



TASAI

THE AFRICAN SEED ACCESS INDEX



Uganda Brief 2018 - The African Seed Access Index

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INTRODUCTION

A competitive seed sector is key to ensuring the timely availability of high-quality seeds of improved, appropriate varieties at affordable prices for smallholder farmers in Uganda. TASAI seeks to encourage public policymakers and development agencies to create and maintain enabling environments that will accelerate the development of competitive formal seed systems serving smallholder farmers.

This country brief summarizes the key findings of The African Seed Access Index (TASAI) study conducted to appraise the structure and economic performance of Uganda's seed sector in 2017. The study evaluates the enabling environment necessary to build a vibrant formal seed sector, focusing on four grain and legume crops important to food security in Uganda — maize, beans, finger millet, and sorghum — which together account for about 35% of arable land in Uganda (FAOSTAT, 2017). The study covers 20 indicators divided into the following categories: Research and Development, Industry Competitiveness, Seed Policy and Regulations, Institutional Support, and Service to Smallholder Farmers. [Appendix 1](#) summarizes all 20 indicators and compares Uganda with 12 other African countries where TASAI has conducted similar studies.

Overview

Like most other African countries, the seed industry in Uganda consists of two systems: the informal sector and

the formal sector. This country brief focuses almost exclusively on the formal seed sector.

The informal sector broadly refers to the system in which farmers produce, obtain, maintain, and distribute seed resources from one growing season to the next (FAO, 1998). Due to limited exposure, low availability of varieties, inability to purchase seeds, limited access to agro-dealers, or for other reasons, most smallholder farmers in Uganda still rely at least in part on informal seed systems, particularly for crops other than maize. In the informal system, farmers generally acquire seeds from the local community, including markets and the farmers' social networks. Standards in the informal seed sector are not monitored or controlled by government policies and regulations; rather, they are guided by indigenous knowledge and standards, and by local social structures.

The formal sector focuses on breeding and evaluating improved varieties and producing and selling seed of these varieties certified by the National Seed Certification Service (NSCS). The NSCS is the government entity under the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) responsible for regulating Uganda's seed industry. As shown in Table 1, Uganda's formal seed sector comprises many institutions, including government (e.g. MAAIF, DCIC, NSCS and NARO, local government extension services), the private sector (MNCs and local seed companies), agro-dealers, and development agencies (NGOs and CBOs). The country's most important seed association, the Uganda Seed Trade Association (USTA), plays an important role in sharing information and advancing members' interests.

Table 1: Role of key players in Uganda's formal seed sector

ROLE	KEY PLAYERS
Research and breeding	NARO, NaCRRI, NaSARRI, CGIAR, AATF
Variety release & regulation	NSCS, MAAIF, NSB
Breeder and foundation seed production	NARO, NaCRRI, NaSARRI; local seed companies, MNCs, AATF
Seed production	Seed companies, local seed businesses
Processing and packaging	Seed companies
Education, training, extension	Seed companies, extension agents, farmers' organizations, NGOs, agro-dealers, USTA
Distribution and sales	Seed companies, rural agro-dealers, NGOs

Key Acronyms: AATF – Africa Agricultural Technology Foundation, CIMMYT – International Maize and Wheat Improvement Center, DCIC – Department of Crop Inspection and Certification, DUS – Distinctness, Uniformity, and Stability, ISTA – International Seed Testing Association, LSBs – Local Seed Businesses, MAAIF – Ministry of Agriculture, Animal Industry and Fisheries, MNCs – Multinational Corporations, NAADS – National Agricultural Advisory Services, NaCRRI – National Crop Resources Research Institute, NARO – National Agricultural Research Organization, NaSARRI – National Semi-Arid Resources Research Institute, NGOs – Non-Governmental Organizations, NSCS – National Seed Certification Service, NSB – National Seed Board, OWC – Operation Wealth Creation, OPVs – Open Pollinated Varieties, QDS – Quality Declared Seed, UPHIA – Uganda Plant Health Inspectorate Agency, USTA – Uganda Seed Traders Association, VCU – Value for Cultivation and Use, VRC – Variety Release Committee.



RESEARCH AND DEVELOPMENT

Number of active breeders

Uganda has 15 active breeders for the four priority crops – maize, beans, finger millet¹, and sorghum. Most breeders (7 out of 15) focus on maize, while 4 focus on beans, and 2 breeders each work with millet and sorghum. In addition, several foreign-owned companies rely on the breeding capacity of their regional headquarters, located outside Uganda. Of the 15 local breeders, 2 are employed in the private sector, while 13 are from the two National Agricultural Research Organization (NARO) institutes: the National Crop Resources Research Institute (NaCRRI), which has nine breeders focused on maize and beans, and the National Semi-Arid Resources Research Institute (NaSARRI), which has four breeders focused on sorghum and millet. There are more breeders working at NaCRRI than at NaSARRI, which is in part due to the fact that NaCRRI has received technical and financial support from the Africa Agricultural Technology Foundation (AATF), Alliance for a Green Revolution in Africa (AGRA), the Pan-African Bean Research Alliance (PABRA), and various CGIAR institutions, namely the International Institute of Tropical Agriculture (IITA), the International Center for Tropical Agriculture (CIAT), and the International Maize and Wheat Improvement Center (CIMMYT) under the Drought-Tolerant Maize for Africa project. In contrast, NaSARRI lacks the funds to maintain a comprehensive breeding program. On average, seed companies rate their satisfaction with the number of active breeders as “good” (69%). The highest levels of satisfaction were reported for beans (80%) and maize (72%), while satisfaction with sorghum breeders is “fair” (55%). Seed companies are least satisfied with millet breeders (40%).²

Varieties released in the last three years

Between 2015 and 2017, a total of 40 varieties were released across the four crops. Twenty-six of these were maize varieties, five each were bean and millet varieties, and four were sorghum varieties. Not surprisingly, the number of varieties released correlates with the number of active breeders. Figure 1 shows the trend for variety releases (using three-year moving averages) for the four crops between 2002 and 2017. An important finding is that variety releases for maize outnumber the combined

releases for bean, millet, and sorghum. The number of maize variety releases has been rising since 2012, in part due to the entry of foreign companies and the development and release of Water Efficient Maize for Africa varieties by the AATF. By contrast, no millet varieties were released between 2000 and 2016, and no sorghum varieties were released between 2000 and 2011. One reason for the low number of sorghum releases is that there is no hybrid sorghum breeding program in the country.

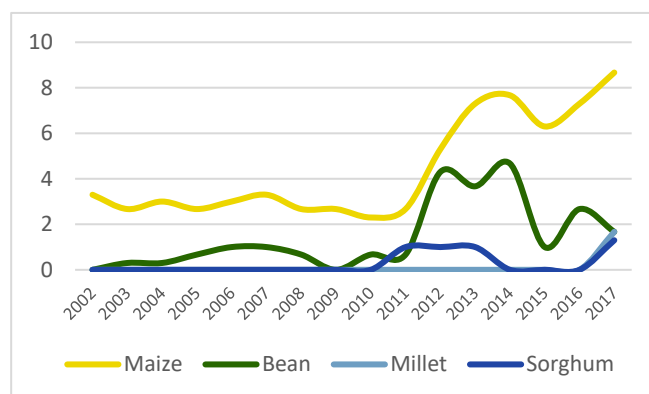


Figure 1: Trend in variety releases between 2002-2017 (three-year moving average)

Availability of foundation seed

Most seed companies source their foundation seed (also called basic seed) from the NARO institutes: NaCRRI for maize and bean seed and NaSARRI for sorghum and millet. All the companies producing millet and bean seed source foundation seed from these institutions. Three of the 18 maize seed-producing companies and 2 of the 11 sorghum seed-producing companies are foreign-owned and source their foundation seed from their regional/continental breeding programs. The main sources of maize foundation seed outside Uganda are Kenya (for five companies), Tanzania (for one company), and Zimbabwe (for four companies), while one company sources sorghum foundation seed from India and another from Zimbabwe³. All bean and millet foundation seed is sourced from within Uganda.

On average, seed companies rate the availability of foundation seed for the four crops as “good” (62%). The companies are more satisfied with the availability of foundation seed for maize (72%) than for the other three crops - beans (59%), millet (50%), and sorghum (55%). This makes sense, given the greater investment in maize

¹ Herein referred to as millet.

² All scores are based on industry self-reporting of satisfaction on the following scale: 0-19.99% (extremely poor), 20-39.99% (poor), 40-59.99% (fair), 60-79.99% (good), and 80-100% (excellent).

³ Note that these country sources also apply for foundation seed sourced from CGIAR centers based outside Uganda.



breeding programs by national and international agricultural research organizations.

Number of varieties sold in 2017

In 2017, seed companies sold a total of 68 varieties across the four focus crops in this study. Of these, 41 were maize varieties, 13 were bean varieties, 6 were millet varieties and 8 were sorghum varieties. The most popular maize varieties were Longe4, Longe5, Longe5D, and MM3. Longe4 and Longe5 are open-pollinated varieties (OPVs) that were released in 2000 and are popular for their early-maturing and nutritional characteristics. Longe4 is also popular for its resistance to maize streak virus. MM3 is a derivative of Longe4 and is early-maturing. Longe 7H, a hybrid sold by all seed companies, was also reported to be a popular variety.

The most popular bean varieties in 2017 were recent releases of NABE 15 and NABE 17 and an older variety, NABE4, which was released in 1999. Other varieties such as K132, K131 and NABE1 have been left on the market as landraces and are classified as standard seed. The most popular millet varieties in 2017 were PESE1 and PESE2, released in 1989 and 1995, respectively, and Seremi 2, while the most popular sorghum varieties were Seso1, 2, and 3. These varieties are classified as standard seed and are sold primarily to relief agencies.

Number of varieties dropped over the last 10 years

Seed companies were asked if they had dropped varieties between 2008 and 2017. Fifty percent of companies reported dropping maize varieties, 59% reported dropping bean varieties, 50% reported dropping millet varieties, and 33% reported dropping sorghum varieties. Across the four crops, companies reported dropping a total of 25 varieties – 9 maize, 7 bean, 3 millet, and 6 sorghum varieties.

The dropped varieties included: SC407, Longe4, Longe5, Longe10H, YARA41, Victoria2, ZM652, and Ssalongo for maize, NABE4, NABE5, NABE11, NABE17, K131, and K132 for bean, PESE1, PESE2, and Seremi1 for millet, and Sekedo, Epuripuri, Seso1, and Seredo for sorghum. The reasons cited for dropping these varieties were the need to replace these varieties with superior ones, a low tolerance to drought, high levels of adulteration (especially in the case of maize OPVs), a lack of foundation seed (especially for bean varieties), the degeneration of the variety (for the K132 bean variety), and low yields. These facts

notwithstanding, some companies continue to produce and market a number of the varieties dropped by others.

Table 1: Reasons for dropping varieties

Crop varieties	Reason dropped
Maize SC 407, Longe 4, Longe 10H, YARA 41, Victoria 2, Longe 5, Hybrid 2H, ZM652, Ssalongo	- Replacement with superior high-yielding varieties - Low tolerance to drought - High level of adulteration, especially for OPVs - New and better varieties with drought and disease-tolerant characteristics released
Bean Nabe 4, Nabe 5, Nabe 11, Nabe 17, K131, K132	- Lack of foundation seed for old varieties - NABE 11 was no longer marketable - K132 was dropped due to degeneration - Poor storage attributes - Introduction of higher-yielding varieties
Millet Pese 1, Seremi 2, Pese 2	Introduction of higher-yielding varieties
Sorghum Sekedo, Epuripur, Seso1, Seredo	Preference for drought-tolerant varieties

Average age of varieties sold in 2017

The average age of varieties sold in 2017 was 6 years for maize, 11 years for bean, 16 years for millet, and 12 years for sorghum. For three of the four crops (maize, bean, and millet), the youngest varieties on the market are one year old. Four sorghum varieties released in 2017 had not yet been commercialized by the end of the year. The youngest sorghum variety on the market in 2017 was released in 2011. The oldest varieties on the market were 17 years for maize, 23 years for bean, 28 years for millet, and 22 years for sorghum.

The fact that all four crops have old varieties on the market suggests a reluctance on the part of some farmers to switch to new varieties. Although 37 varieties of bean, millet, and sorghum have been released since 2002, the oldest varieties on the market were more than 20 years old.

Table 2: Age of varieties sold (in years)

Crop	Age of youngest variety sold	Age of oldest variety sold	Average age of varieties sold
Maize	1	17	6
Bean	1	23	11
Millet	<1	28	16
Sorghum	6	22	12

Varities with climate-smart features

To be classified as climate-smart, a crop variety must meet at least one of two criteria: early maturity and/or tolerance to extreme weather conditions such as drought, flooding, or frost. For maize, 8 of 26 varieties released between 2015 and 2017 were climate-smart, with drought tolerance being the most common climate-smart trait (6 of the 8 varieties). Only three of the five released bean varieties were climate-smart – all of them early-maturing.



All three climate-smart sorghum varieties (of the four released) were drought-tolerant.

INDUSTRY COMPETITIVENESS

Number of active seed companies

In 2017, there were 34 registered seed companies in Uganda, 20 of which produced and marketed certified seed for at least one of the four focus crops. Of these 20 companies, 19 produced maize seed, 17 produced bean seed, 6 produced millet seed, and 12 produced sorghum seed. Five of these 20 seed companies were foreign-owned.

In 2017, seed companies produced a total of 21,959 tons of maize seed, 3,794 tons of bean seed, 19 tons of millet seed, and 2,302 tons of sorghum seed. For the same year, a total of 17,013 tons of maize seed was sold. By comparison, the 2015 sales figures were: 9,500 tons for maize seed, 2,957 tons (bean), 12 tons (millet), and 1,857 tons (sorghum).

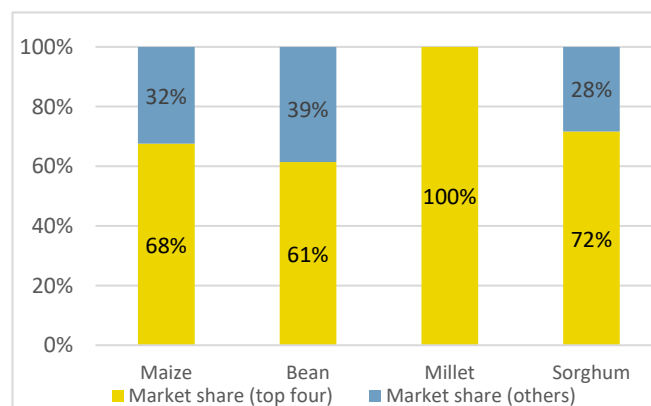
Market share of top seed companies

The market concentration for the four focus crops in this study was calculated in two ways. First, the sales of the top four companies were calculated as a percentage of total industry output for each crop. Using this method, the volume-weighted market share for the top four companies by crop was 69% for maize, 61% for bean, 100% for millet, and 72% for sorghum. Figure 2 illustrates the market shares.

Market concentration was also analyzed using the Herfindal-Hersman Index (HHI). The HHI measures market concentration by squaring the market share of each firm competing in a market and then adding up the resulting numbers. The HHI can range from close to zero (perfect competition) to 10,000 (monopoly)⁴. The HHI was calculated for each of the four crops. The HHI for three of the crops – maize (1,425), bean (1,214), and sorghum (1,703) – is low. Due to the low number of active companies producing millet seed, the HHI score for millet is extremely high (5,139). The market shares of the top four companies and the HHI results both indicate that the seed market for maize, bean, and sorghum is competitive, with many active seed companies, none of which is dominant. The

millet seed market is less competitive due to the small number of active seed companies.

Market share of government parastatal



Uganda has no active government parastatal engaged in the production and marketing of certified seed.

Figure 2: Market Share (%) of Top Four Companies

Length of import/export process for seed

The length of the import/export process is calculated as the number of days from the date of the application for an import/export permit to the date when the consignment is cleared at the border. The NSCS only issues import and export permits to entities registered as seed merchants.

Of the 20 seed companies, 4 companies (all foreign-owned) imported seed into Uganda in 2017. Maize seed was imported in the largest quantity (967 metric tons, from Kenya and Zimbabwe), followed by sorghum (200 metric tons). The main border point of entry was Malaba, on the Uganda-Kenya border. Seed companies reported that it took an average of 14.5 days to import seed into Uganda. Obtaining the relevant documentation, including the import permit and phytosanitary certificate, took up over half this time (8 days), while clearing the seed at the border point of entry took about 4 days. The main causes of delay had to do with obtaining documentation and heavy cargo traffic at the border. Despite the delays, seed companies rate the import process as “good” (70%).

Five of the 20 active seed companies exported seed in 2017. A total volume of 2,207 metric tons of seed was exported, equal to 10% of total seed sales in 2017. Companies exported 1,305 metric tons of maize seed (8% of total maize seed sales), 56 metric tons of bean seed (2% of total

⁴ Scale for HHI scores, ranging from extremely low to extremely high levels of market concentration: <1,000 (extremely low), 1,000-1,999 (low), 2,000-

2,999 (average), 3,000-3,999 (high), >4,000 (Extremely high, i.e., monopoly or near monopoly).



bean seed sales), 4 metric tons of millet seed (33% of total millet seed sales), and 842 metric tons of sorghum seed (45% of total sorghum seed sales). South Sudan was the main export destination for the seed (1,937 metric tons, or 88% of total exports), where the buyers were primarily emergency relief agencies. Other destinations included Burundi (100 metric tons), Tanzania (80 metric tons), the Democratic Republic of Congo (45 metric tons), and Kenya (45 metric tons). The main border points of exit were Nimule (to South Sudan), Malaba (to Kenya), Bunagana (to the DRC) and Port Bell (to Tanzania). Seed companies reported that it took 15 days to export seed and rated the exportation process as “good” (60%).

SEED POLICY AND REGULATIONS

Length of variety release process

The length of the variety release process is calculated as the number of days from the date of the application for a variety release to the Variety Release Committee (VRC) to the date when the variety is approved for release by the NSCS. Prior to the release of a crop variety, it is evaluated for distinctness, uniformity, and stability (DUS) and value for cultivation and use (VCU). According to the seed regulations, DUS tests should be performed for at least two seasons, while VCU tests should be conducted in at least four agro-ecological zones. On average, the VRC meets twice a year. According to seed companies and breeders, the average length of the variety release process is 28 months.

The official cost for DUS tests is UGX 350,000 (US \$100)⁵ per variety, while VCU tests cost UGX 800,000 (US \$220) per variety. In addition, breeders pay UGX 100,000 (US \$30) to have a variety listed in the National Variety Catalogue. However, seed companies and breeders reported that, in reality, the total cost of the variety release process is substantially higher (US \$1,200 to US \$5,000) due to additional expenses, such as transport and living costs for staff who run the on-farm trials, site management, crop assessments, and evaluation. For similar reasons, research institutes reported paying US \$350 (UGX 1,225,000) for the DUS test, as opposed to the official rate of UGX 350,000. Despite the high costs, seed companies rate the variety release process as “good” (75%), while the NSCS and NARO rated the process as “excellent” (80% and 90%, respectively).

Status of seed policy framework

Under the current institutional arrangements, the NSCS falls under the Department for Crop Inspection and Certification (DCIC). In addition, the NSCS serves as the secretariat for the National Seed Board (NSB), which advises the MAAIF on all seed-related issues. However, in 2016, the MAAIF drafted a national seed policy, which included a proposed change of the organizations in charge of seed regulations. The new policy proposes that the DCIC become a semi-autonomous agency called the Uganda Plant Health and Inspectorate Agency (UPHIA), which will oversee all plant health services, seed regulatory services, and agricultural and plant-related chemical regulatory services (MAAIF, 2016a). The updated seed policy has yet to be passed by the Cabinet.

The Seeds and Plant Act of 2006 is the main law governing Uganda’s seed industry. The law established the NSB and NSCS. In turn, The Seeds and Plant Regulations of 2017 were developed as implementing instruments for the Act. These regulations provide details related to plant breeding, variety release, seed multiplication, seed conditioning, seed marketing, seed importation and exportation, and quality assurance of seeds and other planting materials. The MAAIF has also developed the National Seed Strategy (MAAIF, 2016b).

Uganda is a member of both the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC). Uganda’s seed regulations have been amended to conform to COMESA’s harmonized seed regulations, which aim to facilitate the movement of certified seed within the region. However, as of yet no Ugandan seed company has listed varieties in the COMESA seed catalogue.

The MAAIF plans to apply for the accreditation of the national seed laboratory by the International Seed Testing Agency (ISTA) in 2018. However, prior to submitting this application, the MAAIF will need to hire additional laboratory staff to meet ISTA requirements.

Quality of seed regulations and enforcement

Seed companies rate the quality of Uganda’s seed law and regulations as “good” (60%). In contrast, companies are less satisfied with the enforcement of these tools, which they rate as “fair” (48%). The main reason seed

⁵ Exchange rate: US \$1 = UGX 3,500 (October 2018)



companies gave for this relatively low rating was the need to recruit, train, and deploy more qualified seed inspectors, who would monitor seed companies' production and processing activities, thus ensuring seed quality throughout the value chain.

Adequacy of seed inspectors

Seed inspection falls under the mandate of the NSCS. Unfortunately, the NSCS has a significant shortage of inspectors, employing only seven inspectors in 2017. This shortage is due to lack of funding: already in 2014, the NSCS had a budget deficit of 70% for the employment of inspectors (Barungi and Naluwairo, 2014). Seed companies rate their satisfaction with seed inspection services as "fair" (59%). In addition to the seven seed inspectors, the MAAIF has trained phytosanitary inspectors who are stationed at the major border points. These inspectors handle both phytosanitary services and seed imports.

Several seed companies have given support to a private initiative that would verify the seed quality at the production and processing stages. Known as Ag-Verify, the initiative was initially financed by USAID, and offered two core services: (i) training and deployment of private seed inspectors, and (ii) verifying the quality of seed produced by seed companies. For the latter, samples from the seed companies' fields would be tested at an ISTA-accredited laboratory, managed by a private company called Chemiphar. These services were intended to complement the mandatory seed inspection and certification services provided by the NSCS. Unfortunately, the lack of an agreement on the working and payment structure between Ag-Verify, the NSCS, and seed companies led to the dissolution of Ag-Verify in 2018. By the time it closed, Ag-Verify had trained 32 agronomists in the application of the COMESA Seed Harmonization Standards. Of these agronomists, six were employed and supervised directly by Ag-Verify; the rest were employed by the NSCS and seed companies.

Efforts to stamp out fake seed

Seed companies reported 14 cases of fake seed in 2017. This is likely to be an underestimate, as most cases go unreported. Seed companies rate the government's efforts to stamp out fake seed as "fair" (53%). Seed companies reported that the main sources of fake seed are seed companies, seed distributors, and retailers (seed stockists). The problem of fake seed is partly fueled by the

government seed distribution program Operation Wealth Creation (OWC), whose procurement system is unpredictable and which offers insufficient checks on seed quality and seed sources.

The industry, led by the Uganda Seed Trade Association (USTA), has been raising awareness about the problem of fake seed. The campaign recommends that seed companies use tamper-proof labels, provided by the MAAIF, on their seed packages. In addition, companies are encouraged to appoint trusted agents who are licensed by MAAIF.

Use of smart subsidies

The OWC is a government initiative that procures agricultural inputs and distributes these to farmers through local governments. The OWC was officially launched in June 2014 as an intervention coordinated by the army, the Uganda People's Defense Forces. The OWC is funded under the National Agricultural Advisory Services (NAADS) secretariat, an agency of the MAAIF, and its operation aligns with the MAAIF's mandate of providing agricultural inputs to farmers. Seed companies that sell seed to the NAADS are required to show seed inventory reports, crop and factory inspection reports from the NSCS, and tax clearance certificates from the Uganda Revenue Authority. In addition, the NSCS advises the NAADS on seed companies' capacity, based on their production returns and inspection reports. Seed companies that meet the criteria are then invited to respond to tenders from the NAADS. The NAADS provides local governments with information on the required seed types and seed volumes.

In 2017, the NAADS purchased maize seed from nine companies, bean seed from seven companies, and sorghum seed from three companies. In total, seed companies sold 8,856 metric tons of maize seed (52% of overall maize seed sales), 1,359 metric tons of bean seed (46% of overall bean seed sales), and 180 metric tons of sorghum seed (10% of overall sorghum seed sales) to the NAADS. These volumes indicate that the NAADS was a major buyer of seed in 2017.

Despite the high volumes of seed sales to the NAADS and the existence of explicit procurement procedures, seed companies are not very satisfied with the procurement arrangements. Seed companies rate the transparency of the seed procurement process (59%), the clarity in requirements and procedures (57%), and efficiency in



government payments (48%) as “fair”, and rate predictability in the procurement process as “poor” (36%). Seed companies reported that the seed procurement process was marred by uncertainties and irregularities, and, as a result, several seed companies had opted not to sell to the NAADS.

INSTITUTIONAL SUPPORT

Availability of extension services

In Uganda, the NAADS oversees agricultural extension services. According to the National Agricultural Extension Strategy, in 2014 the ratio of agricultural extension staff to farmers was estimated at over 1:5,000 (MAAIF, 2014). The low number of government extension officers is partly due to the restructuring process currently underway at the NAADS, as a result of which all extension staff who were recruited under the NAADS have been discharged. In addition to the government extension services, the seed companies employ a total of 176 extension officers. Seed companies rate their satisfaction with extension services as “fair” (59%).

Quality of national seed trade association

Formed in 1999, the Uganda Seed Traders Association (USTA) is a member-based association for all seed merchants in Uganda. In 2017, USTA had 27 members, of which 23 were seed companies and 4 were associate members. USTA plays a key role in liaising between private seed companies and the government on all matters related to the seed industry.

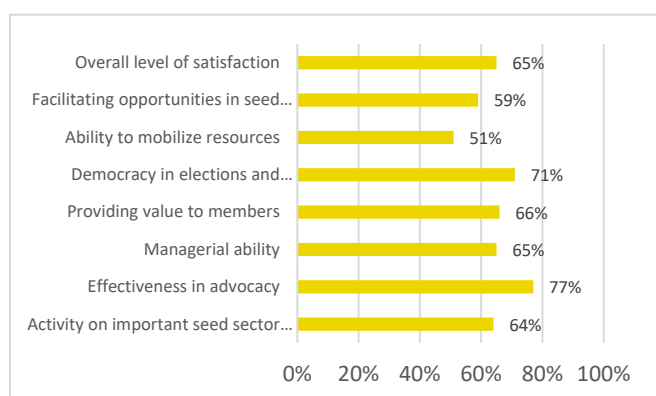


Figure 3: Satisfaction of USTA members

Figure 3 illustrates seed companies' level of satisfaction with USTA's performance in seven service areas. The companies rate their satisfaction with the overall quality of USTA as “good” (65%). Companies were most satisfied

with USTA's effectiveness in advocacy (77%) and democracy and governance (71%), and least satisfied with its ability to mobilize resources (51%) and facilitate business opportunities for members (59%). In all other areas – effectiveness in advocacy, activity on important seed sector issues, managerial ability, and providing value to members – USTA's members rate the association as “good”, giving it ratings from 64% to 66%.

SERVICE TO SMALLHOLDER FARMERS

Concentration of rural agro-dealer network

The most recent census for agro-input dealers was conducted in 2009, recording 2,064 agro-dealers in the country. However, the Uganda National Agro-Dealers Association estimated the number of agro-input dealers in 2009 at 2,500 – 3,000. Whatever the total, the MAAIF estimates that only 500 agro-dealers are trained and accredited. The Ministry plans to train over 1,000 agro-dealers in the next two years. Using the lower figure of 2,500 agro-dealers, the ratio of agro-dealers to agricultural households is 1:1,580. Seed companies rate their satisfaction with the rural agro-dealer network as “good” (61%).

Availability of seed in small packages⁶

Across the four crops, 25% of seed sold in 2017 was sold in small packages of 2 kg or less, though the percentages varied by crop. All millet seed, 25% of maize seed, 9% of bean seed, and 48% of sorghum seed was sold in small packages. The bulk of maize seed (69%) and bean seed (72%) was sold in packages weighing between 2 and 10 kg.

Despite the low volumes sold in small packages, seed companies are satisfied with the availability of seed in

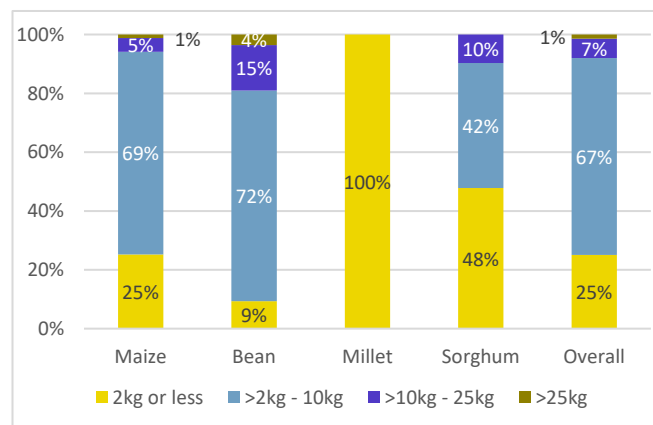


Figure 4. Percentage of seed sold in different package sizes

⁶ Data on seed packages does not include Quality Declared Seed (QDS).



small packages. They rate the availability of seed as “good” for bean (64%) and millet (72%) and “excellent” for maize (82%) and sorghum (80%), indicating that the current seed package sizes for the four crops are well-suited to farmers’ needs. Figure 4 shows a breakdown of the percentage of seed sold in the different package sizes for each crop.

Seed-to-grain price ratio

Assuming stable prices at planting time, the seed-to-grain price ratio reflects the extent to which a variety is improved, as improved seed varieties have a higher production cost and higher transaction costs in the seed market (Nagarajan, Smale and Glewwe, 2005). Of the four crops, hybrid maize has the highest seed-to-grain price ratio (6:1). This is understandable, given that the costs of production and processing are higher for hybrid seeds. OPV maize has the second-highest ratio (3:1). The ratios for the other crops are 1.2:1 (bean), 1:1 (millet), and 1.2:1 (sorghum).

Status of Quality Declared Seed (QDS)

Quality Declared Seed (QDS) is a recognized seed class in Uganda’s draft National Seed Policy of 2016. QDS requires minimum field inspection and certification standards for variety, purity, and germination. To promote the development of QDS, an organization called Integrated Seed Sector Development has empowered seed producers, farmer organizations, and co-operatives by organizing them into Local Seed Businesses (LSBs).

In 2017, of the four focus crops, LSBs only produced beans. A total of 107 LSBs were supported to grow 15 different varieties of bean seed. LSBs source foundation seed from the NaCCRI and, in 2017, they produced the NABE variety series, NARO series, ROBA1, and K132. Since their inception, LSBs have dropped two bean varieties (NABE11 and NABE20); the latter was dropped due to its physical likeness to NABE 15, which is preferred on the market.

In 2017, LSBs produced 237.1 metric tons of bean seed, with most production in the second season⁷. They sold 160.5 tons of bean seed, of which 96.3 metric tons was sold in the first season. No bean seed was sold to the government under the OWC program, mainly because QDS seed can only be sold in the area where it is produced.

QDS bean seed was sold in two different package sizes: most (60%) was sold in 25 kg packages, while the remaining 40% was sold in small packages of 2 kg or less. The NSCS intends to develop regulations specifically for QDS. In addition, there is a need to amend the Seeds and Plant Act of 2006 to include QDS as a seed class.

CONCLUSION

Uganda’s seed sector is at a critical stage in its growth. Several seed companies feel that local demand for certified seed is growing, as evidenced by the increase of over 80% in aggregate certified seed sales between 2015 and 2017. However, this growth is largely driven by the government’s OWC initiative. In addition, the country is a net exporter of seed for the four crops discussed in this study, though these exports are largely driven by relief agency purchases in South Sudan. Given the significant presence of government and relief buyers, the growth in both the local and export markets should be viewed with caution, as the drivers are not sustainable over the long term. Nevertheless, the progress made towards the harmonization of seed regulations across the COMESA region offers the potential to widen the scope for regional trade. Furthermore, the development of the QDS market bodes well for the overall demand for certified seed, as this indicates an increase in farmers’ appreciation of quality seed.

Beyond market growth prospects, there are several notable improvements and opportunities in the seed sector. The seed import and export processes are well-defined and efficient, though they could benefit from further reducing the time spent processing the import/export permits and phytosanitary certificates. The initiative to establish a private seed company, NARO Holdings, to specialize in the production of foundation seed is very positive. If well managed, the company will be able to respond to the current lack of adequate amounts of foundation seed.

Effective and transparent inspection services are critical for seed quality assurance along the value chain. In line with the Seeds and Plant Regulations (MAAIF, 2010), and the Seeds and Plant Act 2006 (MAAIF, 2006), the Ministry should accredit qualified officials to conduct seed inspection and testing services, which would complement

⁷ Uganda has 2 growing seasons.



existing NSCS seed inspection services. However, the NSCS will require additional funding to carry out this expansion.

Furthermore, on most fronts, seed companies have expressed a high level of satisfaction with USTA, the national seed association. USTA is cementing its position as a relevant platform through which the private sector can engage with the government. The organization should be furthered strengthened to drive much-needed industry reforms, most notably in private seed inspection services and in the fight against counterfeit seed. Lastly, the MAAIF should close the remaining gaps in the seed policy environment by passing the National Seed Policy, which will lead to the establishment of UPHIA. The Ministry should also draft regulations for both the Plant Variety Protection Act and the QDS.

Despite these positive elements, Uganda's seed industry faces notable challenges. The first is the high incidence of fake seed. The government's efforts to involve the national police force represent a step in the right direction, though the NSCS will also need more financial and staff support to adequately ensure seed quality is maintained at the key stages of seed production, processing, and marketing. Another challenge pertains to the seed subsidy program under the OWC, managed by the NAADS. Seed companies are not satisfied with the levels of transparency, predictability, and clarity in the seed procurement process. If not well managed, the program may be abused. More importantly, the subsidy program creates an artificial demand for seed, which is unsustainable in the long run.

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APPENDIX 1.

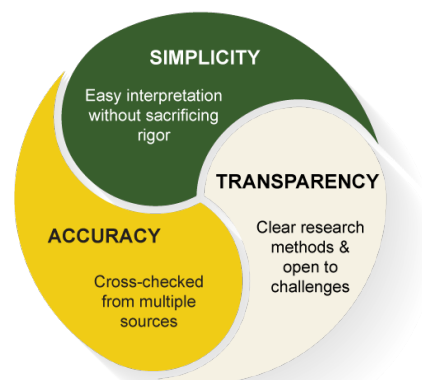
For a comparison of TASAI Indicators across countries, please visit: <http://tasai.org/wp-content/uploads/TASAI-Appendix-CURRENT.pdf>



ABOUT THE AFRICAN SEED ACCESS INDEX

The **African Seed Access Index (TASAI)** is a seed industry research initiative housed at **Market Matters Inc.** (MM Inc.). **TASAI's goal** is to encourage African governments and other seed industry players to create and maintain enabling environments that will accelerate the development of a vibrant private sector-led seed system serving smallholder farmers. It is this enabling environment that TASAI seeks to measure, track, and compare across Africa countries.

To assess the status of the seed industry value chain, TASAI employs **20 indicators** grouped into five categories: **Research and Development, Industry Competitiveness, Policy and Regulations, Institutional Support, and Service to Smallholder Farmers.**



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