

Disinfection of Horticultural Tools¹

Geoffrey C. Denny and Gary E. Vallad²

The purpose of this document is to provide assistance in selecting the appropriate method to sterilize or disinfect horticultural tools and implements.

The disinfection and sterilization of horticultural tools and surfaces is a good way to prevent the spread of disease-causing pathogens in gardens, landscapes, greenhouses, nurseries and farms. The habit of cleaning all tools and work surfaces (including floors) with a surface disinfectant will not only eradicate pathogens, but also limit their spread to healthy plant materials.

Disinfecting and sterilizing tools and surfaces is no guarantee against plant disease, but including these practices as part of good production hygiene can have a significant impact on the incidence and severity of a disease outbreak. These practices can reduce the size of the initial disease outbreak and can also provide a better opportunity to manage the disease successfully through other means.

Numerous types of products can be used to disinfect tools. Various disinfection products have advantages and disadvantages that should be considered before a product is selected for use. Table

1 provides a list of the most common types of products available and lists their pros and cons, as well as how the products should be used and where they may be purchased.

No matter which type of disinfectant product is selected, diligence in using the product is important. Ideally, tools should be disinfected after working on every plant. However, since this practice is not always practical, depending on the system you are using, tools should be sterilized as frequently as possible. It helps to have several tools that can be rotated between plants. One tool can be soaking in the disinfectant while the other is being used. Remember, keeping your tool clean helps prevent the spread of diseases!

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2. Geoffrey C. Denny, assistant professor, Environmental Horticulture Department, and Gary E. Vallad, assistant professor, Plant Pathology Department, Gulf Coast Research and Education Center (GREC)--Wimauma, FL, Institute of Food and Agricultural Sciences, University of Florida.

The use of trade names in this publication is solely for the purpose of providing specific information. UF/IFAS does not guarantee or warranty the products named, and references to them in this publication does not signify our approval to the exclusion of other products of suitable composition.

Table 1. Common products used to disinfect horticultural tools and surfaces.

Material	Pros	Cons	Technique	Sources
Quaternary Ammonium Salts	<ul style="list-style-type: none"> • Very effective • Stable (solution lasts for longer period) • Not corrosive 	<ul style="list-style-type: none"> • Little residual activity • Not as effective if mixed with hard water or organic matter 	<ul style="list-style-type: none"> • Follow the label directions 	<ul style="list-style-type: none"> • Many commercial products are available from horticulture-supply vendors
Hydrogen Dioxides	<ul style="list-style-type: none"> • Less toxic • More biodegradable • Some products recognized as "organic" 	<ul style="list-style-type: none"> • Corrosive • Effective on only a limited number of pathogens • Life span of solution is short 	<ul style="list-style-type: none"> • Follow the label directions 	<ul style="list-style-type: none"> • Many commercial products are available from horticulture-supply vendors
Chlorine Bleach	<ul style="list-style-type: none"> • Inexpensive • Effective 	<ul style="list-style-type: none"> • Corrosive • Fumes can be harmful • Short life span of bleach solution (about 1/2 effect is gone after 2 hours), requires fresh batches immediately before disinfecting tools • Not as effective against viruses 	<ul style="list-style-type: none"> • 10% bleach solution (1 part bleach : 9 parts water) • 30-minute soak • Rinse with water after soak 	<ul style="list-style-type: none"> • Grocery and hardware stores and home-improvement centers
Alcohol (Ethanol or Isopropyl Alcohol)	<ul style="list-style-type: none"> • Immediately effective (no soaking) • Can be used as wipe • No need to rinse 	<ul style="list-style-type: none"> • Flammable 	<ul style="list-style-type: none"> • Wipe or dip tool in 70 - 100% alcohol 	<ul style="list-style-type: none"> • Grocery stores and pharmacies
Trisodium Phosphates (TSPs)	<ul style="list-style-type: none"> • Inexpensive 	<ul style="list-style-type: none"> • Very corrosive 	<ul style="list-style-type: none"> • 10% solution (1 part TSP : 9 parts water) 	<ul style="list-style-type: none"> • Many commercial products are available at hardware stores and home-improvement centers (used to clean surfaces for painting)
Pine Oil Products	<ul style="list-style-type: none"> • Not corrosive 	<ul style="list-style-type: none"> • Not as effective 	<ul style="list-style-type: none"> • 25% solution (1 part pine oil : 3 parts water) 	<ul style="list-style-type: none"> • Many commercial products available at grocery and hardware stores and at home-improvement centers
Household Disinfectants	<ul style="list-style-type: none"> • Easy to find • Usually not corrosive 	<ul style="list-style-type: none"> • Little research on effectiveness of products • Relatively expensive 	<ul style="list-style-type: none"> • Full-strength spray or dip, depending on the product 	<ul style="list-style-type: none"> • Many commercial products are available at grocery and hardware stores and at home-improvement centers