

Factsheet final findings Applied Research Fund Call 3



Promoting dye sorghum cultivation to improve livelihoods in rural Benin in context of climate change (Dyegrain)

Summary

Dye sorghum varieties have the distinct advantage to produce leaf sheaths rich in bio-colorants, while producing grain at the same time. The promotion of dye sorghum cultivation will raise incomes through bio-colorants sales, while enabling retention of grain for food security. The present project aims to optimize the cultivation practices of dye sorghum and develop methods for bio-colorants extraction and grain processing into foods. The project is structured in eight work packages, carried out in an interdisciplinary setting that addresses the important links of the production chain: (i) Varieties' selection and seed production, and optimization of cultivation practices, (ii) Extraction of bio-colorants and grain processing into foods, (iii) Quality assurance in the supply chain, (iv) Socio-economic profiling of production and marketing of the dye sorghum products and, (v) Technology transfer to stakeholders. Capacity building is also ascertained in four research projects for MSc students. Fertilization trials on elite varieties and brewing experiments are ongoing.

Research findings

Farmers have successfully cultivated dye sorghum crop on the commercial basis and Leman Sarl, the private partner of the research project, purchased a total of 1800 Kg of fresh leaves for international trade. Approaches for appropriate post-harvest handling of leaf sheaths have been developed at Leman Sarl and the company has successfully exported a first batch of 250 kg of dry leaf sheaths to EU markets. A second batch of 600 kg of leaf sheaths is currently ready at Leman Sarl for exportation. During a preliminary experiment, the project has successfully malted and brewed grain of dye sorghum using traditional beer brewing processes. Likewise, the grain was successfully processed into owo (a thick porridge) by decortication, and into gowé (a fermented sweet porridge) by germination and fermentation. A commercial bio-colorant extraction method was developed using a locally produced ethanol and the extract was successfully used to dye wara, a West African cheese.

Outcomes achieved

There is an uptake of new production techniques by early adopters, which resulted into the commercial production of leaf sheaths in certain areas. Following the successful supply of a first batch of dye sorghum leaf sheaths, the company Leman Sarl received a satisfactory feedback from a company in Europe which resulted into the signature of "La charte d'achat responsable".

Project messages to

A) Actors from private sector:

- The private sector of Benin is encouraged to invest more in the dye sorghum sector to scale up innovation

B) Civil society and practitioners organizations:

- The project generated practical knowledge and a strong database useful for practitioners' organisations that are willing to support farmers in the cultivation of dye sorghum varieties throughout the country.

C) Policy makers:

- The government is invited to facilitate the development of the dye sorghum sector into a new commodity in the country, since it has a great potential to contribute to food and nutrition security in the country via income generation.

Knowledge products

- A commercial dye extraction technique developed for dye sorghum leaf sheaths

MSc Reports

All by MSc students from the University of Abomey-Calavi, Faculty of Agricultural Sciences (July 2019)

- “Extraction of bio-colorant from dye sorghum leaf sheaths”
- “Processing of dye sorghum grain into food products”
- “Brewing beer of dye sorghum grain”

Knowledge networks

A network of dye sorghum farmers is being initiated in the country.

Knowledge co-creation

Various means of communication were used for networking within the consortium. These include Skype meetings with Wageningen partners abroad and regular phone call, as well as WhatsApp network. There are regular exchanges of emails about activities between consortium members. The launching workshop was prepared and organized together in Cotonou. Follow up meetings and steering committee meetings were organized. There was also a progress report validation meeting. A secretariat has been set up in order to ensure regular reporting. Several field visits have been organized.

Consortium Partners

- Leman Sarl (Benin)
- Faculty of Agronomic Sciences – School of Nutrition and Food Sciences and Technology (FSA/ENSTA) – University of Abomey-Calavi (Benin)
- [CARDER/Atacora – Donga](#) (Benin)
- [Food Quality and Design – Wageningen University & Research](#) (Netherlands)

Contact person

Florentine Djegui
lemanflore@gmail.com

Project website

[F&BKP Research Project page](#)