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Rice varietal identification by rapid chemical tests, electrophoretic variants of soluble seed proteins and DNA fingerprinting

Sambasiva Rao P, Meena Kumari KVS and Bharati M

Acharya N.G. Ranga Agricultural Universit, India

Forty genotypes of cultivated rice varieties released by Acharya N.G.Ranga Agricultural University, Andhra Pradesh. India were studied using seed and seedling characteristics for their reaction to phenol, modified phenol, NaOH, GA3 and 2,4-D (auxin) tests, as well as by electrophoresis of soluble seed proteins. Though no individual chemical test was able to distinguish all the genotypes, different chemical tests in conjunction were useful in identification of varieties. The differential banding pattern of total soluble seed proteins and DNA polymorphism revealed the qualitative and quantitative variation among the different varieties and could distinguish among closely related varieties by the presence or absence of specific bands and intensity of bands varies with their relative mobility. Seed keys for identifying forty varieties on the basis of their biochemical response and total soluble protein profiles were developed. The cluster analysis indicated the wide diversity of the varieties released from Andhra Pradesh with similarity ranging from 0.36 to 0.98.