SHORT COMMUNICATION

Sources of Resistance Against Root-knot Nematode, *Meloidogyne incognita* (Kofoid & White) Chitwood in Mungbean and Urdbean

Raghunandan Prasad[1], M Nehal Khan[1], SS Ali[2], B Singh[2] and Abul Hasan[1]
[1]*Department of Nematology, Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad -22422, Uttar Pradesh*
[2]*Indian Institute of Pulses Research, Kalyanpur, Kanpur, Uttar Pradesh*

Key Words: ***Meloidogyne incognita*, Root-knot nematode, Resistant sources, *Vigna mungo*, *Vigna radiata***

Mungbean, *Vigna radiata* (L.) Wilczek and urdbean, *Vigna mungo* (L.) Hepper are the major pulse crops grown in India. Despite progress in genetic improvement of these crops, the production has remained static during the past several years due to a number of biotic factors. Nematodes play an important role in crop production (Sasser, 1989). Several phytoparasitic nematodes are known to be associated with mungbean and urdbean. Among them, root-knot nematode, *Meloidogyne incognita* (Kofoid & White) Chitwood is a major pest causing 18-65% and 23-49% losses in mungbean and urdbean, respectively (Ali, 1997). Due to prohibitive cost and environmental hazards, the use of chemicals is discouraged and growing resistant cultivars is advocated which would be cost-effective as well as ecofriendly. In view of above, greenhouse experiments were conducted to identify sources of resistance in these crops, which could be exploited in breeding programme to develop a commercial variety possessing resistance against this nematode.

Advanced breeder's seed material entries for multilocational testing under All India Co-ordinated Research Project on MULLaRP (Mungbean, Urdbean, Lentil, Lathyrus, Rajmash and Fieldpea) were included in this study, as these entries are high yielding. Promising seeds of mungbean and urdbean were surface sterilized in 0.2% mercuric chloride solution and were sown separately under completely randomized design with three replications in 15 cm diameter earthen pots containing 1 kg of steam sterilized soil. Fifteen hundred freshly hatched second stage juveniles of *M incognita* were inoculated around each plant at 2-3 leaf stage. After 45 days of inoculation the plants were uprooted and washed gently in running tap water. Galls that developed on the roots were counted. Resistance/susceptibility was determined as follows: no galls = highly resistant (HR), 1-10 galls = resistant (R), 11-30 galls = moderately resistant (MR), 31-100 galls = susceptible (S), > 100 galls = highly susceptible (HS).

The results are shown in Table 1. None of the accessions of mungbean and urdbean were found highly resistant. However, AKU 9802, AKU 15, UG 1017, TPU 4, Phule U 9417-5, OBG 17 and USTD 102 of urdbean and ML 131, IPM 99-125-and Pusa

Table 1. Response of mungbean and urdbean genotypes against *M. incognita*

Varieties		No. of galls	Host reaction
Mungbean	**Urdbean**		
ML 131, IPM 99-125, Pusa172	AKU 9802, AKU 15, UG1017, TPU 4, Phule U 9417-5, OBG 17, USJD 102	1-10	R
Pusa 2072,VGG72,UPM 99-3, Pusa 105, ML 1108, BM 4, PBMR 145, NDM 97-1, CoGG912	NDU 99-2, TV 94-2, OBG 19, USJD 111, VGG 2009, KU 96-3, UK 17, TV 2000-27, CoBG630, KU 99, CoBG 631	11-13	MR
MSJ 118, MH 96-1, ML 5, TM 98-37, AKM 9801, TM 94-2	KU 99-4, VSJD 113, TV 95-5-1, UG 950, AKU 99-01	31-100	S
ML 818, TM 99-47, MH 98-1	TU 2000-28, OBG 15	Above 100	HS

172 of mungbean were found resistant. Varieties TU 2000-28 and OBG 15 of urdbean and ML 818, TM 99-47 and MH 98-1 of mungbean were highly susceptible. Rest of the varieties were found moderately resistant to susceptible. In absence of highly resistant donors in mungbean and urdbean against this nematode screening should further be extended on a large scale to encompass almost all the existing lines/germplasm collection of other national and international research centres. In due course of time however, cultivation of these crops in *M. incognita* infested fields could be carried out employing chemicals and other agronomic practices which suppress root-knot population.

References

Ali SS (1997) Status of nematode problems and research in India. In: SB Sharma (ed.) *Diagnosis of Key Nematode Pests of Chickpea and Pigeonpea and their Management.* Proc. Regional Training Course, 25-30 Nov. 1996 International Crop Research Institute for Semi-Arid Tropics, Patancheru, Andhra Pradesh, India, 74-82 pp.

Sasser JN (1989) In: *Plant Parasitic Nematodes: The Farmer's Hidden Enemy*. Deptt. Plant Pathology, North Carolina State University, Raleigh, NC, 115 p.