

ISSD Uganda

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Seed Tracking and Tracing System

Introduction

Seed tracking and tracing along the seed value chain is an integral part of seed quality assurance to curb the sale of counterfeit and fake seed. The Department of Crop Inspection and Certification (DCIC), Ministry of Agriculture Animal Industry and Fisheries (MAAIF), sought support from the Integrated Seed Sector Development Plus programme (ISSD Plus) to support the development of a digital seed tracking and tracing system (STTS) to ease the work of seed inspectors and increase accountability of stakeholders in the seed value chain.

Based on the National Seed Policy, the following seed classes are recognised in Uganda: Pre-Basic Seed (PBS), Basic Seed (BS), Certified Seed (CS) and Quality Declared Seed (QDS). PBS and BS are currently produced and controlled by public breeders of the National Agricultural Research Organisation (NARO). However, capable entities such as the Zonal Agri Research and Development Institutes (ZARDIs) or selected enterprises can also produce and distribute BS. BS is then used as an input by seed producers for CS and QDS production. Seed Quality assurance of both BS, CS and QDS is handled by National Seed Certification Services (NSCS). However, via the model of Local Seed Businesses (LSBs) for certain crops QDS is produced.

Seed tracking and tracing

Stakeholders in an effective and efficient seed value chain have access to information needed for sustaining well laid-out operations. To boost seed entrepreneurship information on *what*, *where*, and *how* needs to be readily available. Thus, *tracking* and *tracing* seed along the seed value chain becomes critical. .

Tracking: This is following the details of seed movement from the PBS to the CS and QDS stage. This gives

information on where the seed has reached after production.

Tracing: This is linking the seed up to its original source. This is important to know for seed law enforcement in the case of complaints. The codes on the seed packets need to allow for tracing back till the PBS stage, to identify the operations that might have caused the non-conformities. This helps to eliminate seed counterfeiting, which is endemic in the seed sector.

Components of the STTS

The digital STTS has a central database, located in a cloud server with some basic query capabilities. Seed law regulators, inspectors, seed producers and farmers have access to different modules of the system. There are two parts in the system, i.e. the web platform and the mobile application.

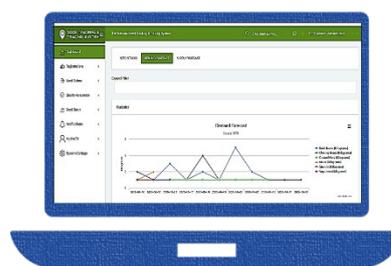


Fig 1: The web platform

Functions of the web platform

The web platform functions as the back-end system. It has a dashboard function as well as an administration function. It also handles approvals by the Commissioner and other higher officials.

Dashboard function supports to

- See stocks, demand D Q G supply forecasts
- Manage registrations

- View applications
- Check and manage quotations, orders, delivery and demand
- Approve planting returns
- Schedule field inspection
- Assign inspectors
- Enter laboratory data
- Request seed labels
- Edit, update and enter seed stock
- Track and trace using 'inventory codes'

Admin function supports to

- Add and update, crops, varieties, users, permissions and all settings of the system

The elaborate administrative capabilities under the admin function are not visible to regular users to avoid accidental changes.

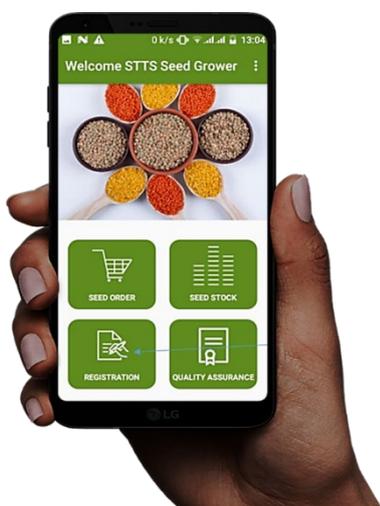


Fig 2: The mobile application with seed grower login

Functions of the App

The mobile application has separate logins for different stakeholders with every user group having different permissions related to different functions. For example, the Commissioner does not need the "seed order" function, as s/he will only authorize applications. The following different logins are available in the app:

- Administrator
- Commissioner
- Inspector
- Seed grower / QDS producer
- Seed merchant
- Farmer
- Lab technician

The mobile app has four sections. Users have access depending on their utility.

1. *Seed order*: Order seeds, receive seed quotations, finalize quotations, view and respond to seed demand in the market
2. *Seed stock*: Maintain, add and update stocks
3. *Registration*: Apply for registration for QDS producers, seed growers and merchants
4. *Quality assurance*: Submit planting returns, enter field inspection data, submit QDS declaration

Advantages of this system

The advantages are many for different stakeholders

Farmers

- Information on seed availability from the app
- Digital system with real-time information

Seed growers

- All processes online, including application, ordering of basic seed, submission of **planting returns and payment of prescribed services**
- Online seed sales to potential buyers
- Bigger markets without physical distance
- Saving on advertisement costs

National Seed Certification Service

- Easy and effective approval of planting returns
- Automatic scheduling of field inspections
- Online submission of field inspection reports
- Time saving
- Centralized database
- Less paperwork
- Secure authorization and approval system
- Easy report preparation on seed with quick strategic action

Partners



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