



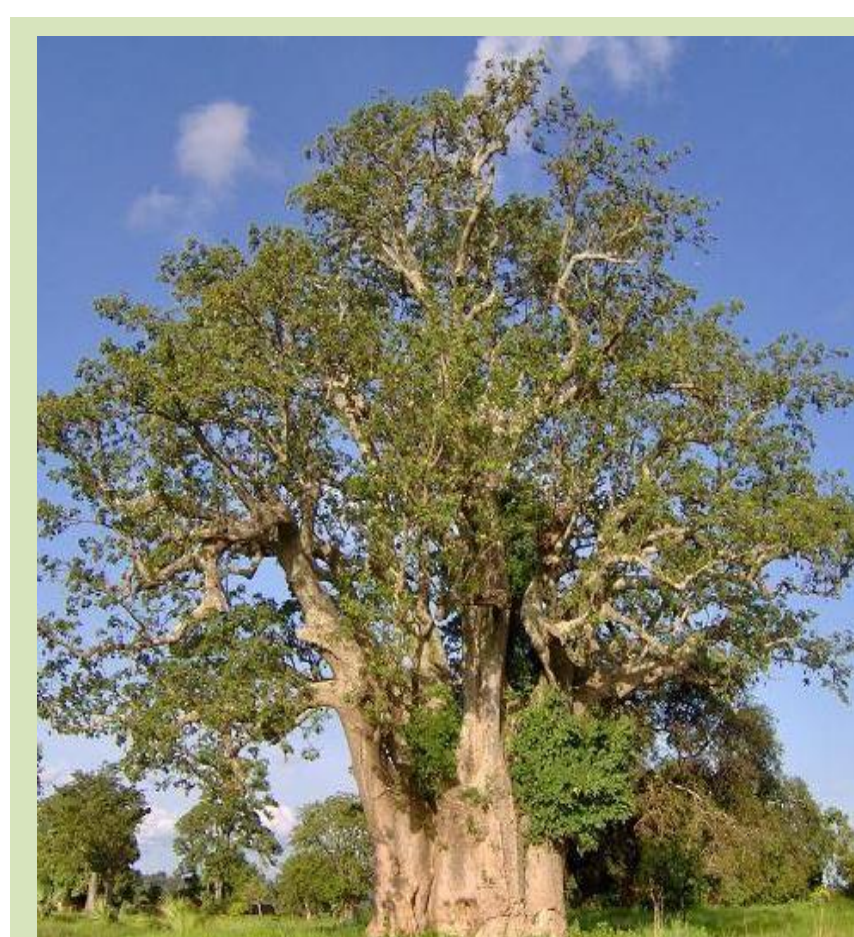
Establishing a technical guideline for agro-ecological production of baobab leaves at seedlings stage in Benin (West Africa)

Hounsou-Dindin G.¹, Salako V.K.¹, Idohou R.¹, Sero Nadejda¹, Assogbadjo A.E.^{1,2}, Glèlè Kakai R.¹

¹ Laboratoire de Biomathématiques et d'Estimations Forestières, School of Environment Management, Faculty of Agronomic Sciences, University of Abomey-Calavi, 04 BP 1525, Cotonou, Benin

² Laboratoire d'Ecologie Appliquée, School of Environment Management, Faculty of Agronomic Sciences, University of Abomey-Calavi, Benin

1 Introduction



Baobab tree

- ☐ > 300 uses: food, medicine ...
- ☐ Income generation: fruits, leaves ...
- ☐ Food security



Baobab tree harvested

- ☐ Threat of wild population (bush fire, grazing and lack of natural regeneration)
- ☐ High risk of extinction

Conservation and domestication strategies

This study aimed to develop best agro-ecological practices to improve the leaves biomass production on baobab seedlings

2 Materials and Methods

Data collection:

The study were conducted in humid zone (Guineo-Congolese) in south Benin (Fig. 1).

- Split-split plot design with three replications were used.
- Number of leaves were counted for only the first 30 days.
- Leaves biomass harvested were weighed fresh and after drying in an oven at 105° C during 48h.
- Leaves morphology and index of leaf area, next to the last leaves harvest to the 230th day were calculated.

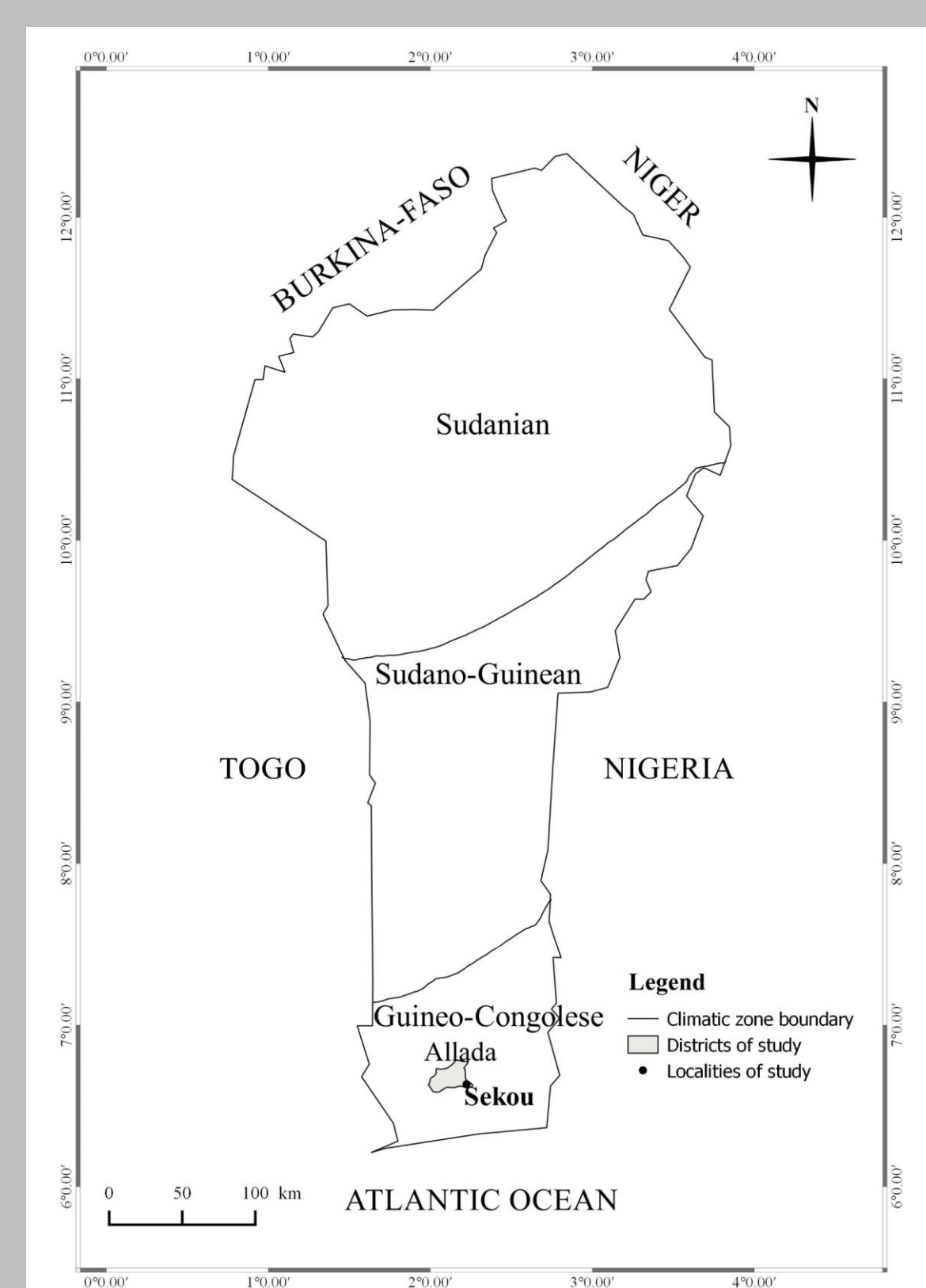


Fig.1. Study areas

Table 1. Factors tested in the frame of the experiment and their modalities

Factors	Types	Nature	Modalities
Type of organic matter	Fixed	Categorical	Compost of organic waste versus poultry dropping
Doses of organic matter	Fixed	Quantitative	- 0 (control), 10, 20 and 30 tons/ha for the compost and the poultry dropping
Density of sowing	Fixed	Quantitative	15 × 15 cm, 20 × 20 cm and 30 × 30 cm
Frequency of leaves harvest	Fixed	Quantitative	Every 15, 22 and 30 days; starting 45 days after planting
Time (days)	Random	Quantitative	
Block	Random	Quantitative	

Data analysis:

- 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.
- All analysis were implemented in the R software.

3 Results and Discussion

Technical route



Collection of fruits in the same biogeographical zone as the ones of trial



Extraction & pre-treatment of seeds using a container of boiling water for 48h



Weeding the site and realization of plots



Baobab seedlings

Fertilization:

30 t/ha of poultry dropping: more biomass of leaves growth

Sowing density = 15 × 15 cm

Leaves harvesting frequency = monthly harvests next to sowing

Provided more biomass of leaves and greatest number of leaves growth

This combination provided optimum growth of the number of leaves and biomass of *A. digitata* seedlings.



Leaves harvest

Available all the year through

- Food security
- Good conservation
- Reduction of poverty

4 Conclusion and future plan

30 t/ha of poultry dropping



Monthly harvests

15 × 15 cm

Higher leaves biomass

Further research is necessary to evaluate the mineral content of the poultry droppings used and their influence on the nutritional composition of the harvested leaves compared to those from mineral fertilizers.

Acknowledgement



https://drive.google.com/file/d/1qd26_G8OhF43UvH0tul8xnM9ZdTovb5h/view?usp=sharing

Author contacts

Email: guillaumehehd@gmail.com

Facebook: Guillaume Hounsou-Dindin

Phone: +229 96 66 14 28