



Landscape Services

Safety Standard Operating Procedure

(Revised 3/2023)

IPM Scouting

This SSOP provides guidance on safe IPM scouting. As with any equipment or tools, the most basic premise for safe operation is reading and adhering to the manufacturer's instructions and warnings. This SSOP is not a substitute for the owner's manual produced by the manufacturer.

Safety

PPE required for IPM Scouting:	Gloves, safety glasses, sturdy footwear
Scheduled:	Seasonally
Tools needed for IPM Scouting:	Pocket lens with 10x magnification, white sheets of paper, pruners, Ziploc bags, soil sample bags, disinfectant spray
Safety Hazards:	Vehicle and pedestrian traffic, lifting, bending, noise, equipment malfunction, hot or cold temperatures, sharp objects, and inclement weather.

Understanding Integrated Pest Management Scouting

To properly monitor pests and diseases in the landscape, it is important to keep track of seasonal trends, weather conditions (wind, humidity, rain, dry spells, temperature, and cloud cover should be noted). Integrated pest management is a science-based decision-making process that combines tools and strategies to identify and manage pests. It is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.

Steps for Scouting

1. Identify the plants in the landscape that you will be scouting.
2. Based on the plant type and plant, will determine the best management practice for the pest or disease that you are scouting for.
3. Once you have determined the plant material that you are scouting, assess the overall appearance of the plant.
 - a. Do the leaves appear to be healthy?
 - i. Note the color of the foliage.
 - ii. Are you seeing any leaf drop?
 - iii. Are there any branches that are completely defoliated while others are not?
 - iv. If discoloration is present, check for small pests not visible by taking a clean white sheet of paper and shaking the branch with the affected leaves/needles over the paper. Observe any movement on the paper.

1. Samples of the branch or pest can be collected and taken to the diagnostic lab for evaluation.
- b. Is there any dieback present?
- i. Look for potential damage along the branch.
 - ii. Observe from the main stem to the end of the dead branch for anything unusual.
 1. Look for possibly girdling obstructions.
 - a. Old arbor tags.
 - b. Wire girdling a branch.
 - c. Animal or insect that chewed off the cambium layer of a branch.
 - d. Is the branch broken?
- c. Do you see any unusual patterns/markings on the leaves?
- i. Do you see leaf veins as a different color than the leaf?
 - ii. If the leaf color is supposed to be green, but is not, what color is it?
 - iii. Are the leaves curling?
 - iv. Do you see black within the leaf tissue?
 - v. Is the pattern biological or mechanical?
 - vi. Have any treatments been made in the vicinity of the plant?
 1. Chemical drift can cause symptoms to plants. It is important to note patterns of other nearby like plants.
 - vii. If unusual patterns are present, check for small pests not visible by taking a clean white sheet of paper and shaking the branch with the affected leaves/needles over the paper. Observe any movement on the paper.
 1. Samples of the branch or pest can be collected and taken to the diagnostic lab for evaluation.
 - viii.
- d. Do you see any damage to the bark?
- i. Lightning strikes will kill plants instantly by vaporizing all the water within the vascular system.
 1. Expect to see splitting and bark peeling or even major splintering.
 2. Leaves or needles will turn brown quickly within two weeks' time.
 - ii. Do you see bark stripped off the plant?
 1. This could be from an animal or decay.
 - iii. Do you see any visible damage from birds, animals, or borers present?
 1. Borers will show tiny holes going into the tree or shrub.
 - a. Observe what shape the hole is as it enters the trees.
- e. Is there any visible damage from a recent storm, animals, or birds?
- i. Are there any broken branches?
 - ii. Do you see damage from birds? IE woodpeckers or other sapsucking birds.
 - iii. Do you see any damage from animals?
- f. Is there any signs of standing water or lack of water?
- i. Look for areas on the surface of the soil that are more wet than others.
 - ii. Probe the soil to determine moisture content.
 - iii. When was the last rain event?
- g. Do you see pests visibly from the ground? If yes,
- i. Can you identify what type?

- ii. If observing a tree for insects, you may need to go up into the tree. You may need the assistance of a ladder, lift or to call in a certified arborist to climb into the tree to do a further assessment of the pest.
 - h. Were there any adverse weather events that took place two to four months prior?
 - i. Often on plants, especially trees and shrubs, we may not see the effects of weather patterns until a later date as the damage was done to the root system not visible to us. Plants will often pull from reserves which may take months to years to show the symptoms depending on the extent of the damage.
 - ii. If you suspect that an adverse weather condition is to blame, try to expose the root system at the dripline of the plant.
 - 1. Observe the fibrous root system.
 - a. Do you see viable roots on the plant?
 - b. What color are the roots?
 - c. If you perform a tug test on the fibrous roots, does the external layer come off or does it just break away?
 - 2. Observe the tertiary root system for viability.
 - i. Has there been any construction recently that may have affected the plant?
 - i. Was chemical used on the construction site that could have drifted or infiltrated the soil near the plant affecting the root system?
 - ii. Was any excavation done near the plant? If yes,
 - 1. How much of the critical root zone was affected?
 - 2. What was the size of the roots that were damaged?
 - 3. Was anything done to assist with the ensuing known stress due to the root zone damage?
- j. Do you see any unusual residues on the leaf material? If yes,
 - i. Is it on the underside?
 - ii. Is it on the topside?
 - iii. If residues are present, check for small pests not visible by taking a clean white sheet of paper and shaking the branch with the affected leaves/needles over the paper. Observe any movement on the paper.
 - 1. Samples of the branch or pest can be collected and taken to the diagnostic lab for evaluation.
- k. What have the temperatures been like?
 - i. Has it been hot?
 - ii. Was there a recent cold snap?
 - iii. How much cloud cover have we experienced?
 - iv. Observe the plants microclimate.
- l. What has the moisture been like for the atmosphere, not just rainfall.
 - i. What has the humidity been during the night hours?
 - 1. Many diseases thrive at 70-degree nights with high humidity.
 - 2. If it has been humid, what is the airflow for the plant like?
 - 3. Air circulation is critical for keeping fungal spores in check.
 - ii. When did we receive rain last?
 - 1. Late evening rain showers are often the culprit for fungal issues in the subsequent days.
 - 2. How much rain did we get?
 - 3. Duration and amount of rainfall should be noted for plants that appear to be stressed.

- a. Observe the roots and soil moisture content for a better look into the plant.
- m. When was the plant last pruned?
 - i. Was the plant pruned with shears, chainsaw, or pruners?
 - ii. Did the team that performed the pruning utilize a disinfecting protocol between plants?
 - iii. Was the plant pruned at the proper time?
 - iv. How much plant material was removed?
 - v. Were the cuts made properly?

Utilizing the Information from Scouting

1. Based on what you are seeing, you may need to take cuttings or the pest to the diagnostic lab on campus. **If you do not need to take samples to a lab for diagnosis, skip to step 5.**
 - a. You will want to take a cutting of the infected leaf, branch, or roots.
 - b. When getting cuttings of the plant material, it is important to not only bring samples of the affected tissue, but also nearby tissue on another branch to determine if it is localized or if it is affecting other portions of the plant.
 - i. Sometimes symptoms are not present all over, but the disease could be present in areas that do not appear to have symptoms.
 - c. If possible, put the sample into a Ziploc bag to keep the sample from becoming contaminated or spreading to a healthy plant during transport.
 - d. Bring a soil sample of the affected plant with you as well to assist in determining the best approach for treatment.
 - i. Be sure to take your soil samples from all around the root zone of the plant and not from one location. This will help to form an average within the soil sample and not a localized sample.
 - e. If you are collecting insect samples, try to identify as best you can in the field the type of pest.
 - i. Safety is of concern here as some pests can bite you and irritate the skin. It is best to use gloves and try to scoop the pest into either a Ziploc bag or a small sealable container like a cup or bowl.
2. You will need to wait one to three days for the results from the lab depending on how busy the diagnostic lab is.
3. Once you have received the results from the lab, you will need to decide of the best course of action to remedy the issue with the plant material.
4. If chemical applications are to be made a licensed pesticide applicator will need to make to application to the affected plant.
 - a. It is important to document the chemicals used for treatment.
 - b. The applicator should also be making a record of the application. Recording temperature, wind conditions, humidity, amount of chemical applied, rate of chemical applied, and the product applied.
5. Determine the timing for any pests or diseases that you have observed.
 - a. If the pests are still currently active, a chemical application may need to be made.
 - i. If chemical applications are to be made a licensed pesticide applicator will need to make to application to the affected plant.
 1. It is important to document the chemicals used for treatment.
 2. The applicator should also be making a record of the application. Recording temperature, wind conditions, humidity, amount of chemical applied, rate of chemical applied, and the product applied.
 - b. If the damage has been done but the pests are now dormant, note the timing of the insect's active cycle and put it on your calendar to monitor the degree days so that you can proactively treat the pest right

before it becomes active. This will help to ensure that you are not treating a dormant pest expecting results.

6. Once you have made the determination of the pest, continue to monitor, and observe the plant noting any changes in the overall appearance of the plant.
 - a. Observe the efficacy of the treatment that was used.
 - i. It is important to note that any restricted use pesticides should be rotated to keep from building up immunity amongst the pest population. If you do not rotate active ingredients for insect control, they will build up an immunity to that active ingredient and will no longer be able to treat that pest.
7. Repeat steps 1 – 3 of the scouting steps and steps 1 – 6 of the utilizing the scouting information cyclically as needed.
 - a. Many plants have different pests and diseases. It is important to be scouting for pests and diseases when they are active or shortly before they become active. This will help you to catch them in action and allow for you to create a routine plan.