RELOAD
REDUCING LOSSES ADDING VALUE

Reduction of Post Harvest Losses and Value Addition in East African Food Value Chains

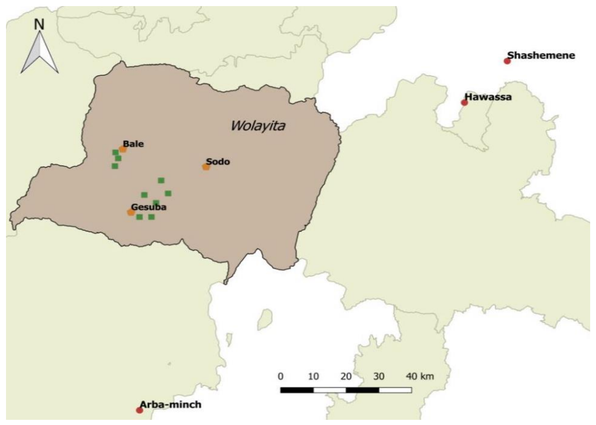
Assessment of Food Loss and Waste (FLW) Associated with the Cassava (*Manihot esculenta* Crantz) Root Value Chain in Southern Ethiopia

Aditya Parmar, Barbara Sturm, Oliver Hensel

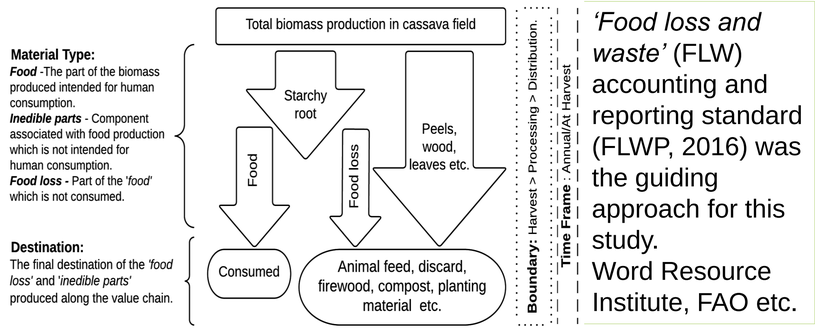
1. Introduction

- Cassava (Manihot esculenta C.) is the second most important root and tuber crop after potato (Solanum tuberosum L.).
- Cassava is a perennial woody shrub grown exclusively in tropics, where it provides staple food for more than 800 million people.
- Cassava was introduced in Ethiopia around 1960. its Importance increased after the notorious famine of 1984 made people realize the importance of this crop.
- Limited information is available from Ethiopia regarding production and processing of cassava (and associated food losses).
- Objective was to assess the food losses and inedible parts along the dry cassava value chain.

2. Study location



3. Methodology

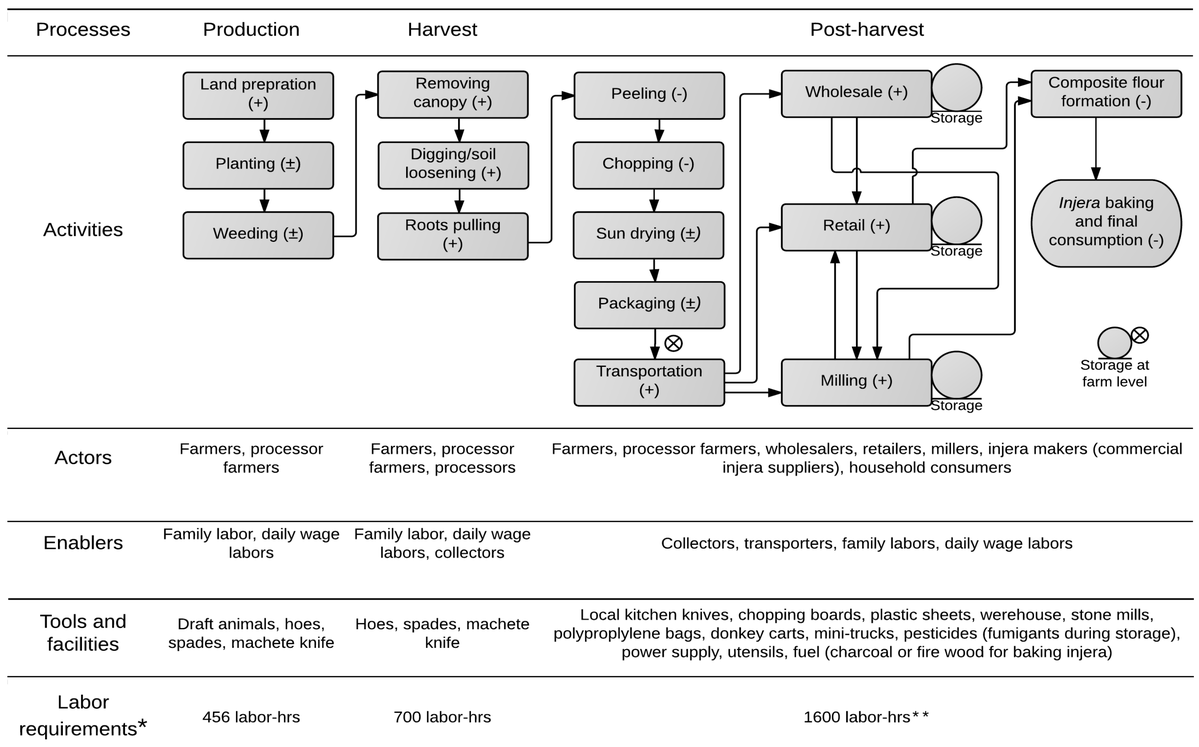


'Food loss and waste' (FLW) accounting and reporting standard (FLWP, 2016) was the guiding approach for this study.
Word Resource Institute, FAO etc.

Field measurement (direct weighing) and survey (semi-structured questions) were selected as assessment tools.

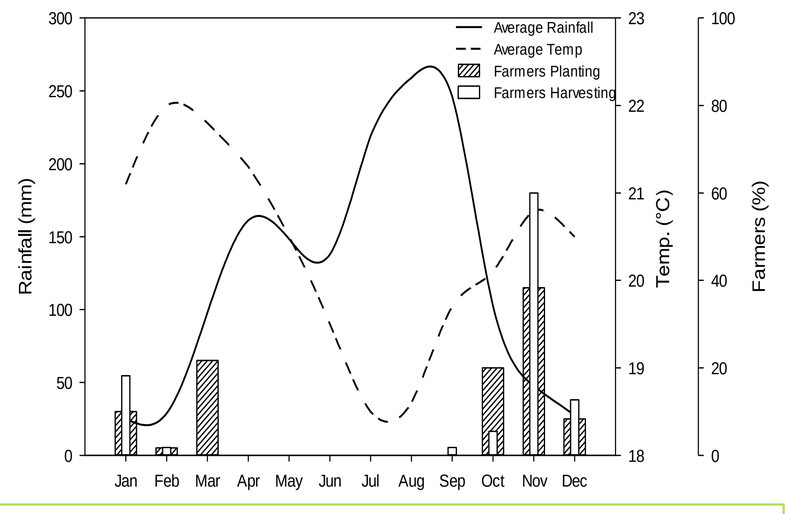
4. Results

4.1 Value Chain Map



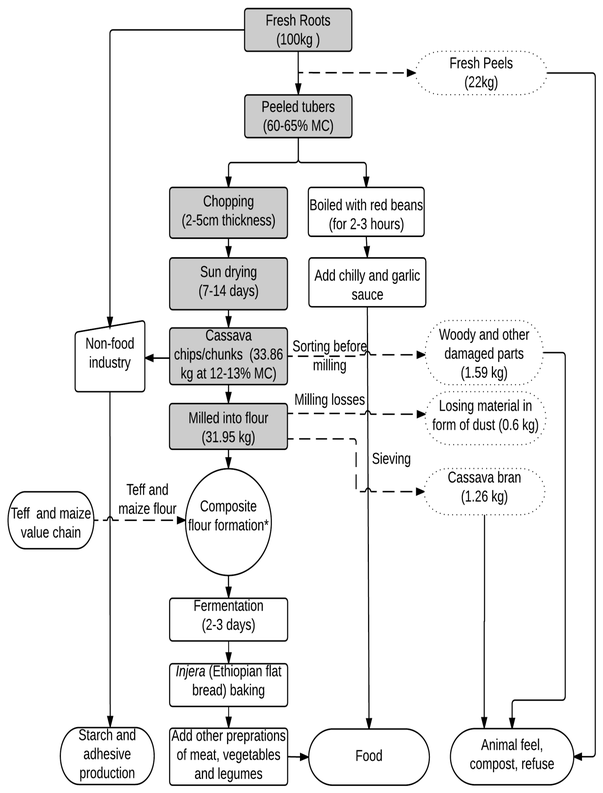
(±) Gender neutral activities: performed by men and women; (+) Male dominated activities; (-) Female dominated activities: * Per hectare (approximate assessment for a yield 20 tons/ha). **Only peeling and chopping activities.

4.2 Harvesting and Planting

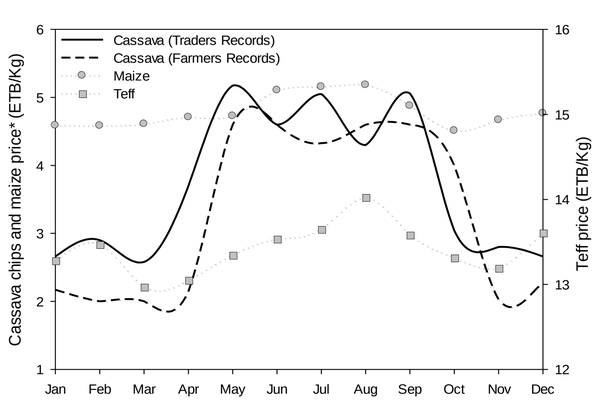


Planting and harvesting frequencies in line with climate data. (Climate data is 10 year average of mean monthly temperature and rainfall. Source *National Meteorological Agency*, *Areka Station, Wolayita Zone*)

4.3 Processing and marketing



Mass balance flow from fresh tubers to cassava flour.



Monthly price fluctuation of dried cassava chips in the study area

Rank*	Common name	Species name	Family
1	Box-wood borer	Heterobostrychus brunneus (Murray 1867)	Bostrichidae (Horned Powder-post Beetles)
2	Lesser grain borer	Rhyzopertha dominica (Fabricius 1792)	Bostrichidae (Horned Powder-post Beetles)
3	Corn weevil	Sitophilus zeamais (Motschulsky, 1855)	Curculionidae (Snout and Bark Beetles)
4	Broad-horned flour beetle**	Gnatocerus cornutus (Fabricius 1798)	Tenebrionidae (Darkling Beetles)

Major insects infesting dry cassava.

4.4 Food losses and inedible parts

Process	Activities	Food losses	Inedible parts	Type of material	Destination use	Causes of food losses
Harvest*	Removing canopy⁺ (t/ha)	NEGL	9.2 ± 1.2	Stems	Planting material /fire wood.	NA
		NEGL	2.2 ± 0.2	Leaves	Animal feel/compost	NA
	Digging/soil loosening/ root pulling (t/ha)⁺	NEGL	3.8 ± 0.9	Stumps	As fire wood or refuse	NA
	Too small and woody roots (t/ha)⁺	NA	1.8 ± 0.2	Cassava roots	Animal feed	Too small and woody for processing.
Post-harvest	Peeling (% of unpeeled roots)⁺	1.24 ± 0.7	21.57 ± 4.56	Peels	Compost/ animal feed	Inappropriate peeling tool
	Chopping (%)	NEGL	NA	NA	NA	NA
	Sun-drying (%) ⁻ ☹	3.8 ± 2.4	NA	Edible roots	Refuse/animal feed	Pilferage, domestic and wild animal, unpredictable rainfall occurrence, theft
	Packaging (%)	NEGL	NEGL	NA	NA	NA
	Storage (at Farm) ⁻ (%)☹	11.46 ± 9.3	NA	Dry chips	Refuse/animal feed	Insect, pest and mold
	Transportation (%)	NEGL	NEGL	NA	NA	NA
	Storage (at Market) ⁻ (%)☹	14.28 ± 13.26	NA	Dry chips	Refuse/animal feed	Insect, pest and mold
	Sorting (%)⁻	NEGL	4.5 ± 2.9	Woody and insect damage chips	Animal feed/refuse	Removal of woody parts, unwanted material
	Milling (%) ⁺	2.0 ± 0.7	NEGL	Cassava flour	No use (lost as dust)	Stone mills
	Sieving (%) ⁺	NEGL	3.8 ± 1.4	Cassava bran	Animal feed	NA

5. Conclusion

The cassava production and processing are labor intensive processes. The Lack of processing and storage technologies are resulting in the maximum amount of losses along the value chain. The quality of final product due to long drying periods and lack of washing facilities was poor. Currently cassava was used as a cheap supplement to expensive staples such as Teff.
The improved quality of product may result in significant advance in the well being of rural and urban poor.

Recommendations:
Interventions with simple technologies at the involved processing stages can lessen the drudgery particularly of woman workers, improve the quality of the final product and reduce the food losses.
Improved packaging, management of stores and appropriate control measures for insect infestation may results in reduction of food losses.
Introduction of HQCF (High quality cassava flour) production technologies.

Bundesministerium für Bildung und Forschung
Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
DAAD
AGRARTECHNIK WITZENHAUSEN
EIAR
HAWASSA UNIVERSITY
organicagriculturalsciences UNIKASSEL

Contact:
Aditya Parmar
aditya.parmar@daad-alumni.de