Improving food security and food safety of smallholder farmers in the Western Highlands of Guatemala through reduction of post-harvest losses in corn

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Abstract

Traditional post-harvest practices used for corn by smallholders in Guatemala are the result of a long process of empirical experimentation and adaptation. These practices have been applied in an economy essentially oriented towards subsistence. Previous research has shown that many of these practices may not guarantee grain integrity and protection against major storage pests, thus impacting food safety, along with food and income security of the smallholder farmers. This project aims to improve food safety and food security of smallholder farmers through the implementation of affordable post-harvest technologies geared towards reducing post-harvest losses, mitigating mycotoxin contamination, and improving storability of corn. In the first phase of the project, a post-harvest assessment study will be conducted through farmer interviews in the region of Huehuetenango, Guatemala, in order to identify factors contributing to post-harvest losses and to better understand how traditional storage structures, pest control and storage management may affect quality and shelf-life of the stored corn. Also samples will be periodically collected throughout the duration of storage to quantify actual losses, moisture content, and mycotoxin contamination. The second phase will evaluate the effects of improved post-harvest and storage practices/technologies on post-harvest losses and mycotoxin levels in stored corn compared with traditional practices. In this phase, a group of smallholder farmers will be given access to improved corn drying and storage equipment (i.e. solar dryers, metal silos, plastic barrels, and PICS bags). Moreover, as a third phase of the project smallholder farmers and their families will receive intensive training regarding the hazards of mycotoxin consumption, the importance of appropriate drying, storage and post-harvest practices to maintain grain integrity, and how to improve their traditional post-harvest practices. The use of improved post-harvest management systems by smallholder farmers will enhance farmers' capacity to intensify production activities and improve food safety and security.

Keywords: corn, post-harvest losses, mycotoxins, pest control