

Keeping Pest-free Soil Pest Free¹

R. P. Esser²

INTRODUCTION: The pest in "pest-free" refers to any organism in the plant or animal kingdom that might damage or kill plants. The Division of Plant Industry's sanitation program was initiated in October 1961 and developed vigorously in the sixties and seventies. A nursery sanitation survey was conducted from 1961 to 1962 encompassing 91 nurseries in Florida with 876 operational years represented. Most of the nurseries surveyed at that time (73%) did not disinfect soil or other planting media prior to use. A serious problem in the early development of the sanitation program and one that still exists today is to find and recommend a source of certified pest-free soil or planting media. Bags of soil or potting media have been examined throughout the state of Florida during numerous sanitation surveys. In no case was a certified pest-free statement of claim found on the label. Fortunately, bagged soil or potting media tested for nematodes in the past 30 years rarely revealed a regulated nematode pest. The rare occurrence of plant parasitic nematodes detected have usually been low level parasites not involved in quarantine regulations, such as spine nematodes (*Criconema* spp.) found in bagged peat from Canada. Many Florida nursery operations, particularly those shipping plants to states or foreign entities that prohibit entry of specified nematode pests, disinfest their potting mixes at the nursery site, and store the treated soil in protected areas as part of an effective sanitation program. Unfortunately, a number of nurseries still lack the facilities or desire to treat their own soil, and obtain soil or soil mixes from areas outside of the nursery. The objective of this circular is to suggest means of protecting theoretically pest-free soil at the digging or mixing site and at storage sites in the nursery.

DIGGING OR MIXING SITES: Approval must be obtained from the Division of Plant Industry prior to the movement of clay, sand, compost or organic materials (herein called "product") from soil pits, peat bogs, mixing sites, compost operations, and miscellaneous diggings, to a citrus-producing area or citrus nursery. The target nematodes in digging or mixing sites are burrowing (*Radopholus similis* (Zimmerman, 1898) Filipjev & Schuurmans Stekhoven, 1941), citrus (*Tylenchulus semipenetrans* Cobb, 1913) and coffee root (*Pratylenchus coffeae* (Cobb, 1893) Thorne, 1949). Soil pits, peat bogs, and other product sources that require nematode certification to sell product to nematode-certified nurseries must be sampled at 12-month intervals. The digging, mixing or compost operation should be at least 100 feet (30 m) from citrus plantings, and protected by a fence at least 50 feet (15 m) from the stored or composing product (Fig. 1). The storage area for product should be well drained and protected by a buffer zone between the storage area and the fence. The buffer must be maintained free of weeds or other contaminants.

The principal sources of contamination to pest-free product at digging, mixing and compost sites are live plants growing in the site substrate, plants in the site environs, water entering the site from the environs, vehicles with off-site contamination moving onto the site, and humans or animals on the site.

To maintain a pest-free status, when pest-free product is dug or produced from mixing sites the product must be placed on a pest-free substrate prior to its mixing or removal to its sale destination. The very best substrates are concrete, asphalt or wood platforms, followed by plastic tarpaulin or fallow ground sampled and found free of regulated nematode pests. A wet product such as peat bog diggings placed on a slope to drain should preferably be placed in long draining tiers perpendicular to the slope on plastic tarpaulin narrow enough to prevent intrusion

¹ Contribution No. 460, Bureau of Entomology, Nematology, and Plant Pathology - Nematology Section.

² Nematologist, FDACS, Division of Plant Industry, P.O. Box 147100, Gainesville, FL 32614-7100.

into the product by wheels of front loaders.

Storage areas for product should be religiously protected from contaminant intrusion. The product should never be stored on substrate where plants are growing. For example, when builders sand is placed on grass, for example plant parasitic nematodes under the sand are able to migrate into the sand and reach the top in a few weeks or months. In 1993, there were 238 certified soil pits. In the same year, nineteen soil pits lost certification usually due to site violations or nematode contamination.

PLANT NURSERY STORAGE SITES: It is imperative for plant nurseries shipping plants to states and countries that prohibit the entry of specified regulatory nematodes to utilize only pest-free soil in their operation within a sound sanitation program. When pest-free product is received at the plant nursery a protected site should be prepared for its reception. The best storage sites are concrete, wood bins, or wood platforms away from heavy vehicle traffic areas. Storage sites should have signs proclaiming a pest-free area and product.

INSPECTION: Division of Plant Industry plant protection specialists should evaluate the storage sites in nurseries, pits, bogs, mixing sites, and compost operations during the annual inspection of such sites. Sites prone to contamination should be reported to the operator with a copy to the Bureau of Plant and Apiary Inspection.

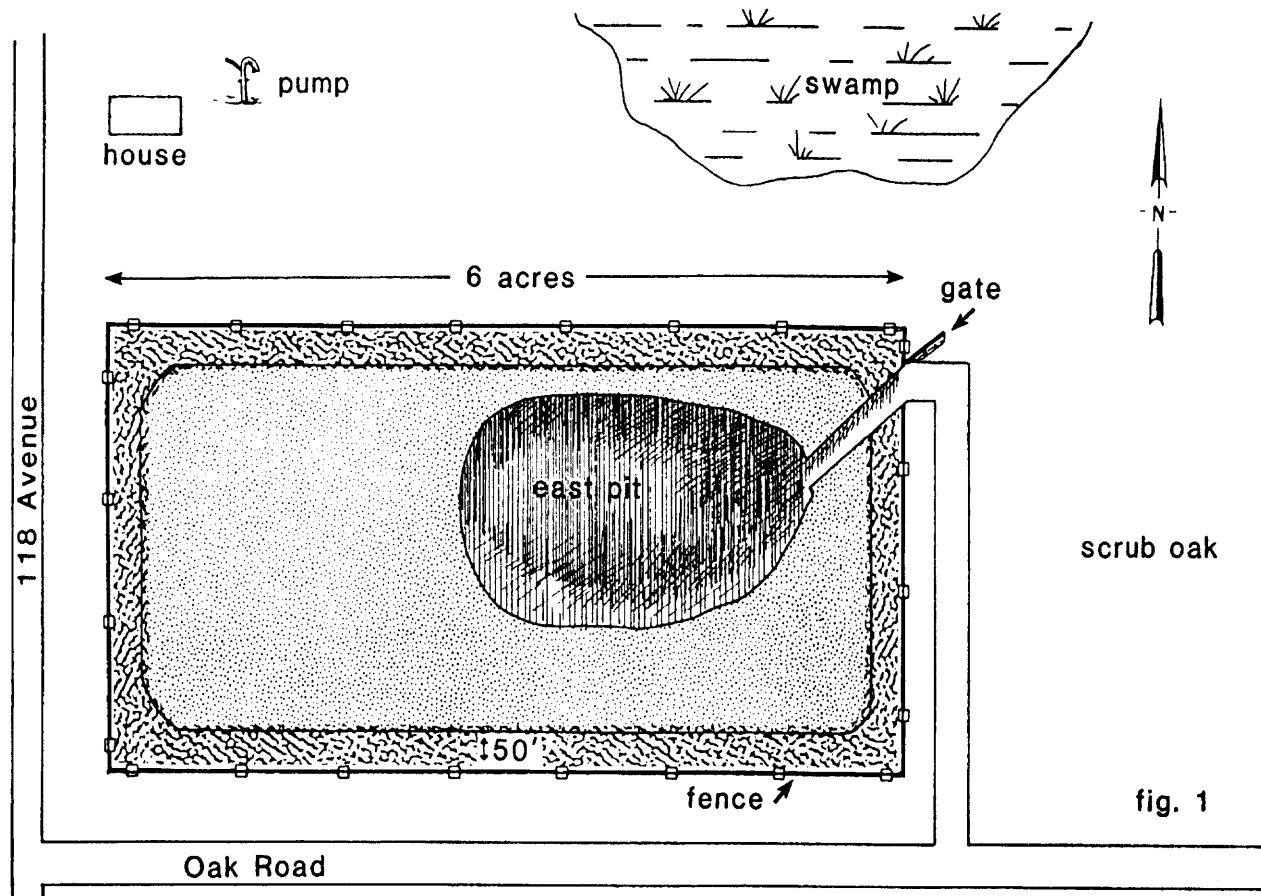


Fig. 1. A protected soil pit layout.