

ISOLATIONS FROM RUSSIAN-OLIVE SEEDLINGS WITH TERMINAL DIEBACK SYMPTOMS
FROM THE BIG SIOUX NURSERY, WATERTOWN, SOUTH DAKOTA

by

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Russian-olive (Elaeagnus angustifolia L.) seedlings displaying terminal dieback symptoms were submitted for isolation of associated organisms by Richard Dorset, Forest Insect and Disease Specialist from South Dakota. These seedlings were being grown for windbreaks and ornamentals at the Big Sioux Nursery in Waterton; potentially high losses were possible from this disease since almost 270,000 seedlings were affected.

In the samples submitted, necrosis occurred on leaves and extended down to almost 5 cm from terminals. Alternaria spp. were sporulating abundantly on necrotic tissues. Tissues for isolations were extracted from the zone bordering the necrosis. Pieces containing both necrotic and healthy tissues were surface sterilized in 10 percent aqueous sodium hypochlorite, rinsed in distilled water, and plated on 2 percent water agar (WA) and a selective medium for Fusarium (Komada 1975). Plates were incubated at about 24°C under a diurnal (12-hour) cycle of fluorescent light and darkness. After 5-7 days, emerging fungi were either identified directly on the plates or transferred to potato dextrose agar (PDA) slants for identification.

The major organism consistently isolated on WA was Alternaria (species not identified). This fungus grew from every sample placed on WA. However, tissues incubated on Komada's medium yielded six isolates of Fusarium and no Alternaria was obtained. These six isolates were placed on carnation leaf agar (CLA), which is useful in identifying Fusarium spp. All six isolates were tentatively identified as F. avenaceum (Fr.) Sacc. on the basis of characteristics produced on CLA and colony morphology on PDA. A detailed description of the fungus is included in the Appendix.

Pathogenicity tests were not conducted to evaluate possible roles of Alternaria or Fusarium in causing Russian-olive dieback. Alternaria spp. are common phyllosphere organisms that may incite leaf spot diseases. We suspect that the Alternaria was probably saprophytic and developed abundantly on the seedlings during storage and transit. Fusarium avenaceum has been implicated in several plant diseases, including root diseases of conifer seedlings. The fungus may have been associated with cankers of Russian-olive seedlings in a nursery in Montana, where the associated Fusarium were grouped as "F. roseum." More definitive work is needed, including carefully controlled pathogenicity tests, to determine the role of F. avenaceum as a pathogen of Russian-olive seedlings.

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APPENDIX

Characteristics of Fusarium avenaceum (Fr.) Sacc. (isolate 85-93) isolated from Russian-olive seedlings with terminal necrosis symptoms.

- colonies moderately fast growing producing abundant cottony whitish aerial mycelium with a dash of rose.
- deep rose to carmine pigmentation produced on PDA.
- distinct bright orange (becoming slightly brown with age) sporodochia produced readily on CLA.
- macroconidia very slender, extremely falcate with an acuminate apical cell and a distinct pedicellate basal cell, mostly 5 septate.
- no microconidia formed (a few immature macroconidia may be present).
- chlamydospores absent.