GROWERTALKS

Features

12/30/2016

Stay in Shape by Keeping It Clean

Dustin Meador

Each year at the Annual National Collegiate Landscape Competition, horticulture students compete at applied horticultural skills. The events are organized by the National Association of Landscape Professionals (NALP) with the help of industry sponsors. There are multiple landscape operations challenges.

One of the events, “Landscape Maintenance Operations,” is a two-person team competition to demonstrate safety, site assessment, mower operation and time required to complete a routine lawn maintenance job. The tendency for some may be to speed off the trailer and lap the turf plot like a motor speedway, so there was risk of disqualification if safety checks were overlooked.

Most teams did a walk to assess the landscape or remove the paper cup and napkin that were strategically placed in the plot. A few teams didn’t do an initial assessment, so they didn’t see the pesky paper cup and napkin. In the wake of the mower, there were thousands of little pieces of paper confetti that took much longer to clean up than walking the plot and removing two pieces of trash would have been.

Principles of sanitation, cleanliness and hygiene seem cliché; however, they’re important to reinforce best management practices (BMPs), integrated pest management (IPM) and compliance standards. Growers of edible or alternative crops have additional compliance requirements compared to ornamental crops. Food safety requires standard operating procedures for sanitation at each step of production, packaging, storing and shipping.

In recent years, the horticulture industry has been challenged to provide transparency into our production practices. Our vendors, regulatory agencies and employees have expectations for sanitation that should be maintained. The appropriate level of sanitation can vary; however, principles are similar for any horticultural operation—nursery, greenhouse, turf and landscape.

Here are some principles and practices for effective sanitation programs. (It helps me to begin with a broad scale perspective and then move into more detail.)

• Aerial photos and maps can be useful to identify features on location that are important to sanitation objectives. Map key buildings, greenhouses and nursery production areas and any buffer zones between these features that require consideration; assess how the layout fits with the natural flow of the surroundings.

• Assess the ergonomics of the working space, storage, machinery, and movement of workers and materials.

Minimize risk of disease contamination by maintaining product flow and isolation between receiving, holding and finishing. Can you isolate incoming material for disease screening before moving into the production area?

• Are there practices that are not conducive to sanitation, safety or production efficiency?

• Are you able to find remnants of last year's potting mix in crevices and corners? Limiting the accumulation of debris and proper disposal will improve your sanitation program. If a problem is encountered or chemical control is needed for disinfestation, it will be more efficient. Generally, the dirtier things are, the more difficult it is to clean up.

• After a crop is removed, a standard operating procedure (SOP) can be used to ensure that the site is ready for the new crop coming into the area. The SOP below is an example of a program developed to improve sanitation in a production area.

Pre-planning guidelines

• Production areas should be verified to be in good repair, free of litter and unnecessary equipment. Needed repairs should be identified with a work order to facilities.

• Weeds should be removed and disposed of in a sealed container. If there are excessive weeds, a request to the pesticide applicator will be made to provide herbicide treatment.

• There should be no other issues from animals or potential pests. In the case of dead animals, please contact the supervisor to dispose of in an appropriate manner.

Sanitation protocols

• Remove large debris and sweep up any plant material, growing media and plastic. Dispose of material immediately and transport away in closed containers.

• Verify that algae or biofilm isn't present on ground or surfaces.

• Got algae? If so, follow steps for surface and moisture management below.

Surfaces and moisture management

Look at your level of drainage. If it's either 2 or 3, refer to "Treatments" below.

1. Dry
2. Slow to drain
3. Standing water

• Surrounding areas should be treated (tiles, gravel, absorbents) or graded to reduce mud and dust contamination from entering the production area.

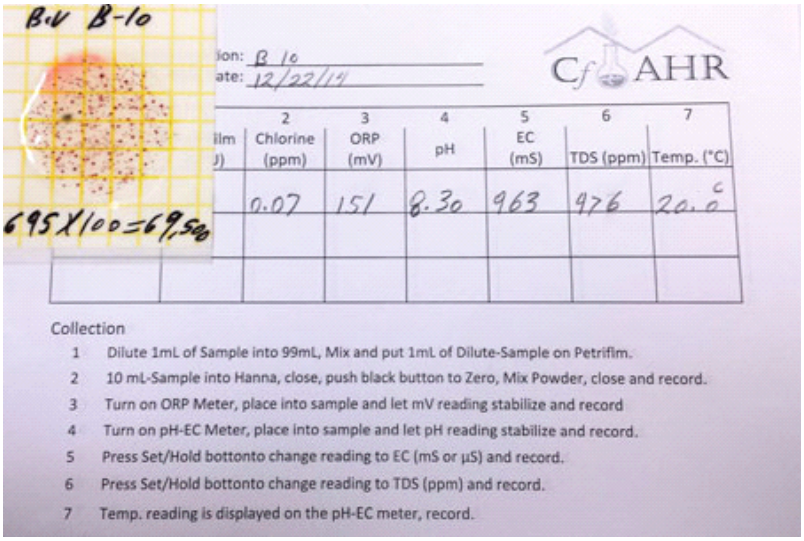
• Make sure the walking areas drain well.

• Drainage fields should be graded to drain, collect effluent and reduce discharge (sheet) flow.

• Ground cloth and fabric covers should be fastened to the ground.

• Fill holes in ground cloth and/or depressions with construction sand.

• Make sure your irrigation is pressurized and delivers equal
volume, and conduct a systems check.



On-site water quality monitoring by a grower to determine efficacy of disinfestation process. Chemical water quality was assessed with pH, electrical conductivity and oxidation reduction potential (ORP). Biological water quality was assessed using methods developed for irrigation monitoring with Petrifilm aerobic count plates (3M).

Greenhouses/structures and equipment

• Inspect working irrigation and other hardware (fans, cooling pads, doors and vents).

• Air intakes should be inspected, lubricated and cleaned so they're not a source of dust, dirt and other contamination.

• Holes and gaps in the structure need to be repaired to limit rodent and insect pressures. Open areas near floors can be reinforced with 16 mesh to 1-in. screen.

• Covers (ceilings and cloths) should be tight fitting, secure and provide shelter from environmental conditions.

Cleaning

• Examples of cleaning and treatment to perform after sanitation and safety verified. Personal protective equipment (PPE) must be worn in accordance with the label.

• After appropriate sanitation efforts, surfaces should be cleaned and sanitized (see list below).

• Wet/dustless methods should be used when crops are located nearby or in case of high winds. Dustless methods include wet cleaning—water with push broom, scrubber or squeegee, vacuum or sweeping with dust -arresting compounds (sawdust, sand).

• Sweeping with a broom is preferred and can be combined with powdered treatments of dolomitic lime and/or powdered bleach for sterilization, in addition to other products listed below.

• Leaf blowers are acceptable, if there are no surrounding crops nearby that will be contaminated by dust.

• Debris containers with tight-sealing lids should be available on site at all times.

Examples of powder treatments for wet surfaces:

1. Absorbent materials: Diatomaceous earth, sawdust
2. Abrasives: Sand
3. Pests: Dolomitic limestone
4. Sanitizers: Ajax, Comet or other powdered bleach

Sanitizing liquid treatments:

1. Chlorine bleach 5% to 10% (sodium hypochlorite)
2. Activated peroxygens (dioxides, peroxide, peroxyacetic acid, octanoic acid)
3. Quaternary ammonium

Other problems

Outside air movement into ventilation systems will allow an entry for debris that can vector Erwinia, Powdery Mildew, Pseudomonas and other weed and insect pests. Spores such as *Penicillium sp*. and Zygomycota molds *(Rhizopus stolinifer)* can persist in air-exchange systems and are problematic in storage coolers and air conditioning units in tissue culture labs. Air quality and flow may require management during certain times of the year when pests are prevalent in the surrounding environment. A maintenance plan for equipment will improve the functional reliability. Currently, the Center for Applied Horticultural Research (CfAHR) is screening several treatment options to control biofilm and mineral deposits in cooling pad systems.

Equipment maintenance for machinery and cutting equipment often requires lubricants, sharpening and additional manufacturer recommendations. Store sensitive probes in appropriate storage solution. Cutting blades should be stored dry or with lubricant. This responsibility should be specifically assigned to someone who can provide accountability. Otherwise, routine product support may be needed from the manufacturer for specific calibration or other maintenance needs. Clean equipment between use and disinfest before use.

Efficacy of the disinfestation process should be monitored. Here's an example of a program that was developed for a grower who had an initial question about disinfestation efficacy of their manual tray-washing process: "How many can we wash before changing the water in a wash tank"? We conducted a few trials and developed a sanitation program to provide an acceptable level for disinfestation of bacteria.

Tray wash example:

- Pre-wash trays to remove debris
- Chlorine (from bleach) was measured at 100 ppm
- Wash solution was acidified to a pH of 7
- Tray stays in the solution for a minimum contact time of 10 seconds **GT**

CfAHR can assist growers, manufacturers, academia and government to find solutions for horticultural production issues, discover opportunities and promote practices towards sustainability of specialty crops. *cfahr.org*

Dustin Meador is the Executive Director for the Center for Applied Horticultural Research in Vista, California

.