Africa RISING science, innovations and technologies with scaling potential from postharvest management perspective

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Key messages

- Recent studies in the semi-arid areas of northern and central Tanzania have shown that: 20-40% of grains and legumes are usually lost during harvesting; a further 5% is lost during shelling-even when the amount of grains shelled per day was very small due to drudgery and lack of improved shelling technologies; a further 15-25% is lost during storage.
- Farmers desperately need improved technologies to reduce labour inputs during postharvest handling, minimize storage losses and increase household income.

Objectives and approach

- ❑ Studies were carried out to test a combination of improved postharvest handling and storage technologies such as maize shelling, drying and hermetic storage as an approach to reducing food waste, increasing income and improving food security.
- ❑ Mechanical shelling and storability of maize grains were tested with farmers comparing traditional *Kihenge, Kilindo* and polypropylene bags (PPB) with hermetic storage bags.
- ❑ Financial gains from the improved handling and storage technologies were examined to compare the gains with the traditional practices.

Key results

- ❑ Mechanical shelling machines removed 79.4-84.1% of grains on maize cobs and were not broken as the case with manual shelling.
- ❑ Grains dried on collapsible drier cases (CDC) had lowest moisture contents (approx. 13.2%) especially with maize harvested late in the season. The CDC can dry 400kg of maize in five hours in the sun.
- ❑ Shelling machine shelled maize-on-cob that was dried on CDC more quickly and was cheaper than manual shelling in all cases.
- ❑ Hermetic storage reduced insect population during storage, leading to lower grain damage (71.7 damaged grains per 1000grains) than in the traditional storage facilities such as *Kihenge or Kilindo* (95 damaged grains) & PPB (166 damaged grains).
- ❑ Hermetic storage bags were profitable for an average maize producer or household. The net-benefit for an average producer was USD 1.7 per bag per storage season and the benefit increases as production volume increases but the net benefit is negative for low maize producers.

Significance and scaling potential

The results suggest that scaling of the improved post-harvest processing and storage technologies can benefit more than half a million smallholder producers in Tanzania to reduce post-harvest grain losses in order to address the problem of household food insecurity.

Mechanical maize sheller

Collapsible drier case

Warehouse storage with PPB and hermetic storage bags

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