



Incidence of blast in exotic fingermillet germplasm grown in post-entry quarantine isolation area

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The National Bureau of Plant Genetic Resources (NBGR) has been functioning as a nodal organization for introduction and exchange of plant genetic resources of varied agri-horticultural crops for research purposes. The exchange of germplasm has exposed the world to greater risk of introducing exotic pests. Thus, it is mandatory that all the imported germplasm should be subjected to post-entry quarantine growing to check for the occurrence of exotic disease incidence (Plant Quarantine Order, 2003). The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) imports crop germplasm from different countries for their crop improvement programmes.

During 2012, a total of 727 accessions of fingermillet germplasm was imported from Nepal (265), Uganda (437) and Tanzania (25). All the accessions from Nepal and Uganda were the cultivated species of *Eleusinecorocana*, while accessions from Tanzania consisted of wild finger millet species too, viz., *E. indica* (16 accns) and *E. intermedia* (4 accns). The consignments were grown in the post-entry quarantine isolation area (PEQIA) at ICRISAT during 2012 post rainy season and weekly observations were recorded on the occurrence of exotic diseases, if any.

Post-entry quarantine inspection during growing period revealed the incidence of blast *Magnaporthe grisea* (anamorph-*Pyricularia grisea* (Cooke) Sacc.) on majority of the accessions. Symptoms appeared on leaf lamina as typical spindle shaped spots with gray or whitish centre and brown or reddish brown margin and in severe cases, the spots coalesced and gave blasted appearance. Neck blast was noticed at a later stage on some infected accessions in which two to four inches of the neck, almost immediately below the earhead turned brownish black, resulting in breaking of stem at the neck region. Incidence of head blast was also recorded wherein blast symptoms were seen in the fingers of the earhead, from the apical portions towards the base. The extent and severity of infection varied from accession to accession from different sources. The performance of these accessions from different countries to withstand the disease pressure under natural conditions was assessed and grouped into different categories. Occurrence of leaf blast and neck blast was recorded by visual observation following 0-5 scale (Patro and Madhuri, 2014) at the time of crop vegetative stage, while finger blast was recorded by calculating the per cent infected heads.

Observations (Table 1) revealed that all 265 accessions from Nepal recorded blast incidence with varied infection of leaf, neck and finger blast (2.48 to 86.42%). Accessions from Uganda were found to be tolerant as the intensity of infection was less as compared to those from Nepal. Head blast or finger blast occurrence was recorded only in 19 accns (1.82 to 76.92%) and 415 accessions were found completely free. Earlier, Chakrabarty *et al.*, (2004) intercepted *Pyricularia setariae* on finger millet accessions from Zimbabwe in the PEQIA of ICRISAT. On the contrary, all accessions from Tanzania were found completely free from all the three types of blast incidence, although they were grown adjacent to the Nepal consignment. This finding has got significance as majority of the Tanzania accessions belong to wild

species, viz., *E. indica* and *E. intermedia* and these can be used efficiently in the future crop improvement programmes.

Table 1. Blast disease recorded from the imported finger millet accessions grown in PEQIA, rainy season, 2012

Blast incidence	Disease reaction (Score/per cent)	Number of accessions		
		Uganda	Nepal	Tanzania
Leaf blast	Resistant (1-2)	345	70	25
	Susceptible (3)	90	189	0
	Highly Susceptible (4-5)	1	6	0
Neck blast	Resistant (1-2)	403	37	25
	Susceptible (3)	29	155	0
	Highly Susceptible (4-5)	4	73	0
Head blast (%)	Resistant (0-10)	430	11	25
	Moderately Resistant (11-30)	4	109	0
	Susceptible (31-50)	1	105	0
	Highly susceptible (50-100)	1	40	0

References

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