

e-Verification of Agricultural Inputs: Progress in Uganda

Judy Payne, ICT Advisor for Agriculture, USAID

Pradeep Prabhala, Senior Manager, Monitor Deloitte

Kristin O'Planick, Enterprise Development Specialist, USAID/E3

November 17, 2015

Judy Payne



Judy Payne is USAID's ICT Advisor for Agriculture, where she helps USAID missions and their projects around the world use information and communications technologies as a tool for economic growth and agriculture development.

Her work includes helping USAID's implementing partners find ways to use ICT-enabled approaches to increase their projects' success in sustainable and scalable ways. Applications include mobile banking, market price information systems, applications to help large buyers deal with thousands of producers, and new technical and business models to extend access to the Internet to the poor.

Prior to joining USAID, Payne worked for over 25 years in the US private sector, including 15 years working in all aspects of e-business, electronic commerce, and e-government.

Pradeep Prabhala



Pradeep is a Senior Manager with Monitor Deloitte. He leads Monitor Deloitte's work in Agriculture and Food Security in Emerging Markets and has worked extensively across Sub-Saharan Africa, South Asia, South East Asia and the Middle East. He has led Monitor Deloitte's work with USAID on Feed the Future Private Sector Action Plans and has supported governments across Africa and Asia on transforming agriculture sectors through inclusive private investments. He also has extensive experience in Fertilizer and Seeds systems in Africa and has led several engagements with various development actors such as USAID, the Bill & Melinda Gates Foundation, the World Bank, the Islamic Development Bank, and the Rockefeller foundation.

Kristin O'Planick



Kristin O'Planick is an Enterprise Development Specialist in USAID's Bureau for Economic Growth, Education and Environment. She provides assistance to market systems, enterprise development, and workforce development programming. Kristin also manages the Leveraging Economic Opportunities project and the Feed the Future Uganda Agricultural Inputs activity.

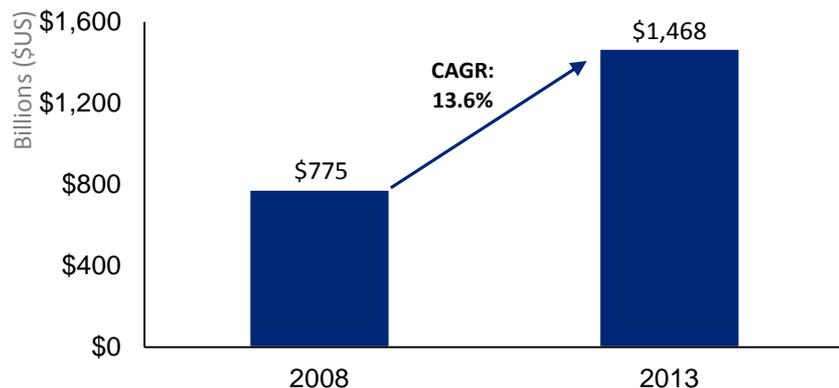
Counterfeiting in African Agriculture Inputs – E-Verification Solution

November 17 2015

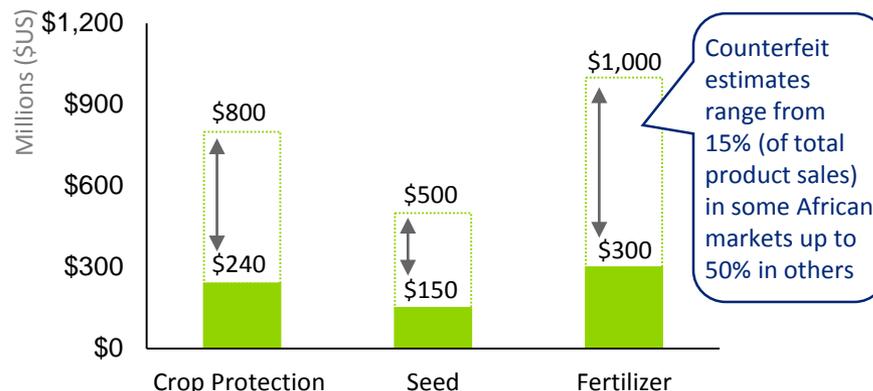
**Pradeep Prabhala
Monitor Deloitte**

Counterfeiting is a challenge with global reach that spans multiple sectors; agricultural input sectors in Africa are not immune

Global Value Lost Due to Counterfeiting¹



Value Lost Due to Counterfeiting: Agricultural Input Sectors in Africa²



Counterfeit Agricultural Inputs: Prevalence in Africa



“Rwanda: ICT to Fight Fake Agriculture Inputs”
November 2013

30%

UNLICENSED OR SMUGGLED PESTICIDES ON SALE IN GHANA³



“Kenya: Fake Maize Seeds Worry South Sudan Minister”
October 2013

40%

ESTIMATE OF FAKE SEED PACKETS IN KENYA⁴



“Tanzania Amends Law to Curb Fake Fertilizers”
October 2012

30%

COUNTERFEIT HYBRID HIGH-YIELDING VARIETY SEEDS IN UGANDAN MARKET⁵



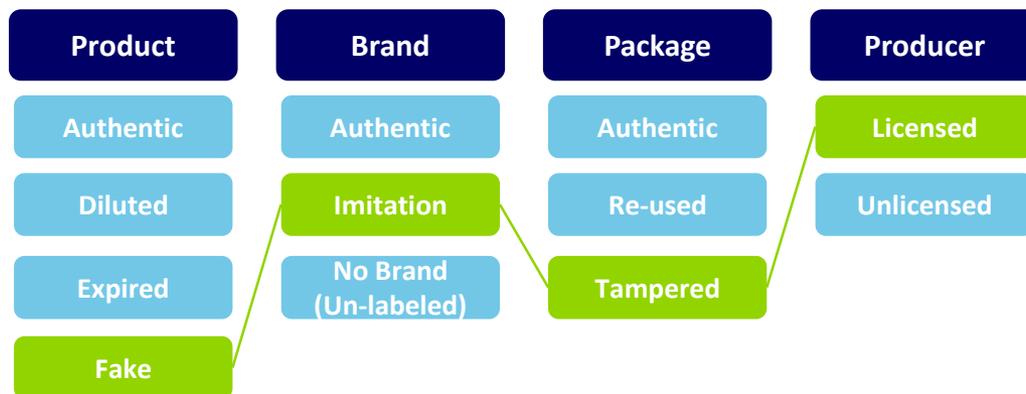
“Cocoa Farmers Advised to Desist from Using Fake Pesticides”
March 2012

Source: : (1) BASCAP (2011); (2) Frost and Sullivan Research (2013); FAOSTAT; Hernandez and Torero (2011); Monitor Deloitte Analysis; (3) CropLife Middle East Africa (2011); (4) Kenya Agricultural Research Institute (2012); (5) Joughin (2014)

Counterfeiting in Africa's agricultural input sectors takes multiple forms – from imitation branding and packaging to partially diluted or entirely fake products

Combinations of How Counterfeiting Occurs

(Example Highlighted in Green)



Examples of Counterfeit Agricultural Inputs

Counterfeit Label and Bags



COUNTERFEITERS CHANGE ROUNDUP TO ROUNDALL AND FILL WITH FAKE PRODUCT¹

Re-used Brand Packaging



YARA INT'L FERTILIZER BAGS WERE REPACKAGED AND SOLD WITH COUNTERFEIT PRODUCT²

Expired Products



FARMERS IN NORTHERN GHANA LOST SEVERAL HECTARES OF COTTON AFTER USING EXPIRED PESTICIDES³

Unlicensed Producers



APPROXIMATELY 50% OF SEED COMPANIES IN UGANDA ARE UNLICENSED

Source: (1) Bloch, Kisitu, Gita (2013); (2) Kazoka (2012); (3) Ghana Web (2007);

Smallholder farmers in Africa face significant challenges as a result of using counterfeit agricultural inputs



Reduction in Income

Farmers who use counterfeit agricultural inputs risk significant crop damage, directly impacting their income

“Farmers can lose an entire season to counterfeit products”

-- DEVELOPMENT ORGANIZATION

Health and Safety

Untested and often dangerous crop protection products pose food safety, environmental, and health issues

“There isn't the same sort of consumer protection... we're not talking about an FDA that monitors these issues”

-- DEVELOPMENT ORGANIZATION

Access to Genuine Inputs

Trustworthy agro dealers are forced out of the market when they cannot compete with cheap, counterfeit manufacturers – forcing some farmers to travel further for genuine inputs

“Margins are often higher on the fake or low-quality products”

-- IMPORTER

Trust in Genuine Inputs

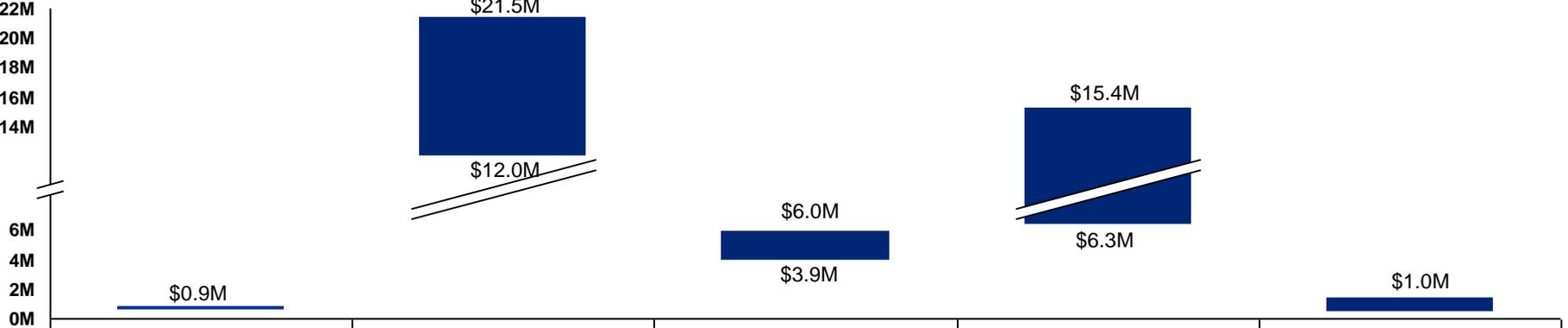
After continuing to buy counterfeits, farmers may lose trust in the efficacy of genuine inputs

“It is important to find champions in farming communities...A lot of them already don't trust us”

-- INDUSTRY ASSOCIATION

Furthermore, manufacturers lose significant value annually to counterfeit agricultural inputs across the markets studied

Value Lost Due to Counterfeiting



Methodology

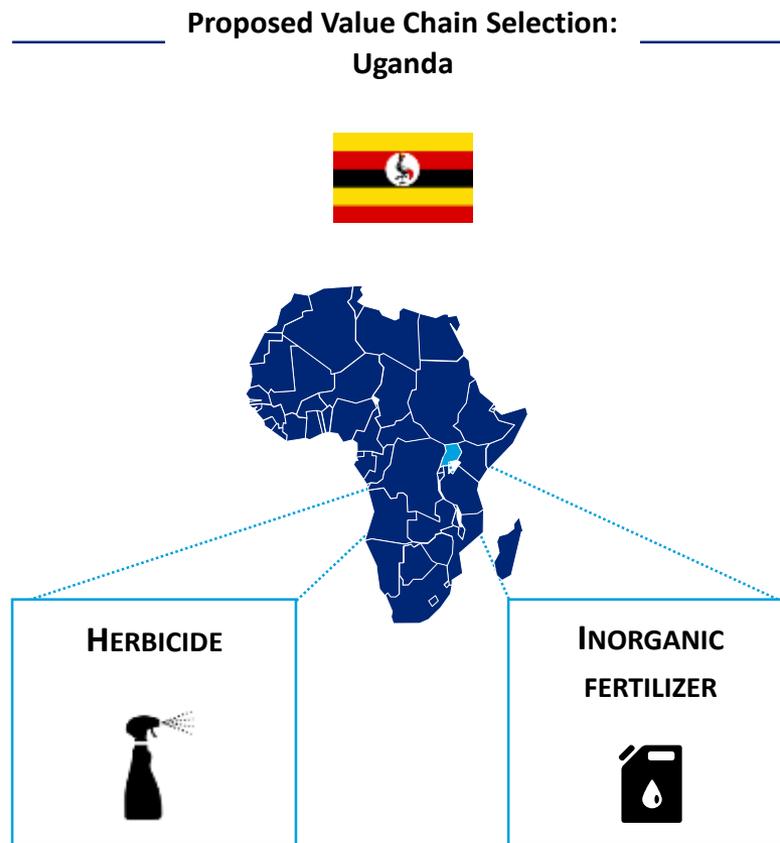
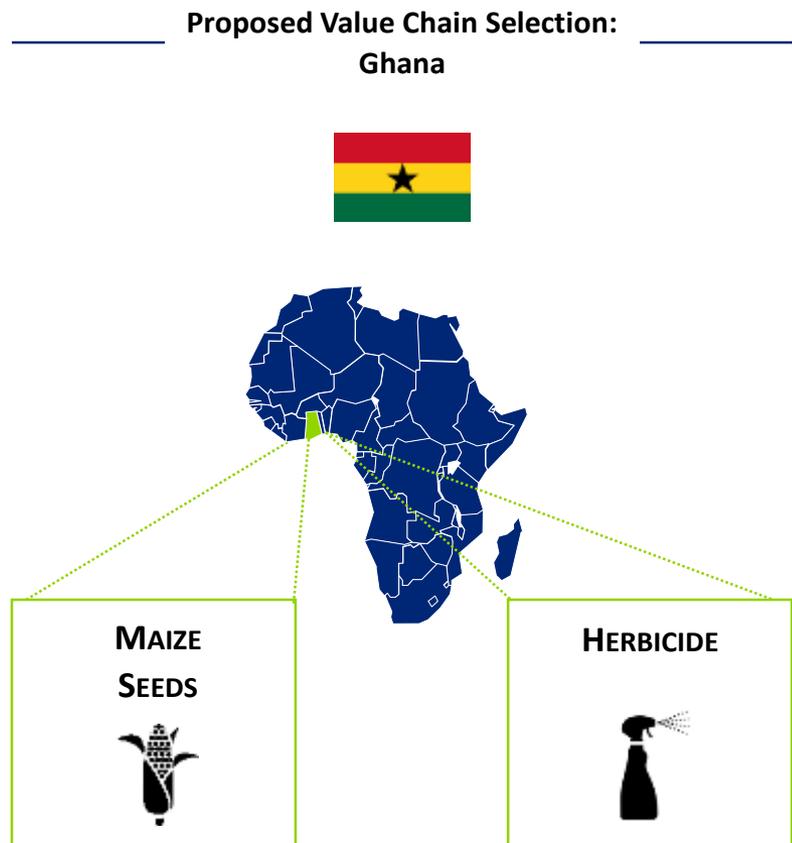
Maize Seed: The size of seed markets in Uganda and Ghana is based on secondary research. We have applied the estimated level of counterfeiting to hybrids and OPVs separately, based on stakeholder interviews. To calculate the final estimated losses, average market prices of seed types were applied.

Herbicide: The total market size is based on secondary research. The primary driver of counterfeiting is bottle reuse, which was the primary rate applied to calculate total value lost. All other counterfeit activities were estimated based on stakeholder interviews in-country.

Inorganic Fertilizer: Market data was available through AMITSA; the calculation was only done for Uganda. Counterfeiting primarily affects smallholders, a very small segment of the market. We have estimated and applied the counterfeit rate to the total market.

Sources: Joughin; IFPRI (Uganda Fertilizer and Ghana seed sector studies); stakeholder interviews; Monitor Deloitte analysis

To better understand the challenge of counterfeiting, we studied maize seeds and herbicide in Ghana, and herbicides, maize seeds and inorganic fertilizer in Uganda



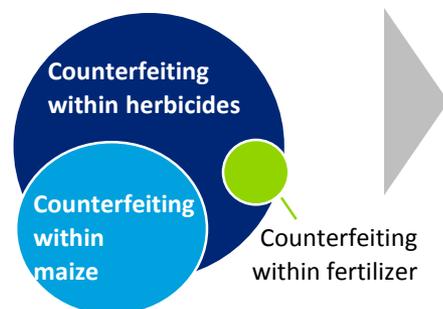
Note: Maize seed was also added to the analysis in order to compare insights across geographies

The selection of these value chains was based on an analysis that assess the following criteria: relevance to smallholder farmers, size of the category, profitability of the category, role of the government, and prevalence of counterfeiting

Similarly, among the value chains studied in Uganda we learned that counterfeiting prevalence is highest within the herbicide market, followed by the maize seed market and the fertilizer market

Summary of Prevalence of Counterfeiting Across Value Chains Studied

Relative Prevalence of Counterfeiting
(Illustrative Sizes)



The prevalence of counterfeiting is highest within herbicides. Counterfeiting in maize seeds – especially among hybrid varieties – is also prevalent, but less so than in herbicides. Smallholder farmers rarely use fertilizer and therefore counterfeiting is not as prevalent as in the other two value chains (but remains a recognized issue).

Summary of Types of Counterfeiting

Herbicides

- **Mislabeled / Sub-standard Product** in which the label does not reflect contents in the bottle (often Chinese imports)
- **Label Reuse / Sub-standard Product** in which a premium product's label is placed on a bottle of sub-standard product
- **Bottle Reuse / Adulterated Product** in which premium bottles are refilled with diluted or fake product
- **Label Imitation / Sub-standard or Adulterated Product** in which a premium brand is imitated, but the product is sub-standard or adulterated

Maize Seeds

- **Mislabeled / Diluted Seed** in which seed growers "top-up" orders with grains in order to meet contracted amount or mobile salesmen sell grains mixed with seeds out of the back of trucks
- **Label Imitation / Adulterated or Sub-standard Seed** in which imitation packages of leading seed companies are produced and filled with grain and/or fake seeds
- **Label Reuse / Adulterated Seed** in which agro dealers acquire and re-use bags of reputable seed companies

Fertilizer

- **Mislabeled / Underweight Product** in which fertilizer is removed from bag and then the bag is resealed
- **Mislabeled / Diluted Product** in which agro-dealers dilute fertilizer with ash or sand during re-packaging
- **Mislabeled / Adulterated Product** in which large packages are broken into smaller packages and fake materials are placed in the small packages

Counterfeiting activities across the value chains studied are primarily the result of four root causes

Summary of Root Causes of Counterfeiting

1

Package Integrity across Distribution Chain

There are many points of intermediation along the value chain within Africa's agricultural input sectors, and often a high degree of fragmentation; it is thus difficult for manufacturers to track the product flow along the value chain, and difficult for end consumers to authenticate the source.

2

Manufacturers Willingness to Intervene

Many European manufacturers of agricultural inputs (namely, CPPs and fertilizers) are not investing in African markets; as a result, they do not conduct demand planning, manage inventory, or ensure channel accountability beyond the point at which product is sold to importers.

3

Smallholder Context/ Behaviour

It is very difficult for smallholder farmers to determine if a product has been adulterated (diluted or fake) or if it is a sub-standard product (expired or poor quality) based on the label alone; labels and bottles are often tampered with and reused, and the product itself may look and smell the same as an authentic product.

4

Distribution Chain Actors' Behaviour

The profit potential of dealing counterfeit products motivates ill-intentions within actors across the value chain; weak enforcement of regulation means that actors who behave illegally are rarely caught and prosecuted. When prosecution occurs, existing fees and punishment do not serve to deter commitment of further crimes.

There are six solution archetypes that could address the challenge of counterfeiting; the primary focus of this engagement was on scalable technologies funded by manufacturers

Solution Archetypes to Address Counterfeiting

1

End-User Authentication

Description: End consumers verify that an agricultural input was produced by a credible, certified manufacturer; solution leverages either coin-scratch labels or holograms as the medium to conceal PIN code, and mobile phone (text or call) to authenticate source

Point Solution Evaluated: Coin Scratch & Mobile Authentication

2

Quality Assurance / Certified Channels

Description: The quality of the product is assured through independent testing, and actors along the value chain are certified to distribute the product; solution would require an external evaluator to test the product at each point of intermediation in the value chain

Point Solution Evaluated: Mobile Testing Kits

3

Smallholder Education

Description: Smallholder farmers are provided training platforms focused on the importance and value of genuine inputs, methods of detecting counterfeit products, and agricultural input purchasing best practices

Point Solution Evaluated: Information Collection & Dissemination Platform

4

Track-and-Trace Technologies

Description: Manufacturers verify the movement of an input at each point along the value chain; solution leverages either RFID tags (passive or active) or barcode applications (2D or QR codes)

Point Solutions Evaluated: Barcode Applications, Inventory Management Platform, and RFID tags

5

Product, Package, or Channel Investment

Description: Manufacturers invest in direct access to the channel (e.g., build local import facilities and distribution centers); or invest in product innovation that is difficult to counterfeit (e.g., seed dyes) or invest in package innovation (e.g., smaller packs)

Examples listed in appendix

6

Regulatory Investment

Description: Government regulatory agencies are equipped to set high quality standards for the manufacture and distribution of agricultural inputs, conduct random product testing, investigate sources of counterfeiting on an ongoing basis, and enforce regulations effectively

Solutions related to end-user authentication, quality assurance / certified channels, track & trace technologies, and smallholder education were the primary focus of this research

We have assessed six leading solutions that have been effective in other industries to tackle counterfeiting

Solutions to Tackling Counterfeiting¹

	Description	Assessment of Viability
<ul style="list-style-type: none"> Track-and-Trace Technologies BARCODE APPLICATIONS	<ul style="list-style-type: none"> Unique product information is encoded on barcodes, which are affixed to the product and scanned at each step of the value chain Manufacturers are able to track product flow through value chain 	 <ul style="list-style-type: none"> Requires significant process change; each actor needs to use scanners Expensive to implement
<ul style="list-style-type: none"> Quality Assurance MOBILE TESTING KITS	<ul style="list-style-type: none"> Product is tested for quality at each stage of value chain by an external evaluator; agro dealers are independently certified to distribute agricultural inputs 	 <ul style="list-style-type: none"> Requires significant investment in testing infrastructure and resources Addresses all types of counterfeiting
<ul style="list-style-type: none"> End User Authentication COIN SCRATCH & MOBILE AUTHENTICATION	<ul style="list-style-type: none"> End consumers verify the product was produced by a credible, certified manufacturer (via coin-scratch labels & SMS) Enables source authentication; eliminates bottle/label reuse 	 <ul style="list-style-type: none"> Very effective solution when package integrity is maintained Low cost to implement and operate
<ul style="list-style-type: none"> Smallholder Education INFORMATION DISSEMINATION PLATFORM	<ul style="list-style-type: none"> Farmer reports incidence of counterfeiting to hotline; data is aggregated and pushed back out to subscribers periodically Enables farmers to learn from each other – network effects 	 <ul style="list-style-type: none"> Very effective to tackle counterfeiting when scale has been achieved Potential for garbage in, garbage out
<ul style="list-style-type: none"> Track-and-Trace Technologies INVENTORY MANAGEMENT PLATFORM	<ul style="list-style-type: none"> Agro dealers assess product inventory and notify manufacturers of stock levels through mobile application Primarily addresses root cause of counterfeiting: stock-outs 	 <ul style="list-style-type: none"> Requires significant process change Addresses only one root cause of counterfeiting
<ul style="list-style-type: none"> Track-and-Trace Technologies RFID TAGS	<ul style="list-style-type: none"> Radio Frequency Identification (RFID) tag is affixed to product, crate, or pallet; RFID reader uses radio waves to wirelessly scan tag when product comes within close proximity 	 <ul style="list-style-type: none"> Requires significant investment in RFID tags and RFID scanners Technology can be unreliable

Key:
● End User Authentication ● Track-and-Trace Technologies
● Smallholder Education ● Quality Assurance





FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Uganda E-V

Kristin O'Planick

11/17/2015



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

HOW IT WORKS

The farmer scratches the label to reveal a unique fourteen digit code, sends to *114# and then receives a response with the product's detailed specifics.

1

Check product for verification code



2

Enter verification code



3

Instantly verify if a product is genuine





Availability
of high-
quality
inputs

Prevalence
of
counterfeit
inputs

INDOFIL[®]-M-45.
MANCOZEP 90% WET



What e-verification DOES

- Assures customer that the product is from the supplier
- Prevents package re-use and adulteration
- Gives Brand visibility
- Provides inventory tracking to last mile without necessitating cooperation of retailers and distributors
- Holds Brand owners accountable and removes counterfeits as an excuse for poor quality

What e-verification DOES NOT

- Guarantee the quality of the product inside the package
- Solve problem of sales out of open containers
- Address home saved seed and informal seed suppliers



ABILITY TO
EXECUTE



FINANCIAL
VIABILITY



STRENGTH OF
STAKEHOLDER
RELATIONSHIPS



- What do the stakeholders want?
- What services are they willing to pay for?
- What will the Government allow?
- What are the costs of making a mistake?



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Wait a minute! ...or a few months

KNOW IT'S REAL

Scratch Panel and Sms code to 5050

Let your harvest improve, get yourself
the right agro inputs today,
E-verify





- Liaise with potential suppliers
- Interface with Government
- Support consumer education and promotion
- Support market entrance to help providers get up to commercially viable scale



- More than 30 million Ugandans rely on the ag supply chain
- Fake seeds alone erase \$1.5 billion a year in yields and incomes
- E-verification hopes to
 - empower 5 million Ugandan farmers plus agro-retailers
 - generate more than \$1 billion a year
- Beyond ag? Possibilities are almost endless



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



Thank You



mPedigree





FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

www.feedthefuture.gov



USAID
FROM THE AMERICAN PEOPLE

1 FARMER

When a farmer buys a product, s/he sends the attached unique 14 digit code to the UNBS code *114# for verification.



- SMS reply that
1. Product is not genuine
 2. Code is reused
 3. code is invalid
 4. Product is expired

2 UNBS E-TAG SYSTEM DATABASE

SYSTEM SIDE

- MAAIF lists of certified agro inputs, manufacturers uploaded
- System updates
- Logs
- Reports
- Code verifications, etc.



4 CALL CENTER

1. System submits numbers to call center to follow up cases of products with invalid codes.
2. Call center contacts farmer when an invalid code is sent, to obtain details of the product and location of purchase.
3. Farmer can call a toll free to the call center in case SMS doesn't match in the details of products purchased.
4. Call center forwards reports to coordination center with the particulars



3 UNBS CO-ORDINATION CENTRE

6 MAAIF

MAAIF given report and its enforcement team conducts an onsite assessment of the product to enforce the law.

5 AGRO-INPUT MANUFACTURER APPROVED BY MAAIF

1. UNBS E-tag shares real time reports and updates with the certified manufacturer through web portal (e.g. if sub-standard products are detected)
2. Manufacturer updates its account on the E-tag system



ABOUT E-TAG

ABOUT E-TAG

The non-forgable electronic tag system, has been designed to empower farmers to conclusively detect forgeries of trademarks and quality marks, using their personal mobile phone handsets, during the process of purchasing goods.

The System

The system is run on a centralized ICT program that locks out counterfeiters from the market of a given product, that has been electronically tagged with unique codes, by alerting the purchasing farmer and MAAIF whenever the farmer electronically encounters a counterfeit from anywhere in Uganda with a mobile phone network.

The Farmer

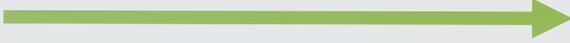
Farmers will use their mobile phones to verify if a product is genuine or not at the point of sale or on the farm. In case of an invalid/fake code or reused codes encountered on a counterfeit by the farmer, UNBS shall be alerted automatically. An assessment is done on the location and particulars of the counterfeit, enabling a quick response reaction from the MAAIF surveillance team.

Manufacturer's benefit

Agro input manufacturers on the system will recover and maintain markets lost to counterfeits thus increasing turnover while increasing farmer confidence and satisfaction. The system is transparent as it sends real time reports enabling an affected manufacturer to get involved when counterfeits are detected.



*Questions
and Answers*



Continue the
conversation



Comment on today's topic:
<http://agrilinks.org/events/e-verification-agricultural-inputs-progress-uganda>

Tweet tips!
twitter.com/agrilinks

Post resources!
facebook.com/agrilinks

AgriLinks