

## A Report on the Survey of Sterility Mosaic Disease Incidence on Redgram in Tamilnadu

By

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### ABSTRACT

From a survey made over 9,142 hectares in different parts of Tamilnadu, it was observed that the redgram sterility mosaic was prevalent in almost all parts of the State. The percentage incidence of the disease suggests heavy crop losses of redgram in this State.

Sterility mosaic virus disease of redgram (*Cajanus cajan* L.) reported first by Capoor (1952) is very destructive and reduces the crop yield considerably especially if the infection occurs in the young plants. Kandaswamy and Ramakrishnan reported this disease in an epiphytotic form at Coimbatore during 1960. However, there is no information on the prevalence and extent of this disease in other parts of Tamilnadu where redgram is grown over large areas. Under a project on pulse viruses financed by the USDA from P. L. 480 funds, at the Tamil Nadu Agricultural University, Coimbatore, a systematic survey was undertaken to assess the prevalence and intensity of this disease in various parts of Tamilnadu and the results of observations made are given below.

### MATERIAL AND METHODS

The standing crop of pigeon pea in various parts of Tamilnadu state was inspected to assess the incidence and intensity of sterility mosaic. One to

three villages in each Panchayat Union area and 1 to 3 holdings in each village, at random, were examined during the survey. The incidence has been expressed as percentage after examining 100 plants at random. The intensity of the disease was classified into three categories *viz.*, mild, medium, and severe, depending upon the severity of the disease.

### RESULTS AND DISCUSSION

An area of 9,142 hectares of pigeon pea distributed over 198 Panchayat Unions in 12 districts of Tamilnadu except Nilgiris was surveyed for the sterility mosaic disease and the details of the survey are given in Table I. The percentage of incidence ranged from 0 to 50% with symptoms varying from mild to severe. In many places 3 to 10% disease incidence was common while heavy incidence was recorded in a few places. A maximum of 75% incidence in rainfed redgram was observed in Nachiarpatty of Srivilliputhur Block in Ramanathapuram

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district and nearly 90% incidence in irrigated redgram in Kadayam and Natham of Tirunelveli and Madurai districts respectively. Apart from this, the perennial plants of over one year standing examined in many places had cent per cent infection of this disease. The crops surveyed included those raised for the first time as well as those raised continuously year after year. Narayanaswamy and Ramakrishnan (1965) observed that incidence of disease was high in fields where pigeon pea was raised frequently or continuously. According to them the virus inoculum appeared to have been built up in the soil and would probably have accounted for the high incidence in such fields suspecting that the disease was transmitted by nematodes. During the present survey not always such correlations between high incidence of the disease and continuous cropping was established. In some places where the crop was raised for the first time, the incidence was found to be between 20 to 25% (in one particular field 90% incidence was observed) and the incidence was even nil in certain places where the crop was continuously grown for a number of years. It has now been established that the eriophyid mite *Aceria cajani* is the vector of this disease. It is quite

probable that the percentage of disease incidence depends more upon the population of mites available either in the left over or perennial plants of pigeon pea in the area, than on continuous cropping.

It is now known from the survey that the disease is fairly widespread in all the districts except Nilgiris of Tamil Nadu, where redgram is grown either as a pure crop or as an inter crop and under both rainfed and irrigated conditions.

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TABLE 1

Name of the district (1)	No. of Panchayat Unions visited (2)	No. of holdings visited (3)	Area of crop surveyed in hectares (4)	No. of hectares where incidence was noted (5)	Percentage of infection (6)	Remarks (7)
KANYAKUMARI	7	62	244	27	1 to 5	Incidence on annual crop was slight with mild to medium form of mosaic, whereas it was heavy (up to 100%) and severe in perennial plants. Sterility, not common.
TIRUNELVELI	25	135	907	252	1 to 25	A maximum incidence of 90% was recorded in a holding while in many holdings the disease was not observed. Affected plants exhibited medium to severe type of mosaic, partial or complete sterility and apical clusters of small leaflets.
RAMANATHAPURAM	20	97	306	84	1 to 21	Incidence in local variety of pigeon pea was less as compared to the incidence on S.A.1 variety. In heavy infections partial or complete sterility of affected plants was seen.
MADURAI	24	245	2810	471	1 to 50	Incidence of the disease was fairly high in all the areas. Medium to severe form of mosaic with partial sterility of the affected plants was seen.
TIRUCHIRAPALLI	19	122	741	237	1 to 20	Incidence was poor. In varietal trials with JR (Jayankondan) varieties incidence of mosaic was common as compared to local varieties of pigeon pea. Affected plants were pale with apical sterile clusters of leaflets.
SALEM	9	50	380	126	1 to 6	Little or negligible incidence of mosaic. Affected plants exhibited sterile apices of leaflets with few flowers.
DHARMAPURI	11	77	78	43	1 to 50	Heavy incidence of severe mosaic with complete sterility of the affected plants was commonly recorded in many holdings.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
SOUTH ARCOT	15	80	320	161	1 to 25	Incidence was fairly and uniformly heavy. Affected plants had severe mosaic and appeared pale and stunted with partial or complete sterility. Often affected plants were in groups.
NORTH ARCOT	19	115	1960	840	1 to 50	Percentage of incidence of the disease was uniformly high. Affected plants was often fully sterile.
CHINGLEPUT	9	48	97	72	1 to 10	Mild to severe form of mosaic with clusters of leaflets, blisters on leaflets etc. recorded. In many holdings incidence was stray.
THANJAVUR	6	50	150	67	1 to 20	Pigeon pea raised as dry crop as well as irrigated crop on bunds of rice fields; mild to severe symptoms of mosaic with partial sterility of affected plants were common.
COIMBATORE	34	166	1176	420	1 to 25	Incidence was moderately heavy in many cases. Sterility of the affected plants was common.
Total area surveyed	...	...	...	9142	ha	