Dose effect of organic matter on growth and biomass parameters of *Hibiscus sabdariffa* (L.) in the Fatick region .

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1. Introduction

Hibiscus *sabdariffa* is a flowering plant that is native to Africa. Its calyxes, leaves and seeds plant are ingrediencies in the a range of food products.

The decline in rainfall and soil fertility, that can be observed in many African countries, aggravated through climate change, lead to a decrease in the agricultural productivity of hibiscus plants. This, the question arises: is the application of organic fertiliser a suitable strategy to meet this challenge? Hence, it is the aim of this study to promote the use of organic residues in the restoration of soil fertility .

2. Objectives

General objective: Contribute to improving the productivity of *Hibiscus Sabdariffa*

Specific goals

- Determine the effect of varying ratios of organic fertilizer derived from horse manure on the growth parameters of *Hibiscus sabdariffa*
- Evaluate the effect(s) of organic fertiliser derived from horse manure on the fresh biomass of *Hibiscus sabdariffa*

3. Materials and Methods

▪ Research location

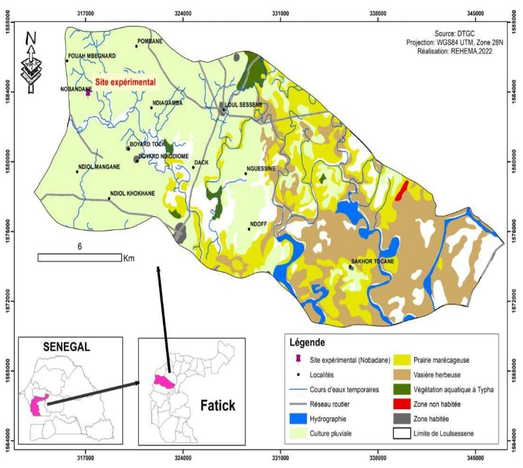

Figure 1: Geographical location of the study site

- Climate zone: Sudano-Sahelian
- Seasons: Dry season (X -Y) 9 months rainy season (X –Z)
- Rainfall: 689.7mm (average)
- Temperature: 24°C (average)

▪ Research Design

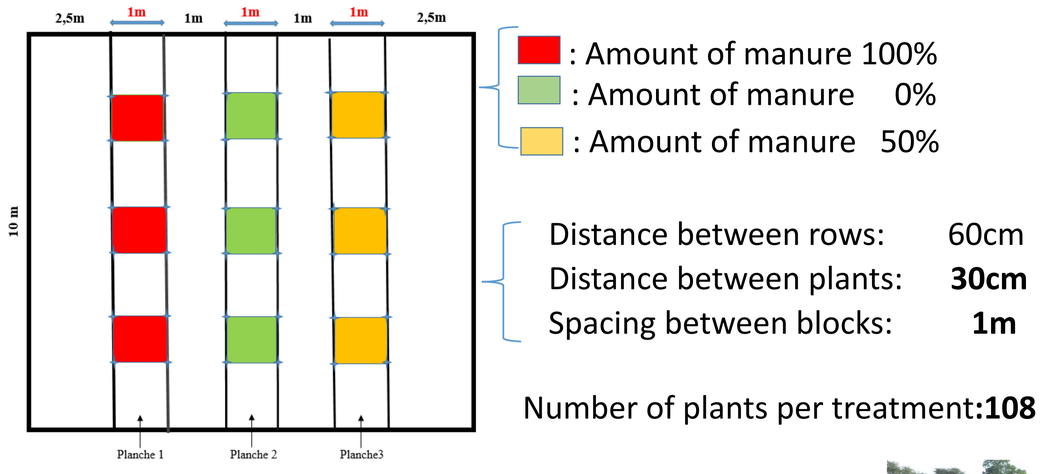

Figure 2: Set-up of experimental plot (block design)

▪ Biological materials

Photo1: *Hibiscus sabdariffa*

Photo2: Organic manure (horse manure)

Research trial process

- Soil preparation
- Direct sowing
- Observation of germination
- Weeding
- Application of manure

▪ Parameters measured

- Plant height
- Number of leaves
- Diameter of the stem
- Biomass /Dry weight

4. Results and Discussion

1. Effects of organic fertiliser ratios on leaf numbers of *Hibiscus sabdariffa* plants

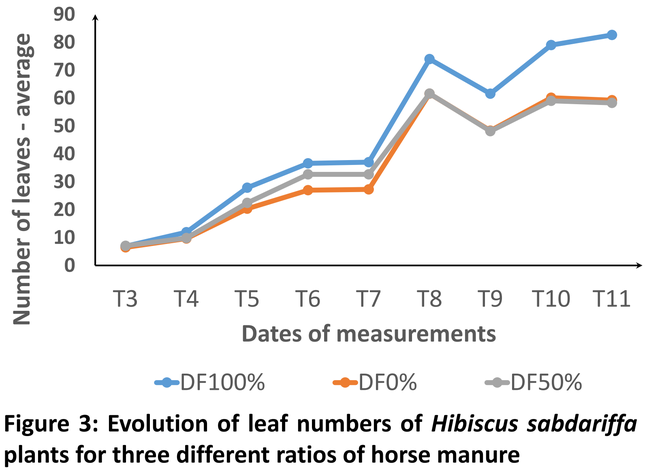

Figure 3: Evolution of leaf numbers of *Hibiscus sabdariffa* plants for three different ratios of horse manure

2. Effects of organic fertiliser ratios on the evolution of height growth of *Hibiscus sabdariffa* plants

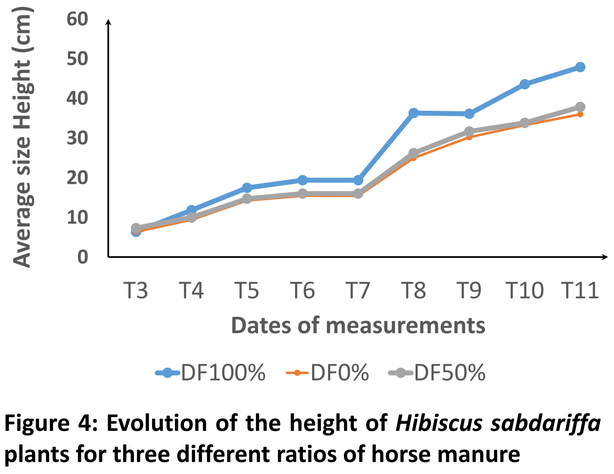

Figure 4: Evolution of the height of *Hibiscus sabdariffa* plants for three different ratios of horse manure

3. Effects of organic fertiliser ratios on the diameter growth at the collar **of *Hibiscus sabdariffa plants***

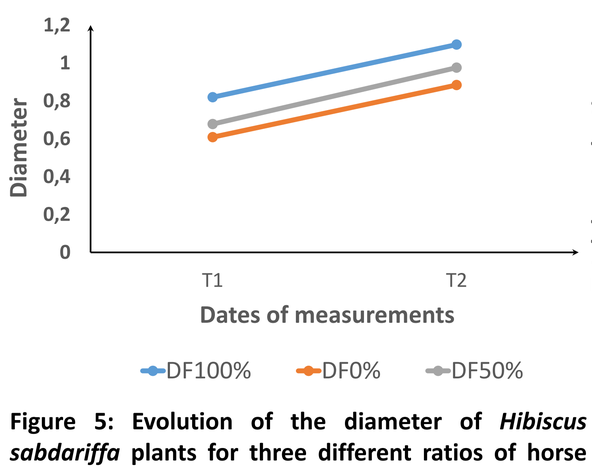

Figure 5: Evolution of the diameter of *Hibiscus sabdariffa* plants for three different ratios of horse manure

4. Effects of organic fertiliser ratios on dry weight/biomass

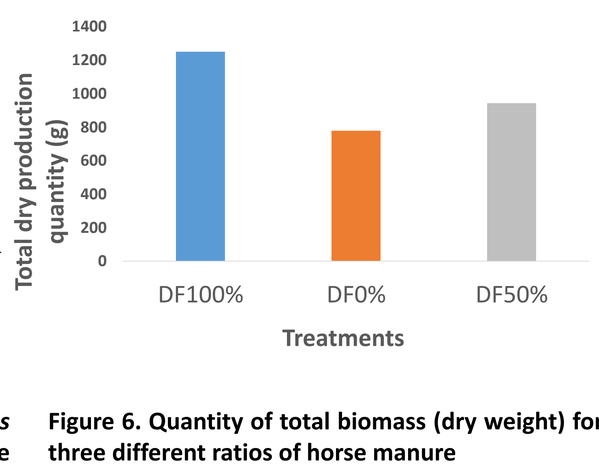

Figure 6. Quantity of total biomass (dry weight) for three different ratios of horse manure

T3: DAD 21; T4: 28 DAS; T5: 35 DAD; T6: 42 DAD, T7: 49 DAD; T8: 56 DAS; T9: 63 DAS; T10: 70 DAD; T11: 77 DAS

Conclusion

- The ratio did not have a significant effect on the growth and development of *Hibiscus sabdariffa*
- Nevertheless, it appears that more growth and the best biomass production were obtained under the DF100% treatment (the highest ratio of horse manure)

Reference

Useni SY, Chukiyabo KM, Tshomba KJ, Muyambo ME, Kapalanga KP, Ntumba NF, Kasangij AKP, Kyungu K., Baboy LL, Nyembo KL, Mpundu MM 2013 . Use of recycled human waste to increase corn production (Zea mays L.) on ferralsol in southeastern DR Congo. Journal Applied Biosciences. 66:5070

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.

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