e-GRO Alert

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Clean Up Your Act: Readying the Greenhouse for Poinsettia Propagation

As poinsettia propagation season approaches, a thorough sanitation plan is essential for producing healthy, disease-free transplants. Proper cleaning and disinfection of the propagation environment should be completed before cuttings arrive to ensure a successful start to the production cycle.

Poinsettia propagation is a critical phase in the production cycle (Fig. 1), setting the stage for the health and vigor of the crop throughout the rest of the season. With the arrival of unrooted cuttings in early summer, growers face the dual challenge of promoting rapid root development (Fig. 2)while managing the risks posed by common pathogens and pests. The warm, humid conditions required for successful callusing and adventitious root development also create an environment where diseases can thrive, making proactive sanitation measures essential.

Figure 1. Rooting cuttings of poinsettias is a critical phase in the production cycle. Photo by: W. Garrett Owen, OSU.

If propagation environments are not properly cleaned and sanitized between production cycles, pathogens from previous crops may persist into subsequent poinsettia propagation. Pathogens and pests in propagation can become especially problematic as they reduce

Figure 2. Example of a healthy, high-quality rooted poinsettia cutting (liner) ready to be transplanted. Photo by: W. Garrett Owen, OSU.

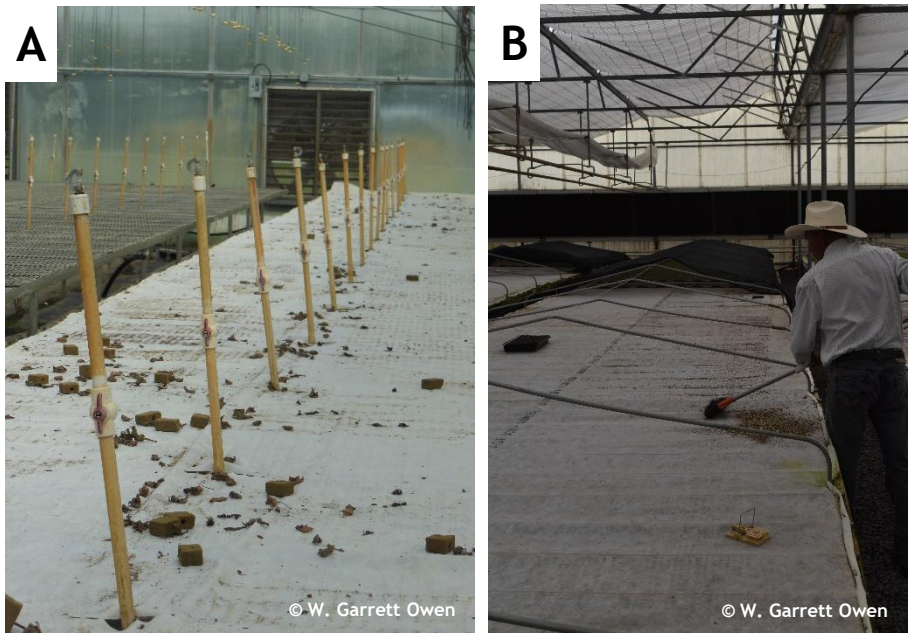

Figure 3. Effective cleaning begins with removing substrate (A) and debris from the from propagation benches. Tools such as brooms (B), vacuums, or even electric leaf blowers can be used. Photos by: W. Garrett Owen, OSU.

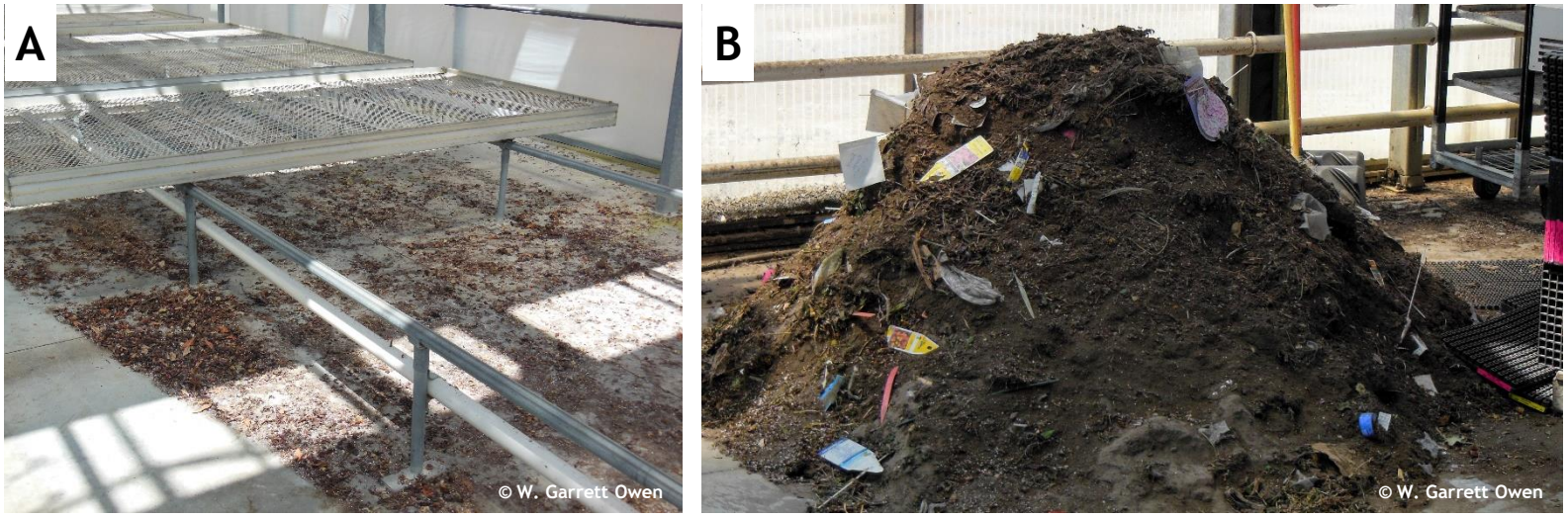

Figure 4. Effective cleaning begins with removing substrate (A) and debris from the from propagation floor and environments. Tools such as brooms, vacuums, or even electric leaf blowers can be used to pile (B) and discard the material. Photos by: W. Garrett Owen, OSU.

rooting success, transplant vigor, and overall transplant quality, leading to significant economic losses in poinsettia production.

A comprehensive sanitation plan is not just about reacting to problems as they arise but about establishing a foundation that prevents disease and pest issues from spreading. By thoroughly cleaning and disinfecting the propagation environment before cuttings arrive, growers can significantly reduce the risk of introducing harmful pathogens and insect pests. This proactive approach helps ensure that poinsettia transplants remain vigorous, disease-free, and of the highest quality, ready for the next stage of production. To achieve these results, growers should create or revisit a sanitation plan tailored to their specific propagation environment and practices. The following section provides general suggestions for cleaning and disinfection practices to help ensure a successful propagation season.

Sanitization and Disinfection in Poinsettia Propagation

What is Sanitization?

Sanitization is the process of reducing or eliminating the number of harmful microorganisms such as bacteria and fungi on surfaces prior to poinsettia propagation. This is typically accomplished through a two-step process: first, thorough cleaning to remove all visible debris, and second, targeted disinfection to eliminate any remaining pathogens or pests.

Cleaning: The First Step

Effective cleaning begins with physically removing all weeds, plant debris, algae, and old substrate from benches (Fig. 3), floors (Fig. 4), and other surfaces. Tools such as brooms, vacuums, or even electric leaf blowers can be used to collect and remove this material efficiently (Fig. 5). Once most of the debris is removed and discarded, surfaces should be scrubbed with soap and water, pressure washed or cleaned with a floor scrubbing machine (Fig. 6) to eliminate any remaining residue or algae. This initial cleaning is essential because it prepares the environment for the next step: disinfection.

Disinfection: Targeting Pathogen

Disinfection involves applying a disinfectant to surfaces after cleaning. The choice of disinfectants should be based on product registration for greenhouse use, type of surface and materials to disinfect, pathogen to eliminate, and the specific needs of the crop. Disinfectants are available in several forms□foam, granular, and liquid□each offering distinct advantages. Foam disinfectants are particularly effective on porous or vertical surfaces, as they adhere well and increase contact time. Granular products spread easily over floors and are useful for controlling algae over extended periods. Liquid disinfectants, meanwhile, can be

Figure 5. Example of a cart equipped with brushes and other tools and resources to help maintain a clean propagation environment. Photo by: W. Garrett Owen, OSU.

Figure 6. Example of a greenhouse operation using a floor scrubbing machine to eliminate any remaining residue or algae from the floor. Photo by: W. Garrett Owen, OSU.

Figure 7. The optimal time to disinfect is when no plants are present in the greenhouse or propagation environment. Photo by: W. Garrett Owen, OSU.

used for general surface disinfection and are also effective for cleaning irrigation lines and emitters.

The optimal time to disinfect is when no plants are present in the greenhouse or propagation environment, as this allows for the most thorough coverage and minimizes the risk of plant damage (Fig. 7). If disinfection occurs while plants are present, extra care should be taken, as many disinfectants can be toxic to poinsettias. For example, poinsettias are sensitive to chlorine, and exposure to bleach solutions can result in symptoms such as black streaking, leaf yellowing (chlorosis), and leaf drop (abortion). Risks from direct contact or volatile gases can be mitigated by rinsing surfaces with water or increasing ventilation. Alternatives such as hydrogen dioxide or quaternary ammonium chloride salts may be considered, but even with these products, label instructions and safety precautions should always be followed.

While cleaning and disinfecting require investment in both labor and materials, these practices are proactive measures that help reduce the risk of future pathogen or pest outbreaks. Such efforts not only improve rooting success and transplant vigor but may also minimize the need for repeated pesticide applications during production.

Hot Spots for Sanitization in Poinsettia Propagation

Proper sanitization is crucial at every stage of poinsettia propagation, from the arrival of cuttings through to the final growing environment. Always source plant material from reputable suppliers to ensure cuttings are free of pathogens and pests.

Cutting Arrival

Sanitation begins as soon as poinsettia

Figure 8. Sanitation begins as soon as plant material arrives by inspecting unrooted cuttings for signs and symptoms of abiotic (nonliving) and biotic (living) stressors. Photo by: W. Garrett Owen, OSU.

Figure 9. Example of unrooted cuttings stored in a clean, sanitized cooler until they can be stick into propagation trays. Photo by: W. Garrett Owen, OSU.

Figure 10. Example of a team member sanitizing the surfaces of the sticking line after a day of sticking unrooted cuttings. Photo by: W. Garrett Owen, OSU.

cuttings arrive at the greenhouse (Fig. 8). Inspect all cuttings carefully for signs of pathogen or pest infestation. Symptoms such as wilting may be caused by abiotic factors like transportation stress, so it is important to distinguish between abiotic (nonliving) and biotic (living) causes. If you are uncertain about any observed signs or symptoms, document your findings by taking photographs and contact your sales representative or state Greenhouse Extension Specialist for guidance. Submitting samples to your state or preferred diagnostic laboratory can help confirm the cause of any issues. For successful propagation, select healthy, firm cuttings that are free of visible pathogens and pests.

Cutting Storage

If cuttings are not immediately stuck upon arrival, they should be stored in a clean, sanitized cooler set to 50–55°F (10–13°C) with high humidity (~ 90%) to maintain cutting turgidity and minimize water loss (Fig. 9). Ensure cuttings are placed on clean shelves and kept separate from other plant material. This storage period can also serve as a quarantine, allowing time to check for any emerging pathogen or pest issues before cuttings enter the main propagation area. Proper quarantining helps prevent cross-contamination and the introduction of new problems into the growing environment.

Cutting Sticking Area

The sticking area is a critical point for pathogen and pest management during poinsettia propagation, as it presents multiple opportunities for contamination. Never reuse growing media to prevent the introduction of pathogens from previous crops. If containers are reused, ensure they are thoroughly cleaned and sanitized before use. Sticking bench surfaces (Fig. 10) and tools (Fig. 11) should also be

Figure 11. Example of tools being sanitized between use. Photo by: W. Garrett Owen, OSU.

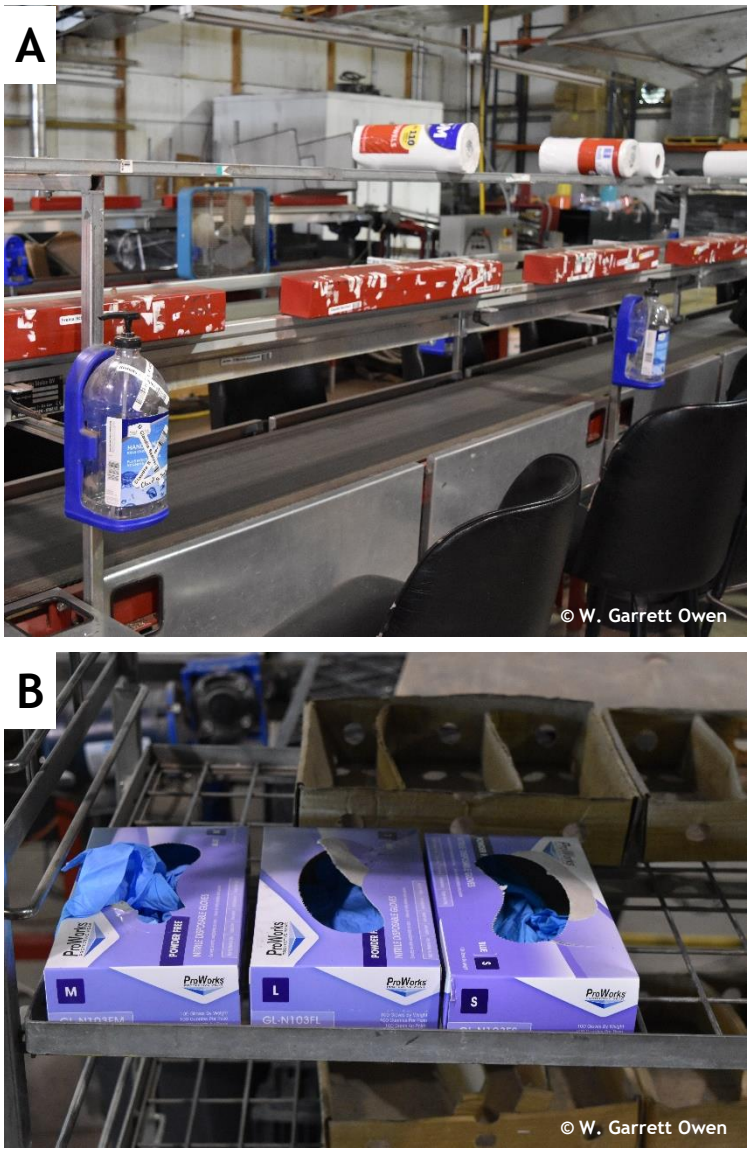

Figure 12. Example of a cutting sticking line equipped with supplies such as hand sanitizer, gloves, and paper towels to minimize the risk of contamination while handling and sticking cuttings. Photo by: W. Garrett Owen, OSU.

sanitized between batches of cuttings. This can be quickly accomplished by spraying or wiping with appropriate solutions such as bleach, hydrogen peroxide, or alcohol, always confirming that the sanitizing agent is compatible with the plant, bench, and surface materials.

All team members should maintain clean hands, gloves, and clothing to minimize the risk of contamination (Fig. 12). Limiting unnecessary movement between different propagation and greenhouse zones is essential, as this is one of the quickest ways pathogens and pests are spread. If team members need to move from one location to another, then consider posting signs to remind them to maintain a clean environment (Fig. 13) and use footbaths or mats (Fig. 14).

Just before cuttings are stuck, consider performing a sanitizing dip. This involves submerging unrooted cuttings in a registered and labeled pesticide or fungicide solution specifically intended for cutting dips. Always follow the label directions for mixing the solution, submerging cuttings, and ensuring the correct treatment duration. Handlers should wear appropriate personal protective equipment during this process. If you are new to cutting dips or are propagating poinsettia cultivars that you have not previously treated, it is recommended to conduct a small in-house trial before treating all cuttings, as cultivar sensitivity can occur. This precaution helps prevent unexpected phytotoxicity and ensures the health of your crop.

Key Areas for Sanitization in the Propagation Environment

Sanitization efforts in the greenhouse and propagation environment should be targeted at several critical areas to

Figure 13. Example of a posted sign reminding team members to keep the propagation area clean upon entry.
Photo by: W. Garrett Owen, OSU.

Figure 14. Example of a sanitation foot mat that team members are required to step on prior to entering the growing area.
Photo by: W. Garrett Owen, OSU.

Figure 15. Example of a propagation bench covered with plastic that would need to be sanitized between propagation crop cycles. Photo by: W. Garrett Owen, OSU.

minimize the risk of disease and pest introduction. Each of these areas plays a unique role in maintaining a clean, productive environment for poinsettia propagation.

Benches

Bench surfaces are in direct contact with propagation trays and plants, making them a primary site for pathogen and pest persistence. Cleaning and sanitizing benches between crops is the most efficient way to prevent the carryover of harmful organisms. Some benches may be covered with plastic film or sheeting(Fig. 15); if severe outbreaks have occurred in previous production cycles, it is best to replace this covering to eliminate potential reservoirs of infection.

Floors

While poinsettias are often propagated on benches, some greenhouse operations may utilize concrete floors for propagation or other elevated systems (Fig. 16). Maintaining clean and sanitized floors is essential, regardless of where propagation occurs. Pathogens and pests can easily be transferred by the soles of workers' shoes, introducing contamination from other areas of the greenhouse. Dirty floors also present significant safety hazards: wet organic matter or algae can create slipping risks for employees (Fig. 17). Regularly sweeping, scrubbing, and disinfecting floors help prevent both disease spread and workplace accidents. Establishing a routine cleaning schedule ensures that all surfaces including floors remain free of debris and potential disease vectors, supporting a healthy and safe propagation environment.

Side Walls and Plastic Tenting

Side walls and plastic tenting may seem like unlikely sources of disease, but they can serve as reservoirs for pathogens and

Figure 16. Example of poinsettias propagation on an elevated rack system close to the greenhouse floor. Photo by: W. Garrett Owen, OSU.

Figure 17. Floors that are wet and covered in algae are significant safety hazards to team members, increasing the likelihood of slipping risks. Photo by: W. Garrett Owen, OSU.

Figure 18. Example of a propagation side wall covered in algae thereby serving as an area for continued growth and reduced light transmission. Photo by: W. Garrett Owen, OSU.

algae (Fig. 18). During propagation, water splashing onto these surfaces can redistribute pathogens to nearby plants. Additionally, as dust and algae accumulate, light transmission through the side wall or tenting is reduced, limiting the amount of light available for photosynthesis and potentially slowing crop growth and development. Routine cleaning of these surfaces ensures maximum light transmission and minimizes disease risk. If plastic tenting (Fig. 19), such as poly film is used, monitor for signs of degradation, such as increased opacity. Degraded film should be replaced promptly to maintain optimal light conditions.

Irrigation Systems

Proper maintenance of irrigation lines and mist nozzles, spinner, or emitters is crucial for growing healthy, disease-free poinsettias and for avoiding system failures. Always follow manufacturer recommendations for cleaning and sanitizing irrigation equipment. Check that water is flowing at the proper rate through all emitters. Calcium and other mineral deposits (Fig. 20) and algae (Fig. 21) can clog mist nozzles, spinner, or emitters and reduce flow rates; soaking emitters in an acidic solution is an effective way to remove these deposits. After cleaning, run a disinfectant through the irrigation system according to label instructions to eliminate any remaining pathogens. Before irrigating any plant material, ensure that lines are thoroughly flushed to remove any residual disinfectant.

Routine Scouting and Monitoring

Importance of Regular Monitoring

Even with thorough preventive sanitation and management practices, pathogen and pest outbreaks can still occur in greenhouse and propagation environments. Regular scouting and monitoring are essential to detect problems early, before

Figure 19. Example of clean plastic tenting used in propagation of unrooted cuttings. Photo by: W. Garrett Owen, OSU.

Figure 20. Example of calcium and other mineral deposit build-up on a mist nozzle. Photo by: W. Garrett Owen, OSU.

Figure 21. Example of algae build-up on an overhead mist sprinkler. Photo by: W. Garrett Owen, OSU.

Figure 22. Healthy, high-quality rooted poinsettia cuttings (liners) produced under a rigorous sanitation and monitoring program. Consistent attention to cleanliness and early intervention throughout propagation results in uniform, vigorous liners that are well-prepared for transplant and continued production. Photo by: W. Garrett Owen, OSU.

they have a chance to spread and cause significant damage to poinsettia crops.

Monitoring Methods and Practices

Effective monitoring involves systematic visual inspection of all plant material, including leaves, stems, and roots, as well as the use of monitoring tools such as sticky cards and indicator plants. Sticky cards placed near the crop canopy help detect flying insect pests, while indicator plants serve as sentinels for tracking the development of pest populations or disease symptoms. Establishing a consistent scouting schedule ideally at least weekly ensures that all areas of the propagation environment are covered and that issues are identified promptly.

Response to Detected Issues

When potential problems are identified during scouting, swift action is required. Infected or infested plant material should be bagged and removed from the propagation environment to prevent further spread. The propagation environment, especially bench surfaces and irrigation systems, should be thoroughly sanitized. Appropriate pesticide or fungicide treatments should be applied according to label instructions, while always considering the safety of workers and the environment.

Successful poinsettia propagation relies on a proactive and ongoing commitment to sanitation, monitoring, and rapid response. By establishing and maintaining a clean environment before cuttings arrive, focusing on key sanitization areas throughout the propagation process, and implementing regular scouting and monitoring, growers can greatly reduce the risk of disease and pest outbreaks. These practices not only improve rooting success (Fig. 22) and plant vigor but also contribute to a more efficient and profitable production cycle. Consistent attention to sanitation and monitoring is the foundation for producing healthy, high-quality poinsettia crops year after year.

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