THE SUCCESS OF USING LABOR SAVING TECHNOLOGY

THE USE OF LOCALLY FABRICATED THRESHER BY SMALLHOLDER FARMERS UNDER THE SAIOMA PROJECT
Strengthening Agricultural Input and Output Markets in Africa (SAIOMA) is a three-year Global Development Alliance between the United States Agency for International Development (USAID), Bill & Melinda Gates Foundation, and the Alliance for a Green Revolution in Africa (AGRA) that is being implemented in Kenya, Malawi and Zambia.

From 2013, Cereal Growers Association (CGA) together with its consortium partners Agricultural Market Development Trust (AGMARK), Co-op Consultancy and Insurance Agency Ltd (CCIA) and a gender consultant have been implementing SAIOMA.

The goal of SAIOMA was to improve smallholder market-led agriculture production for sustainable reduction in poverty and hunger in Eastern Kenya. This has been achieved through addressing low agricultural productivity, constrained access to inputs and output markets by smallholder farmers, poor governance and management of farmer based organizations, as well as uneven field for women and youth in agriculture.

In Kenya, SAIOMA is implemented in selected four counties in Eastern Kenya,

1. Meru (Tigania West Sub-County)
2. Tharaka Nithi (Tharaka North Sub-County)
3. Machakos (Yatta and Mwala Sub-County) and
4. Kitui (Lower Yatta and Kitui Central Sub-County).

The project focused on four staple crops of sorghum, cowpeas, pigeon peas and green grams. These traditional staple crops present a solution to food insecurity, nutritional constraints and economic deprivation for the majority of smallholder farmers in Eastern Kenya.
Adoption of Labor Saving Technology
The story of a portable and affordable fabricated thresher

One of the key transformative successes of SAIOMA was the introduction of locally affordable fabricated threshers to smallholder farmers in Eastern Kenya by Cereal Growers Association (CGA), one of SAIOMA’s consortium partners.

“We noticed that as farmers began to steadily improve their agricultural productivity due to the impact of the SAIOMA project, they were spending lots of time manually threshing their produce by hand. This not only compromised the quality of their produce, which prevented them from meeting market standards, but it also contributed significantly to postharvest losses, besides impacting on their health,” says Backson Mwangi, Project Officer, CGA.

It was a concern to CGA that, ultimately, farmers needed a portable, affordable and efficient fabricated thresher if the impact and achievements of SAIOMA were to be sustainable.

Drawing board
For most part, majority of smallholder farmers could not afford threshers that were already available in the market, most of which are imported, expensive and too large for most farms. For CGA therefore, it was time to go back to the drawing board. The organization began exploring ways of introducing locally appropriate, affordable and sustainable threshing machines as a means of improving farmers’ productivity and efficiency.

Threshing is a critical part of processing grains, which are staple crops in most developing countries, including Kenya. Traditional methods of threshing are time and energy consuming and can result in significant grain losses, in addition to locking farmers out of accessing structured market due to poor quality.

During an exhibition in Nakuru County, CGA identified Dr. Musa Njue who was exhibiting the thresher prototype of Egerton University.

“Our intention is to develop the agricultural sector in Kenya by providing innovative mechanized technological solutions to make agriculture for farmers more enjoyable, less labour intensive and less costly, that’s why we decided to fabricate threshers,” says Dr. Njue, who is now the Technical Director at TECSOLS Ltd, a company that offers technological solutions in the agricultural sector based in Nakuru County.

TECSOLS Ltd was engaged immediately by CGA to fabricate and supply 25 threshers to farmer based organizations through the aggregation centers established under SAIOMA in Eastern Kenya.

Subsequently, in February 2016, a field demonstration for the fabricated threshers was conducted by CGA and in Tharaka Nithi County, and attended by representatives from the Alliance for a Green Revolution in Africa (AGRA). The activity sought to compare two scenarios, namely: difference between hand threshing and threshing using the fabricated threshers. The purpose of the two scenarios was to find out among other things, the volume and quality of grain which could have been threshed within an hour. This was important in eliciting whether it was advantageous to use the fabricated thresher compared to what the farmers normally use. The following were the findings from the two scenarios:

Scenario 1: Hand Threshing
The volume of grain collected was approximately 32.4 Kgs after an hour. After initial threshing, the farmer had to spend some time removing the chaff and also spend approximately an extra hour to winnow. The threshing and winnowing was carried out by two persons since they could assist each other. The farmers had to wait for the wind to start blowing for them to start winnowing. The glumes did not stick on the grain and thus the output was ready for market.

Scenario 2: Threshing by the fabricated thresher
The thresher volume was approximately 106 Kgs in one hour. The fuel consumed was approximately a third of a litre, which translated to less than Kshs 30. Although the grain was separated from chaff by the machine, the final product had glumes stick on the grain making it difficult to be winnowed.

The following were farmers’ feedback: the speed and quality of the threshed grain was much better. Although the thresher primary function was to thresh sorghum, it did very well for green grams, outdoing even the big capacity threshers which broke grains during the threshing process.

It was less labor intensive, easy and efficient using the thresher than hand threshing. Farmers recommended that the threshing capacity to be increased as well as ensure that modifications were made to completely separate the glumes from the grain.

Feedback from SAIOMA’s beneficiaries led to further modification to make the threshers more effective and efficient in producing quality grain. After the modifications were made, in June 2016, a second field thresher demonstration was conducted in Tharaka Nithi County with the purpose of testing the newly modified portable thresher and check whether issues raised previously had been addressed.

The feedback from farmers was unanimously affirmative. The thresher performance exceeded their expectation.

“Truthfully speaking, the thresher has significantly improved the quality of the grains, and for us women we love the thresher because its fast in threshing, saving us valuable time and labor,” says Lina Nzambia, a farmer and operator of a thresher from Lower Yatta in Kitui County.

“The threshers have also interested men to be involved in threshing, which traditionally was a reserve for women. So, we as women are relieved that our men are also helping with threshing, allowing us more free time to engage in other income-generating and social activities,” adds Lina with a smile.
What makes this thresher stand out
The idea of the thresher is that not every smallholder farmer has to own the machine. The machine is designed in such a way that it can be moved around using boda bodas (motorbike taxis). The major benefit for farmers is the extraordinary reduced cost of threshing. In fact, the farmer does not have to use the machine as a sole proprietor, since farmers can work in groups and use the thresher to generate income.

“The thresher weighs about 100kgs, and therefore its easy to move from one place to another. We have gone further and made sure that the thresher within the locality can be moved easily because we have added wheels on it, and requires very little force. Its now gender sensitivity, as a matter of fact, women, the youth and men can move and use it with ease. Another great value of the thresher is the fact that it can thresh both sorghum, millet and green grams,” says Dr. Njue.

The impact of the thresher
The introduction and adoption of locally affordable portable threshers has transformed the lives of smallholder farmers in Eastern Kenya. There are a number of ways farmers are directly benefitting from the threshers. For instance, during harvesting of their produce, most farmers require threshing to be carried out, and going by the old way of doing it, it would take time and impact negatively on the quality of their produce.

However, now with the introduction of the threshers, farmers are able to do the threshing on time, thereby cutting down significantly on postharvest losses. The threshers have also improved the quality of the produce since they bring out cleaner products, enabling the farmer to fetch a premium rate in the market.

“A key success of the thresher is that the the cost of producing a unit of clean grain has come down,” says David Iguna, a farmer and member of Tharaka Cereals Growers Association in Tharaka Nithi County. “For instance, in the market, to do threshing, farmers are charged anything between Kshs 250-300 per bag. However, using the threshers provided by SAIOMA farmers have reduced the cost of production to less than Kshs 100 per bag,” says Iguna.

Over and above, the multiplier effect of the thresher in terms of creating jobs and empowering, particularly women and the youth cannot be ignored. Youth who were earlier not interested in agricultural activities are now engaged in not only farming but also in the operation of the threshers as well as maintaining them, thereby earning a living.

As an exit strategy and to ensure sustainability, SAIOMA supported the training of thresher operators as well as maintenance personnel by TECSOLS Ltd. One such person is Anne Ngei, who provides thresher maintenance for her Kawongo Aggregation Centre in Lower Yatta, Kitui County.

“No one ever knew in my community that one day a woman would be earning a decent living for doing thresher maintenance and repair,” says Anne, proudly.

ABOVE: Clean good quality sorghum threshed by the modified thresher, while BELOW: sorghum after hand threshing. Photo by Douglas Waudo.
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Hand threshing, which traditionally was predominantly done by women was very demanding to the time and health of farmers. As a result, most farmers would spend most of their time just threshing, which affected their involvement in other income-generating activities.

Anne notes that farmers really love the thresher due to the fact that it has saved their time and improved the quality of their produce. “The advantage of the thresher is that it also does the winnowing of the grains at the same time it does the threshing, unlike hand threshing, which was a health hazard since it exposed women and children to inhaling of dust and foreign matter getting into their eyes,” adds Anne.

Increased income
More significantly is the fact that most farmers have increased their acreage of production, because the threshers have brought efficiency and effectiveness. The thresher has also given farmers a competitive advantage in terms of accessing structured markets due to the efficiency of threshing and improved quality of grains.

“As a buyer, I had challenges of accessing quality grains from farmers. This is because I was getting grains mixed with sand and other foreign matters due to hand threshing. In addition, the moisture content of the grain from farmers compromised the quality, hence affecting the market price,” says Dan Mutua, proprietor of Imara Agro Ltd.

“The introduction of the thresher was a game changer. Its impact was immediate and swift. As a buyer I am now able to get not only get good quality grains from farmers, but also the volumes of produce has significantly improved,” adds Mutua. He says that as a result, farmers are being paid well and he has a steady supply of produce from farmers. “Thanks to the threshers, I can confidently say that business is good. As a buyer, I am happy, and the farmers are happy, and that is what matters”, concludes Mutua.

“It’s our belief that locally fabricated threshers will improve farmers’ income, guarantee food security, and by extension improve the country’s economy by creating new business opportunities especially for the youth and by making farming more efficient,” says Backson Mwangi, Project Officer, CGA.

Anne Ngei, providing maintenance and repair for thresher at Kawongo Aggregation Centre in Lower Yatta, Kitui County. Photo by Douglas Waudo.
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