ROOT DISEASE OF DOGWOOD SEEDLINGS AT THE CLIFTY VIEW NURSERY, BONNERS FERRY, IDAHO

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Bareroot dogwood (Cornus stolonifera L.) seedling mortality was investigated during a recent visit to the Clifty View Nursery, Bonners Ferry, Idaho. Mortality occurred in distinct pockets, often on the edges of seedbeds (figure 1). These pockets of mortality appeared to be spreading, killing adjacent healthy seedlings. Examination of the roots of affected seedlings indicated possible presence of root pathogens because of abundance of darkened necrotic epidermal tissues and general absence of healthy root tips or lateral roots (figure 2). Root necrosis began as distinct lesions, mainly on the taproot. Necrosis appeared to spread so that the entire root system became dead.

Isolations were made from necrotic root tissues onto 2 percent water agar and two selective media used for isolating root pathogens (Hendrix and Kuhlman 1965; Komada 1975). Pythium spp. were consistently isolated from root tissues on all three media. These fungi were probably the major cause of the disease. No Fusarium was isolated, although several common saprophytic soil fungi, such as Trichoderma and Penicillium, were occasionally found.

Pythium root diseases are most commonly problems only in poorly drained portions of seedbeds (James 1982; James 1983). However, if soil populations of these fungi are high, losses can occur throughout seedbeds. These diseases are best controlled by reducing Pythium populations in the soil. This can be done by fumigating soil prior to planting and by applying certain fungicides as soil drenches at various times throughout the growth cycle. Commonly used fungicides that are effective against Pythiaceous fungi include metalaxyl (Subdue®) and ethazole (Truban®). Application of these fungicides should also help reduce spread of existing root disease centers. However, to reduce future losses, soil fumigation should be considered, especially in portions of the nursery where root diseases are common problems. There are currently less expensive alternatives to the general biocides methyl bromide and chloropicrin. Two of these include Basamid and Soil Prep (Vapam®). However, care must be taken to properly apply these fumigants. Monitoring soil populations of pathogens before and after treatment is recommended to determine fumigation efficacy.

Figure 1. Bareroot dogwood seedlings with Pythium root disease at the Clifty View Nursery, Bonners Ferry, Idaho. Note the distinct disease center on the edge of the seedbed.

Figure 2. Root system of a dogwood seedling with Pythium root disease. Most of the main taproot was necrotic and a few lateral roots were present. Epidermal tissues on necrotic roots were dark brown to black and easily sloughed off.

LITERATURE CITED

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