

# Loss of Fusarium Wilt Resistance in a Pigeonpea Line ICPL 270 in Reniform Nematode Infested Soil at ICRISAT Asia Center

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ICPL 270, a fusarium-wilt resistant medium-duration high-yielding line, is susceptible to the reniform nematode, *Rotylenchulus reniformis*. At ICRISAT it is used as a susceptible control in trials on screening medium-duration pigeonpeas for resistance and tolerance to *R. reniformis*. This line has been reported as free from wilt and root-knot infection in screening tests conducted at Bvumbwe, Malawi (ICRISAT 1984). Parameswarappa et al. (1987) also found it resistant at Gulbarga in Karnataka, India. The wilt incidence of ICPL 270 in *Fusarium udum* infested soil was 3.2% while wilt-susceptible genotypes such as GS 1, GS 21, PT 221 suffered 100% wilt incidence. However, high incidence of wilt on ICPL 270 was observed at ICRISAT Asia Center on an Alfisol field, naturally infested with *F. udum* and *R. reniformis*. This field is regularly used for screening pigeonpea genotypes for resistance to *R. reniformis*. Therefore, data on wilt incidence on ICPL 270 as well as five other medium-duration wilt-resistant, and *R. reniformis* tolerant pigeonpea lines (ICPLs 8357, 85068, 85073, 89050, and ICPL 90097) were collected for three seasons from on-going trials on evaluation of nematode-tolerant lines. The plot size was 4-m long 2-4 rows and each entry was replicated four times in randomized complete block design. Seeds were sown in Jun each year from 1993 to 1995, and plots were irrigated two times. Number of wilted plants were counted

**Table 1. Incidence of fusarium wilt in a *Rotylenchulus reniformis* and *Fusarium udum* infested field of pigeonpea, ICRISAT Asia Center, Patancheru, 1993-95.**

Line	Wilt incidence (%)			
	1993	1994	1995	Mean
ICPL 8357	9.4	25.0	6.4	13.6
ICPL 85068	8.7	29.4	20.0	19.3
ICPL 85073	13.0	35.0	7.9	18.6
ICPL 89050	20.5	20.4	15.0	18.6
ICPL 90097	18.1	14.2	10.3	14.2
ICPL 270	57.6	100.0	100.0	85.8

at podding, and percent wilt incidence was calculated. Wilt incidence (Table 1) on ICPL 270 was much higher than previously reported (Parameswarappa et al. 1987) whereas other lines had much lower wilt incidence than that on ICPL 270.

Wilt resistance and/or nematode tolerance mechanisms in these lines are presumably different from those operating in ICPL 270 and gene(s) or gene product(s) responsible for imparting wilt resistance to ICPL 270 are modified in presence of the nematode. Sharma and Nene (1990) also reported that presence of *R. reniformis* along with *Fusarium udum* accelerated the death of wilt-susceptible pigeonpea cultivars. These observations indicate that stability of wilt resistance in pigeonpea cultivars in *R. reniformis* infested soils is influenced by the presence of the nematodes.

On the basis of these field observations, detailed investigations on races of both pathogens in the Alfisol field, and interactions between the two pathogens on ICPL 270 under controlled environmental conditions are proposed.

## References

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## Entomology

### Survey of Pigeonpea Insect Pests in Nepal

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Eighty-three percent of Nepal is hilly, and 17% of the area is *terai* plains. Lentil, *Lathyrus*, pigeonpea, chickpea, soybean, cowpea, black gram, and mung bean are the main grain legumes of the country. Pigeonpea is