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Psyllid Resistance in *Leucaena leucocephala* Provenances and their Utilization in Fodder/ Fuelwood Production

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Key Words: *Leucaena*, Psyllid, *Heteropsylla cubana*, Fodder/ Fuel Wood Production

The genus *Leucaena* (Bentham) is reported to have 16 species (Brewbaker and Sorensson 1993)/ 17 (Hughes 1993), of which the most popular species introduced in India is *Leucaena leucocephala*. It has been one of most productive and versatile multipurpose tree legumes available to tropical agriculture. The limitations of leucaena most importantly include susceptibility to the psyllid insect pest-*Heteropsylla cubana*, (Shelton *et al.*, 1995). The damaging effect of the leucaena psyllid has halted promotion and new planting of leucaena in most regions.

The germplasm used around the world is genetically very narrow and mostly of one species (*L. leucocephala*). Clearly, susceptibility to psyllid attack, are partly caused by the lack of genetic diversity. Germplasm screening against natural infestation of 496 leucaena accessions belonging to fourteen species have been reported by Faruqui *et al.* (2002). The present study was undertaken to screen the promising leucaena provenances for reaction to psyllid and identify provenances with reasonable levels of resistance/tolerance and production potential.

The trial on *Leucaena* involving seven promising lines viz. S-10, S-14, S-22, S-24, K-29, K-601 and K-8 as control were subjected to field screening under natural infestation of leucaena psyllid. Round the year observations were recorded but the categorization has been made on the basis data recorded during Mid February to Mid March, a period where psyllid infestation coincides with plant growth at Jhansi. These accessions have been classified in to three categories (resistant, tolerant and susceptible based on the guidelines framed by the NFTA (Wheeler 1988).

Each leucaena germplasm showed different level of infestation of this pest and the injury levels. Provenances S-14, S-22 and K-601 had low infestation (1-4 level) and injury levels (1-2) in both the systems. K-8 indicated the high level of infestation (7-9) and damage (7-8) levels and was considered as most susceptible. K-8 of course showed a very quick recovery during the periods with high humidity or low pest load making good the losses caused.

The infestation and damage was differently reflected in plantation put under repeated cutting for forage proposes as against those left uncut K-601 showed same level of resistance (injury level 1-2) in both the systems. Similarly, at peak infestation period S-22 and S-14 had low (3-4) infestation and damage score (2-3).

The frequent cut results in to new growth that attracts the psyllid. K-8 would be a good choice for a place, which has periodicity in the psyllid populations while K-601 would grow well in the locations even with high pest density based upon their production potential and response to psyllids. It is concluded that production potential under psyllid infestation should be an important criteria for provenance selection in leucaena for specific locations. The genetic diversity available in different

leucaena species needs to be classified on the basis of their utilization potential and suitability for specific regions at different resources levels.

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Introduction and Evaluation of *Saccharum* Germplasm from Thailand

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Key Words: *Saccharum spontaneum*, Germplasm, Evaluation

Saccharum spontaneum L, a wild relative of sugarcane has contributed significantly to the evolution of modern sugarcane varieties, which are complex interspecific hybrids involving two or more species of *Saccharum*. This species is characterized by profuse tillering with underground stolons. It contains very low sugar and high fibre. The species is resistant to diseases and pests and shows tolerance to abiotic stresses like salinity, water logging and drought. It exhibits the widest geographical distribution also. In view of the importance of this species in the breeding programmes, adequate attention has been given for its collection, conservation and characterisation. Within the country, organized attempts have been made to collect the available rich diversity of the species and to conserve it in the germplasm collection. The world collection of germplasm includes *Saccharum spontaneum* from its distributional areas in the country. Besides, accessions from other countries were also imported to augment the genetic diversity of the species. *Saccharum spontaneum* germplasm maintained in India is represented by the accessions from the Indian sub continent, South East Asia, China, Polynesian islands and Africa. Most of the *Saccharum spontaneum* collections available in the germplasm have been characterized and documented in two germplasm catalogues (Kandasami *et al.*, 1983 and Sreenivasan *et al.*, 2001).

The present study was an attempt to evaluate thirty-nine recent introductions of *Saccharum spontaneum* from Thailand with respect to agronomically important characters. The thirty-nine clones of *Saccharum spontaneum* were imported from Thailand during 1999 and 2001 in two batches through the National Bureau of Plant Genetic Resources, New Delhi. The first batch of materials was quarantined in 1999 at Central Plantation Crop Research Institute, Kasargod for one year. The second batch was received in 2001 and was quarantined at Sugarcane Breeding Institute Research Centre, Agali for one year. Healthy seed materials were brought to Sugarcane Breeding Institute, Coimbatore during 2003 and were planted as two clumps per genotype in 2m long plots. Data on number of stalks per clump, stalk height, stalk diameter and internode length were recorded after 12 months. Intensity of flowering, pollen fertility and Hand refractometer Brix were also recorded. Mean, range and variation for different attributes are presented in Table 1.

Table 1. Mean, range and variation of 6 traits for 39 clones of *Saccharum spontaneum* imported from Thailand

Variable	Range	Mean	CV %
Stalks per clump	30 to 120	74.89	26.979
Stalk height (cm)	140 to 270	207.60	16.009
Stalk diameter (mm)	8.02 to 15.37	10.80	19.5213
Internode length (cm)	8.1 to 20.2	13.84	34.507
Pollen fertility %	62.7 to 99.9	94.38	23.888
HR Brix %	2 to 13.4	6.26	43.009