

Factsheet final findings Applied Research Fund Call 2



Matching grain quality attributes to the requirements of soybean processors in Benin (ProSeSS)

Summary

In Benin, non-availability of good quality seeds limits the production of soybean. Further, due to varietal mixture, available soybean grains on the markets do not allow processors to obtain optimal productivity and quality. ProSeSS was designed to improve the availability of quality of soybean seeds and soybean derived products. Soybean seed enterprises are now equipped to produce good quality soybean and better market their seeds and manage their enterprises. These enterprises are now integrating a new arrangement (out-growing scheme) in their production system. In terms of quality attributes, farmers primarily preferred high yielding soybean varieties while high grain density is the major soybean attribute for processors. The insight gained into varietal preferences was key for variety selection and for designing tailored communication to improve variety adoption. Agronomic performance, genetic diversity and purity status of soybean varieties are now documented. Genetic analysis confirmed that about half of the seeds' samples collected from markets and at farmers level are mixture of soybean varieties. Five high yielding varieties adapted to agro-ecologies of Benin with good technological properties have been identified. In addition, the most suitable varieties in terms of quality is matched to each soybean derived product (milk, oil, tofu and *Afitin*, a local taste enhancer). Seed enterprises, soybean growers and processors are willing to adopt those varieties. The project has contributed to raise the interest of decision makers on the importance of soybean and the crop is now considered as one of the priority crops, receiving support from the Government of Benin.

Research Findings

- To improve the soybean seed system, it is necessary to promote the local soybean seed businesses, implement a quality declared seed system, build the capacity of seed producers on technical know-how and improve their managerial skills.
- Soybean is mostly a commodity where productivity and grain density are the most important quality attributes for farmers and processors, respectively.
- Genetic analysis showed that seeds collected from markets and farmers are a mixture of soybean varieties. Out of 16 varieties collected from seed providers in Benin, and IITA – Ibadan in Nigeria, five were adapted to the agroecological conditions of Benin; they are high yielding and less susceptible to insect attacks.
- Two to three of these varieties were identified and validated as appropriate for soymilk, tofu, soybean *Afitin* (local taste enhancer), and vegetal oil production. Processors are now capable of producing these end-products using proper production practices.

Outcomes achieved

Soybean seed producers were eager to apply the recommended seed production and processing techniques and to refine their marketing strategies. Interactions with farmers revealed that they are willing to adopt the identified high yielding varieties with good technological properties. The various advocacy initiatives at the Ministry of Agriculture have contributed to the inclusion of soybean in the Strategic plan for the development of agricultural sector 2017-2025 and the national agricultural investment, food and nutritional security plan 2017-2021. This exemplifies the interest there is in soybean value chains. Furthermore, soymilk and tofu producers are now demanding for high-quality raw material, since they are aware of the existence of a diversity of soybean varieties and their effect on end-product quality. A change of attitude towards a search for varieties with specific traits for each end-use

was noticed. Finally, processors have applied new production practices and appreciate their added-value. They are trying to access the required inputs to adopt the new production practices.

Project messages to

A) Actors from private sector:

- Seed enterprises would improve their market share with the multiplication of the best soybean varieties identified in this project.
- There is a call for farmers and processors to adopt the best varieties in terms of yield and technological properties to improve their productivity and the quality of soybean derived products.
- Soybean processing enterprises should drive the vertical integration in soybean value chains by contracting farmers who will produce the adapted varieties to meet their needs.

B) Civil society and practitioners organizations:

- The results of this project need to be sustained by continued efforts in building the capacity of seed producers, farmers, processors and traders.
- Support from practitioner organisations is much needed to continue promoting the adoption of the best soybean varieties. Educating farmers on the importance of using good quality seeds and avoid mixture of varieties in the field is equally important.
- Civil society and practitioners can play an important role in promoting contract farming, facilitating access to finance, and organizing bundling. The need to set up multi-stakeholder platforms in soybean should not be over-emphasized.

C) Policy makers:

- Proper enforcement of existing seed policy and definition of new regulations and arrangements to facilitate production and marketing of good quality (e.g.: quality declared) seeds are required. This will improve availability of and farmers' access to good quality seeds.
- Consumption of soybean products, especially tofu, have gained so much importance in Benin that it can be used as lever or gear to improved protein access of resource poor people and consequently reduce protein-energetic deficiencies. The value chain is developing strongly and requires more attention. Soybean processing units need to be promoted through funding opportunities, better access to equipment, etc.

Knowledge products

- [Towards effective soybean seed systems in Benin: Current situation and prospects for production and delivery of good quality seed](#). Journal of Crop Improvement, 2017.

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.

Knowledge co-creation

ProSeSS has been developed as a follow-up of a project named ProSAM that reengineered processing techniques for milk and Afitin production from soybean and unveiled constraints related to seed supply and seed quality in relation with end-products. Together as a team and from different angles, the research consortium identified constraints with the practitioners. Processors defined seed and end-product assessment quality criteria. Researchers selected varieties based on instrumental analyses linked with processors' criteria. Identified varieties were used and assessed by processors for final variety selection. Varieties selected by processors are the one to be disseminated in Benin. Result validation was done through workshops and interaction (formal/informal) with the actors.

Consortium Partners

- [SOJAGNON – Association for the Development of Soybean](#)
- [UAC/LSA – University of Abomey-Calavi / Laboratory of Food Sciences](#)
- [IITA-Benin – International Institute of Tropical Agriculture](#)
- REDAD – Sustainable Agriculture Development Network
- [Wageningen UR, Marketing and Consumer Behaviour Group](#)

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