

Project Update: March 2018

Introduction:

Cola nitida and *Garcinia kola* are multipurpose species which habitats are undergoing severe fragmentation under the combined effect of human settlement and agricultural purposes. Previous studies showed that species valorization plays important role in the conservation of species. Authors of the paper has actually concluded that after the valorisation that may represent a major threat of species regeneration, there are some biological factors that are accounted for the scarcity of the species in their natural habitats. Therefore, 2015, our team are trying to undertake a serial of participatory scientific research in order to understand what are such biotic and abiotic factors that may challenge the natural regeneration of species in them habit and most importantly how the control of such factors in collaboration with local communities could be used for the restauration of the lost habitats. The current report intends to present a nutshell of the progress of the experimentation set with the local communities and that would take much more time to be completed due exclusively to the species germination.

Methodology

Two types of experimentation were set in the complex of forest Ouedo-Pahou registered in the understanding of biotic and abiotic factors that may weaken the natural regeneration of the species. The first experimentation wanted to answer the question: Are the soil in the vicinity of *Cola nitida* and *Garcinia kola* tree disposed of enough seeds that may further produce seedling and saplings? In order to answered this question the team collected soils sampling in the community of *Garcinia kola* and *Cola nitida* trees. Assuming that animal can disperse the seeds potential, the soils sampling was extend to the complex and 43 sampling was done using Dainou et al. method. During the data collection, four youths were associated and they help us collect data and set the experimentation (Photo 1).

The second question that the current project want to answer is: What are the ecophysiological traits that depend the germination of both *Garcinia kola* and *Cola nitida*. In order to reply to this question a random block with four factors:

- Factor "Brightness" with six levels: 5%, 10%, 25%, 50%, 75%, and the witness 100%. The shade is provided by the fixing of variable numbers of slats in a branch of palm prepared horizontally on the sides and the roofs of the shade structure to create various brightness and to imitate the alternating high and low irradiances of natural forest. The shade-houses have 2 m high and 1.5 m wide, placed along a line oriented east-west and are spaced 4 m of one another. The calibration of the luminosity has been done with the lumnomètre.
- Factor "Status of the soil" with two levels: sterilized soil (S1) and soil not sterilised (S0).
- Factor "Breaking dormancy method" with four levels: Witness (TB), soaking 24H (T1), soaking 48H (T2), soaking 72H (T3) and scarification (T4).The scarification of *Garcinia Kola* is to create using a blade, four slots slight vertically on the body of

the seed so as not to cut off all the roots embryonic stem cells. With regard to the seed of *Cola nitida*, scarification is cut using a blade of the head of the seed.

- Factor "Provenance of seed" with two levels: From Ouedo and from Nigeria

Results

In the following section, we would provide only with pictures of the observation and after processing to the statistical analysis, additional results would be published in peer review paper.



Left: Soil sampling. ©Savi et al 2018. Right: Setting of the soil experimentation. ©Savi et al 2018.



Presentation of shade-houses with different light quantity. ©Savi et al 2018.



Left: Seedling emerging in the 25% shade-house. ©Savi et al 2018. Right: First seedling emerging from the soil. ©Savi et al 2018.

References

Savi, M. K. et al. Synergy between traditional knowledge of use and tree population structure for sustainability of *Cola nitida* (Vent.) Schott. & Endl in Benin (West Africa). *Environ. Dev. Sustain.* 1–12 (2018). doi:10.1007/s10668-018-0091-5

Dainou, K. et al. Soil seed bank characteristics in Cameroonian rainforests and implications for post-logging forest recovery. *Ecol. Eng.* 37, 1499–1506 (2011).