APHLIS has developed tools that reveal the financial and nutritional values of postharvest losses and the considerable impacts of such losses on people.

Financial and nutritional costs of postharvest losses

Postharvest losses have serious financial and nutritional consequences for farmers and consumers.

Image by Yusuf Wachira/Bioversity

Assessing financial losses

Postharvest losses waste food, as well as the land, water, labour and other inputs used in agricultural production. A tool developed by APHLIS calculates the financial value of postharvest losses occurring in sub-Saharan Africa. This tool can make a significant contribution to understanding how postharvest losses affect African economies and the livelihoods of farmers.

The tool works by multiplying the number of tonnes of a commodity lost each year during postharvest processes in a particular country (using APHLIS loss estimates) by the price of that commodity. In designing the tool, the APHLIS team screened a number of information systems featuring market price information for food crops, eventually selecting the FAO Global Information and Early Warning System (GIEWS) Food Price Monitoring Analysis (FPMA) tool. The financial data has been fully integrated into the APHLIS losses tables, enabling users to select

various key loss metrics, including percentage loss (%), dry weight loss (t), and the financial value of loss (USD)

Estimated financial value of postharvest losses, 2020

- In Burkina Faso, the quantity of rice lost postharvest was equivalent to nearly USD 41 million.
- In Malawi, over 725 000 tonnes of maize were lost postharvest, equivalent to more than USD 200 million.
- In Togo, 11.9% of the rice produced was lost postharvest, equivalent to over USD 14 million.

Work is underway to investigate whether the price discounting effects of postharvest losses on quality, such as those caused by insect damage, can be integrated into the financial loss calculation tool. APHLIS has also added datasets that show the financial value of postharvest losses in sub-Saharan African countries in terms of their national agricultural gross domestic product (GDP) and other metrics. Such data can help in developing a deeper understanding of the true costs of postharvest losses and the value and importance of reducing them.

Assessing nutritional losses

Postharvest losses can affect nutrient availability at various points along the food chain. When grains scatter or are overlooked during harvest, the nutrients they contain are lost as well. The same is true when produce falls from a cart during transport or is damaged by pests in storage.

The nutritional postharvest loss tool developed by APHLIS uses food composition studies to determine the amounts of different nutrients normally present in key crops. Food composition data include energy values, and nutrients such as carbohydrate, protein, fat, dietary fibre, calcium, iron, zinc, folate, vitamin A and vitamin C. Detailed data sets of the nutrient composition of different varieties grown under different conditions or in different locations are not yet available. However, to help account for some of the varietal difference between regions, the APHLIS tool offers users the choice of food composition tables from Tanzania, West

Africa, Lesotho, and the United States Department of Agriculture dataset. These provide representative nutrient composition data for the main crops grown across sub-Saharan African countries. Additional food composition tables or datasets can be added.

The tool uses the quantity of lost nutrients to determine how many people's annual dietary needs could have been met had the losses not occurred. The quantity of lost nutrients is calculated by multiplying the tonnes of postharvest losses that occurred in a particular location (based on APHLIS postharvest losses figures) by the nutrient composition of the focal crop (as determined from the food composition tables). The tool uses the national weighted average nutrient requirements to show how many people's annual dietary requirements could not be met because of postharvest loss.

The calculations consider the dietary requirements of different groups of people (e.g., women of reproductive age, children) to determine the impact of the postharvest nutrient losses for the various life-stage groups. As with the APHLIS quantitative loss estimates, nutritional loss information is available at both national and subnational levels.

Estimated nutritional impacts of postharvest losses in 2020

- In Burkina Faso, postharvest losses of sorghum equated to the annual protein requirements of over 1.5 million women of childbearing age.
- In Malawi, maize postharvest losses were equivalent to the annual kcal energy requirements of over 6 million children under five years old.
- In Burkina Faso, the annual iron requirements of over 1.5 million women of childbearing age were lost due to postharvest losses of millet.

Adding nutritional and financial lenses to postharvest loss assessments will help decision-makers, donors, and researchers to decide where best to focus investments and activities to reduce losses and improve nutrition. Understanding the impact of postharvest losses on nutrition and the economy could also help

African leaders build and prioritize programmes for meeting their commitments under the Malabo Declaration, which requires countries to cut their current levels of postharvest losses in half by 2025.