



# Sesame post-harvest loss management in the Northwest Ethiopia

## **Case overview**

Since 2014, Benefit-SBN has made efforts to reduce harvest, transport and storage losses, which are very significant. This note shares lessons learned and formulates recommendations for the way forward.

## **Background**

In order to have evidence and to design appropriate interventions, the SBN support programme conducted extensive field level action research in 2013-2014. This led to the quantification of losses at different stages in the farmers' production chain, ranging from pre-harvest shattering, harvesting, *hilla* drying, transporting to threshing site, transporting from the farm to store and farmer storage. The result showed that the loss is 55.5kg per hectare, implying a loss of close to 13%. Most sesame is lost during *hilla* drying (5.5%), then pre-harvest plant shattering (3.3%), transporting *hilla* to threshing ground (1.9%) and re-bagging at market centres (1.1%).

Remarkably, farmers consider losses as 'part of the game' and do not give much attention to it. The losses are however important in economic terms. At current prices, the value of field level losses is around 2,500-3,000 ETB per hectare. When it comes to country level, with a cultivated area of more than 500,000 ha, the losses are 275,000 quintals, representing a monetary value of 40-50 million USD.

In order to reduce the field level losses, Benefit-SBN has promoted different improved practices:

- Timely harvesting- to reduce pre-harvest shattering losses;
- Putting small *hillas* together in larger *hillas* - to reduce field transport losses;
- Use of plastic sheets – to collect losses during *hilla* drying
- Use of hermetic (PICS) bags – to reduce storage losses.

## **Objective**

Reducing sesame harvest, transport and storage losses with the aim to increase net production, improve quality and raise farmer income and national production.

## **Achievements**

Farmers currently have more awareness of the economic losses they incur at field level. During a household survey conducted in 2017, 916 farmers were asked to open question "Which of the 20 steps can you mention?". 29% mentioned the step 'large *hillas* for drying and threshing'. Farmers are changing their *hilla* drying method, the practice of making larger *hillas* is spreading. In addition, farmers have developed several innovations for *hilla* stacking to cope with labour, pest and weather challenges.

## What worked well?

- The action research resulted in evidence from the field. As the testing sites were many, farmers saw or heard about the action research methods and purpose. This contributed to awareness raising.
- Harvesting and post-harvest management techniques have been included in the 20 steps package.
- Every season, training on pre and post-harvest management has been provided. This has sensitized both DA's and farmers.
- A movie 'The long road of sesame and the many losses along the way' was produced, featuring images of the action research and options of farmers and agricultural professionals. This movie has been shown during trainings and other gatherings.
- The practice of putting small *hillas* together in larger ones has been taken up and is spreading. The household survey indicates a (partial) adoption rate of 60%. Full adoption is however rare. It can however be found, for instance in Lemlem Terara kebele in Metema woreda.
- Field days at sites with high large *hilla* adoption were organized to share experiences with farmers from other areas.
- Labourers, paid per harvested *hilla*, do not like to walk a larger distance to put harvested sesame in larger *hillas*. Mainly for managing the labour challenge, farmers are testing different geometries of smart *hilla* placement in the field, with the aim to minimize as much as possible the extra walking distance of labourers.
- Other farmer innovations are putting *hillas* on grass beds, which helps to reduce termite attacks and allows for some sesame recuperation and the fencing of *hillas*, which helps to reduce wind losses.

## What didn't go well or had unintended consequences?

- The use of plastic sheets is very limited. In 2017, 10% of interviewed farmers indicated they have tested it and 6% said to continue using them. The major reasons for low adoption are that the plastic sheets can only be used for one season and that the cost-benefit ratio is not attractive, especially when sesame prices are low, which was the case in 2016-17.
- In addition to loss reduction, plastic sheets can contribute to sesame quality improvement. The sesame grading system does however discourage farmers. Mr. Ashenafi from Tach Armachiho clearly depicts the situation: "I employed all the recommended improved practices such as using plastic sheet to maintain the quality and reduce loss. But the market was not considering the effort. Any kind of grade was sold equally. This discourages us to maintain the quality. Only last year I fetched a higher price with one trader. I think the trader bought my sesame for mixing it with the lower grade sesame."
- The dissemination of hermetic bag is very limited. Sesame is checked at different stages, during which bags are pierced to take samples. This is not possible with PICS bags. Hermetic bags are most relevant for mung beans. Due to very high storage losses with conventional bagging and storage, the higher cost of hermetic bags are easily earned back.
- Efforts to reduce sesame losses mainly focused at the field level. High losses are however also observed at regional and national level during transportation, sampling at ECX and storage. These were not studied nor addressed.



## Recommendations

- For field level losses, conduct action research with involvement of farmers. This leads to evidence and raises awareness.
- Have a supply chain perspective; also assess losses beyond field and farmer level.
- Listen to farmers and have an open eye and ear for their innovation (like *hilla* drying geometry, putting *hilla* on grass, and fencing the *hilla*).
- Capacitate primary cooperatives to provide warehousing services to member farmers. Ensure that stores have a cemented floor, are free of rodents and are well ventilated and ensure good conservation, using tools like moisture testers.
- Develop and test low-cost, best fit harvesters to ensure timely harvesting (shattering loss reduction) and to address labour constraints for making large *hillas*.