

ISSD Uganda



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Quality Declared Seed (QDS) Class: Bridging the gap in quality seed availability and access for non-hybrid crops in Uganda

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Why QDS?

According to the 2018 National Seed Policy, only 15% of seed and planting material used by farmers in Uganda comes from the formal seed supply system. However, most of these commercial seed companies focus on high-value hybrid crop varieties with very high replacement rates as their business sustainability strategy due to the high annual profit margins. As a result, seed for other food security crops, such as legumes, oil seed, small cereals and vegetatively propagated crops, are from the informal seed system. These are mostly open-pollinated varieties (OPVs) and self-pollinated crops with low seed multiplication rates and low seed replacement rates, resulting in low profit margins and unpredictable seasonal demand. The seed in the informal system is largely from farmer-saved seed, which contributes to declining crop productivity.

In order to address the inadequate availability of quality seeds for food security crops in Uganda, the Integrated Seed Sector Development (ISSD) programme in Uganda collaborated with the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) and the National Agricultural Research Organisation (NARO) to initiate a four-year project known as Integrated Seed Sector Development (ISSD). This project, which ran from 2012 to 2016, spanned three zones in Uganda: North, Southwest and West Nile. It was funded by the Embassy of the Kingdom of Netherlands primarily to promote the concept of quality declared seed (QDS) and to create the ideal environment for this alternative quality seed delivery system.

The project aimed to increase the availability and sustainable access to affordable quality seed of farmer-preferred varieties. In each zone, ten entrepreneurial farmer groups were organised into local seed businesses (LSBs) to produce and market quality declared seed (QDS). By 2016, more than 109 LSBs had been formed through LSB out-scaling partners after the QDS concept and quality declared seed (QDS) was officially recognised and incorporated into the 2018 National Seed Policy as a sixth seed class in Uganda.

To further consolidate the experiences from the first ISSD Uganda programme, the Embassy of the Kingdom of Netherlands (EKN) funded another four-year follow-up project (2017-2021), known as the ISSD Plus project, to out-scale the quality declared seed and further strengthen the associated policy and institutional frameworks. QDS production was scaled to three more agro-ecological zones of Uganda, namely the Western Highlands (Rwenzori), the Eastern Zone and the Southwestern Highlands (Kigezi). One of the focus areas for this project was to increase the scale of QDS production within the six zones. By the end of the ISSD plus project, a total of 250 LSBs were actively producing and marketing QDS within their communities, in compliance with the 2020 Seed and Plant (QDS) regulations.

As a result of the QDS system, quality seed is now being produced and marketed within the communities, thus increasing the availability and accessibility of quality seed among farmers.

In addition, there has been an increased number of key players in the seed sector in general and the interaction between them has improved. The key players include district local governments (DLGs) which offer field inspection services, market links for seed, and support for seed-related activities within the districts; MAAIF, which is the regulating body for the seed sector; out-scaling partners such as World Vision, ZOA and ACILA Enterprises, which have adopted the LSB methodology to encourage more LSBs to produce and market QDS; and development partners such as GIZ which fund the seed sector. The QDS system now stands out as a viable solution for quality seed for 'orphaned' crops (OPVs) to complement the formal seed sector. To date, over 14 crops including legumes (beans, cowpeas, green gram), oil seed (groundnuts, soybeans, sesame), cereals (finger millet, rice, sorghum), pasture (*Chloris gayana*) and roots and tubers (cassava, potatoes, sweet potatoes) and 59 varieties of these crops from research are being multiplied and disseminated to farmers by LSBs. (Table 1).

Table 1. Number of functional LSBs and crop portfolios per region

Zone	Supporting ZARDI	Number of districts	Number of LSBs	Principal crop	Other crops
Southwest - Ankole	Mbarara	9	33	Beans	Millet, potato
South Western Highlands - Kigezi	Kachwekano	4	28	Potato	Climbing beans
Western Highlands - Rwenzori	Rwebitaba	8	42	Beans	Potato
Eastern Zone	Buginyanya	17	31	Beans	Groundnut, rice
			19	Soybean	Sweet potato
Northern Zone	Ngetta	17	39	Soybean	Sesame
			6	Groundnut	Pigeon pea
			16	Rice	Beans
West Nile	Abi	9	36	Sesame	Beans, rice, Potato
Total		63	250		

Why the local seed business model makes QDS sustainable

LSB model hinges on critical building blocks

The ISSD Plus project has strengthened the capacity of local seed businesses (LSBs) by technically equipping them with the applied science of seed production; by promoting the concept of 'producing what you can sell' using customer analysis and planning; by linking the LSBs to critical input/service providers such as NARO for basic seeds of high-yielding varieties and the National Seed Certification Service for seed quality assurance; and by professionally organising them into subcommittees responsible for quality seed production and marketing.

There has been a steady growth in QDS produced since 2013

LSBs produce and market locally preferred and demanded crops (not usually available in the formal system), which creates sufficient demand for QDS at the community level to sustain the LSBs within their business context.

The seed produced and marketed by the LSBs is quality-assured by MAAIF and accessible and affordable to the local communities. Due to the lower costs associated with the quality assurance and marketing of QDS, it is usually sold at a comparatively lower price than other quality seed options on the market.

As shown in Figure 1, QDS production has increased significantly since 2013 and over the last five years (2015 to 2019). For instance, 139,604 kilograms of bean QDS was produced in 2015 compared to 798,025 kilograms in 2019. This increase can be attributed to the high demand for beans across the regions and to the release of new high-yielding and drought-tolerant varieties, among other things. On the other hand, 40,787 kilograms of sesame seed was produced in 2015 compared to 75,757 kilograms of seed in 2019. This is attributed to the fact that sesame is usually planted once in a season (usually in season B) compared to other QDS crops that are planted in both season A & B and with relatively low demand compared to beans and other crops.

Generally, QDS production has increased significantly with increased access to quality seed by smallholder farmers. However, in most seasons, production was affected by adverse climatic conditions (drought, hailstorms, heavy rains); high incidence of pests and diseases; lack of access to resources (labour, inputs, etc.) and the limited use of yield-enhancing inputs. Note that QDS production trends in 2020 were generally low due to the COVID-19 restrictions implemented in March 2020. This affected timely access to foundation seed and thus not all LSBs were in the position to plant QDS, particularly in the 2020 A season.

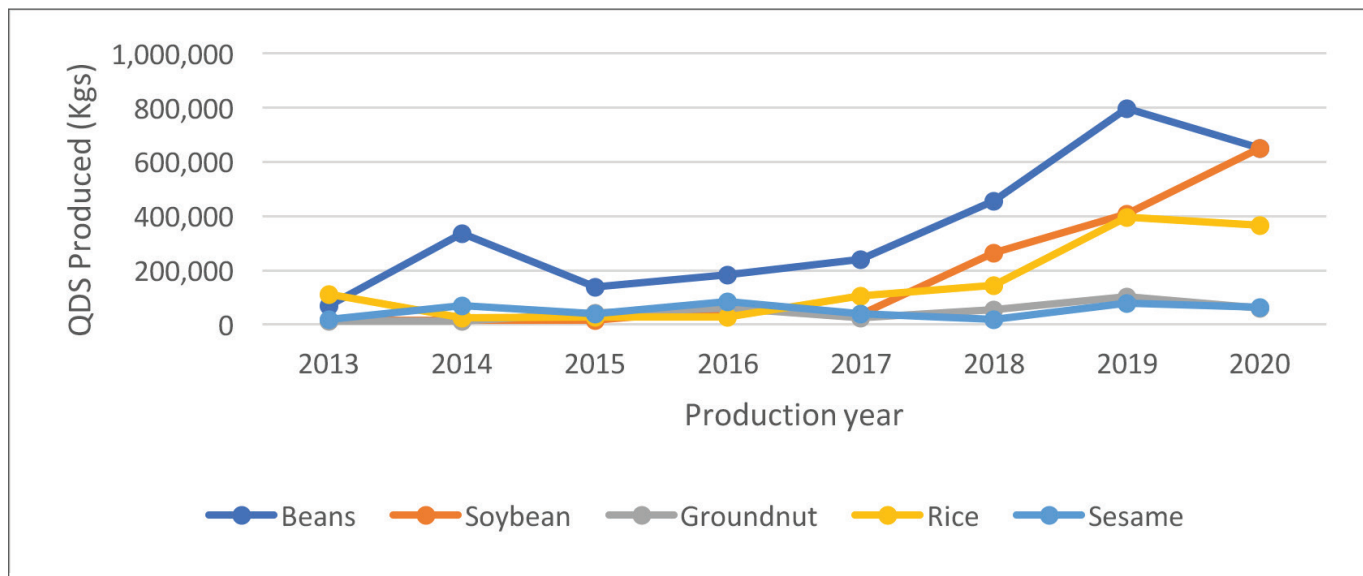


Figure 1: QDS production trends between 2013 and 2020 for key QDS crops

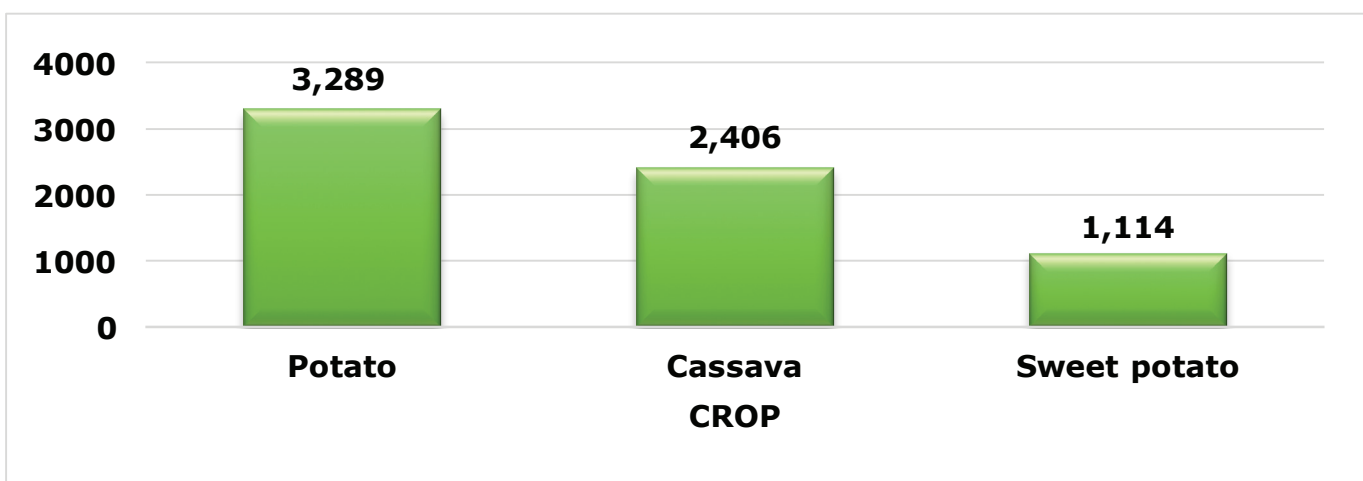


Figure 2: Quantity of QDS sold for roots and tubers (MT) 2017-2020

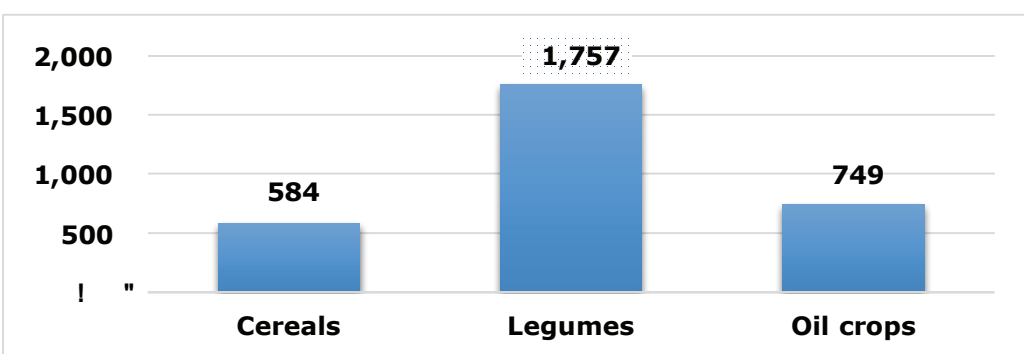


Figure 3: Quantity of seeded QDS sold (MT)

More highlights (2017-2020) of LSB QDS production and marketing include:

- 250 LSBs active in seed production and marketing across 63 districts
- 4,220 LSB farmers (24% female, 53% female) are producing QDS
- 59 crop varieties officially released by NARO disseminated within rural communities
- 3,090 MT of seeded QDS (Figure 3) and 6,809 MT of roots and tubers (Figure 2) produced and sold by LSBs
- 326,719 farmers are estimated to have accessed and used QDS produced in 2017-2020
- 205,416 acres planted with QDS sold by the LSBs to the farmers
- A total of 54 LSBs (2017-2020) received seed stores to ensure proper seed storage and to improve joint seed bulking, as well as designated seed sampling points and collective seed marketing. A total of 28 LSBs were supported to get seed stores under the ISSD Plus project through a co-funding approach (Figure 4); 22 LSBs received stores from other development partners (MAAIF/ACDP, IFDC, NURI) and 4 LSBs built stores themselves from profits made from seed sales
- To reduce drudgery in seed production and post-harvest handling, more than 45 LSBs were supported with labour-saving equipment including tractors (under MAAIF/ACDP), seed planters, seed cleaners and threshers, among other things



Figure 4: LSB seed store constructed under ISSD Plus project

The ISSD Plus project streamlined availability and access to inputs and services critical to QDS production

LSBs are linked to sources of early generation seed (EGS), both zonally through ZARDIs and fellow LSBs trained to produce EGS and centrally through the foundation seed enterprise (S4S (U) LTD). The project facilitated the implementation and operationalisation of all three models of EGS supply. Through the project, LSBs were also linked to sources of quality assurance services which are the district local governments for field inspections and MAAIF-NSCS for laboratory testing and tamperproof label acquisition.

A business case for farmers involved in the QDS business

Looking at the sales from QDS generally, there has been an increase in revenue generated by the LSBs. For instance, between 2017 and 2020, LSB farmers earned a total of UGX 19.9 billion in income from QDS sales.

Quality declared seed bridges the gap of having quality seed available within the community and complements the formal seed sector

The model of having LSBs to produce QDS to bridge the gap of having quality seed available within the community was not well perceived in the beginning as it appeared to bring some form of competition in the seed market. However, this is not the case as the LSBs focus on the production and marketing of OPV crops, which seed companies invest less in with an eye toward profit margins.

QDS is governed by various regulations that differ from certified seeds produced by seed companies in a number of ways:

- LSBs' market segment is within their communities and they are not eligible for larger institutional markets

- QDS crops do not include maize, sunflower or hybrids, which are well catered for by the formal seed sector

- QDS is not marketed in agro-dealer networks in Uganda, but exclusively within farming communities

The Seed and Plant (QDS) provide more details that brings out how the QDS seed class differs from the certified seed class.

Local seed business support systems

To ensure effective and efficient support during seed production and marketing, the project encouraged LSBs to establish support systems that are fully operational. The most important support system being the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), which takes on the regulatory roles as provided for in the 2020 Seed and Plant Quality Declared Seed Regulations. This will ensure continued production and supply of QDS by the LSBs within the communities, with overall oversight from MAAIF to ensure compliance with the relevant regulations. Other support systems include:

- **National Seed Certification Services (NSCS):** Under MAAIF, NSCS will continue to provide timely seed sampling and testing services to LSBs across all zones. Although most of the services have been dependent on support from the ISSD Plus project, LSBs shall be in the position to meet the costs required of them to ensure quality seed supply to the local communities in compliance with the QDS regulations.

- **Local seed business associations and/or LSB clusters:** Present across all project areas, these offer support by coaching and mentoring the LSBs and by coordinating access to EGS, QDS marketing and quality assurance services, among other things. A total of four LSB associations in Ankole, West Nile, Northern and Rwenzori were established to coordinate seed-related activities and services on behalf of the LSBs. In addition, a total of six LSB clusters self-evolved in the Eastern zone in which LSBs had clustered themselves based on the crop value chains and proximity to one another to facilitate all aspects of seed production and marketing.

- **Local seed business trainer (LSB-T)**

approach: Each LSB was equipped with a full-time trainer, who is selected among the LSB members and given additional training in various aspects of seed production and marketing by the ISSD Plus project. Their goal is to support fellow seed growers by coaching and mentoring them with the help of area agriculture officers. A total of 250 LSB-Ts were fully equipped by the ISSD Plus project. These also work closely with a total of 186 gender champions to mainstream gender within LSBs and at the household level.

- **LSB committees for production, marketing and internal quality control:**

In addition to the LSB trainer and gender champions, all LSBs instituted leaders for three committee most critical to QDS production i.e. production, internal quality control and marketing. These committees have been performing their roles excellently which contributes to the success of the LSB model.

- **District local government (DLG) production departments:**

ISSD Plus project and MAAIF built capacity for a total of 64 district agriculture officers (DAOs) and 136 sub-county agriculture officers (AOs) on seed production principles, quality assurance, LSB-T approach and LSB methodology to ensure effective and efficient support for LSBs.

In addition, through the DLGs, some LSBs also benefited from government-sponsored programmes such as the Agribusiness Cluster Development project under MAAIF, in which several LSBs were supported with tractors, store grants and agricultural inputs to improve their seed business. Some DLGs, like Butaleja, Ntoroko and others, started incorporating LSB activities into their annual work plans and budgets and have pledged continuous support to these farmer groups.

- **NARO:** The ISSD Plus project worked through the various Zonal Agricultural Development and Research Institutes (ZARDIs) under NARO. These (Rwebitaba, Ngetta, Mbarara, Kachwekano, Buginyanya and Abi ZARDIs) have also been instrumental in hosting the project and building the capacity of QDS producers in the respective zones. These are also sources of early generation seed (EGS) for LSBs. In addition, the project worked closely with the private arm of NARO (NARO Holdings Limited) to ensure the sufficient and timely supply of EGS to LSBs.

The project also supported the establishment of the Foundation Seed Enterprise, a subsidiary of NARO Holdings Limited that will streamline and sustain the supply of basic seed to the LSBs.

• **Out-scaling partners and other development partners:** The project also continued to work through out-scaling partners (OSPs) such as ZOA, VEDCO, KYEDFA, COVOID, etc. and development partners such as GIZ/World Vision, USAID/AIM project and PRELNOR, among others, to ensure continued support for LSBs. Since these are based in the areas of operation for the LSBs, remote support to the LSBs will continue as well, particularly in the areas of QDS production and market linkages.

• **Uganda Seed Traders Association (USTA):** USTA supported the project in coordinating the printing of the green tamperproof QDS labels for LSBs and created links to ensure continued support.

With the above support systems, the LSB model will likely remain more sustainable for QDS production and marketing for a long period of time.

Quality assurance for quality declared seed

Quality assurance constitutes a critical step in the production and sale of quality seed. In comparison to certified seed, QDS follows a less rigorous regime of quality assurance in which a minimum of one field inspection is required per season, with 10% of the seed fields inspected per LSB per season. To ensure quality, LSBs conduct internal quality control checks. Internal quality control is done by members of the Internal Quality Control Committee (IQCC) of each LSB, who are trained in basic quality control procedures such as site selection with respect to field history, isolation distance, seed agronomy, off-type identification and removal. All seed fields that do not meet the variety purity standards can be disqualified by the IQCC at this stage. An external quality assurance check (field inspection) is then performed by DAOs.

Seed lots aggregated at designated LSB stores are then sampled by the NSCS for laboratory testing for variety purity, germination and moisture content, as prescribed by the Seed and Plant Quality Declared Seed Regulations. Seed lots that meet the minimum standards (Table 2) are certified and green tamperproof labels are issued for each seed package (Figure 5).



Figure 5: Quality assurance cycle for QDS

Table 2: Comparison of quality seed standards for QDS and certified seed

Crop/inspection frequency	Certified seed	QDS
Minimum Purity (%) for cereals	99	98
Minimum Purity (%) for legumes	98	98
Minimum germination (%) for cereals	98	98
Minimum germination (%) for legumes	80	75
Minimum number of field inspections	4	1
Proportion of field inspected seed plots (%)	100	10

Decentralisation of QDS field inspection services: How it has evolved over the years

At the start of the ISSD programme, there was insufficient capacity by MAAIF-NSCS, both financially and technically to effectively and efficiently implement QDS field inspection services to all LSBs. This was further complicated by the fact that the LSBs could not have afforded the NSCS services. It is against this background that the ISSD programme supported MAAIF from 2013 to 2016 to initiate and pilot the decentralisation of field inspection services for QDS to the district agricultural officers (DAOs) of the respective district local governments. For this decentralisation, DAOs were trained by MAAIF-NSCS and equipped with the knowledge and skills to conduct field inspections at LSB seed fields in their respective districts.

This approach worked well, although it faced challenges in some isolated incidences of heavy DAO workloads and a high turnover of DAOs where districts would be left with no trained personnel to conduct field inspections. The approach also involved the supervision and audit of DAOs by MAAIF to ensure compliance with the NSCS guidelines on QDS inspections. This improved timely access to this quality assurance services for the LSBs in the Southwest, North and West Nile regions.

Based on the lessons learnt from the pilot of the decentralised field inspections by DAOs, the approach was scaled up to all regions during the ISSD Plus project, with a total of 64 DAOs (11 female) trained and equipped with skills in QDS field inspections by MAAIF.

The implementation of an effective decentralised quality assurance system is well stipulated in the National Seed Strategy 2018/19-2022/23 and the 2018 National Seed Policy, however, due to institutional delays in the National Seed Policy and the national seed strategy approval and implementation, this is yet to be fully realised. To ensure that inspection services are carried out on time, the project also trained a total of 128 sub-county agricultural officers (31 female) to support their DAOs in conducting QDS field inspections. This is especially critical for areas where the workload was too heavy for a DAO (many scattered LSBs in a district) or when the DAO turned out to be unavailable (noting that inspection has to be done at specific crop growth stages). Table 3 provides highlights of the DAOs and AOs trained within each zone.

Table 3: DAOs and AOs trained to conduct QDS field inspections

Zone	#DAOs		Total DAOs	#AOs		Total AOs	Overall (DAOs & AOs)
	M	F		M	F		
Northern	10	3	13	27	8	35	48
West Nile	7	4	11	27	5	32	43
Ankole	9	1	10	21	7	28	38
Kigezi	4	0	4	18	4	22	26
Rwenzori	8	1	9	17	3	20	29
Eastern	15	2	17	18	4	22	39
Total	53	11	64	128	31	159	223

Main challenges in the QDS quality assurance system

- Centralisation of seed sampling, testing and certification in the Nation Seed Laboratory delays acquisition of lab test results and the certification process that follows. As a result, most QDS produced was marketed without green tamperproof labels. This challenge is most evident for the first season produced seed since there is a short window between harvest of the seed and the next planting cycle (second season)
- The trained DAOs are not yet accredited by MAAIF, leading to laxity of some DAOs in providing the field inspection service.
- Although the Seed and Plant (QDS) regulations now give authority to DAOs to conduct field inspections, this activity is not yet incorporated in most district annual budgets which poses a financial restriction where DAOs may want to offer additional technical support to these seed growers
- QDS quality assurance protocols for vegetatively propagated plants are not yet in place, leading to an incomplete seed certification cycle for such crops. Only the seed field inspection can be done at the moment

Recommendations/ways to overcome the challenges

- MAAIF must assume full responsibility for the regulation of the countrywide QDS system by expeditiously commencing the full implementation of the new Seed and Plant (QDS) regulations
- MAAIF must fast-track the implementation and operationalisation of regional seed testing hubs, as provided in the National Seed Strategy to reduce the time taken from sampling, lab testing and the release of seed testing results
- MAAIF must fast-track the accreditation of DAOs for QDS field inspections
- The developed digital seed tracing and tracking system must be rolled out to ease the coordination of quality assurance services and ensure the completion of the certification cycle
- MAAIF must fast track the finalisation and approval of the quality assurance protocols for vegetatively propagated crops

Lessons learned in the QDS system

- The ISSD Plus Uganda project experience demonstrates that the QDS system can bridge the gap between quality seed access, especially for OPV/self-pollinated crops for smallholder farmers if implemented through the LSB model
- There is increased awareness and buy-in of QDS and LSB methodology among the seed sector stakeholders with more organisations now establishing more LSBs to produce and market QDS
- The lack of decentralised seed certification services (seed sampling, testing and QDS labels distribution) to zones affects the seed producers' ability to market a fully certified product within the communities
- Most local seed sector stakeholders now appreciate the difference between seed and grain and are therefore willing to help curb the sale of fake seed within their communities
- Despite notable growth over the last eight years, QDS production in Uganda is still quite low due to a number of factors like; existence of few LSBs, low productivity per unit area, climate challenges, EGS inadequacies among others.
- Climate-related issues are still a major challenge and continue to affect QDS yields, profits, and the enthusiasm of LSBs to expand their QDS business. The LSBs are more affected than grain farmers due to their substantial investment in basic seed and labour requirements for quantum seed production

Colophon

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