Establishing a technical guideline for agroecological production of baobab leaves at seedlings stage in Benin (West Africa)

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Abstract

Demand for biological vegetables strongly increases. This production requires a reflexion increased on the farming techniques as well as regular observations of the plants and their environment. It requires very broad competences on the techniques and plannings of production. This study aimed to assess the growth of the number of leaves, morphological traits of the leaf and dry weight of yield of baobab seedlings to variation of dose (0, 10, 20, and 30 tons/ha) of organic manure (Compost of organic waste vs organic manure), sowing density (15×15 cm, 20×20 cm, and 30×30 cm) and leaves harvesting frequency (15, 22 and 30 days). The experiment was conducted on-station in the Guineo-Congolese zone of Benin using a split-split plot design with three replicates. Data were analysed using linear, linear mixed effects for longitudinal data with a normal structure for errors and generalized linear mixed effects models for longitudinal data with a Poisson structure for errors models. The results showed that more biomass and greatest number of leaves growth were obtained when A. digitata seedlings were produced applying 30 t/ha of poultry dropping with 15×15 cm sowing density and monthly harvests next to sowing. This combination provided the highest production of leaves biomass (41.62 ± 1.16 Kg of dry matter per 100 m² equivalent to 157.29 ± 4.38 Kg of fresh leaves per 100 m²), a less tapering leaf and the lowest specific leaf area and specific dry weight of A. digitata seedlings. And optimum growth of the number of leaves of A. digitata seedlings for low dose of organic matter (10-20 ton/ha of poultry dropping). Further research is necessary to assess on the protection methods against the bio-attackers and control of adventitious plants.

Keywords: Baobab leaves, density of sowing, compost, organic matter, harvesting frequency