

the significance of this pest in British Columbia has been adequately assessed. In the meantime officials of the Plant Protection Division, the Department of Forestry, the British Columbia Forest Service, and the Provincial Entomologist are studying the situation to determine if preventive measures should be taken to reduce the likelihood of establishment of this pest.—G. T. Silver and D. A. Ross.

**Use of Organic Residues in Forest Nurseries.**—Residues such as sawdust, cereal straw, mushroom manure, and hay have been added as soil amendments and as mulches to reduce frost heaving in British Columbia nurseries. Several instances have been noted recently which suggest that the indiscriminate addition of organic residues to seedling beds is potentially a dangerous practice.

In Douglas-fir beds at the Duncan nursery, a prolific crop of a mushroom, *Hebeloma sordidulum* (Peck) Sacc., occurred in the autumns of 1961 and 1962 following the application of mushroom manure. Other species of this genus have been reported as mycorrhiza formers in conifer seedlings (Trappe, Bot. Rev. 28: 538-606, 1962) but the possibility of parasitic invasion of roots should not be dismissed. At the Chilliwack nursery, an unidentified mushroom grew prolifically following the use of hardwood sawdust as a mulch. In Douglas-fir and white spruce beds at the Cranbrook nursery, extensive patches of dead seedlings were observed after alfalfa hay was applied. There were no such patches in beds to which the mulch was not added. A high count of *Rhizoctonia* colonies was recorded in agar plates in which samples of the hay and of the dead seedlings were plated. This fungus is often found associated with damping-off disease. It seems probable that in all three cases the fungus population was either introduced or increased by the organic residue. In addition, it is possible that toxic decomposition products of the hay predisposed the seedlings to attack by the fungus (Patrick and Koch, Can. J. Bot. 36, 621-647, 1958).

Of the types of mulches currently in use at the nurseries, fresh sawdust from sound conifer logs seems to be preferable to the others. For example, hemlock sawdust yielded less than one-half the number of fungus colonies that wheat straw did when plated on malt agar using sterilized sand dilution. *Trichoderma* predominated in the sawdust plates; this fungus is believed to restrict the growth of pathogenic fungi (Wood and Tveit, Bot. Rev. 21: 441-492, 1955). *Alternaria* was the main fungus in the wheat straw; it is often found in damped-off seedlings (Hartley and Merrill, J. Agr. Res. 15: 521-558, 1958; Vaartaja and Cram, Phytopath. 46: 391-397, 1956; Peace, Clarendon Press, Oxford, 1962) and may be pathogenic under some conditions. In view of the experience so far with organic residues as mulches, it is proposed to carry out routine assays of the microbial content of materials intended as additives in the nurseries.—W. J. Bloomberg.

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