

Case Study: Scratch-off Labels for Seed

A new technology, which empowers farmers to verify the authenticity of crop seed offered for sale, is introduced by the seed regulator, the private sector, and a technology provider.

Introduction

Seed genetics and seed quality are two key determinants of crop yield for farmers all over the world. While a great deal of research has been done in recent decades to bring improved crop variety genetics to farmers in Africa, seed quality is often sub-standard, which means that the genetic potential of the seed is not realized by the farmer who plants it.

Furthermore, as farmers increasingly recognize the value of these varieties, demand for seed of improved varieties often outstrips the supply. Sadly, when this occurs opportunities are created for seed counterfeiters to enter the market – usually with grain painted to look like treated seed, packaged in illegal, counterfeit packaging. Farmers unknowingly purchase this seed believing it to be genuine, only to learn later that their anticipated harvest will not be realized, jeopardizing their family's well-being and food security.



Counterfeit seed in a forged bag, confiscated from an agrodealer

The Problem/Challenge

Despite legal provisions to the contrary, Kenyan farmers have long been subject to the risk of purchasing low quality or counterfeit seed. Even though crop seed sold in Kenya is required to be certified by the Kenya Plant Health Inspectorate Service (KEPHIS), seed can lose quality post-certification (for example, if stored improperly or for excessive time at an agrodealer shop), can be erroneously approved for certification, or can be illicitly distributed by a seed company. Counterfeit seed in Kenya has, over the years been produced by very sophisticated operators, lured by the opportunity to make quick cash during the rush of planting season, often working in concert with rogue agrodealers who agree to sell the counterfeit seed. Stemming the tide of low quality and counterfeit seed in Kenya was proving to be problematic for both seed companies and KEPHIS.

The Starting Point

At the inception of KMT's interventions in the crop seed sector in 2013, low quality and counterfeit seed was widely acknowledged to be a major challenge for smallholder farmers in Kenya, although there was no formal estimate of how big the problem was. In neighboring Uganda, a formal study had estimated that as much as 40% of seed on the market was sub-standard. While Kenya's challenge was certainly far below Uganda's, it was clear that most of Kenya's farmers who purchased certified seed for planting purposes had experienced seed quality challenges at some time in their farming history. Almost all Kenyan farmers claimed to know a farmer that had been negatively impacted by fake seed.

In addition, seed companies openly discussed challenges with counterfeiters amongst themselves. One company had experienced the theft of a lorry full of packaging material, and fears that at least some of this packaging material would appear in the coming season – full of counterfeit seed – were realized.

Fake Seeds Alarm Raised, *The Nation*, May 8, 2014

"Unscrupulous business people are siphoning millions of shillings from farmers by packaging uncertified maize seeds in a racket that is threatening to undermine food production and leave the country vulnerable... The problem has been compounded with lenient punishment meted out to fake seed dealers... In an interview with Kenya Seed Company Chief Executive Officer, Willy Bett says 'The (counterfeiters) are siphoning millions of shillings from farmers by packaging uncertified maize seeds in the company's branded packaging materials and distributing them to unscrupulous seed stockists and agents for sale.' ...The seeds industry's annual turnover stands at more than KES5.1 billion out of which 20% is business being promoted by dishonest traders selling fake seeds...'As a country we cannot fight hunger if we cannot protect farmers against fake seeds. We should not address this issue casually but confront it pro-actively. The fake seed scandal is like drug-trafficking.'" Bett says."

Other crop seed companies related stories of how unscrupulous businesspeople would print illegal copies of bags, or recycle legal bags, to sell counterfeit seed. It was not unusual for seed companies to have their reputations questioned following incidences of fake seed in their branded packets.

Low quality seed also was very problematic for farmers, particularly smallholder farmers in remote locations. Agrodealers who did not know how to properly handle seed often sold expired seed to farmers, or stored certified, viable seed in a manner which caused it to lose viability before it was sold. Seed company operational errors or neglect could mean that low quality seed could be shipped from a warehouse and ultimately sold to an unsuspecting farmer.

The primary way that a farmer knew whether or not the seed she was purchasing was considered legitimate and viable was to plant the seed and see what happened after a month or so, at which point it was most likely too late to replant if there was a problem. The season could be lost.

Previously, only seed packets above 10kg were required to have security labels. These labels contained information on the producing company, seed lot number, date of testing, and expiry of testing. Smaller packets of less than 10 kilos lacked this essential tag. These smaller packages were mainly bought by small holder farmers who, according to FAO¹, cater for over 70% of food produced in Kenya. These farmers sometimes registered losses when they bought seed in what they thought were proper packages, as some of the seed was genuine but low quality while other seed was counterfeit.

This situation called for concerted efforts by seed companies and the regulators to protect farmers, as well as company brands. The Seed Trade Association of Kenya (STAK), an association made up of most seed-producing companies and other stakeholders in the seed sector, recognized the importance of farmers having confidence in the seed they purchased. It is against this backdrop that the Seed Trade Association of Kenya (STAK), together with Kenya Plant Health Inspectorate Service (KEPHIS), advocated for the introduction of mandatory security labelling on all seed packets.

The Journey

Discussions related to the mandatory labelling of seed packets began in earnest in 2015, and involved seed companies through STAK, the Ministry of Agriculture, Livestock and Fisheries (MoALF) and KEPHIS. KEPHIS wanted a better traceability mechanism for certified seed in order to better support farmers, while seed companies felt that they needed a way to get farmers to verify that the seed packed was authentic and had been duly certified in order to protect their reputations. There was not common agreement, however, about what a solution would entail, or how much it should cost. STAK needed to play a key role as an important mediator in the negotiations.

STAK's effectiveness for most of 2015 was, however, sub-optimal due to disarray in the leadership of their Secretariat: the position of Executive Officer was vacant for the first nine months of the year. While KEPHIS was moving ahead with various plans which would impact seed companies, STAK was often not at the table to represent member interests.

Several private sector seed companies had actively lobbied, individually, for specific industry-friendly solutions, but in the absence of a representative of the private sector with whom they could engage, KEPHIS announced a tendering process and took steps to move ahead with its own proposed solution. In early 2015 KEPHIS announced that it had selected a vendor for the new labels, and that the cost to the industry would be 15 Kenya shillings per label.

This announcement was met with strong opposition by the seed companies, as the price was higher than the current cost for all of the packaging material for a 2 kg bag of seed, and represented an approximate 4% increase in the price of 2 kg of hybrid maize seed relative to the average price in the market. This increased cost would clearly need to be passed along to farmers, thus increasing their cost of inputs.

¹ The economic lives of smallholder farmers 2015; <http://www.fao.org/3/a-i5251e.pdf>

The proposed solution was a “non-smart” paper label, issued by KEPHIS, which seed companies would be required to affix to bags. Industry knew that the cost of this type of label was far less than the KES 15 being charged by KEPHIS, raising serious concerns about the true nature of the charge, and who would benefit from the large mark-up. In September 2017, however, the project team agreed with the STAK Board to facilitate the hiring of an Acting Executive Officer for STAK, with the goal of having a full time replacement in place in early 2016. The Acting Executive Officer (EO) arrived as seed companies, through STAK, were trying to push back against the newly-mandated labelling solution. She took steps to consolidate member feedback and clearly present it to KEPHIS.

With STAK now having a stronger leadership team in place, formal discussions were undertaken about the appropriateness of the process followed to date, and whether or not KEPHIS could mandate this solution – despite a tendering process – while higher value solutions were available in the market at a much lower cost. Eventually, after STAK and KEPHIS discussions were held, and raised to high levels of the MOALF, a joint decision was made to re-tender for the labels in a transparent manner.

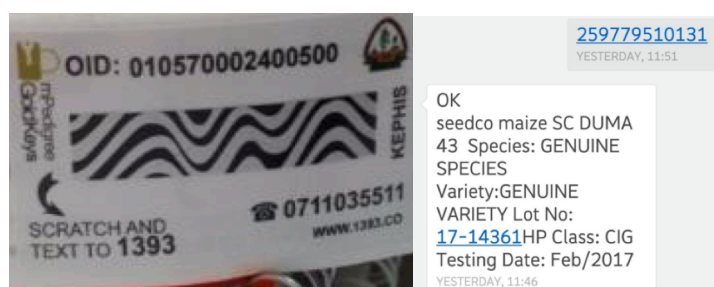
Implementation

The supplier of the labels in the retendering was chosen through a competitive bidding process, and the Acting EO of STAK was present to witness the opening of the tender offers on behalf of STAK members. The process was truly transparent. mPedigree² was the market actor awarded the tender.

The winning technology included enhanced security features that ensured that a farmer could check at the point of sale that the seed had been certified, and also receive additional information.

mPedigree Scratch-off Seed Label: Overview of Technology

After scratching the label, the farmer sends the 12-digit unique number hidden under the scratch label to a short code number using his/her phone. Within seconds the farmer receives a message communicating if the seed purchased is genuine or not, in addition to confirmation of the variety in the package, the seed company, and the date of testing. The text is free to the farmer as the charge for the message is incorporated into the cost of the label. Also included on the label is a KEPHIS hotline number for addressing farmer concerns.



Smart label (left) and sample confirmation SMS (right)

² mPedigree is an African enterprise founded in Ghana in 2007 and present in 12 countries including Kenya. It offers manufacturers technology to help combat the sale of counterfeit products.

In December, 2016 the long-awaited revised seed regulations were gazetted. They included the requirement that labels should be affixed on every seed packet under 10 kilograms as a step towards protecting farmers from poor quality and fake seed. KEPHIS and the seed companies now had to implement the plan. Negotiations continued. Eventually the price per label was revised downward from KES 15 to the current KES 2.00, a more affordable price for seed companies and thus for farmers. Costs had dropped significantly, and the functionality of the labels was vastly greater than the previously chosen label.

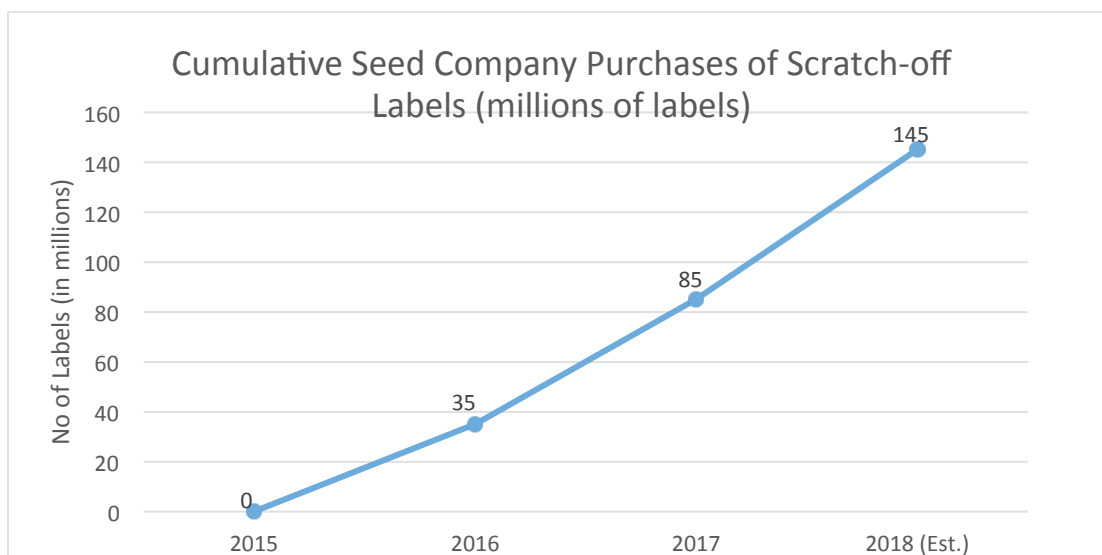
An additional outcome of the negotiation was that 0.70 shillings of the KES 2.00 purchase price would go to KEPHIS to help defray the costs of implementing the program from their end. During the negotiations, STAK also requested that a share of the price come back to them, but KEPHIS stated that they were not allowed to make this payment, and mPedigree would not agree to do it. One issue complicating STAK's request is that the 0.70 charge for KEPHIS is collected on labels purchased from all companies, yet not all companies are members of STAK.

As with all new technologies, the process of releasing the initial lot of labels had teething problems, such as slow supply from the manufacturers, issues with serial numbers (some numbers were not sequential), problems with activation of labels by seed companies, among other issues. However, with the close working relationship among the key implementing stakeholders and commitment from each of them to have the labels succeed, most of these challenges were addressed within short periods of time.

Seed companies had the option of using the new labels beginning in September 2016. In October 2017, the seed labels were officially launched by MoALF in a ceremony jointly planned and executed by KEPHIS, STAK and mPedigree. After the launch it became illegal for certified seed for seed packets under 10 kg to be sold without the new label.

Results

The chart below shows cumulative purchases by seed companies of the scratch-off labels through 2017, and the estimated cumulative amount including the full year of 2018.



Through the sale of the labels, KEPHIS will have generated estimated revenue of KES101.5 million by the end of 2018, based on the trend of current sales. Since the labels also attract value added tax of 16%, this will translate to tax income to the government of KES 46.4 million.

With this technology now fully in use, it is highly probable that there will be a marked decline in the incidences of counterfeit seed being sold in the market, although this has not been formally measured yet.

A further probable outcome is that smallholder farmers will become more confident in investing in certified seed and can expect good yields at the end of the season, all factors held constant. KEPHIS on the other hand will be able to benefit from increased traceability of seed including preventing the stocking of expired seed. By the end of 2017 a total of 110 million labels had been supplied since the project's inception in August 2016, though about 45 million remain unscratched i.e. either not activated by companies, or the seed is yet to be purchased. The involvement of STAK in the preliminary stages of sourcing for a service provider and extensive lobbying to retender helped the industry save more than 1 billion Kenya Shillings through year end 2017, relative to the initial KEPHIS tender and label price.

The label provider, mPedigree, in collaboration with STAK and KEPHIS, regularly organises training sessions for seed companies. Seed companies also continue to train their staff to promptly activate the smart labels before seed is released into the market.

Both KEPHIS and the seed companies have had to change the way they operate to suit the new label approach. The mPedigree solution involves an online platform that can be accessed by KEPHIS, and by individual seed companies for their own seed inventory. In order for the labels to return the correct message, both KEPHIS and an individual seed company must go online to "unlock" the relevant label numbers to indicate that the seed is genuine and that it has, indeed, been certified.

This approach requires greater precision in terms of inventory management by seed companies, in addition to close coordination both within, and with, KEPHIS.

In addition, agrodealers dealing in expired or fake seed now run the risk of having farmers find out about their illegal practices, driving behavioural change among agrodealers.

Lessons Learnt & Future Considerations

The following are lessons learnt from the roll out of the scratch-off labels.

1. When buying multiple packets of seed, farmers tend to scratch only one or two labels after they receive confirmation that the seed related to the first label they checked is certified. This has an impact on the effectiveness of the program.
2. The lack of a broad, effective channel for communicating with agrodealers about the labels negatively impacts program effectiveness, especially since issues arising will most probably emerge at agrodealer shops.
3. Mandating this kind of label on small crop seed packages, especially those under 1 kg, discourages crop seed companies from packaging in very small sizes due to high cost. This has negative implications for product promotions, and small package sale of seed that can be recycled.
4. The system does not have the potential to work as well for root and tuber seed, or for seedlings, as it does for crop seed.
5. The service provider did not fully understand the needs of the private sector, particularly around provision of market-relevant information, and has not been forthcoming with this information. Competition among label providers will help to fight supplier rigidity.
6. It is important to identify upfront who owns the data collected – KEPHIS, seed companies (who pay for and affix the label) or the label provider. Once identified, it is also important to define how this data can be used in the long term in a manner that does not undermine the success of the label program.
7. Similarly, it is important for the service provider to be contractually obligated to report back on what is happening with the program, for example, how many labels have been activated, how many have been scratched etc.
8. For long term sustainability, some funding from the labels should come back to STAK, as the association that supports the use of the scratch labels and advocates on behalf of seed companies. At present, all revenue goes to KEPHIS and the label provider.

Future work should endeavor to support and build upon the success of the labels.

1. While it is too early to fully measure the long term impact that will be brought about by the use of smart labels, sustained creation of awareness will be essential in ensuring that farmers continue to actually scratch the label. The two main partners, STAK and KEPHIS will need to continue with farmer sensitization campaigns for a number of seasons to ensure use of the labels and to capture any relevant information.

2. Public and private sector stakeholders need to be more clear about data analysis and communication, when they select the next provider. The chosen service provider for the subsequent tender period will have to be very versatile to be able to address seed companies' and KEPHIS' needs, especially with regard to useful industry-relevant information, such as providing real time data on numbers of labels scratched and their geographical locations. Encourage competition in the provision of labels.
3. Finally, STAK needs to create a firm plan of how it can generate income from this initiative, considering the central role of STAK in the whole process and ongoing work to ensure its effectiveness.