

Potential of Indigenous African Grains to Replace Wheat in Bakery Applications

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Abstract

The demand for wheat-based products such as bread and pasta has increased in Africa due to population growth, urbanization and increasing disposable incomes. Unfortunately, this demand has resulted in a significant dependency on wheat import which is not sustainable. Currently, more than 50% of the wheat consumed in Africa is imported. Wheat is typically subsidized by African governments or comes as foreign aid, making the price of wheat lower than that of local crops in many African nations. Nonetheless, the Ukraine-Russia crisis has exposed Africa's vulnerability to wheat supply disruption and highlights the need to find solutions that ensure the resilience of African food systems. Replacing wheat with climate-resilient African crops has been recommended for long, and efforts to improve the value chain of crops such as sorghum, millet, tef and local legumes have been initiated. Many governments are also calling private sector to invest in local crops and support small holder farmers.

In the Innofood Africa project, we have explored the potential of local climate smart African crops to replace wheat in bakery products. Technologies have been developed to replace as much as 50% of wheat, for production of bread with a high content of dietary fibre or protein from legumes. The quality and volume of the bread was affected by the replacement level and some products had a sandy, crumbly texture and a bean-like flavour. Sprouting and sourdough fermentation improved the bread quality and reduced the beany flavour. Milling technology to reduce the particle size is currently ongoing and is projected to reduce the sandiness and volume reduction.

PRESENTER BIOGRAPHY: NDEGWA MAINA

Dr. Ndegwa Maina is a food scientist specializing in food chemistry and bioprocessing. He is an associate professor at the University of Helsinki, department of food and nutrition. His research work focuses on the health benefits of cereal fibre, tailored bioprocessing of cereals for the production of functional metabolites that enhance safety, sensory and nutritional quality, and valorisation of food industry side-streams. During the last years he has initiated collaborative research with research institutes in Africa to explore innovative and novel technologies for utilization of indigenous African grains. Dr Habtu Abraha is the Upstream Research Manager Africa for Puratos. Previously he has worked as a researcher at Ghent University, Belgium. He studied on the nutritional implications of contaminant iron that originate from the soil, milling equipment, water, and metallic cookware. Currently he is leading a team working on utilization of indigenous Africa grain in bakery applications.