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Extent of Seed Transmission of Urdbean Leaf Crinkle Virus in Gujarat

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Urdbean leaf crinkle virus (ULCV) disease of urdbean (*Vigna mungo* (L.) Hepper) is characterised by an increase in the size and a light green colour of leaves followed by the typical crinkling symptoms. Considerable malformation of the inflorescence in infected plants is also observed. Yield loss of 62 to 100% (Nene, 1973; Kolte and Nene, 1979) under field condition and 71 to 84% in glass-house studies have been observed (Beniwal and Chaubey, 1979). ULCV is reported to be seed, sap and vector transmissible virus in urdbean (Kolte and Nene, 1972, Narayanaswamy and Jaganathan, 1973, 1975, Dhingra, 1975, and Beniwal and Bharathan, 1980). The primary source of infection under field condition is always from the seed. Kolte and Nene (1972) observed that 18.39 per cent of urdbean seeds carried the virus (glass-house study).

The disease has been observed in recent years in Baroda, Kheda, Mehsana, Panchmahal and Sabarkantha districts of Gujarat (Anonymous, 1990, 1991). Therefore, to determine the effect of disease on some yield contributing characters and rate of seed transmission under Gujarat conditions a preliminary study was made. The infected plants in the field were tagged in *kharif* season of 1989 and pods were harvested. The pod size, no. of seeds/pod and test weight (1000-grain weight) from infected as well as healthy plants of urdbean cv. T-9 were determined. The seeds were sown in plastic pots (10 cm) containing autoclaved soil. Two plants were maintained in each pots covered with insect proof cages. The typical crinkled symptoms were observed on some plants and the infectious nature of the disease was confirmed by mechanical transmission on to healthy plants. Seeds from healthy plants served as control.

In the second experiment seeds collected from 3 locations viz. Talod, Vijapur and Anand from diseased and healthy urdbean plants cv. T-9 were sown in field. The seeds were sown in 3 rows of 5 meter each, 45 cm apart. The plant to plant distance was adjusted to 20 cm after emergence. Typical diseased plants were counted weekly.

The data (Table 1) revealed that pod size, no. of seed/pod and test weight were reduced due to ULCV. Similar reduction in yield contributing characters in urdbean due to ULCV

TABLE 1

Effect of urdbean leaf crinkle on pod characters and rate of seed-transmission in urdbean cv. T-9.*

Source of seed	*Pod size (cm)*	*No. of seeds/pod*	*Test weight (gm)*	*Rate of seed transmission of ULCV*
Diseased	3.8	4.7	21.4	8.0
Healthy	4.4	6.0	38.0	0.0

*Average of 50 pods.

have been observed by Beniwal and Chaubey (1979). However, they did not observe reduction in test weight. In the pot experiment 8.00 per cent of plants raised from the seeds of diseased plants showed typical leaf crinkle symptoms which was later transmitted to healthy plants after sap inoculation. Seeds from healthy plants did not show any symptoms.

TABLE 2

Rate of seed-transmission of ULCV in urdbean cv. T-9 under field condition in Gujarat.

Location of seed plot		*Healthy source (ULCV%)*	*Diseased source (ULCV%)*
Talod	(Sabarkantha)	2.2.	31.2
Vijapur	(Mehsana)	3.4	4.4
Anand	(Kaira)	2.1	2.0

In the field experiment (Table 2) differences were found in the rate of seed transmission from location to location. Seeds collected from diseased plants at Talod showed 31.25 per cent ULCV infected plants followed by Vijapur (4.40%) and Anand (2.0%). Seeds collected from healthy plants showed some incidence of ULCV which might have resulted from mechanical/vector transmission as in the initial counts there were no diseased plants in the plots raised with healthy seeds. These results confirm the seed-borne nature of the disease Kolte and Nene (1972) and constitutes, the first record of the disease from Gujarat.

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REFERENCES

Anonymous, 1990. Annual Report of the Department of Plant Pathology, BACA, Anand for the year 1989-90 presented at the 25th meeting of PPSC of AGRESCO, 23.

Anonymous, 1991. Annual Report of the Department of Plant Pathology, BACA, Anand for the year 1990-91 presented at the 26th meeting of PPSC of AGRESCO, 29.

Beniwal S. P. S. and N. Bharathan 1980. Beetle transmission of urdbean leaf crinkle virus. *Indian Phytopath.* **33** : 600-601.

Beniwal, S. P. S. and S. N. Chaubey 1979. Urdbean leaf crinkle virus : effect on yield contributing factors, total yield and seed characters of urdbean. *Seed Research* **7** : 175-181.

Dhingra, K. L. 1975. Transmission of urdbean leaf crinkle virus by two aphid species. *Indian Phytopath.* **28** : 80-82.

Kolte, S. J. and Y. L. Nene 1972. Studies on symptoms and mode of transmission of the leaf crinkle virus of urdbean (*Phaseolus mungo*). *Indian Phytopath.* **25** : 401-404.

Kolte, S. J. and Y. L. Nene 1979. Urdbean (*Phaseolus mungo*) leaf crinkle virus : noteworthy symptoms on host and influence of growth stages on hosts susceptibility. *Tropical Grain Legume Bull.* **15** : 5-8.

Narayanaswamy, P. and T. Jaganathan 1973. Vector transmission of black gram leaf crinkle virus. *Madras agric. J.* **60** : 651-652.

Narayanaswamy, P. and T. Jaganathan 1975. Seed transmission of black gram leaf crinkle virus. *Phytopath. Z.* **82** : 107-110.

Nene, Y. L. 1973. Viral diseases of some warm weather pulse crops in India. *Plant Dis. Repter.* **57** : 463-467