Metal silos bring food security to El Salvador

The small Central American republic of El Salvador is characterised by a rugged topography and approximately 300,000 smallholder farmers whose livelihood security is based on the cultivation of maize and beans. Land degradation has contributed to poor yields but the problems that farmers face are exacerbated by poor crop storage and subsequent losses of 10-15 per cent of the harvested crop to pests and diseases. Jon Hellin and Fred Kanampiu report on a programme to reduce these losses.

Recognising the importance of improving post-harvest storage, the Swiss Agency for Development and Cooperation (SDC) and the Ministry of Agriculture and Livestock (MAG) began a programme in 1994 to promote the use of metal silos for storage. The correct use of these silos can reduce post-harvest losses of maize and beans to zero. SDC supported the programme, known as POSTCOSECHA (the Spanish term for 'post-harvest') until 2003 when it was fully incorporated into MAG.

Since 2003, the production and uptake of metal silos has continued and there are now approximately 65,000 silos being used by farmers. The silos tend to hold 1,800 lbs of maize or beans (c. 0.8 t) but artisans (manufacturers) also produce silos of 1,200 lbs (0.5t) and 3,000 lbs (1.4 t). The harvest can be stored for up to two years but it is normally consumed in the first six months of storage. Those farmers with surplus maize and beans, who used to have to sell their crops immediately after harvesting when prices are low, are now able to store their produce until the market price is higher.

Artisans at a training course.

Credit Jon Hellin

Training of artisans

Throughout the programme, and with a view to making it more sustainable, there has been a strong emphasis on stimulating private entrepreneurship. POSTCOSECHA offers a five-day training course on the manufacturing of metal silos. Artisans also receive training on accounting, credit management and advertising i.e. the skills required to run a viable business. To date over 550 artisans have been trained although of these about 200 are really active, producing silos that are then sold to farmers. These 200 artisans produce approximately 3,000 silos per annum. Demand for metal silos is seasonal i.e. before and after the maize harvests in September and December, hence, the training includes a component on the manufacture of other metal-based products such as watering cans, kitchen utensils and roof guttering. This helps the artisans to diversify products and keeps them busy the whole year.

Many of those attending the training courses are farmers who are supported by different institutions such as NGOs, while others are individuals who contribute to the cost of the course with the rest covered by MAG. There are essentially four types of trainees:

1. Individual artisans who are based in rural areas. They make silos, grow maize and do other artisan-related work. They mostly make silos for farmers in their neighbourhood.
2. Urban based artisans. They essentially carry out only artisan work such as making silos and are rarely involved in farming. Their clients extend beyond their area of operation.
3. Associations formed by artisans. They benefit from economies of scale, i.e. they can buy materials such as the metal sheets in bulk at discounted rates and also benefit from being contracted by NGOs to produce large numbers of silos.
4. Technicians from NGOs who are trained to produce silos and afterwards train others in the communities where they work.

Those trained and actively engaged in the manufacture of silos are required to keep records of the numbers of silos manufactured and sold. In this way, POSTCOSECHA is able to monitor adoption rates. Furthermore, when selling the silos to farmers, the artisans are required to teach the farmers how best to store the maize and grain e.g. to ensure that the grain is in good condition prior to storage (fresh, clean and dry).

Promoting small businesses

The objective of POSTCOSECHA's work is to make the metal silos widely

available to farmers on a 'sustainable' basis. This often means looking at different models that range from fully subsidised to unsubsidised promotion. In the case of the latter, it could be argued that the artisans should operate as a small enterprise (even though the initial training may be subsidised) and that farmers should purchase the metal silos without subsidies. Such thinking may work in practice but a mixture of public and private support is often required especially in the case of adoption of silos by very poor farmers.

Many of the artisans are operating as small enterprises with reasonable profit margins: a 1,800 lbs silo often sells for approximately US$90 and the artisan makes a profit of around US$8 per silo (after taking into account the cost of labour, materials and depreciation of tools). However, POSTCOSECHA has used subsidies when required. For example, shortly before terminating its support to the project, SDC set aside a fund for $106,000. Initially the fund was designed to be used to provide loans to artisans (to manufacture silos) without interest being charged. 60 artisans received loans under this scheme (they represented 30 per cent of all the artisans who had been trained at this stage). Each artisan received between US$50 and US$400 but the loan was not in cash but in kind: the provision of metal sheets. The artisans were expected to pay back the loan in full after six months. Most of the artisans did so but six did not and the initiative was stopped.

An artisan advertises his metal silos

Credit Jon Hellin

Transport of a finished silo.

Credit Jon Hellin

The fund was subsequently used in a different way. The money in the fund was used to produce silos at a cost of US$37 per silo (price in 2000/01). Artisans recovered their labour cost by selling silos to farmers at the cost of their labour i.e. of the total cost of making the silo (US$37) the cost of the material (US$17) was paid for from the fund and the farmers who received the silo paid US$20 which represented the artisans' labour cost. Through this model, POSTCOSECHA was able to support the production and uptake of 6,200 silos. A similar model has been for NGOs to subsidise the adoption of the silos by paying for the materials (metal sheets) and, hence, enabling poorer farmers to buy the silos from the artisans by paying only the artisans' labour costs.

More recently MAG has allocated US$1,200,000 to make 15,000 silos. The money will cover materials, transport, and labour and the silos will be given to poor farmers as a gift. Long-term plans are to make 40,000 silos since the demand is still very high. POSTCOSECHA will manage the MAG fund and the 200 active artisans who have been trained in silo production will make the silos, hence, the intervention of the government will support rather than undermine the entrepreneurship of the trained artisans. MAG is also planning to fund the training of more artisans. There are about 300,000 farmers in El Salvador and approximately 600,000 silos are needed. So far only 65,000 silos have been produced in the country.

South-south cooperation

Recognising the success of the POSTCOSECHA programme in El Salvador (and neighbouring Central American countries), SDC is now funding an initiative to facilitate the uptake of metal silos in Eastern and Southern Africa (ESA) where maize is a food staple and where post-harvest losses due to the large grain borer and grain weevils average 20-30 per cent in affected areas. Planned activities include learning from the successes in El Salvador and adapting the training materials and models of silo uptake to the agro-ecological and socio-economic conditions in ESA.

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