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Short Communication

SORGHUM GERMPLASM FROM THAILAND SHOWING RESISTANCE TO SUGARCANE APHID, *Melanaphis sacchari* Zehntner

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Three accessions in Sorghum imported from Thailand have shown resistance to yellow sugarcane aphid (*Melanaphis sacchari*). Accessions EC-434431&434432 appeared to be immune whereas EC-434430 was highly resistant to aphid infestations and sooty mould formation.

Key words : Sorghum germplasm, resistance, sugarcane aphid, *Melanaphis sacchari*

Sorghum is one of the mandate crops of the International Crops Research Institute for the Semi Arid Tropics (ICRISAT), Patancheru, AP, India. Sorghum germplasm is regularly exchanged between ICRISAT and several sorghum growing countries in Africa, America, Asia, and Europe. The ICRISAT gene bank through National Bureau of Plant Genetic Resources (NBPGR) imports the sorghum germplasm after necessary quarantine processing. The germplasm, after processing in the laboratory, is transferred to the post- entry quarantine isolation area (PEQIA) to ensure that only insect and disease free germplasm enters into India and the ICRISAT gene bank.

Recently, nine accessions of sorghum germplasm imported from Indonesia, Thailand and China were sown in the PEQIA. At maturity, three entries from Thailand viz., EC-434430, EC-434431 and EC-434432 sown in the middle three blocks between the entries from Indonesia and China were found to be totally free from infestation by the yellow sugarcane aphid, *Melanaphis sacchari* Zehntner and the sooty mould (*Capnodium* sp.) The honeydew secreted by aphids favours the development of sooty mould, which hinders the photosynthesis by enveloping the green leaves leading to reduction in fodder quality and grain yield. The thick black sooty mould had completely covered the leaves of the other six entries from china (EC-434433, EC-434434, and EC- 434435) and Indonesia (EC-434436, EC-434437 and EC-434438). The affected plants appeared to be burnt up in contrast to the unaffected plants of three entries from Thailand.

Aphid populations on the susceptible entries covered the panicles and the tender shoots. Observations wre recorded on Number of plants affected by sooty mould and the aphids (Table 1). Of the three entries from Thailand showing resistance to the yellow sugarcane aphid EC-434431 and EC-434432 appeared to be immune as the plants remained completely free from aphid infestation and sooty mould formation. The third entry from Thailand EC-434430 was found to be highly resistant, in which only 4% plants were infested by the aphid. The rest six

Table 1. Reaction of the sorghum germplasm accessions to the yellow sugarcane aphid, *Melanaphis scchari* (post-Entry Quarantine Isolation Area, ICRISAT center, 1998 rainy season)

Germplasm accession (Local name)	Origin	Infestation (%)	Remarks
EC-434430 (U-Thank 1)	Thailand	3.95	Highly resistant
EC-434431 (Suphan Buri #1)	Thailand	Nil	Immune
EC-434432 (Suphan Buri 60)	Thailand	Nil	Immune
EC-434433 (LS-1)	China	100	Highly susceptible
EC-434434 (LS-2)	China	100	Highly susceptible
EC-434435 (LS-3)	China	100	Highly susceptible
EC-434436 (Mandau)	Indonesia	91.86	Susceptible
EC-434437 (UPCS-S1)	Indonesia	97.06	Highly susceptible
EC-434438 (Keris)	Indonesia	100	Highly susceptible

entries from China and Indonesia were susceptible to highly susceptible with aphid infestation ranging from 91.9 to 100 per cent.

Literature search indicated that except for a few reports, there is not much of screening of the germplasm to identify the sources of resistance and their utilization in resistance breeding programmes. Scientists in Japan at the National Agricultural Experiment Station, Fukuyama, Hiroshima and Research Institute for Bioresources. Okayama University, Kurashiki, have carried out considerable work on aphid resistance. Tsumuki *et al.*, (1995) reported that although leaf surface wax was similar among all varieties, the total sugar content and the free amino acid concentrations were slightly more in the aphid-resistant varieties than in the susceptible ones. Hagio (1992) classified six varieties as highly resistant, and he reported that the resistance in two varieties (PE 954 177, and Senkinshiro) may be conditioned by a dominant gene. Mote and Shahane (1994) reported that the varieties with greater height, greater distance between 2 leaves, smaller leaf angle and presence of waxy lamina were less susceptible to the aphid. Development of aphid was more pronounced on varieties with high nitrogen, sugar and total chlorophyll contents (IS 105, IS2217, IS1063, and IS553). They reported that varieties ICSCTV9, BTP28, IS1640, ICSV148, and SPV504, with higher contents of phosphorus, potassium and polyphenols were less preferred by the aphids.

The three sorghum accessions from Thailand showed a nearly immune reaction to the aphid *Melanphis sacchari*. These lines can be used in sorghum improvement to increase the production and productivity of this crop in the semi-arid tropics. The immune reactions to aphid infestation need to be studied further to understand the contributing factors to resistance to this insect.

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