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"Global food security and food safety:
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Development of Processing Guidelines for Underutilised Fruits and Vegetables Crops in West Africa

Sharvari Raut[1], Bastian Lange[2], Brendan W. Rice[3], Oliver Hensel[4], Barbara Sturm[5]

[1] *University of Kassel, Agricultural and Biosystems Engineering, Germany*
[2] *University of Kassel, Agricultural and Biosystems Engineering, Germany*
[3] *University of Kassel, Agricultural and Biosystems Engineering, Germany*
[4] *University of Kassel, Agricultural and Biosystems Engineering, Germany*
[5] *University of Kassel, Agricultural and Biosystems Engineering, Germany*

Abstract

Majority of women of reproductive age, infants and children living in rural communities of Sub-Saharan African (SSA) countries lack access to balanced diets and hence are susceptible to malnutrition and severe health consequences. In countries like Ghana, Nigeria and Sierra Leone, commonly consumed starchy foods such as rice, kooko (porridge) have limited amounts of proteins and micro nutrients which are required for proper nourishment. Therefore, use of underutilised fruits and vegetables (UFVs) such as moringa, orange-fleshed sweet potato, amaranth, pumpkin, etc. available in West Africa, is an affordable solution to improve the nutritional status. UFVs consist of essential vitamins, proteins, and minerals that can be either processed into highly nutritious products and/ or be added as supplements to existing products. However, UFVs are highly perishable products, therefore it is essential to process the produce immediately in order to extend the shelf life and obtain nutrient rich products and reduce post-harvest losses. Rural communities in SSA countries not only have limited transportation and storage facilities for preservation of processed products but also limited access to energy. Thus, calling for innovative renewable energy driven decentralised processing units.

Solar energy is abundantly available throughout the year in West Africa, creating an ideal environment for implementation of solar driven decentralised food processing units. With developments in Photovoltaics (PV) and combining them with direct current (DC) motors, is a cost effective, low maintenance and devolved solution for food processing. The decentralised food processing line considers peeling, chopping, drying and grinding units with quality analysis at each step. The study comprises of multiple products that have varying requirements for processing, quality and nutritional aspects, thus indicating a need for simple yet thorough design. This study aims to provide an initial scoping review on the UFVs mentioned above in order to identify the required processing methodology for each of the product and the compromises needed for processing of these multiple product groups. The resulting information will further support the development of an adaptable processing framework for decentralised solar food processing unit for each of the defined UFVs.

Keywords: Decentralised unit, nutrients, processing framework, quality, underutilised fruits and vegetables

Contact Address: Sharvari Raut, University of Kassel, Agricultural and Biosystems Engineering, Nordbahnhof Strasse 1a, 37213 Witzenhausen, Germany, e-mail: sharvari.raut@uni-kassel.de