

Factsheet final findings Applied Research Fund Call 3



Enhancing Kersting's groundnut (*Macrotyloma geocarpum*) production and marketability in Benin (Project Doyiwé)

Summary

The production of Kersting's Groundnut (KG) in Benin is constrained by poor agronomic practices and the lack of quality seeds leading to low yield and poor quality products. To tackle these constraints, the Project Doyiwé has been developed and aims at making quality KG grains available in rural and urban markets in Benin. The project intends to answer three research questions: (i) what are the preferences of Beninese farmers, processors and consumers for KG?; (ii) how diverse are the KG accessions and how do they perform in Benin?; (iii) which high-yielding accessions among the existing germplasm fulfil the needs of the actors? Seeds of the accessions from Burkina Faso and Benin have been increased and 81 accessions from which sufficient seeds have been obtained, have undergone agro-morphological characterization. Some other accessions have been included in an experiment to assess best practices for KG seed production, which is ongoing. In addition, experiments have been done to understand the phenology and reproductive biology of KG. Seed health and storage technics have been assessed. Multi-location trials have been conducted in the three major KG growing areas of Benin. Twenty elite materials have been evaluated in such trials. Nutritional profile of Kersting's groundnut has been assessed on the KG accessions, and experiments are ongoing to test for cooking ability of the top accessions. A qualitative study was conducted to understand the market creation potential for KG and its value chain actors' preferences. The study shows that the white KG with small grain size is the highly accepted and strongly demanded variety of KG by consumers, processors and traders in Benin. A quantitative study that built on the results of the qualitative study revealed five clusters of farmers with needs such as: prepaid deposits, certified seeds, KG price, and post-harvest facilities from a well-known contractor company.

Final research findings

- Accessions collected: 99 from Benin, 38 from Burkina Faso, 12 from Ghana, 12 from Togo, 6 from South Africa and 4 from Nigeria.
- Agro morphological characteristics of 81 accessions are known.
- Production and storage constraints are mapped.
- The best agronomical practices are known and captured into a production guide, which has been disseminated extensively.
- Preferences and use of KG: The perception of KG varies considerably between different parts of Benin. Respondents of every zone and on all stages of the value chain emphasized the importance of affordability as a key factor for the production, trade, processing and consumption of KG.
- A market development model for KG stylized in a five-stage model has been developed.
- Quantity of KG produced will increase significantly when these arrangements are proposed to farmers: 'prepaid deposit' as payment methods, 'seeds being provided by a known organization' such as Sojagnon, 'variable price depending on the market' as price option, and post-harvest facilities from a well-known contractor company.
- Packaging for the commercialization of KG is developed.

Final outcomes achieved

- KG traders and consumers reported that there was no appropriate packaging for preserving KG to market it. To address this issue, the private partner of the consortium, Benin Agribusiness Incubation Hub (BAIH), has developed a good-looking packaging of 1-2 Kg capacity for the commercialization of

KG. It is a biodegradable packaging, respecting environmental standards, water resistant, and allowing the product to show through. This triggered the desire of consumers to purchase more KG.

- Although not documented, farmers are showing more interest to grow KG in Benin, and in the areas where KG cultivation has been abandoned, there is strong willingness to resume.

Project messages to

A) Actors from private sector:

- KG can be seen as the outputs of endogenous businesses, as it uniquely grows in a particular ecological zone of Benin.
- Market development strategies for KG can build on informal actors such as traders who contribute to creating awareness about and acceptance, and affordability of the products by increasing access.
- Farmers need to be approached with a combination of contract attributes because farmers' decision to augment their quantity of the production of KG is based on assessment of contract farming, using a combination of attributes rather than individual/isolated attributes.

B) Civil society and practitioners' organizations:

- To reduce the cost and risks that constrain the supply of KG, NGOs can disseminate improved seeds and best farming practices and provide contract-farming schemes that fit farmers' preferences, through farmer cooperatives.

C) Policy makers:

- Benin endogenous products like KG deserve more attention in Benin's agricultural development agenda.
- Incorporate the following recommendations in their agricultural policy framework, decisions / actions:
 - Support capacity building for the sustainable development of certified seeds of KG.
 - Foster strategic alliances for KG among research institutes, extensions agencies, agricultural associations, and private businesses.
 - Encourage research on improved varieties and processing of KG.

Knowledge products

- Policy Brief No. 1 "[Endogenous Products to Increasing Food Security in Benin.v](#)" By Falyath Babah Daouda and Paul T.M. Ingenbleek, Project Doyiwé, Wageningen University & Research (Oct 2020).
- Recommended practices for farmers "[DOYIWÉ - Kersting's groundnut \[Macrotyloma geocarpum \(Harms\) Maréchal & Baudet\], a versatile & underutilized grain legume for subhumid zones](#)". By Eric E. Agoyi, Hospice S. Sossou, Fréjus A. Sodédji, Achille E. Assogbadjo, Brice Sinsin. ISBN 978-99982-05-36-9, Benin (Sept 2020).
- Article [Kersting's Groundnut \[Macrotyloma geocarpum \(Harms\) Maréchal & Baudet\] Crop Attracts More Field Pests and Diseases than Reported Before](#). By Eric E Agoyi, N'danikou S, Médard K, Mathieu A, Frejus AK S, et al. Agri Res & Tech: Open Access Journal 21(5) (June 2019).
- Article "[Market Development for African Endogenous Products](#)". By Falyath Babah Daouda, Philip Barth, and Paul T.M. Ingenbleek. Journal of Macromarketing. 40(1): 13-30 (Oct 2018).
- 3 Master theses, 4 Bachelor's dissertations, 4 posters, and 1 Working Paper developed. See various headings in right column of [Project page](#).

Knowledge networks

The soybean consortium of Benin (Consortium Soja du Bénin) is a member of the Platform for African-European Partnership in Agricultural Research for Development (PAEPARD). This provides the consortium with the opportunity to disseminate the results of the project to a wider audience. SOJAGNON and REDAD are founding members of RENOVA, a network of non-governmental organizations in the agricultural sector in Benin. Two members of the research teams attended the Gender Responsive (GREAT) course in Uganda. The team has developed a proposal to collect gender-disaggregated data that would enable understanding KG preference criteria, as well as analysing the breeding scheme that would do no harm to both sexes.

Knowledge co-creation

The co-creation process began by the express of needs by KG actors to alleviate their constraints. To tackle these constraints, partners leverage their expertise in a complementary manner with feedback. Thus, the farmer preference survey took the report on accession collection of the UAC/FSA team as a starting point. That report provided the WUR team with a list of production areas and KG farmers. The results on the preferences survey helped the FSA team to select the cultivars, meeting the needs of farmers. After the study on the preferences for KG with the collaboration of SOJAGNON and a master student from WUR, the designing of the study on institutional arrangements for KG production has been operationalized based on the farmers list provided by UAC/FSA team and in collaboration with the practitioners (SOJAGNON and BAIH) for facilitation and enumerators recruitment. Co-creation also lies on the creation of a team between FSA, SOJAGNON and WUR to implement research on gender responsive breeding in the implementation of this project.

Consortium partners

- [SOJAGNON – Association for the Development of Soybean](#)
- [Benin Agribusiness Incubation Hub \(BAIH-Sarl\)](#)
- [UAC/FSA – University of Abomey-Calavi Laboratory of Applied Ecology](#)
- REDAD – Sustainable Agriculture Development Network
- [Wageningen University and Research – Marketing and Consumer Behavior Group](#)

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