Verticillium albo-atrum on Ceanothus in a California Forest

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ABSTRACT

Verticillium albo-atrum (dark mycelial type) was found to be the cause of a lethal systemic xylem infection of Ceanothus integerrimus on a relatively cool coastal forest site in an area with no history of cultivation. This report is apparently the first for Verticillium wilt on Ceanothus spp., the first on natural forest vegetation in western North America, and only the second of V. albo-atrum in California.

In August 1981, dead and wilting plants of deer brush (Ceanothus integerrimus Hook. & Arn.), a common shrub of disturbed forest sites in northern California, were observed on a heavily logged site about 10 km inland from the town of Mendocino on the northern coast of California. No known agriculture has occurred within 4 km of the site. Prior to logging 5 yr earlier, the site was occupied primarily by Douglas-fir, redwood, tanoak, and alder. Scattered dead and wilting plants occurred throughout most of the logged area (about 125 ha). Most of the xylem of wilting plants showed reddish discoloration from below the ground into the small, leaf-bearing twigs, suggesting that a systemic infection may have been responsible for the mortality. No such symptoms or disease have been reported on Ceanothus previously. Thus, stems of wilting plants were collected for isolation of the causal agent, and inoculations were made to confirm pathogenicity.

MATERIALS AND METHODS
A species of Verticillium was consistently isolated from discolored xylem by incubating sections of surface-sterilized stem segments on moistened filter paper and transferring conidia produced on the sections or by placing the stem segments directly on water agar plates. A conidial suspension of this fungus was prepared for inoculation as described by Christen and Peaden (1). Ten large Ceanothus plants growing near the site where the disease was discovered were inoculated in March 1982. Three branches (with diameters of <1 cm, about 1 cm, and 1-2 cm) on each plant were inoculated 1-2 m above the ground. About 0.2 ml of the conidial suspension (8 X 10^5 conidia per milliliter) was introduced into a slit that was cut to a depth of about one-third the diameter of the stem. Four control plants were treated similarly but injected with distilled water. All wounds were covered with masking tape. Six-week-old seedlings of alfalfa and cotton were inoculated in the greenhouse as described by Christen and Peaden (1).

RESULTS AND DISCUSSION
The fungus fit the description of V. albo-atrum Reinke & Berth. (4). It formed dark mycelium but no microsclerotia when cultured on prune-lactose agar (10), and it failed to grow at 30 C. It LITERATURE

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