Tropentag, September 18-21, 2016, Vienna, Austria

"Solidarity in a competing world — fair use of resources"

Assessment of Food Loss and Waste (FLW) Associated with the Cassava (*Manihot esculenta* Crantz) Root Value Chain in Southern Ethiopia

Aditya Parmar[1], Barbara Sturm[2], Oliver Hensel[1]

[1] *University of Kassel, Agricultural and Biosystems Engineering, Germany*
[2] *Newcastle University, School of Agric., Food and Rural Developm., United Kingdom*

Abstract

The lack of data on the occurrence of food loss and waste (FLW) prevents governments, research institutes and other stakeholders from realising its socio-economic, nutritional and environmental significance. The awareness of where and how much FLW occurs can help develop better food loss reduction and waste management strategies. The cassava value chain was evaluated in three districts of southern Nations Nationalities and People's Region, Ethiopia, in the purview of GlobE project RELOAD. The objective was to identify hotspots and causes of FLW demanding strategic intervention. The food (edible parts) loss and waste (inedible parts) were quantified in the framework of the recently developed FLW protocol from WRI (World Resource Institute), which is a multi-stakeholder accounting and reporting standard. Field measurement (direct weighing) and survey (semi-structured questions) were selected as assessment tools from the list of possible quantification methods. In total 200 stakeholders were surveyed with cluster sampling and three replicas of measurements were taken. The food losses were observed in the cassava value chain during peeling and chopping (2.6 %), drying (0.2 %), storage (up to 30 %) and milling (2 %). Losses during storage were highest, primarily due to storage insects. Four insects were identified in the cassava storage systems: *Rhyzopertha dominica*, *Sitophilus zeamais*, *Gnatocerus cornutus* and *Heterobostrychus brunneus*. The predominant use of cassava is in the form of a composite flour of teff, cassava and maize which is further processed into staple flat bread. The waste associated with 100 kg of fresh unpeeled cassava during processing was mostly peels (21.8±4.2 kg). However, cassava production results in considerable amounts of stem cuts wood (9.2 t ha^{-1}) and leaves (2.2 t ha^{-1}) during harvest. Lastly 100 kg of dried cassava flour results in 3.5±0.5 kg fibrous material after sieving. The peeling and chopping is carried out by woman with local knives which is labour intensive (8 hours/100 kg fresh cassava). Sun drying of cassava chips takes up to 14 days depending on weather conditions which adds the risk of fungal growth, soil contamination and pilferages. Interventions with simple technologies at processing and storage stages can lessen the drudgery particularly of woman workers, improve the quality of the final product and reduce the food losses.

Keywords: Cassava, food loss, storage insects, waste

Contact Address: Aditya Parmar, University of Kassel, Agricultural and Biosystems Engineering, Nordbahnhofstrasse 1a, 37213 Witzenhausen, Germany, e-mail: aparmar@hotmail.de