

Analysis of cost structure and pricing strategy for sweetpotato Early Generation Seed – examining experiences from Kenya and Ghana

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Public institutions in Kenya and Ghana are using real-time data collection methods to determine the exact costs of producing Early Generation Seed (EGS). This approach is informing pricing strategies to ensure sustainable production of EGS.



Fig. 1 Preparation of pre-basic cuttings at KEPHIS, for sale to World Vision. (credit S. Rajendran)

► What is the problem?

National Agricultural Research Institutes (NARIs) and other public institutions engaged in sustainable sweetpotato EGS¹ production need to ensure at a minimum, cost recovery. Establishing accurate cost structures and appropriate pricing strategies are critical in this process. A consistent supply of EGS is the start of the seed value chain for farmers to access timely, quality seed.

► What do we want to achieve?

Our objective is to support the NARIs to achieve sustainable sweetpotato pre-basic seed production (Fig. 1) through implementation of business strategies. Suitable pricing is key to ensure adequate revenue flows into a revolving fund mechanism to support future production and to maximize profitability for each unit sold. Therefore, it is important to measure accurate costs for EGS production to identify where costs can be reduced, without jeopardizing the quality

¹ Early Generation Seed includes breeder, pre-basic (or foundation) and basic seed.

of the seed. Once accurate costs have been identified, a margin and markup can be added to determine an appropriate price for the EGS.

► Where and with whom are we working?

Currently, a real-time data collection method is being applied by selected public institutions in Kenya, Tanzania, Ghana and Burkina Faso. The Kenya Plant Health Inspectorate Service (KEPHIS), which is the regulatory body and producer of EGS in Kenya; and the Crop Research Institute (CRI), Ghana have completed their data collection.

► How are we making it happen?

We are using a real-time data collection method. Cost and revenue data is recorded by a team of scientists, economists, field assistants and technicians using a multi-stage data collection method. Data are captured for a production activity (e.g. planting or irrigation) by the person involved, who records the inputs, quantities and costs incurred in real-time. The data collected are used to prepare accurate cost structures which are the basis to determine estimated prices and then to formulate pricing strategies for the target markets.

► What have we achieved so far?

Fully updated cost structures have been completed by KEPHIS and CRI. These have been used to determine the break-even price and develop pricing strategies (Table 1). An analysis of costs for each production stage shows where the highest costs are incurred, and how they might be reduced. The results show a large difference in the unit cost for all stages of production. For example, the unit production cost for tissue culture (TC) plantlets is \$0.65 at KEPHIS compared to \$5.60 at CRI; so, an analysis of the cost structure for each institution, could reveal lessons about the efficiency of different production practices.



Table 1. Pre-basic seed (PBS) unit production cost, price, mark up and margin: KEPHIS and CRI (June 2017)

PBS stage	KEPHIS				CRI			
	Unit production cost of 3-4 node cutting (US \$)	Price Range (US\$)	Mark-up (%)	Margin (%)	Unit production cost of 3-4 node cutting (US \$)	Price Range (US \$)	Mark-up (%)	Margin (%)
Stage 0 (clean-up) ²								
Stage 1 (Tissue Culture)	0.65	0.75-1	15-53	13-35	5.60	6-9	15-191	6-38
Stage 2 (Hardening)	0.17	0.2-0.4	19-135	10-29	1.90	2.1-3	15-191	12-37
Stage 3 (Screenhouse)	0.08	0.1-0.35	30-375	23-79	0.18	0.21-0.35	15-191	12-37

² Costing of clean-up is still in process, as it can take 6-9 months.

For CRI, the costing exercise showed that their existing selling price of US \$0.05/15 cm cutting was below the cost of production and resources were underutilized. The following recommendations were discussed with CRI management:

- Establish markets for sweetpotato cuttings using innovation platforms
- Use bio-technology resources more efficiently by focusing on varieties with high demand
- Explore use of solar power to reduce electricity cost
- Include the cost of conserving and maintaining breeder seed. This is estimated at 25% of tissue culture unit production cost; the institution should aim to conserve at least 100 plantlets of each of five varieties.

These results also led to a review of the pricing strategies for pre-basic seed. KEPHIS' prices now range from US \$0.10 to US \$0.35 per 3-node cutting (compared to the price of US \$0.50 for 2015-2016). The CRI price range for pre-basic cuttings is \$0.21 – \$0.35. Both institutions have

Table 2. KEPHIS pricing strategy for pre-basic seed, November 2016

Type of customer	Time of order and payment system	
	Selling price (US\$) per 3-4 node cutting	
	Early order and advance payment	Late order payment
Institutional customers	0.20	0.35
Private multipliers	0.10	0.20

developed pricing strategies based on the type of customer (institutional or private multiplier) and whether advance payments are made. The KEPHIS case is shown in Table 2. Stakeholders have provided positive feedback due to the reduction in price and incentive for advance orders.

KEPHIS has enhanced their marketing strategies to increase EGS sales. Price information and contact details are published on their website: <http://www.kephis.org/index.php/news-and-events/226-kephis-producing-sweet-potato-vines-for-health-and-food-security>. Both KEPHIS and CRI have established a WhatsApp group to improve communication with potential buyers (Fig. 2 & 3). These platforms have significantly enhanced sales volume. Since 2016, KEPHIS has received a total of \$23,931 into their revolving fund from sales of pre-basic seed; and disbursed \$15,742 for production related costs. CRI started their revolving fund in 2017 and currently have earned \$2,065. CRI plans to establish an ICT application for trading planting materials not only for sweetpotato but also for other crops.

➤ **What's next?**

The cost data will be updated by the other NARIs using a simpler data collection template. This data will contribute to price strategies that will improve the sustainability of their seed enterprises. With successful implementation of the business strategies there will be adequate revenue into the revolving funds to meet recurrent costs of pre-basic seed production. To strengthen their seed business, the NARIs will also establish customer databases to include decentralized vine multipliers, NGOs, institutions and projects. They will improve availability of product information through demonstration plots, product branding, labeling, and quality assurance.

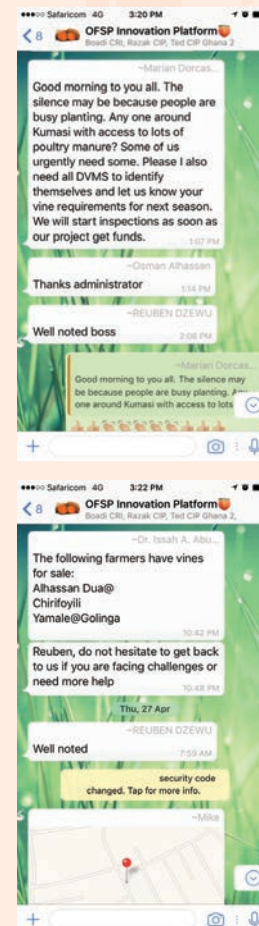


Fig. 2 & 3 Information on availability of sweetpotato vines from CRI WhatsApp group

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