

Susceptibility of Papaya Cultivars to Papaya Mosaic in Sri Lanka

Carica papaya L commonly called "papaya", is widely grown in tropical and semitropical latitudes for the delicately flavoured fruit. Virus diseases of papaya have been reported from nearly every continent where the crop is grown and these viruses severely restrict commercial production. Papaya mosaic first reported from a commercial plantation in 1952 in Sri Lanka, is common in Hawaii, Bombay, Puerto Rico and several latin american countries. (Adsuar, 1946, Capoor et al, 1958; Giacometti et al 1960; Holtzman et al, 1963) Despite thorough studies of papaya genetics and the existence of a myriad of papaya varieties horticulturally desirable lines resistant to these virus have yet to be discovered or developed. This paper reports our efforts to find germplasm for resistance to papaya mosaic in Sri Lanka.

Seeds of papaya varieties were obtained from the Central Agricultural Research Institute, Gannoruwa, Peradeniya. Varieties of *Carica papaya* used in this study included Coimbatore dwarf 1, ceylon 1, ceylon 2, and Solohawai. Plants of mountain papaya (*Carica cardamarcensis*) were also included in the trials. Systemically infected leaves of *Carica papaya* var. *solohawai* were the only source of inoculum used in this study. The experiment was conducted at the Dept : of Agric. Biology, Faculty of Agriculture, University of Peradeniya, Sri Lanka.

Healthy seedlings were raised in pots (30 cms in ht & 45 cms in diameter) and were planted at the rate of 10 seeds/pot. Three replicates were maintained. All the plants were fertilized at the rate of 4 ozs/pot with the N.P.K. mixture 4:8:5 weekly. The seeds germinated within 3 weeks and all the seedlings were mechanically inoculated with extracts from infected leaves of the variety solohawai when they were 5-6 weeks old. Six hundred mesh cerborundum powder was dusted on to the leaves of seedlings. Seedlings were covered with polythene to keep them insect free and those that did not develop symptoms within 3 weeks after inoculation were reinoculated and were subsequently rechecked for symptoms. All seedlings that developed systemic mosaic were considered as susceptible and were discarded.

None of the *Carica papaya* seedlings tested in this study were resistant to papaya mosaic. Shortly after inoculation the varieties of *Carica papaya* developed a systemic necrosis and within 3 weeks all the plants died. Plants of mountain papaya (*Carica cardamarcensis*) appeared to be resistant as only minute localized spots of mosaic which never enlarged, were seen. Resistance to papaya mosaic was not found in the 40 accessions of *Carica papaya* tested in this study. The mountain papaya (*Carica cardamarcensis*) was found to be resistant. Our work did not include assessing papaya accessions to other virus diseases of papaya. Micheletti de Zapa (1963) however

concluded that whereas all *Carica papaya* lines succumbed to this disease other carica species such as *Carica cauliflora* was resistant. Thus although germ-plasm for virus resistance is apparently unavailable in *Carica papaya* other species of *Carica* may prove to be sources for resistance to papaya mosaic particularly in view of previous reports of successful interspecific crosses with *Carica papaya*. Reciprocal grafts between *Carica cauliflora* and diseased *Carica papaya* showed that *Carica cauliflora* apparently has an inhibitory effect on the mosaic virus probably because it contains a substance whose effect is similar to that of interferon in animals. (de Zapa 1963).

Therefore there are possibilities of incorporating the virus resistant germ-plasm from *Carica cardamarcensis* to *Carica papaya* and develop a new mosaic resistant variety through breeding.

No resistance was found among 40 accessions of *Carica papaya* L. tested for susceptibility to papaya mosaic virus but *Carica cardamarcensis* was found to be resistant. The prospectus of incorporating virus resistance

into *Carica papaya* is brought out in the present study,

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ROHAN H. S. RAJAPAKSE

(Department of Agronomy, Faculty of Agriculture, Ruhuna University, Matara, Sri Lanka.)

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