

OCCURRENCE OF *FUSARIUM* WITHIN STYROBLOCK CONTAINERS -
PLUM CREEK NURSERY, PABLO, MONTANA
(PRELIMINARY REPORT)

R. L. James
Plant Pathologist

Cooperative Forestry and Pest Management
USDA Forest Service
Northern Region
Missoula, Montana

July 1987

Nursery Disease Notes No. 51

Fusarium spp. cause economically important diseases of containerized conifer seedlings in Northern Rocky Mountain nurseries (James 1984). Inoculum sources of these fungi have previously been thought to come primarily from contaminated seed in container operations (James 1987). However, a few nurseries have experienced higher disease levels than would be expected from the amounts of *Fusarium* on seed. Therefore, we recently began looking at the containers themselves as possibly harboring pathogens and allowing these organisms to infect new crops.

Styrofoam containers for growing conifer seedlings have become popular at several nurseries because of their initial lower cost and insulating ability of seedling root systems. Normally these containers are reused for several successive crops. They are usually washed after each use, often using high pressure steam and/or disinfecting with bleach or similar chemicals. However, residual soil particles and root pieces often persist within the containers despite cleaning. One of the major drawbacks of styrofoam containers is the ability of roots to grow into the styrofoam. When seedlings are extracted, these roots may be broken and pieces may remain lodged within cells.

Recent investigations at a nursery with relatively high disease levels caused by *Fusarium* spp. (James and Gilligan 1987) indicated that *Fusarium* spp. commonly colonized the inner walls of styrobloc containers as well as residual roots that were within these cells. Fungal levels were high even in containers that had been stored over the winter and washed thoroughly.

In order to determine extent of styrobloc container colonization by *Fusarium* spp., samples were collected from a nursery without a current disease problem (Plum Creek Nursery, Pablo, Montana). One styrobloc container from the 1986 crop was sampled. This container had been stored over the winter and not cleaned. Twenty cells (of a total of 160) were randomly selected from which samples were taken from the bottom of each cell. A previous investigation (James and Gilligan 1987) found the highest levels of

Fusarium at the bottom of cells. Four styrofoam pieces were collected from the bottom of each selected cell and aseptically placed on a selective medium for *Fusarium* spp. (Komada 1975). Also, 11 residual root pieces were collected from the container. Roots were washed thoroughly under running tap water, aseptically dissected into several pieces and placed on the selective medium. All plates were incubated at 22 degrees C for 7-10 days under a regime of diurnal fluorescent light.

Three of the 20 sampled cells were infected with *Fusarium*. Total percent of sampled styrofoam pieces that yielded *Fusarium* was 7.5. *Fusarium* was isolated from only one of 11 (9.1%) root pieces sampled. Other fungi commonly colonizing either styrofoam or root pieces included species of *Trichoderma*, *Cylindrocarpon*, and *Phoma*. *Fusarium oxysporum* Schlect. was the only species of *Fusarium* isolated.

These levels of infection were much less than those found on styroblock containers from a nursery with disease problems (James and Gilligan 1987). However, the container sampled from the Plum Creek Nursery had been used only twice before; it is possible that *Fusarium* levels may build up as containers are used for several successive crops. Work at another nursery (James and Gilligan 1987) indicated that *Fusarium* levels were higher in containers used many times and that standard cleaning techniques did not adequately remove inoculum from the containers.

A more thorough investigation of the possibility of styroblock containers harboring *Fusarium* inoculum at the Plum Creek Nursery is planned. Containers used to grow several different conifer species (especially Douglas-fir) will be compared at the end of the 1987 crop. Efficacy of standard cleaning techniques to reduce colonization of containers by *Fusarium* spp. will also be assessed.

LITERATURE CITED

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