

# DRAFT – ANALYSIS OF HOW AGRODEALERS PERCEIVE AND RESPOND TO COUNTERFEITING IN THE SEED SECTOR

October 2018



## BACKGROUND

There is widespread agreement among farmers, agrodealers, input suppliers, donor agencies, and other stakeholders that there is a serious problem with counterfeit agricultural inputs in Uganda, although has been difficult to accurately quantify the magnitude of the problem. Anecdotal evidence from recent years suggests that the quantity of poor quality or counterfeit/adulterated products on the market has not decreased, and that the problem may have gotten worse. Counterfeit and poor quality products can have a devastating impact on the farmers who purchase them, representing not only a lost investment but potentially a lost season and the loss of the household's primary source of income. A 2017 study conducted in Uganda found that 30% of nutrients were missing from fertilizer purchased from retailers versus straight from wholesalers, and the hybrid maize seed sold at retailers contained only 50% of the authentic seeds that come from wholesalers.<sup>1</sup> The prevalence of these products has also greatly undermined trust in the agricultural inputs market in Uganda. A survey conducted by the International Food Policy Research Institute found that 40% of Ugandan farmers believe the quality of most or all hybrid maize is lowered by adulteration or counterfeiting.<sup>2</sup>

Uganda's agrodealers are on the front lines in the fight against counterfeits. In this context, agrodealers are small business owners who sell agricultural inputs to farmers and other small businesses. They purchase their products directly from the manufacturers or from wholesalers in the larger market towns. They bear the responsibility for ensuring that their customers have access to quality products. The agrodealers take this responsibility seriously, and are eager to maintain their reputation and their relationships with their customers. As a key linchpin in the fight against counterfeits in Uganda, we felt it was important to conduct thorough qualitative research into how agrodealers are coping with the challenges they face. Our ultimate objective is to understand how much influence agrodealers can exert on the variety and brand of seed a farmer purchases, in order to develop strategies for leveraging that influence to increase farmer adoption of genuine, high quality seed.

This case-based exploratory research aimed to gather information about how agrodealers navigate the uncertain input market – how they detect and react to counterfeits, decide which products to purchase, and structure relationships with their suppliers and customers. With this understanding of behaviors and incentives, effective market facilitation efforts can be designed. These efforts should leverage agrodealers' incentives in order to promote desirable outcomes such as adoption of quality seed. Over the course of two days in July 2018, our team visited Mbale, Uganda, to conduct interviews

<sup>1</sup> Tessa Bold, Kayuki C. Kaizzi, Jakob Svensson, David Yanagizawa-Drott; Lemon Technologies and Adoption: Measurement, Theory and Evidence from Agricultural Markets in Uganda, *The Quarterly Journal of Economics*, Volume 132, Issue 3, 1 August 2017, Pages 1055–1100, <https://doi.org/10.1093/qje/qjx009>

<sup>2</sup> Ashour, M., Billings, L., Gilligan, D. O., & Karachiwalla, N. (2014). *Evaluation of the impact of e-verification on counterfeit agricultural inputs and technology adoption in Uganda, Baseline Report* (Technical report). Washington, DC: International Food Policy Research Institute.



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with agrodealers. We completed 17 one-on-one interviews and conducted a half-day focus group with 22 local agrodealers.

## DEFINITIONS

For this discussion, it is important to understand the difference between a “genuine or authentic” product and a “quality” product. “Genuine” or “authentic” agricultural inputs are those that were legitimately produced by the specified manufacturer, and contain the product that is indicated on the label. These genuine products do not necessarily meet the minimum quality standards set forth by the government; some input companies knowingly produce low quality products, such as seeds with low germination rates and low yields. A “quality” product is one that meets the official standards for quality for that category of agricultural inputs, such as the correct concentration of active ingredients or an acceptable germination rate.

“Counterfeit” products, narrowly defined, are those that in some way misrepresent their contents or origin. For example, counterfeit bottles of Roundup brand herbicide have been found on the market, designed to resemble the real product but containing a lesser quality alternative. However, based on our research, it appears that most Ugandans use “counterfeit” or “fake” to refer to any product on the market that does not deliver to farmers’ expectations. This broad definition is one reason the extent of counterfeiting in Uganda has been very difficult to measure. These “fake” products could be any one of the following:

1. **Counterfeit products:** Products that meet the narrow definition provided above, with packaging that is designed specifically to resemble a product already on the market. These are usually imported, and can be very sophisticated copies.
2. **Adulterated products:** Some “genuine” products can be adulterated once they enter the market – the packaging is emptied and re-filled with a lower quality alternative, for example, or the product itself is diluted. The products appear genuine, but have been tampered with before reaching the customer.
3. **Poor quality products:** There are some products that are “genuine,” in the sense that they were distributed by a licensed manufacturer and have not been adulterated, but are still poor quality. These products do not deliver the results that farmers expect, and can be lumped in with counterfeits as “fake”.
4. **Other “fake” products:** There is also an amorphous set of poor quality products that do not fit neatly into any of the other categories. For example, there have been seizures of poor quality products on the market that came from companies that were not registered and licensed, with counterfeit government inspection labels. Strictly speaking, these are neither “counterfeit” nor “genuine” nor “adulterated”, though they are usually of poor quality and contribute to the broader problem.

Our research focused specifically on the market for seeds, and the strategies for combating counterfeit/“fake” seeds. Two other concepts are important for understanding farmers’ use of seeds in Uganda:

1. The majority of smallholder farmers in Uganda use recycled or home-saved seeds. These are saved from one harvest to the next and re-planted. Many are local indigenous varieties, or come from seed stock that was donated or purchased many seasons before. Depending on the farmers’ skill in selecting and preserving seeds, these home-saved seeds can often have degraded genetics and correspondingly low germination rates and yields. They could also include seeds that were pollinated by different varieties from neighboring farms, creating mixed genetic lines with unpredictable characteristics.

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### ANALYSIS OF HOW AGRODEALERS PERCEIVE AND RESPOND TO COUNTERFEITING IN THE SEED SECTOR

2. Most seeds that are purchased in Uganda are “improved” seeds (though home-saved seeds are sometimes available on the market in some areas). Improved seeds are varieties that have been specifically selected and bred to have certain characteristics, such as those that thrive in certain climates, have high germination rates or yields, use nutrients efficiently, or are resistant to pests or climate shocks. Improved seed is grown from seed stock under controlled conditions, and will fare better than home-saved seed that has been re-used for several harvests.<sup>3</sup>

The improved seed on the market in Uganda includes both hybrid and open-pollinated varieties. Hybrid seeds are those that have been specifically bred to produce certain characteristics. They are the first generation offspring of two specially chosen parent plants of the same species. They tend to have uniform characteristics and therefore result in more predictable crops. The hybrid crop will not “breed true,” meaning its offspring will not be exact copies – they could display a wide range of characteristics. As such, saving hybrid seeds to plant a second generation crop will likely generate degraded results (though often still retaining some of the original beneficial traits). Open pollinated varieties (OPVs) are produced from a stabilized genetic line, and are self-pollinated. Their offspring will be mostly similar to the parent plants, unless pollen from a plant of the same species but a different variety reaches the crop. OPVs tend to have lower yields and are less robust than hybrid varieties, since they have not been specifically bred to select for beneficial attributes. However, OPVs are also less expensive than hybrid seeds, which often require hand-pollination or other intensive production processes. Though hybrid seeds tend to produce more robust, better yielding crops than OPVs, both fall under the umbrella of “improved” seed. Throughout our interviews and this memo, the seed referred to is specifically maize seed. Our team focused on maize since it is the most popular crop in Uganda. It is one of the most common types of seed sold and therefore one of the most vulnerable types to counterfeiting and “faking.”

## METHODOLOGY

The agrodealers that we interviewed were identified using a combination of convenience sampling and snowball sampling. Our objective was to interview as many of the agrodealers in Mbale as possible. The agrodealers were first identified by walking Market Street and looking for stalls with signs advertising agricultural inputs. Agrodealers that we interviewed were also asked to identify other shopkeepers selling similar products. This may lead to bias in the responses, in that the shopkeepers we interviewed were more likely to be in a central location, have more visible stalls, and know other agrodealers. However, given challenges of identifying the entire population of agrodealers in the Mbale area and traveling to multiple different locations in the district, a convenience sample is a simple, feasible way to collect information. Mbale District was also part of the Feed the Future “zone of influence” for Uganda, and several Feed the Future Activities operated there, including the USAID/Uganda Feed the Future Agricultural Inputs (AgInputs) Activity. As such, the agrodealers in Mbale may have greater awareness of counterfeit inputs and strategies for detecting and avoiding them than agrodealers in other districts. This could be a potential source of bias; the perceptions of Mbale agrodealers about counterfeits may not be representative of all of Uganda.

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<sup>3</sup> Though it is important to note that some of the “improved” seed available for sale on the Ugandan market is of very poor quality, and in some cases little better than the home saved seed that farmers are already using.

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### ANALYSIS OF HOW AGRODEALERS PERCEIVE AND RESPOND TO COUNTERFEITING IN THE SEED SECTOR

Our team conducted semi-structured interviews with 17 agrodealers. The respondents were asked questions from a standard script, with follow-up questions frequently posed to elicit more information. A translator fluent in several local languages assisted with the interviews when necessary. For respondents uncomfortable with English, the interview was conducted wholly in their local language. For other respondents, clarification in local language would be offered if they seemed confused by the question.

After the first day of interviews, a review of responses determined that more targeted questions could be asked in order to obtain more focused answers. Since some questions were only asked on the second day of interviews, some of the responses summarized here do not reflect the entire sample population of 17; this is indicated where applicable. Some response data may not reflect the entire sample population for other reasons; for example, an agrodealer may not have provided a clear response to a question or time constraints may have prevented a question from being asked to all interviewees.

Interviewees (plus a few agrodealers who could not be interviewed one-on-one due to time constraints) were invited to a half-day focus group to broaden the discussion on these issues. Twenty-two agrodealers participated. The focus groups were structured around a script of questions from the facilitators, but were actively moderated to allow for discussion among participants. Follow-up questions were asked based on the responses from agrodealers in order to encourage deeper discussion of the topics. At first, one group discussion was held in English, again with a translator present to help with clarification. As more participants arrived later, two groups were formed, one conducted in English, and one led in Lugandan by the translator. This allowed for smaller groups, which gave each individual more time to speak and allowed those less comfortable with English to use a more familiar language. Participants were compensated with a transportation reimbursement and lunch at the end of the session.

## FINDINGS

In our discussions with agrodealers, our questions were structured in broad categories. For each topic, key themes and patterns emerged across the responses. This section characterizes the information we learned from agrodealers, as well as some possible explanations for and implications of those responses.

### Product offerings:

Agrodealers' purchasing decisions are very strongly tied to customer demand. The farmers tend to request specific seed brands, often the same brands season after season, and agrodealers place their orders with the wholesalers/manufacturers based on demand from their customers. When prodded on how price affects their decision making, the agrodealers maintained that demand from their customers was the primary basis for deciding what to order. If they chose not to stock a product that customers want, they would lose those customers to one of the many competing shops in the area that had the product in stock.

The agrodealers reported that in their experience, farmers' preferences for particular brands of seed tend to be strongly held and inflexible, and the agrodealers reported that they have little power in convincing farmers to use different products. The entrenched nature of seed preferences is likely caused in part by the inherent risk involved in purchasing seed in Uganda. Given the widespread reports of counterfeit, adulterated, and poor quality seeds on the market, farmers

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are naturally wary of purchasing seed that will not germinate as advertised. Once a farmer has been introduced to a particular brand with an adequate germination rate and yield, it is likely that he/she will keep coming back to the product he/she knows. Smallholder farmers in Uganda naturally have a low risk tolerance, and it is likely that many farmers are unwilling to switch to a new product, even if it might generate higher yields. Because of these entrenched preferences, any incentives offered by seed companies to encourage agrodealers to purchase or market their products could be ineffective. Agrodealers will not purchase a particular brand if the farmers are not requesting it, and so it may prove difficult to use agrodealers as the leverage point for promoting quality seeds.

### Pack size offerings:

All agrodealers reported that the smallest seed package they sell is a 2kg pack.<sup>4</sup> They also unanimously reported that they sell more of the 2kg packs than any other size. We asked 16 agrodealers if customers ever request a pack size smaller than 2kg, and 15 of 16 said yes. They reported that 1kg and 500g packs are frequently requested by farmers. We asked 8 agrodealers follow-up question about how often farmers request smaller size packages; 6 responded that many people asked for these products, while 2 said that it was an infrequent request. According to agrodealers, customers are interested in smaller sized packages for several reasons:

- They have a small plot of land and only need a small quantity of seeds.
- They need an odd number of kilograms of seed and do not want to purchase more than they need (i.e. purchasing two 2kg packs to obtain 3kg of seed).
- They would like to try a new product and only want to purchase a small quantity for testing.

When asked directly if they would ever open a seed pack and measure out a smaller volume for customers, the respondents answered hesitantly. Measuring seeds from a pack that is not opened in front of a customer presents ample opportunity for adulterating the product, which is why the practice has been outlawed by Uganda's Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF). No one wants to go on the record admitting to this practice because it could put them at risk of having their products confiscated, even if they do use this business practice to meet customer needs. Sometimes, the admission that an agrodealer would measure out seeds would come out as part of a discussion about something else. Reviewing the transcripts for mentions of how the agrodealers respond to customer requests for smaller packs, we found varied responses:

- 10 said they open a pack and weigh out seeds for the farmer
- 3 said that they turned the customers away
- 2 encouraged the customer to find someone else to split the pack with

### e-Verification programs:

One of the newest innovations in fighting the problem of counterfeit agricultural inputs is the use of e-verification programs, which introduce scratch labels to input packaging. The end customer scratches the label, revealing a unique

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<sup>4</sup> For reference, a farmer requires approximately 10kg of maize seed to plant an acre; maize is the most commonly sold seed, and most likely what the agrodealers were referring to.

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authentication code, and sends the code to a specific USSD number, which confirms that the product is genuine and has not expired. Genuine, in this case, means that the product is authentic, and comes directly from the manufacturer. The labels are single-use and difficult to replicate.

The e-verification labels help to combat two of the major sources of counterfeit products in Uganda: imitation packaging (bottles and bags that are designed to look like premium brands but contain substandard products) and re-use of genuine packaging (original bottles and bags refilled with substandard products and resealed). With single-use labels, original packages cannot be re-used once the labels have been scratched; the labels themselves are also difficult to reproduce without the right equipment, and thus difficult to include on imitation packaging. E-verification programs also help the participating companies build brand equity with their customers, by signaling that they stand by their products, and can be used to generate some useful data on where and when their products are being purchased.

All of the agrodealers that we interviewed had experience with e-verification labels.. The USAID AgInputs Activity, mentioned above, promoted two e-verification programs in the Mbale area: KAKASA, which was created to verify the authenticity of a product, and AgVerify, which was meant to provide a guarantee of both authenticity and quality. Some of the agrodealers have also seen imported seed from Kenya, which also comes with an e-verification label issued by the Kenyan government. It is important to note that regardless of whether a the e-verification label sticker was KAKASA, AgVerify, , or from Kenya, all agrodealers referred to the label as “Kakasa, and farmers and agrodealers alike viewed the labels as a signal of quality, whether or not the program actually guaranteed it.

Program	Implemented by	Quality verification	Authenticity verification	Picture
<b>AgVerify</b>	Private company	X	X	
<b>KEPHIS</b>	Kenyan government parastatal	X	X	
<b>KAKASA</b>	Uganda National Bureau of Standards and private companies		X	

The agrodealers reported that their customers were very aware of the KAKASA and AgVerify programs and have high trust in the labels. This awareness is a double-edged sword: it means that farmers specifically request products with an e-verification label and value quality, but it also means that farmers might suspect an agrodealer of selling counterfeit or adulterated products if any of his/her stock is missing a scratch label. . Unfortunately, some companies only used e-verification labels on a portion of their products, while others did not participate at all. Both the KAKASA and AgVerify

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programs have now ended, and only a few companies are still using e-verification labels. As one agrodealer explained, “Some maize does not have Kakasa. So when the farmers come here and find products without Kakasa, they will say those are fake products and the blame is shifted to the agrodealers.”

In addition, it was reported that the SMS-based e-verification system often was not working properly. Several agrodealers in the focus group stressed this difficulty. Farmers would send an SMS containing the code on their label to a special phone number listed on the label, but would then receive an error message that the system was down. During normal operation, the farmer receives a reply SMS indicating if the code on the label is valid or not. An invalid code would indicate an expired or counterfeit product. When pressed on how often the error messages occurred, one agrodealer estimated that, out of ten labels, only four would receive proper verification responses and the other six would be errors. Since all programs are referred to as “Kakasa,” it is unclear which of the three e-verification labels on the market had these problems. The errors in the system were often interpreted as an indication of fake products, with agrodealers bearing the blame and anger of customers.

It is unclear how prevalent the e-verification labels will be in the future, even though farmers have trust in them. The lack of e-verification labels in the future may result in farmers distrusting agrodealers and seed companies. In light of the belief of both farmers and agrodealers that any e-verification label indicates high quality, it would be beneficial if future e-verification programs met this locked-in expectation by including a quality inspection element. If companies that produce lower quality seed begin attaching e-verification labels to their authentic but poor yield products, the meaning of the label becomes diluted.

### Counterfeits:

Almost all of the agrodealers claimed that they had never encountered counterfeit seeds and did not know where they come from, which is unsurprising given they were informed of our affiliation with USAID, and would not want to be publicly affiliated with counterfeit seed. When pressed, four agrodealers said they believe the seed companies themselves produce fake seeds, four did not know where the counterfeit seeds came from, one blamed other agrodealers for adulterating the products, and one believed that employees of the seed companies were stealing genuine packaging to sell low-quality seed on the side. Agrodealers were unanimous in saying that no one had ever tried to sell them counterfeit seed. A few had experienced instances where the seed they received from a company failed to germinate. In all of these cases, they contacted the company and received replacement seed.

In the fight against counterfeit products, it is vital that agrodealers understand how to recognize products that are counterfeit or have been adulterated. We received mixed responses on how the agrodealers evaluate a pack of seeds to determine if it is counterfeit or genuine from the 16 respondents who were asked. Some respondents used multiple techniques to do this evaluation. Results are summarized in the table below.

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## ANALYSIS OF HOW AGRODEALERS PERCEIVE AND RESPOND TO COUNTERFEITING IN THE SEED SECTOR

Technique	Tally of agrodealers (out of 16)
Look for e-verification label	8 (50%)
Check to see if lot number on blue MAAIF label matches lot number on seed pack	3 (19%)
No way to tell	3 (19%)
Appearance of seeds themselves	2 (13%)
Examine packaging design	2 (13%)

For context, MAAIF provides blue certification labels to companies whose seed multiplication fields have been inspected and tested. It is meant to indicate that the seed meets the national seed quality standards. This label is required on all domestically produced seed that is sold in Uganda. It should be noted that MAAIF's inspection services are underfunded and overburdened, and do not have the capacity to inspect all of the seed produced in Uganda. The National Seed Certification Service (NSCS), the entity under MAAIF tasked with inspection and certification, employed only seven seed inspectors in 2017, for more than 20,000MT of certified seed sold.<sup>5</sup>



Interestingly, agrodealers were split on the scope of the counterfeiting problem. Twelve agrodealers were asked if counterfeiting affects many farmers or only a few. Respondents were split down the middle: six believed that many farmers were affected by counterfeits, and six said that only a few people were affected by the problem. Of those who said counterfeiting affected a smaller number of farmers, three of these agrodealers made sure to emphasize that the impact

<sup>5</sup> Mabaya, E., Mugoya, M., Mubangizi, E., & Ibyisintabyo, C. (2018). *Uganda Brief 2018 – The African Seed Access Index* (Technical report). The African Seed Access Index.

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### ANALYSIS OF HOW AGRODEALERS PERCEIVE AND RESPOND TO COUNTERFEITING IN THE SEED SECTOR

on those people was high, so counterfeiting is still an important issue to resolve. The even split in beliefs about the scope of impact highlights the challenges that persist in quantifying and understanding the “fake seeds” problem. Anecdotes abound, but it is difficult to collect hard evidence. The various other problems in the seed market, including low quality products and the improper use of genuine seeds, also make it difficult to determine when poor germination and low yield are the result of counterfeit products or other issues.

#### Barriers to using improved seed:

From the perspective of the agrodealers, there are several main reasons why more farmers do not purchase improved seed. The question was answered by 16 agrodealers; note that some agrodealers provided multiple reasons:

1. Cost (10 respondents; 59%) – Improved seed is much more expensive than the home-saved version. One agrodealer explained that a 2kg pack of improved seed may cost from 12,000 UGX to 17,000 UGX, while 2kg of home-saved seeds only costs around 1,000 UGX.
2. Risk aversion (5 respondents; 29%) – Concerns with counterfeits discourage farmers from trying improved seed in favor of home-saved seed. If the home-saved seed has been providing an adequate harvest, he/she will be very unwilling to make the higher investment on improved seed.
3. Positive experiences with home-saved seeds (3 respondents; 18%) – Three agrodealers explained that, because home-saved seeds had been providing a sufficient harvest, farmers were unwilling to switch. They were satisfied with the performance of home-saved seeds and therefore had no interest in trying a new product.
4. Bad experiences with improved seeds (1 respondent; 6%) – One agrodealer claimed that the improved seeds offered the same yield as the home-saved seeds, and therefore farmers did not think they were worth purchasing. Another agrodealer alluded to a similar issue when discussing the improper use of products, explaining “He’ll come here and say, I need NASECO [a specific seed brand], this type of brand or grade which is supposed to be grown in the highlands, but instead he plants in the lowlands. And then the yields don’t turn out to be good.”

Agrodealers were asked if the majority of the farmers throughout the country had been sensitized to the high yield potential of improved seeds, to gauge if education was a primary factor hindering the adoption rates of these products. Of the 14 who answered, 11 (79%) agrodealers said that most farmers are aware of improved seeds offering the potential for higher revenue but the factors above prevent them from using the products. There were 3 (21%) agrodealers who believed that only a small fraction of farmers are aware.

## FURTHER INVESTIGATION

Common themes and areas for improvement emerged in our conversations with agrodealers about the seed market. Hearing similar concerns echoed suggests that these issues are ripe for further exploration in order to evaluate how addressing each one can improve the sector. Below, we highlight some of these common concerns and provide suggestions to begin addressing them.

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### ANALYSIS OF HOW AGRODEALERS PERCEIVE AND RESPOND TO COUNTERFEITING IN THE SEED SECTOR

#### Reasons for lock-in:

Agrodealers report that farmers demonstrate high levels of lock-in for their seed brands of choice. Once a farmer has loyalty to a brand, agrodealers do not believe that they can change that. Understanding how these preferences form and the reasons why they persist can be valuable in developing strategies for promoting quality seed. Farmers could be interviewed about how they make decisions about products. Possible reasons include aversion to risks associated with trying new products and lack of access to trustworthy information.

#### Encourage continuation of scratch label verification:

Given the high buy-in for e-verification programs, it is important to ensure that they continue in future seasons. In order to avoid misinterpretation, it may be beneficial if these programs include a quality certification requirement for all participating companies. Most farmers and agrodealers already interpret scratch labels as signals of quality, so aligning the process behind the labels to these ingrained expectations could reduce confusion.

#### Training agrodealers on agricultural practices:

As discussed above, agrodealers are likely not a leverage point for promoting specific products, but, as a conduit between company representatives and farmers, they may be positioned to provide farmers with valuable information. Once a farmer acquires improved seed, it is important that he/she uses proper planting and cultivation methods in order to achieve the high yield promised, which will increase the return on investment and build trust in improved seed. High success will build that specific farmer's confidence in purchased seed and may have spillover effects that encourage other members of the community to try these products. Therefore, investments should be made in training agrodealers on the proper agricultural practices and encouraging them to pass this information on to their customers.

#### Strengthening extension programming:

Telling farmers about the benefits of improved seed is good, but showing them is even better. This could be achieved through expanded networks of extension agents who can work directly with farmers to ensure they are using the correct agricultural techniques to achieve high yields. While agrodealers do stand to gain by growing their customer base if they go out to communities and demonstrate the benefits of improved seed, they are reluctant to fill this role due to costs associated with transportation and communication. Seed companies also have incentives for providing this service so as to grow their customer base. One major seed company already engages in such an initiative, and others companies should be encouraged to follow suit. While the Ugandan government aims to provide extension services, their workers are stretched thin and are very limited in the number of farmers they can reach. If possible, the government should be encouraged to invest money in bolstering these services.

#### Loans to increase access to improved seeds:

High cost is the largest barrier to farmers using improved seed. Low-interest loan programs could make these products more accessible. It is crucial that these be offered in tandem with education on the proper planting and cultivation of

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improved seeds. Ideally, the farmers accessing these loans may be those who are trying improved seeds for the first time and unfamiliar with the best techniques to achieve a high yield. Therefore, training on how to get the most value out of the seeds will be needed to increase the likelihood that farmers pay back the loans.

### Smaller pack offerings:

Companies should be encouraged to provide seeds in 500g and 1kg sealed packages. Many customers are interested in these products, and offering them may grow a company's customer base and increase sales, while increasing the adoption rate of improved seeds. Smaller pack sizes will benefit agrodealers, who sometimes turn customers away or put themselves at risk by opening a sealed pack and weighing out a small portion, which is illegal.

### ABOUT MSM

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