STUDY OF THE EFFECT OF THE DOSE OF ORGANIC MANURE ON THE GROWTH PARAMETERS OF GOMBO (*Abelmoschus esculentus (L.) Moench)*

A. TOURE [1], O. SARR [1], A. GUISSE [1], J. Henze [2]

[1] Cheikh Anta Diop University (UCAD), BP 5005, Dakar- Fann , Dakar, Senegal
[2] Humboldt-Universität zu Berlin, Center for Rural Development/SLE, Hessische Str. 1-2, 10115 Berlin, Germany

Tropentag 2023
Humboldt-Universität zu Berlin,
September 19-24 2023

Introduction

Okra (*Abelmoschus esculentus (L.) Moench)* is an indispensable ingredient in the West African diet, especially for rural populations, where malnutrition is a major problem among children and adults (Aishwarva and Bilaspur, 2018). It is a source of vitamins and mineral salts, that are essential for a balanced diet. Its importance is due to its high market value, but also to the fact that it is found fresh in all markets during the winter months (july to september) and in a dried form during the rest of the year (slices, dried slices or powder) (Sall, 2020).

In rural areas of Senegal, small market gardeners overexploit the soil, which leads to a progressive depletion of their nutrients and their possible degradation.

This study, which is part of an effort to improvement of food production in the Sahel, therefore tested three dose ratios of organic manure based on horse dung, through observing different growth parameters of okra plants.

Material and method

Study area

The agricultural field trial was carried out in the Nobadane village, located in the commune of Loul Sessène, a district of Fimela, in the Fatick region.

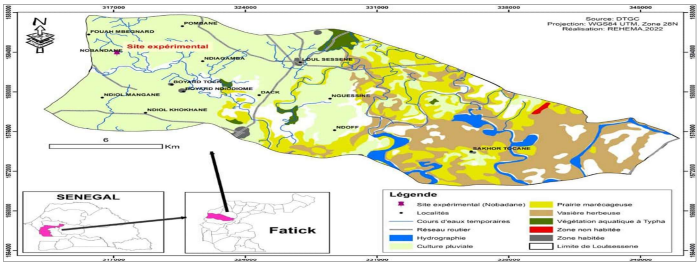


Figure 1: Location of the experimental site

Organic fertiliser


Horse manure


Local okra seed

Device experimental

The experimental design followed a Fisher' blocks design with three repetitions and three treatments including one control (see figure 2)

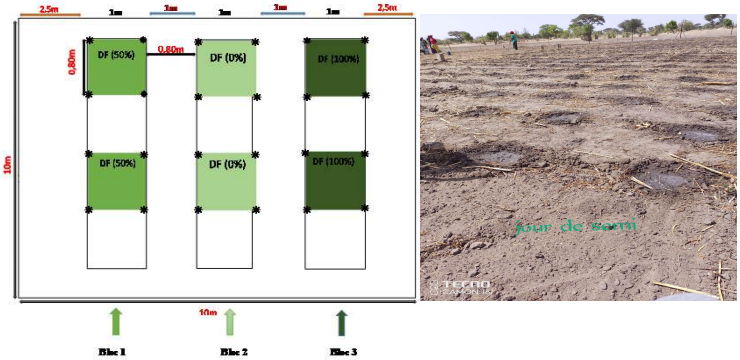


Figure 2 : Presentation of the experimental device

DF (100%): 100% horse manure i.e. 2Kg/pocket

DF (50%): 50% horse manure i.e. 1Kg/pocket;

DF (0%): control with 0%; and

The experimental set-up of the Fisher block entailed three repetitions and three treatments including a control (figure 2). The plot contained 16 pockets per line, sown at the rate of two to three seeds per pocket.

Measurement of growth parameters

Figure 3 : Measurement of growth parameters

References

Abdou, R., Halilou, Al, Zango, O., So, TKA, Yahaya, MI, & Bakasso, Y. (2022). Effect of fertilizers on the productivity of three varieties of okra (*Abelmoschus esculentus* L. Moench.) from the Zinder region (Niger). *International Journal of Biological and Chemical Sciences* , *16* (1), 378-389

Online Sacred, H. (2020) . The influence of goat farming practices in the region of Fatick (Senegal) on the presence of antibiotics in dairy products.

Results and discussion

- Compared to the control (D2), the application of the manure with the ratio of 100% fertiliser (D1) induced a fairly significant production of leaves;
- The application of the ratio of 50% fertiliser (D3) only had on average only a positive effect on the production of leaves after the 10th week. At the same time, the leaf production of individuals plants subjected to ratios (D1) and (D2) tends towards a progressive reduction.

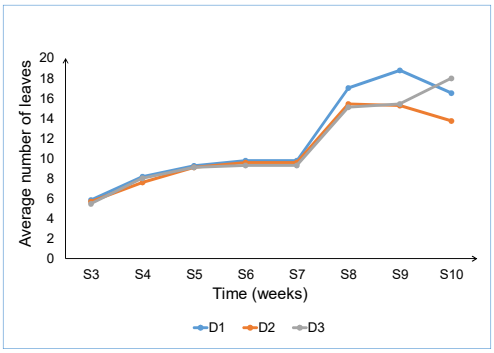
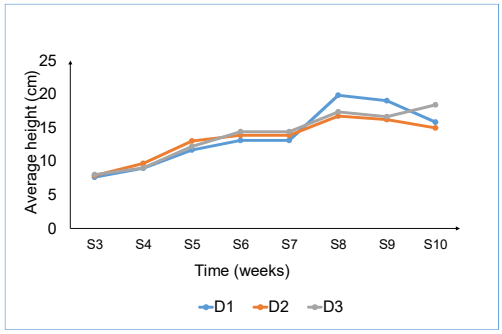


Figure 4 : Evolution of the number of leaves/plants from the 3rd to the 8th week after sowing

- Vertical growth is negatively affected by the doses of manure, the analysis of variance does not show any significant difference (p-value > 5%).
- However, there is a difference in size between the control plants and the plants subjected to basal fertilization treatment, the average of which is around 50m



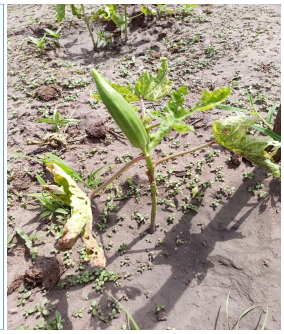


Figure 5 : Evolution of plant height from the 3rd to the 8th week after sowing

Table: Effect of organic manure dose on growth parameters

Rates	Number of sheets	Plant height	Collar diameter
D1	11.875 [a]	13.625 [a]	0.4758a [a]
D2 (witness)	10.734b [a]	13.250a [a]	0.4693a [a]
D3	11.198 [ab]	13.779 [a]	0.4594a [a]
P	< 0.05	> 0.05	> 0.05

Under the conditions of the experiment, the analysis of the results showed that the addition of organic matter had no significant effect either on the height of the plant or on the diameter at the collar. On the other hand, D50% showed a significant effect on the number of leaves compared to D0% and D100%

Conclusion

It appears from the trials that the lower ratio of 50% horse manure clearly gave the best results compared to the higher ratio and the control.

This shows that the okra plant reacts well to the addition of organic manure and that it is possible to improve the productivity of okra by using moderate amounts of fertiliser, especially in soil rich in organic matter.

NUTRiGREEN

NUTRiGREEN is an international project with partners in Burkina Faso, Germany, Senegal and Sweden. The project investigates the value chains of traditional African plants in order to strengthen their impact in the local and regional agri-food system. Together with farmers, consumers and other value chain stakeholders, we research their current status and future potentials from farm to folk.

The NUTRiGREEN project is funded by the German Federal Ministry of Food and Agriculture (BMEL) through the Federal Office for Agriculture and Food (BLE), grant 2821ERA14C. This project has received funding from the European Union Research and Innovation Program under grant agreement No 862555.

With support from
Federal Ministry of Food and Agriculture
by decision of the German Bundestag
FOSC
ERA-NET Cofund on Food Systems and Climate