

# The Asian Vigna: Genus Vigna subgenus Ceratotropis genetic resources - Norihiko Tomooka, D. Vaughan, Helen Moss, Nigel Maxted - 2012 - 9789401003148 - 270 pages - Springer Science & Business Media, 2012

The pollen morphology of 22 Asian Vigna [subgenus Ceratotropis (Piper) Verdc.] species, including wild and cultivated taxa from India, was investigated with light microscopy and scanning electron microscopy. The quantitative data were analyzed by descriptive statistics and multivariate statistics. The pollen grains are prolate spheroidal in shape with equatorial diameter of 36.06-116.33  $\mu\text{m}$  and polar diameter of 36.31-120.96  $\mu\text{m}$  in equatorial view. The small pollen dimensions were observed in *Vigna hainiana*, *V. trilobata*, and *V. indica* and the largest in *V. vexillata*. The pollen grains have reticulate Genetic differentiation within the genus Vigna. The subgenus Ceratotropis is thought to have emerged from the subgenus Vigna via the subgenus Plectrotropis [16, 25, 26]. The theoretical basis of this hypothesis is that, while the subgenus Vigna has a symmetric keel without pocket, the subgenus Plectrotropis has a curved keel with a pocket, and the subgenus Ceratotropis has a more prominently twisted keel with a more prolonged pocket. However, the phylogenetic tree using rDNA-ITS in this study suggested the following genetic differentiation patterns. 8. Tomooka N, Vaughan DA, Moss H, Maxted N. The Asian Vigna: Genus Vigna subgenus Ceratotropis genetic resources. Kluwer Academic Publishers; 2002. 9. Dixit TM, Sutar SP, Yadav SR, Bhat KV, Rao SR. To determine the genetic diversity structure and relationships between 35 genotypes of 20 taxa of Asian Vigna, polymorphism scores at 16 microsatellite loci without missing data were used (see Additional File 2). UPGMA cluster analysis was conducted using software NTSYSpc 2.2 [41]. Results from the cluster analysis revealed that all the genotypes of Asian Vigna could be clearly differentiated and classified into two groups; mungbean group and azuki bean group (Figure 2). The results were in agreement with previous studies using non-coding sequences of trnT-F [42, 43]. 47. Tomooka N, Vaughan DA, Moss H, Maxted N: The Asian Vigna: Genus Vigna Subgenus Ceratotropis Genetic Resources. 2002, Kluwer, Dordrecht. Google Scholar. 47. The genetic diversity and phylogenetic relationships among species in the genus Vigna subgenus Ceratotropis were investigated using sequence data from the ribosomal DNA ITS and atpB-rbcL intergenic spacer of chloroplast DNA regions. While both sets of sequences were of similar lengths about 700 bp the rDNA-ITS was more informative than atpB-rbcL having 170% more polymorphic sites and five times as many parsimony-informative sites. The atpB-rbcL spacer may be appropriate for analysis of taxa above the species level in the genus Vigna. Results of analyzing rDNA-ITS revealed, with low level of st