments must send a copy of the training roster to EHS.

Only employees who have received training regarding the application, mixing, disposal, safe handling, and the avoidance of the hazards associated with their use.

XI. Training Guidelines

IPM Training to include the following criteria

Pest Education includes identification, life cycles, host plants, and diagnosis of each of the 13 major pest problems on campus. Questions that pertain to where and when to find these pest problems will be answered. Knowing when a particular pest is in the most susceptible phase will determine the most effective means of control.

Target vs Non-Target This includes target/weed plants as well as plants that are victims of a particular pest. One must be able to distinguish pests either as a Target or Non-target.
For example, bluegrass turf could be a target weed when it is growing in a flowerbed, and the same turf could be the victim of weed infestation or the non-target plant. It is ultimately a matter of determining management objectives. In general, a weed can be defined as a "*plant-out-of-place" or* not desired.

Plant and Weed Identification

In turf
In ornamental Plantings

Herbicide Education

Non-Selective Vs Selective
Pre-Emergent vs Post Emergent
Growth Regulators

Insecticide Education

Chemical
Bio-Rational
Organo-Phosphates
Cholineasterase Inhibitors
Systemic vs Non-Systemic (contact)
Mosquitoes and West Nile Disease

Non-Chemical Controls

Biological
Physical/Mechanical
Cultural

XII. Responsible Parties

Manager of Landscaping & Grounds (Sarah Boyd)
Facilities Management
Parsons Hall, 501 20th Street
Greeley, Co 80639
970-351-1263

Grounds Nursery II* Chemical Applicator (Ben Weber)
Facilities Management
Parsons Hall, 501 20th Street
Greeley, CO 80639
907-351-1275

**This position #999 serves as the Primary Pesticide Applicator*

APPENDIX B

UNIVERSITY OF
NORTHERN COLORADO

Safety Data Sheets (SDS)

Are in the SDS binder located on the pesticide storage cabinet in Parsons Hall.

Can also be found on MSDS Online
Contact EHS for Assistance