

TRANSMISSION OF CARNATION-MOSAIC VIRUS BY THE  
CUTTING KNIFE

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It has become a common practice in many commercial greenhouses to harvest carnations by cutting the stems with a knife. Numerous bacterial plant diseases are known to be spread in this manner, as are a few of the viruses. The carnation-mosaic virus has been found to be highly infectious, transmissible by numerous mechanical means. Therefore, it seemed probably that cutting-knife blades might become contaminated with virus in the plant sap when an infected plant is cut. Thus, the contaminated blade might inoculate plants cut subsequently by smearing the infected sap from the infected plant to the stub of a healthy plant. An experiment was designed to test the effectiveness of this type of transmission.

Twenty young plants of Dianthus barbatus were inoculated with the expressed juice from an infected carnation plant. The technique of inoculation followed as closely as possible the cutting operation used in commercial greenhouses. A pocket knife was used to cut off a portion of the stem from the infected carnation; then the tip of one of the D. barbatus plants was cut off using the same section

of the blade for both cuts. After cutting a healthy plant the infected plant was cut again to reinfest the blade before the next healthy plant was cut. Infection was determined by the presence of visible symptoms after 30 days.

Out of the 20 plants used in this test 14, or 69.9%, expressed symptoms of mosaic. The experiment was repeated twice. The second experiment resulted in 13 plants becoming infected, and 14 plants became infected in the third experiment. These results indicated that the amount of virus transmission incurred by the use of a cutting knife was high. The use of a cutting knife is to be considered as a factor in the transmission of carnation mosaic in commercial ranges. The presence of only a few diseased plants in a bench could lead to a gradual dissemination of the virus throughout a range. Cuttings taken from these plants would gradually increase the amount of diseased stock, and would lead to a possible reduction of yield and flower quality.