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STUDIES OF INSECT TRANSMISSION AND CROSS- INOCULATION OF MOSAIC ON THE SOLANACEAE, CUCURBITACEAE AND LEGUMINOSAE

O. H. ELMER

The results of most investigators tend to show that the mosaic disease is quite limited in its host range. Recent experiments show that such is probably not the case.

Four petunia plants were inoculated with mosaic from squash and four egg plants with sweet potato mosaic. All became infected, while the checks remained healthy. An experiment in which juice of a mosaic plant was inoculated under long continued pressure through a capillary tube resulted in 100 per cent infection. Using this method, eight squash plants were inoculated with the mosaic from tobacco and tomato. At the same time a tobacco and a tomato plant were inoculated with mosaic from squash and became infected. An equal number of checks were held and all remained healthy. In addition, two tomato plants inoculated with mosaic from squash by means of a hypodermic needle became infected. Five tobacco plants inoculated with crookneck squash mosaic with a flamed knife became infected within twelve days. The thirty checks remained healthy.

Cow pea plants (*Vigna Catjang*) growing in the Agronomy greenhouse were found severely infected with mosaic. Inoculation by means of aphid (species undetermined) from the mosaic plants to healthy plants has shown beyond doubt that this mosaic is a transmissible disease. Two pots containing thirty-eight cow pea seedlings were infected with aphid from the mosaic cow pea plants and were placed in insect proof cages. Both pots were ringed with tree tanglefoot to keep other insects away. One hundred per cent infection occurred in both pots, while all checks remained healthy. Artificial inoculation has, to date, proved unsuccessful.

It is known that aphid are capable of transmitting mosaic. As far as I know, the mealy bug (*Dactylopus*) has not been reported as transmitting this disease. However, evidence has been obtained which indicates that this is the case. An experiment in which

mealy bugs from a mosaic squash were transferred to a pot containing fourteen cow pea plants has resulted in 100 per cent infection. The pots were kept under an insect proof cage and were ringed with tree tanglefoot to keep other insects away. The checks remained healthy. These data are of interest, in addition to the fact that the disease was transmitted by the mealy bugs, in that the infection was from Cucurbitaceae to Leguminosae and gives added proof that mosaic can be transmitted to plants belonging to other families and orders.

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