Effect of agronomic practices on growth and leaf yield in spider plant (*Gynandropsis gynandra*)

Carlos A. Houdegbe[1*], E. O. Dêêdi Sogbohossou[1,2], Enoch G. Achigan-Dako[1]

[1] Laboratory of Genetics, Horticulture and Seed Sciences, University of Abomey-Calavi, Benin.

[2] Biosystematics Group, Wageningen University and Research, The Netherlands.

Background and objectives

Spider plant (*Gynandropsis gynandra* (L.) Briq.) is a neglected leafy vegetable with high nutritional and medicinal value. However, its production is constrained by poor germination and inadequate agri-cultural practices. Introducing the species in urban and peri-urban agriculture in West Africa requires development of appropriate culti-vation techniques.

To adress these issues, we assessed the effects of seedlings age at transplanting, planting spacing and cutting frequency on growth and yield in *Gynandropsis gynandra* in Benin.

Materials and methods

- Factorial combination of :
  - ⇒ two seedling ages: 2 weeks and 3 weeks after sowing
  - ⇒ three planting spacing: 15 cm x 15 cm, 20 cm x 20 cm and 20 cm x 30 cm
  - ⇒ three cutting frequencies: 1 week, 2 weeks and 3 weeks after the first harvest
- Randomized complete blocks with two replicates
- Growth and yield data collected and analysed using analysis of variance and generalized linear models.

Results

- Higher leaf production for 3 weeks old seedlings compared with 2 weeks old seedlings

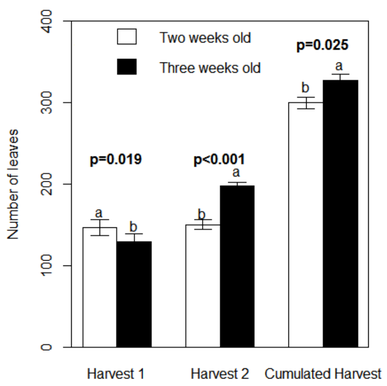

Figure 1. Number of leaves per plant according to seedling age

Figure 3. Spider plant plot three weeks after transplanting

- Cutting plants every two weeks resulted in higher leaf yield

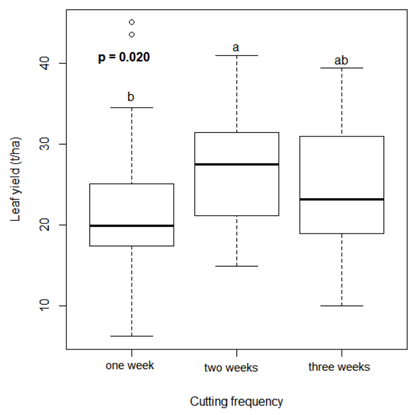

Figure 5. Leaf yield according to cutting frequency

- Decreasing planting spacing significantly decreased the number of leaves per plant but significantly increased the leaf yield up to 29 t/ha .

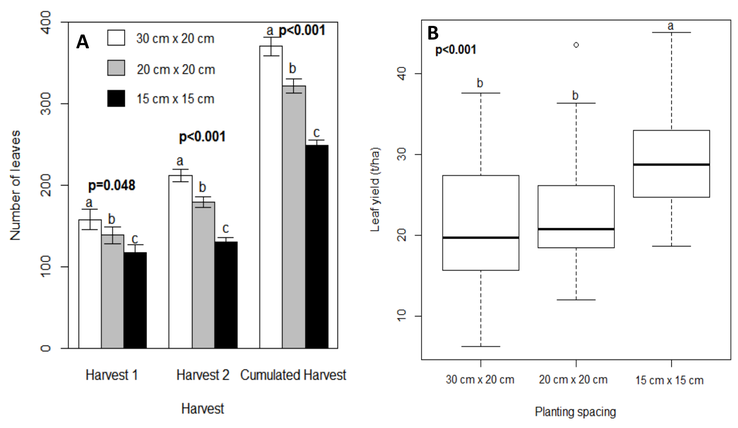

Figure 2. Variation in number of leaves (A) and leaf yield (B) according to planting spacing

Figure 4. Spider plant plot one week after cutting

- The leaf area significantly decreased over harvests while the dry matter content increased.

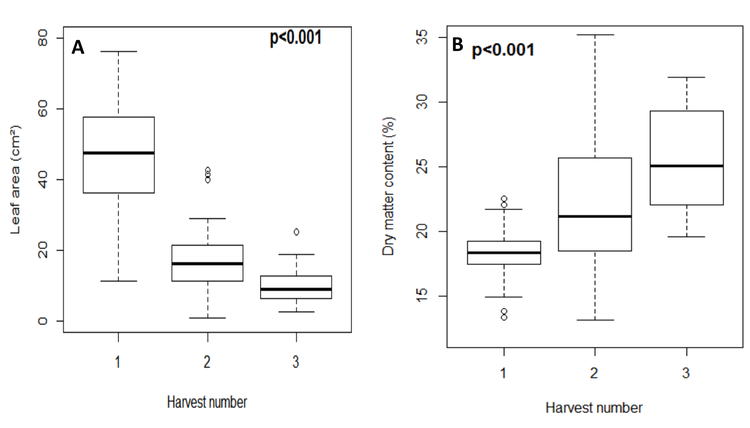

Figure 6. Evolution of leaf area (A) and dry matter content (B) over successive harvests

Conclusions

- For spider plant cultivation, three weeks old seedlings can be transplanted following 15 cm x 15 cm spacing. Three harvests can be done: the first one 3 weeks after transplanting and two subsequent harvests at two weeks intervals.
- Investigations including several genotypes and locations required to validate our results.

Acknowledgements

This study was funded within the Project CLEONOMICS by the Applied Research Fund of the Netherlands Organization for Scientific Research (NWO-WOTRO).

References

1. Onyango, C.M., Kunyanga, C.N., Ontita, E.G., Narla, R.D., Kimenju, J.W., 2013. Current status on production and utilization of spider plant (*Cleome gynandra* L.) an underutilized leafy vegetable in Kenya. Genet. Resour. Crop Evol. 60, 2183-2189.

2. Schönfeldt, H.C., Pretorius, B., 2011. The nutrient content of five traditional South African dark green leafy vegetables - A preliminary study. J. Food Compos. Anal. 24, 1141-1146.

*Contact: houdariscarl@gmail.com

TROPENTAG 2017