

**Appendix A. Sanitation Protocols for Nursery Reared Individuals Planted into Natural Areas.**

The following guidelines are followed for all rehabilitation, re-vegetation, landscaping, and rare plant recovery programs at Hawaii Volcanoes National Park. All propagated plants are decontaminated for weeds, pathogens, slugs, mites, scales, and other invertebrate pests routinely during propagation and prior to outplanting to prevent the introduction of new pests and pathogens into the target outplanting environments.

Standard nursery sanitation protocols:

- In all stages of plant growth, nursery plants are kept pest free in the greenhouse and nursery using a variety of different pesticides and fungicides when needed.
- Soil is sterilized prior to use to eliminate any initial contamination of soil pests such as, soil mealy bugs, ants, micro-organisms, pathogens, nematodes, fungus and weeds.
- Only clean, sterile pots and flats are used in the nursery.
- Weeds are continuously removed from pots in the nursery and the ground beneath the nursery benches to decrease the risk of introducing any undesirable species (native and/or alien) to outplanting sites.
- All nursery benches are at least 18 inches off the ground.

Specific sanitation protocol prior to outplanting:

Approximately 30 days prior to outplanting, plants are segregated into pest free areas of the nursery and the following pesticides and fungicides are applied.

product name	application prior to planting	target pests
Malathaion (Prozap 57)	25-30 days	sucking insects and flies
Mancozeb (Diathane WF)*	25-30 days	fungal pathogens
Azadirachtin (Neem)	10 days	various insects and fungal pathogens

\*Mancozeb (Diathane WF) should be applied to the entire plant with specific application to the soil, dreching the potting media.