RESEARCH COMMUNICATION

Pathogenic Variability in Pigeonpea Wilt Pathogen *Fusarium udum* Butler in Nepal

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Wilt caused by *Fusarium udum* Butler is an important disease of pigeonpea in Nepal. The disease is prevalent in all pigeonpea growing areas of Nepal, but its severity differs from place to place. In mid-western terai, the disease is more severe killing almost 90% of plants in farmers' field (RARS, 1996). Limited studies on variability in the wilt fungus *F. udum* have indicated that the fungus exhibits physiologic specialization (Shit and Sen Gupta, 1978; Reddy and Raju, 1993). However, information on the variation of the pathogen in isolates collected from different agro-ecological zones of Nepal is lacking. Such information will help in developing disease resistant pigeon pea varieties. Variability between 2 isolates of *F. udum* from Nepal are studied and discussed in this paper.

Differential pigeonpea lines from International Crop Research Institute for Semi Arid Tropics (ICRISAT) were used. These include a susceptible line ICP 2376 and other resistant and susceptible lines from different locations. Each line was seeded on 23 July 1996 on fine riverbed sand in polythene bags. Pathogenic variability in 2 isolates of *F. udum* collected from Khajura, Nepalgunj, Western Nepal and Nawalpur, Sarlahi, Central Nepal was studied using root dip inoculation and transplantation methods (ICRISAT, 1986). Seven to ten days old roots of ten to thirty seedlings of each differential line were inoculated on 2 August by immersing these roots for 30 minutes in spore suspension of each isolate of the fungus. The seedlings were transplanted in sterilized sand and soil (1:1) mixture in plastic pots. Inoculated plants were kept at $25^0 \pm 3^0$C in a screen house for 40 days. Disease incidence and reactions were taken 11, 21 and 31 days after transplanting. These were begun from 15 Aug. Similarly, the second experiment was begun on 26 Aug, inoculated on 5 Sept and the disease observations were made on 18 Sept, 30 Sept and 11 Oct. The lines with 1-10% wilt were categorized as resistant, 11-20% as moderately resistant, 21-40% as moderately susceptible, 41-60% as susceptible and 61-100% as highly susceptible (Reddy and Raju, 1993).

The pigeonpea differential lines showed four types of reactions 1. No apparent symptoms, 2. Chlorosis, 3. Chlorosis and early wilting (after 10-15 days) and 4. Chlorosis and late wilting (after 15-30 days). There was variation in the reactions of differential lines (Table 1). Lines ICP 8862 and ICP 8863 were resistant to Nepalganj and Sarlahi isolates. Lines ICP 9145, ICP 9174, ICP 8859 and BDN 2 showed resistant to Nepalganj isolate, but susceptible to Sarlahi isolate. The result of this experiment indicated that *F. udum* isolates of Khajura and Nawalpur are two distinct pathogenic races. The lines like ICP 8859 and ICP 8863 were resistant also at wilt sick plot of farmer's fields, Sanoshree, Bardia district and Dhaulagiri, Banke district (Jha and Neupane, 1998). It is also reported that lines ICP 8859 and ICP 8863 were resistant at RARS, Nepalgunj. The disease incidences and reactions of lines ICP 8863, ICP 9174, ICP 8862 and ICP 8859 were similar to that observed in ICRISAT, Patancheru (Reddy and Raju, 1993). So, before selection of a resistance line for a particular location, it is necessary to screen pigeonpea lines separately at different locations.

Table 1. Disease incidences and reactions of pigeonpea differential lines to F*usarium udum* isolates of Khajura, Nepalgunj and Nawalpur, Sarlahi by root dip method in 1996

Differential line	Khaujra, Nepalgunj isolate				Nawalpur, Sarlahi isolate			
	Experiment 1		Experiment 2		Experiment 1		Experiment 2	
	Disease		Disease		Disease		Disease	
	Incidence, %	Reaction†	Incidence, %	Reaction	Incidence, %	Reaction	Incidence, %	Reaction
ICP 2376	80.0	S	90	S	100	S	100	S
ICP 8863	0.0	R	2.5	R	7.5	R	4.5	R
ICP 8858	90.9	S	83.3	S	100.0	S	65.0	S
ICP 9145	0.0	R	0.0	R	100.0	S	75.0	S
T 21	100.0	S	100.0	S	100.0	S	100.0	S
ICP 9174	0.0	R	0.0	R	100.0	S	100.0	S
ICP 8862	0.0	R	9.2	R	10.0	R	10.0	R
ICP 8859	0.0	R	0.0	R	100.0	S	66.7	S
C 11	100.0	S	83.3	S	100.0	S	66.7	S
BDN 2	0.0	R	0.0	R	100.0	S	62.5	S

† R, Resistant; S, Susceptible.

In conclusion, the pathogenic races of *F. udum* of Nepalgunj and Sarlahi were two distinct types. This information helps to identify pigeonpea varieties resistant to wilt at different regions.

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