

A comparative study of seed amino acid content, pollen germination and drought tolerance of two grain legumes and their tentative wild relative

The majority of pulse grain belonging to the tribe *Phaseoleae* of the sub family *Papilionoideae*, are an important source of protein for human diets in the tropics. Wild relatives of pulse grains had proven to possess many desirable characters, such as, high nutritive value, resistant to diseases and pests, insecticidal properties, delayed dehiscence of pods.

One of the identified potential wild species that can be used to improve the pulse grains is *Macroptilium lathyroides* (L.) urban. In this study *Macroptilium lathyroides* was compared with two *Vigna* spp.

The findings revealed that the total free amino acid content in seeds was high in *Macroptilium lathyroides* (48.11 ± 2.13 mg/g) when compared with that of *Vigna radiata* (44.22 ± 1.23 mg/g) and *Vigna mungo* (41.78 ± 0.96).

The germination percentage of pollen samples was done to assess the pollen viability. It indicated that there was no significant difference ($p > 0.05$) between *Vigna mungo* (74.3 ± 2.49) and *Macroptilium lathyroides* ($70.0\% \pm 4.78$), whereas, a comparatively low germination percentage was recorded in *Vigna radiata* ($57.7\% \pm 3.74$). to study tolerance to water stress, two parameters were taken into account. Percentage survival of seedlings revealed that wild species had the highest resistance to the drought condition (90%) and this was followed in decreasing order by *Vigna radiata* (80%) and *Vigna mungo* (75%). This was confirmed by the study of stomatal index, where the wild species showed the lowest stomatal index (19.405 ± 0.9990) and this was followed by *Vigna radiata* (22.565 ± 0.588) and *Vigna mungo* (23.613 ± 0.956) in increasing order.

As Macroptilim lathyroides is closely related to the species belong to the genus *Vigna*, it can be used to improve these species through conventional or molecular breeding methods.