


- 2.2.5  Mwale, Priscilla K. (2002). Effect of different priming agents on germination, emergence and yield performance of bambarra groundnuts (*Vigna subterranea* (L.) Verdc.) landraces. (Supervisors: Dr. M. S. Mwala and Dr. D. M. N. Mbewe).

Bambarra groundnut is an indigenous African legume crop, cultivated mainly by small-scale farmers in Zambia. The crop is grown predominantly for human consumption although it has

also potential for use in animal feeds and in many farming systems for soil amendments and rotation. However, its full potential has not been exploited in Zambia. Most varieties of the crop under cultivation in Zambia are characterized by low yields, poor agronomic characteristics and poor response to improved conditions. In addition, it exhibits slow and uneven germination both of which may lead to poor establishment and low yields. This problem has been overcome by priming in other crops. Therefore, the objectives of this study were to determine the effects of different priming agents and priming temperature on germination rate, emergence and yield performance of different landraces of bambarra groundnuts. Three bambarra groundnut landraces, identified by color, were used in evaluation of the response to priming. A split-split plot design was used with three landraces (brown, red and cream), two priming temperatures (10°C and 15°C) and three priming agents (Polyethylene glycol PEG), potassium nitrate and potassium dihydrogen phosphate) and no priming (control). The germination parameters measured were time to 50% germination, rate of germination, final germination, and germination synchrony. Time to 50% germination was reduced by priming in KNO_3 and KH_2PO_4 , but PEG had no effect. Germination rate was improved in KH_2PO_4 while KNO_3 and PEG had no effect. Final germination percentage was not improved across landraces and priming agents. Priming had no effect on germination synchrony. The above results indicate that the different priming agents did not improve the germination of bambarra groundnut landraces. The emergence parameters were similar to those for germination. Different priming agents did not improve time to 50% emergence of bambarra groundnuts. Similarly, emergence rate, final emergence percentage and emergence synchrony was not improved. The yield attributes measured were number of stems per plant, number of branches per plant, number of nodes per plant, number of pods per plant, harvest index, hundred seed weight and grain yield. Priming across priming agents had significant effects on the 100 seed weight, harvest index and number of nodes per plant. Despite the differences in yield attributes, grain yield of bambarra groundnut was not affected by priming. This shows that bambarra groundnut is a stable crop but affected by the environment.