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Research Notes

Leaf Crinkle Virus on urdbean seed yield and its quality

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Among the viral diseases, Leaf Crinkle Virus (LCV) is an important disease in urdbean. This viral disease is common at Uttar Pradesh, Punjab, Haryana and Delhi (Nene, 1968 and Kadian, 1983). The seed-borne nature of LCV on urdbean was reported (Kolte and Nene, 1972 and Mali, 1991). The loss in grain yield of urdbean was reported from 20.43 to 24.21 per cent due to this LCV infection during *kharif* (Pernae *et al.*, 1997). Crinkling of leaves is an important symptom of this disease. Affected plants are stunted and showed partial and in severe cases complete sterility. Considering the severity of LCV, experiment on seed yield and seed quality parameters in urdbean was initiated.

The urdbean cultivars *viz.*, TPU-4 PantU-30 and T-9 were sown in the experimental field of Pulses Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri July, 2002. The plot size was 5 x 2.70 m with 4 lines of each cultivar replicated twice. The adapted spacing was 30 x 15 cm. The plants of urdbean from each cultivar were observed up to 30 days for the incidence of leaf crinkle virus. Observations on number of nodules per plant at flowering, number of pods/plant, number of seeds/pod, pod length (cm), 100seed weight (g) and yield/plant (g) were recorded from five plants each of healthy and LCV infected plants for each cultivar. The per cent seed germination (Anonymous, 1985) and seedling vigor index from the seeds of virus infected plants and healthy plants were recorded by

using rolled paper towel method (Abdul-Baki and Anderson, 1973). The vigor index was calculated by following formula given here under.

$$\text{Vigour index} = \frac{[\text{Root length (cm)} + \text{Shoot length (cm)}]}{\text{x Germination (\%)}}$$

The yield reducing parameters and seed quality damaging parameters with leaf virus in urdbean was worked out.

All the three cultivars of urdbean were found infected with LCV with incidence of 13.33 per cent (TPU 4), 7.69 per cent (Pant U 30) and 9.93 per cent (T9). Kolte and Nene, (1979) reported 0.25 to 2.75 per cent incidence of LCV on urdbean. The incidence of LCV on urdbean cultivars *viz.*, TPU 4 (12.80%), Pant U 30 (5.30%) and T 9 (80.30%) was also reported (Pernae *et al.*, 1997). The LCV infected plants of urdbean produced less yield/plant than healthier one (Table 1). The reduction in yield was 28.61 per cent. The number of nodules / plant in LCV infected plants of urdbean cultivars were found to be reduced as compared to healthy one. The per cent reduction in number of nodules in diseased plant was 20.65 per cent. The per cent reduction in number of pods/ plant of diseased plants of urdbean was 23.85. The number of seeds/pod, the pod length(cm) and 100 seed weight (g) were also found reduced in LCV infected plants as compared to healthier one and the

Table 1. Effect of leaf crinkle virus infection on yield and seed quality parameters.

Parameters	TPU 4		Pant U 30		T 9		Mean		Per cent reduction
	H	D	H	D	H	D	H	D	
A) Yield contributing parameters									
i. Yield / pl (g)	7.91	4.41	6.41	5.69	6.04	4.11	6.78	4.84	28.61
ii. Pods / pl.	66.61	44.11	59.11	47.10	48.60	41.55	58.11	44.25	23.85
iii. Seeds / pod	6.80	5.69	5.22	4.41	6.01	4.59	6.01	4.89	18.63
iv. Pod length (cm)	7.11	6.81	6.89	5.49	6.11	5.00	6.70	5.97	10.89
v. 100 seed wt. (g)	3.88	3.37	3.91	3.31	3.40	3.01	3.73	3.23	13.40
vi. Nodules / pl.	46.46	38.17	33.17	26.81	29.87	21.90	36.50	28.96	20.65
B) Seed quality Parameters									
i. Germination (%)	86.91	71.10	85.15	72.24	81.60	69.90	84.55	71.08	15.93
ii. Vigour Index	2710	2433	2941	2371	2180	1724	2610	2176	16.62

Where : H : Healthy plant. D : Diseased plant.

values was 18.63, 10.89 and 13.40 per cent respectively. The results were in agreement with findings of Kadian (1982), Beniwal and Chaubey (1979) and Mandhare *et al.* (1999).

The seeds from LCV infected plants of urdbean showed lower germination (71.08%). The per cent reduction in germination was 15.93 per cent. The seeds of LCV infected plants showed 16.62 less seedling vigour index (2176) as compared to healthier plants (2610). Similar results were obtained by Mandhare *et al.* (1999) in mungbean cultivars. Thus, the results clearly indicated that there was an adverse effect from leaf crinkle virus on each of the yield contributing parameter and the parameters that decide seed quality.

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Research Notes

Production potential of blackgram genotypes under intercropping situation

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The red lateritic soil of Pudukottai district in Tamil Nadu is traditionally known for redgram belt. Instead of growing sole crop of redgram, intercropping of any short duration crop like blackgram would be more profitable. Intercropping is a viable agronomic practice for increasing the production as well as productivity of a system from a unit area during a cropping period. Intercropping system not only provides certain insurance against biotic and abiotic stresses but also provides extra yield advantage by simple means of growing crops (Willey, 1979). Planting geometry in intercropping system has important effects on the balance of competition between component crops and their productivity. Intercropping of sorghum with cowpea in paired rows (2:2)

recorded highest land equivalent ratio (2.77) and monetary return compared with other intercropping systems (Mishra *et al.*, 1997). Hence, the study was conducted to investigate the suitable blackgram genotype and planting geometry for improving productivity of redgram + blackgram intercropping system.

A field experiment was conducted during the *kharif* seasons of 2003 and 2004 at National Pulses Research Centre, Vamban. The experimental soil was paralithic haplustalf, sandy clay loam in texture and had pH 6.1, organic carbon 0.3% and low in available N, P and K. The experiment was laid out in randomized block design with three replications. The treatments included were; T1 - Redgram uniform row