

NUTRIFOODS: Innovative approaches to value-addition and commercialization of climate-smart crops for enhanced food security and nutrition in Africa and beyond



Consortium members

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Knowledge institutes:

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Dr. Emilia Nordlund (Cereal Scientist), Dr Heikki Aisala (Sensory and Consumer Scientist), Markus Nikinmaa (Food Technologist), Dr. Natalia Rosa-Sibakov (Food Technologist).

Industrial partners:

Bakker Wiltink, a large industrial bakery from the Netherlands producing gluten-free breads, Bbrood a Dutch bakery with commercial activities in Africa; Nutreal Ltd. an SME from Uganda marketing healthy bakery products. Tymax Agribusiness Solutions Ltd. from Kenya and BICSA, the Bakery and Food Technology Incubator of South Africa.

Background and objective

African and European baking industry share for different reasons the requirement for functional, nutritious flour from sustainable crops to replace wheat in baked products. NUTRIFOODS seeks solutions on how to increase the use of Climate-Smart Food Crops (CSFC) in baked products to provide nutritionally-rich food that meets consumer needs



while favouring local economies. CSFC are mainly for technical reasons underutilized. Focus will be on gluten-free cereals (sorghum, finger millet), pseudo-cereals (amaranth), starchy roots (cassava) and legumes (cowpeas). The technical functionality and flavour aspects of CFSC will be enhanced by processing and/or by formulating.

Figure 1. Sorghum as an example of a CSFC. Sorghum has a rich nutritional value, but its flavour and technical functionalities are hurdles for wide application for baked goods preferred by modern consumers.

Approach & Impact

NUTRIFOODS purposes to build new value chains for CSFC in Sub-Saharan Africa through a market-driven approach. The key strategies to achieve this are:

- to develop functional ingredients with properties that allow partial or full replacement of wheat in bread products by using CSFC;
- understanding the supply and market chain of CSFC by addressing their limitations;
- using markets as key incentivizing drivers of value chains;
- engaging commercial partners to enhance technology uptake and commercialization.

The project outputs will lead to market uptake for new, safe, nutritious, palatable and convenient staple bread products for European (gluten-free) and African (wheat replacement) consumers. Technology to create functional ingredients from CSFC will open new business opportunities along the CSFC value chain in Africa, thus having a positive contribution to employment and wealth creation. This will lead to the increase of the utilization and demand for these crops.

Activities

- Identify consumer needs and key limitations in the supply and market chain of CSFC;
- Develop high quality functional ingredients from the CSFC to be used in palatable breads;
- Use the functional ingredients in pilot-scale breads tailored for African and European markets;
- Identify business opportunities in the CSFC value chain and nurture SMEs to commercialize the developed technology;
- Inform policy makers and disseminate the developed technologies for harnessing of CSFC.



Figure 2. High-aerated tin breads require highly functional ingredients to replace wheat to meet consumer requirements.



Figure 3. Low-provision flat breads may well fit to modern consumers in different markets.

Opportunities and challenges

The NUTRIFOODS consortium is multidisciplinary with a strong food technology and business focus. Market-driven technology push with experienced commercial partners and SME incubators offer chances for sustainable economic impact.

The strong technological focus should be balanced with communication activities towards other stakeholders e.g. policy makers to broaden the impact.

