

Can Diseases Develop Under Mist?

By Ross Skiver and Ralph Baker

Since the introduction of mist propagation, pathologists and floriculturists have been alert to the possible increasing incidence of certain diseases under such a system. Certainly, from a theoretical point of view, the free water constantly associated with the leaves of cuttings would furnish an excellent environment for germination and penetration of certain leaf spotting pathogens; however, a survey in the Denver area revealed that disease problems have not increased, and bulletins from other sections of the country^{1,2} have reported similar observations. Langhans¹ explained this by postulating that spores are washed from the leaves of cuttings under mist. To test this hypothesis, an experiment was set up using Alternaria dianthi,³ causal agent of alternaria leaf spot and branch rot on carnations.

Cuttings were sprayed with a spore suspension of the pathogen at 4 hour intervals over a 20 hour period. Thus separate groups of cuttings were inocu-

lated at 6 P.M., 10 P.M., and 2 A.M. Another lot was inoculated at 6 A.M. and the mist turned on for 4 seconds each minute thereafter during the day. Another inoculation was made at 10 A.M. and again at 2 P.M. The mist system, delivering water 4 seconds every minute, was operative from 7:30 A.M. to 4:30 P.M. each day. Bottom heat was supplied at 65-72°F. Greenhouse temperatures were approximately 55°F. at night and 60-75° during the day.

For each inoculation 36 cuttings were utilized. These were divided into 3 replications. Uninoculated checks consisting of the same number of cuttings were stuck at 6 P.M. and 6 A.M. respectively.

At the end of 2 weeks all cuttings in each lot except the uninoculated checks displayed definite symptoms of the disease. There was no difference in degree of symptom expression between lots. Subsequent critical examination of leaves of check plants under transmitted light revealed minute spots. These were cultured, and

A. dianthi was isolated. It is believed this situation resulted from spread of the organism from the adjacent diseased cuttings.

Distribution of leaf spots was at random and not confined to areas (such as leaf axils) which were likely to accumulate high concentrations of spores.

Under conditions of this experiment it is apparent that the spores of A. dianthi may infect cuttings propagated under mist.

¹Langhans, R. W. (1954) Mist propagation and growing. New York State Flower Growers bulletin 103:1-2.

²Mastalerz, J. W. (1955) Mist propagation. Massachusetts Flower Growers Association Bulletin 31:1-2.

³Culture of Alternaria dianthi supplied by Dr. A. W. Dimock, Cornell University, Ithaca, New York.

