



Integrated impact of mycorrhiza (*Glomus* sp) and pollinating insects on growth and yield of *Vigna subterranea* (L.) Verdcourd (Fabaceae)

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1 SUMMARY

Bambara groundnut (*Vigna subterranea*) is an important component of some dietary staples in many African countries. Although it is a crop legume, its yields are generally low. It is well known that, by providing pollination, anthophilous insects including bees, generally increase fruit and seed yields of many plant species. Therefore, the effect of insect pollinators and mycorrhiza on growth and yield parameters of *Vigna subterranea* was assessed from April to September 2015 and 2016 at Dang (Ngaoundere, Cameroon). The experiment was set up in a complete randomized block design with three treatments: plots applied with mycorrhiza; plots applied fertilizer-NPK; plots applied neither with mycorrhiza, nor with fertilizer-NPK. Two other treatments were formed by flowers protected against insects and free pollinated flowers. Parameters such as reproduction mode, frequency of floral entomofauna, activity of insects on flowers, cumulative effect of treatments on yield were assessed. Data were analysed using student test, chi-square and Pearson correlation. Results indicate that root nodules formed by the host plant in plots that received mycorrhiza were significantly higher than those from positive and negative controls. *Vigna subterranean* was revealed as an allogamous-autogamous plant with the predominance of autogamy. In 2015 and 2016, 3205 and 1565 visits from five insect species were recorded on *V. subterranea* flowers respectively. *Eurema eximia* and *Halictus* sp. were the most frequently insect species observed in the field, with 25.62 and 23.58% visits respectively. The comparison of yields between plants with flowers left in free pollination to those with flowers protected from insects indicated 32.80% increase in fructification index and 21.55% increase in the number of seeds per pod due to insects. The synergistic effect of insects and mycorrhiza increased the number of seeds per pod by 28.8% and the percentage of normal seeds by 30.03%. This study results suggest that inoculation of Bambara groundnut seeds at sowing with mycorrhiza and installation of hives close to field could be recommended for a sustainable pods and seed yield improvement of this crop.