

DECEMBER 2019

AgriFin Accelerate



AGRIFIN

# 4TH ANNUAL

# LEARNING EVENT



› Technology Disruptions and Agriculture Systems



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THIS YEAR'S EVENT FOCUSED ON

TECHNOLOGY DISRUPTIONS

AND AGRICULTURE SYSTEMS

It particularly focused on digital platforms and their potential for smallholder farmers, identified as listed below:

Allowing farmers to access a full range of services	Allowing service providers to reach farmers at scale	Transcending weak rural infrastructures
Establishing more stable and transparent markets	Increasing income for farmers	Driving higher productivity rates
Building rural economies to drive job creation with a focus on the youth	Enabling government to support and manage policy for agriculture	Supporting mechanization and climate-smart agriculture
Helping businesses along agricultural value chains to become profitable	Driving financial inclusion and financial health	Promoting food safety



## After 3 plenary sessions and 6 in-depth sessions, the main conclusions were:

1. Technologies create opportunities to be more end-user focused and to organize the whole value chain around smallholder farmers needs, bringing more transparency to the sector. This can also be leveraged to further address the gender gap through the development of women-focused services.
2. Many new and essential partnerships are possible through the use of disruptive technologies, allowing to make more sense of all data produced and to reduce risks for both farmers and investors. This is of particular relevance for scaling up climate smart agriculture.
3. Using technology to attract the growing African youth to jobs in agriculture represents a great potential for fighting both food insecurity and youth unemployment.
4. Technology is an enabler, not the only answer. To be able to enhance financial inclusion and promote financial health, technology has to be driven by deep user insights to detect and address needed and demanded use cases. Resources like The Human Account<sup>1</sup>, have been developed and employed towards addressing this gap.

<sup>1</sup> <https://www.thehumanaccount.com/>

# ABOUT MERCY CORPS AgriFin

Mercy Corps AgriFin Accelerate (AFA) is a US\$25 million, 6-year initiative supported by the Mastercard Foundation, expected to benefit 1 million smallholder farmers across Kenya, Tanzania, and Zambia. It aims to close the financial inclusion gap for smallholder farmers with greater access to affordable, accessible, and demand driven financial products and services through digital solutions. With the addition of a USD 5 Million Grant from the Bill and Melinda Gates Foundation, the program has now expanded its services to Ethiopia and Nigeria, dubbed the AgriFin Digital Farmer (ADF).

Target group: Underserved smallholder farmers living on less than \$2.50/day with outreach to 50% women and youth focus.

AFA supports more than 100 partners to develop, prototype, test and scale digital services for farmers.

### After 5 years of program:



**2.5M**

smallholder farmers were reached



**36% - 40%**

active users are women



**900,000**

farmers reached with the  
extended work with

BILL & MELINDA  
GATES *foundation*

It was also a year of breakthrough in various fields: digital platforms, digital marketplace, partnerships with governments and private sector, climate smart agriculture and crop insurance.

# EVENT SUMMARY

**350+**

Attendees

**260+**

Organizations  
presented

**50+**

Keynote speakers

**6**

Plenary sessions

**3**

Breakout Sessions

**New Technology**  
tools presented

## OPENING PANEL & PLENARY



**Leesa Shrader**  
AgriFin Program Director  
*Mercy Corps*



**Debisi Araba**  
Regional Director of Africa  
*CIAT*



**David Green**  
Disasters Program Manager  
*NASA*



**Hamadi Boga**  
Principal Secretary of the State  
Department for Agricultural Research  
*Ministry of Agriculture, Livestock,  
Fisheries and Irrigation*



**Craig Redmond**  
Senior Vice President of Programs  
*Mercy Corps*



A woman with light brown hair, wearing a red top and a beige blazer, is speaking into a silver microphone. She is looking slightly to her left. The background is a blurred blue screen with some text visible.

“A transformed agriculture sector will be driven by private enterprise and enabled by the public sector”

– Dr. Debisi Araba, *CIAT*

# INTRODUCTION

In its fifth year out of six, AgriFin already exceeds the targets of the Mastercard foundation

**2.25 M**  
smallholder  
farmers reached

2019 was a breakthrough year for the program in terms of advancing digital platforms and marketplace connections for smallholder farmers, as well as increasing access to crop insurance and building strong ecosystem partnerships. Some major challenges remain such as how to interest private investors to finance innovative solutions in the agricultural field, for youth employment in rural areas, or more importantly climate change and the remaining gender gap.

Digital platforms and innovations represent a great potential in tackling these challenges. They allow smallholder farmers to access a full range of services, but also allow to reach farmers at scale, to transcend weak rural infrastructures, to bring more transparency in the market, to generate higher productivity rates and increase income for farmers, to drive financial inclusion and to promote food safety.

This opening plenary aimed at presenting the role of digital platforms in transforming rural economies and driving job creation.



## KEY TAKEAWAYS

1

**The agriculture sector is facing an urgent climate change challenge. It is not a time for business as usual, but all actors need to partner and build a smarter agricultural system.**

FAO is estimating a 25 decline in crop yields by 2025 linked to climate change in Africa. Ambitious initiatives already exist in tackling this problem, as demonstrated by the Digital-Climate Smart Agriculture D-GCS playbook, developed by AFA documenting several initiatives including those of NASA.

*Please refer to case study 0.1 in the Appendix*

2

**There are many promising initiatives from Digital Financial Service (DFS) to credit programs targeting women, but we need to get commercial banks involved.**

African agriculture represents 70% of employment and more than 40 of GDP, but less than 3 of bank lending. According to the World Bank, there is a need of 140 billion dollars annually in additional financing in the agricultural sector to meet the SDGs by 2030, with 90 billion coming from the private sector. To face this high lack of funds to support the many innovative solutions, it is essential to invest in de-risking agriculture.

*Please refer to case study 0.3 in the Appendix*

3

**A remaining big challenge in the agricultural field today is the gender gap:**

a transformational approach is needed, where we need to design solutions specifically to the needs and constraints of women. Womens deficits in agricultural productivity range between 20-30 across SSA. FAO announced that tackling this issue along the postharvest loss problem has the potential to solve hunger in Africa by 2025.

Women in Kenya are responsible for dealing with emergencies. They are saving just to survive and use credit as a lifeline, not as a driver for growth. While AgriFin already designed a saving product specifically for this profile, it is not live yet because no commercial bank has been willing to finance it.

4

**There is now a surplus of data, and we need more collaboration in order to analyze and put it into context.**

Being able to connect sources of data and to extract important information is essential in de-risking investments in the agricultural field. This will help in attracting more private funds towards agriculture.

*Please refer to case study 0.2 in the appendix*

DigiFarm draws on a wide range of capabilities from several other partners such as **iProcure**, **FarmDrive**, **Arifu** and **iShamba**. The integrated nature of the platform and its intensive use of digital data seeks to leverage each partner's strengths, reduce risk for each partner, and drive higher revenues across the partnership.

## **DigiFarm lessons to inform future replication of digital offerings for farmers:**

› **Offering bundled services reduces costs and risk, and drives uptake and loyalty**

By offering a more holistic solution the efficacy and impact of each of the individual tools is reinforced.

› **A platform approach can reduce development costs and crowds in diverse capabilities**

Safaricom did not want to build out new service capabilities from scratch and instead made a “platform play” to leverage other service providers.

› **A farmer-centric / user experience approach is crucial to ensuring product-market fit**

A responsive and knowledgeable tech team that can properly analyse and respond to feedback from the field is an instrumental part of building and maintaining a farmer-centric approach.

› **Trusted, high-touch channels can drive customer uptake and improve stickiness**

Farmers respond best to trusted channels – in particular other farmers. Also, having reliable physical touchpoints for in-person engagement makes a difference.



» **Building a robust and transparent partnership structure is key for success**

Transparency in roles and responsibilities (clear input and expected outputs) is critical to enable each partner to achieve individual goals while still working towards the longer-term shared goal of the platform itself.

» **Credit scoring for smallholder farmers can benefit from diverse mobile and farm-level data**

A digital data trail of crop input purchases and/or sales objectively verifies a farmer's track record working with a given crop. A history of purchases and sales with other actors in a given value chain indicates the ability to honor agreements.

» **Patient capital and a process of trial and adjustment is crucial in underserved markets**

DigiFarm used its platform to first develop buy-in and trust from farmers through its educational services and input purchases and only moved forward to lending in the second phase of the project.

» **Establishing the value of data upfront is critical to expanding financial access**

DigiFarm's data platform has the potential to provide lenders with new insights and information on farmer businesses, which provides an alternative credit score to use in assessing lending viability.

» **Loan product structure is critical given farmer income is lumpy and volatile**

DigiSoko is currently piloting a three-part loan product, with a cash loan at planting (to cover labor and other costs), as well as a later cash loan at harvest to ensure farmer have cashflow to get their produce to market.

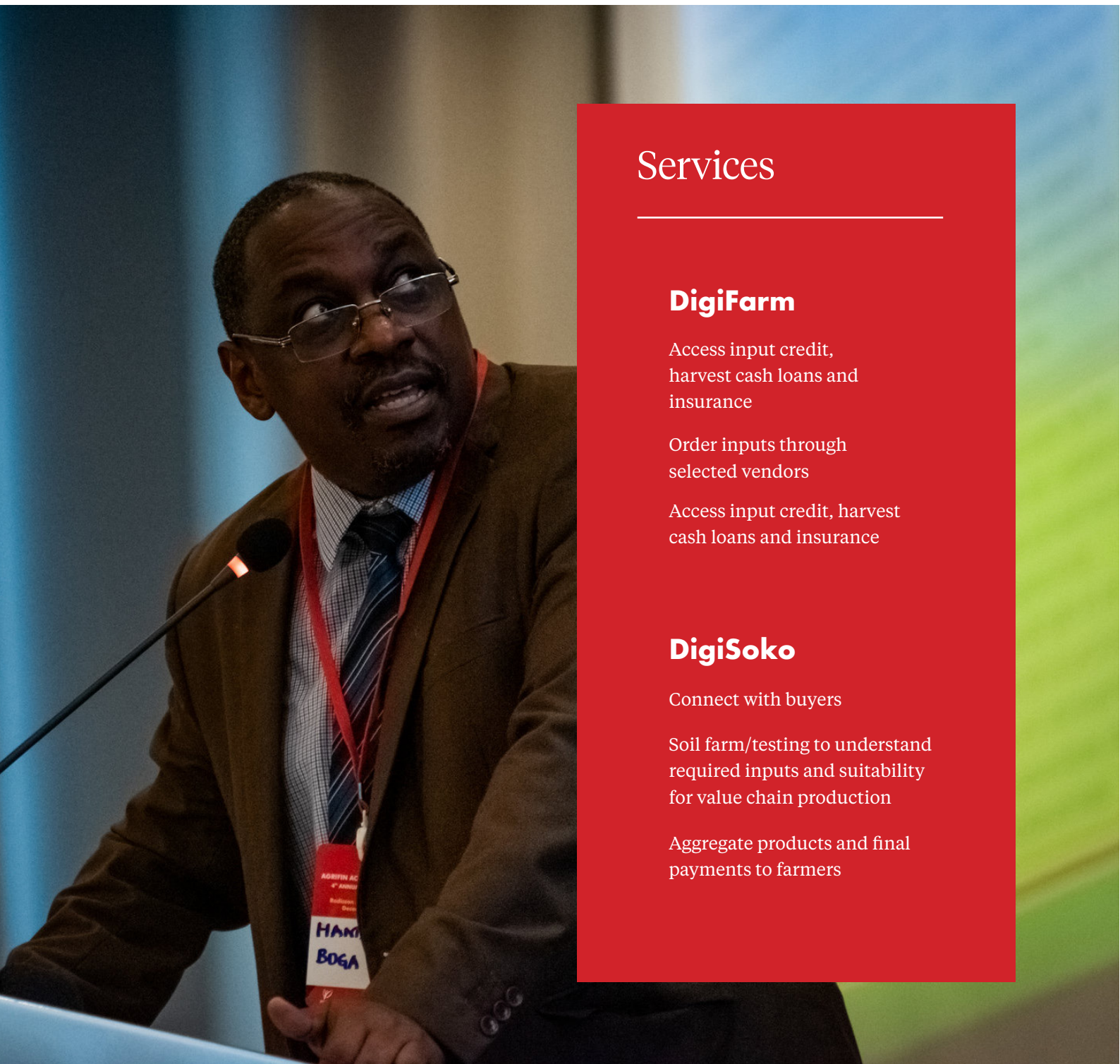
## CASE 1

# DIGIFARM

Launched in 2017, DigiFarm is Safaricom's integrated mobile platform of digital services for farmers. DigiFarm, accessible on a basic feature phone, provides farmers with access to products and services enabling them to conveniently source, transact, learn, and grow their farms. Over time, additional services are added onto the platform to make DigiFarm a one-stop shop for Kenyan farmers, including the recent introduction of DigiSoko, an open marketplace for agricultural produce.

DigiFarm has registered  
**1.3M** smallholder  
farmers since 2017 with an  
estimated

**\$100M+** income gain to  
farmers



## Services

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### DigiFarm

Access input credit,  
harvest cash loans and  
insurance

Order inputs through  
selected vendors

Access input credit, harvest  
cash loans and insurance

### DigiSoko

Connect with buyers

Soil farm/testing to understand  
required inputs and suitability  
for value chain production

Aggregate products and final  
payments to farmers

➤ **Offering bundled services reduces costs and risk, and drives uptake and loyalty**

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➤ **A farmer-centric / user experience approach is crucial to ensuring product-market fit**

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## CASE 2

# AGRIPAY BY ZANACO

Agriculture contributes to only 6.5% of Zambia's GDP, despite 54% of the population of Zambia (1.4m households) being full-time smallholder farmers. Smallholder farmers in Zambia are unable to reach their full potential because they lack access to credit, markets & information.

Over the past two years, the AgriFin Accelerate Program worked with the ZANACO team to identify the opportunities to drive transactional volumes and long term client acquisition for its digital customers in smallholder farming. They developed Zambia's first Digital Financial Services Platform for smallholder farmers, AgriPay.

AgriPay is a holistic customer value proposition that includes account opening, access to markets, access to agronomic information, and suite of digital financial products for farmers. To drive product uptake and sustainability, AgriPay will take a comprehensive approach to financing farmers by targeting both farmers themselves and value chain players.

The farmers' banking solution was launched on February 27, 2019 and farmers are being onboarded through offtakers and farmer associations. To date, 3,560 farmers were onboarded, 50% of them being women and 30% of them considered as youth.

Some preliminary farmers insights include: safer and cheap storage of money, higher financial discipline (keeping track of revenues and their use), reduced expenditures and operational costs along the process (e.g. transportation costs).





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## CASE 3

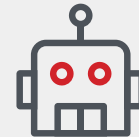
# CROPIN

Begun in 2010 by Mr. Krishna Kumar, CropIn is an intuitive, intelligent and self-evolving system that delivers future ready farming solutions to the agricultural sector. This system is useful for digitizing farms while providing near real time data reporting and data managing the entire ecosystem. This enables farmers to archive patterns, predict trends, and make blueprints for their businesses in times to come. It does this through

Data Storage



Machine Learning



Weather Analysis



Satellite Monitoring







This is done using the following tools and products:

### **SmartFarm**

This tracks your farm with accuracy giving the farmer alerts, imagery and notifications to monitor and respond to factors in real time. The application is installed in the phones of the farmers or the field officers.

### **Smartsales**

This maximizes sales performance and activity - during pre season, season and postseason - with a swift, prompt and intelligent system

### **Mwarehouse**

This enables the user to experience supply chain solutions on their mobile phones, from plant seeding to product sales by tracking and tracing every move with total transparency.

### **Smarrisk**

This product helps mitigate risk, monitor assets and sharpen evaluation with an intuitive remote sensing solution, powered by alternate data.

# The measured impact of CropIn

**5.5M**

acres of farmland  
digitized

**2.1M**

farmers benefiting  
globally

**98%**

client retention rate

**3,662**

crop varieties

Present in  
**46+** countries

**92%**  
score on adaptability

Acquired  
**207+** clients

**384**

crops

Their data reporting tools are useful in enabling the following to be more effective:

- » Agri Input companies that produce fertilizers, nutrients, pesticides, seeds and farming equipment are provided with breakthrough technology
- » Financial Lending institutions are provided with risk mitigating technology to provide agricultural loans
- » Crop Insurance providers are provided with risk minimizing technology to cover farmers appropriately
- » Farming companies such as contract farming companies, organic farming companies, export and packhouse processing companies and commodity traders are provided with revolutionary technology that can predict output with more precision
- » Seed production and selling companies can maximize on quality input
- » Governments and Advisories can focus on increasing farm productivity and sustainability through the innovative technology provided

CropIn in collaboration with Safaricom and DigiFarm is utilizing its Smart Farm element to take the image of the farmer, map farm areas of farmers and register the crops they grow. The field technicians can capture more information to add to the portal such as images and the problems that the farm is facing, they can also suggest the fertilizers and chemicals the farmers can use as they visit the farms. This helps Digifarm to monitor the movements and performance of the field technicians and therefore compensate them easily. Smart Farm has also removed the need for paperwork, and has automated the process of farm management. The farmers have found the app convenient, accurate in terms of geo tagging, the alerts have been useful and the supply chain process from tilling of the land to selling of the produce.

## SESSION 1

# THE PROMISE OF DIGITAL

# PLATFORMS FOR AGRICULTURE

### Moderators

Leesa Shrader | Program Director - *AgriFin Accelerate and AgriFin Digital Farmer*

Betty Muriithi | Digital Finance Services Manager - *AFA*

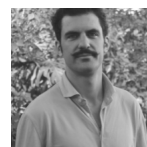
### Presenters



**Albert Boogard**  
Head of Innovations  
*Rabobank Foundation*



**Jessica Chisompola**  
Head Alliances, Digital  
Banking  
*ZANACO PLC*



**Sebastian de  
Escoriaza**  
Country Coordinator  
*FtMA*



**Elias Nure**  
Project Team Leader ICT for  
Agriculture Agribusiness and  
Markets - *Ethiopian Agriculture  
Transformation Agency*



**Elizabeth Mudogo**  
Senior Manager  
*Digital Solutions -  
MAgri, Safaricom*



**Martha Haile**  
VP of Africa  
*WeFarm*





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DigiFarm has registered 1.3 million smallholder farmers since 2017 with an estimated \$100 million+ USD income gain to farmers.

## Session 1

### THE PROMISE OF DIGITAL PLATFORMS FOR AGRICULTURE

# Introduction

Digital technology and platforms are a big accelerator in the agricultural space. DigiFarm has registered 1.3 million smallholder farmers since 2017 with an estimated \$100 million+ USD income gain to farmers. The app was built on a human centered design. When they asked farmers what they wanted, they said that they wanted high quality inputs at a good price and they wanted to learn. The AgriFin Accelerate Program worked with the ZANACO team to identify the opportunities to drive transactional volumes and long term client acquisition for its digital customers in smallholder farming.

*Studies show that if farmers use:*

➤ **E-learning platforms**

They will increase their income and production from 20% to 40%

➤ **Quality inputs**

Their productivity gain will be from 10% to 30%

➤ **Input credits and score cards**

Their income and production increases by 20%. They are able to buy a bit more of what they need

➤ **Crop insurance**

Their income and production increases by 20%-25%. If farmers know that they are insured, they will plant more because they know that they have a buffer

➤ **Precision AG and weather**

Their income and production increase by 70%. This works better than crop insurance because they don't lose the crops

➤ **Savings**

It has proven to show a 14% decrease in smallholder farmer poverty levels

➤ **Irrigation**

Farmer led irrigation solutions increase production by 50% to 100%

➤ **Soil testing**

Their income increases by 50%. Farmers understand what they should be applying to their soil

## KEY TAKEAWAYS

1

Offering bundled services reduces costs and risk, and drives uptake and loyalty

6

Trusted, high-touch channels can drive customer uptake and improve stickiness

2

A platform approach can reduce development costs and crowds in diverse capabilities

7

Patient capital and a process of trial and adjustment is crucial in underserved markets

3

A farmer-centric / user experience approach is crucial to ensuring product-market fit

8

Building a robust and transparent partnership structure is key for success

4

A farmer-centric / user experience approach is crucial to ensuring product-market fit

9

Credit scoring for smallholder farmers can benefit from diverse mobile and farm-level data

5

A farmer-centric / user experience approach is crucial to ensuring product-market fit

10

Loan product structure is critical given farmer income is lumpy and volatile

## SESSION 2

# LEVERAGING DIGITAL PLATFORMS TO CREATE INCLUSIVE JOB OPPORTUNITIES

### Moderators

Christabell Makokha | Director for Strategy Learning - *Mercy Corps AgriFin*

Collins Marita | Senior Manager, Monitoring, Evaluation and Impact Assessment - *Mercy Corps AgriFin*

Happy Mathew | Program Manager - *AgriFin Tanzania*

### Presenters



**Gituku Ngene**  
Post-Investment and  
Learning Advisor  
*Youth Impact Labs*



**Mikael Hook**  
Director  
*RAFL*

### Panelists



**Jamie Anderson**  
Senior Financial Sector  
Specialist  
*CGAP*



**Joy Mulema**  
Coordinator  
*FAO*



**Caine Wanjau**  
Chief Technical Officer  
*Twiga*



**Steven Katingima**  
Country Lead  
*Tru Trade*





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The youth population in Africa keeps increasing and will reach 30% of the world's youth by 2025.

## Session 2

### LEVERAGING DIGITAL PLATFORMS TO CREATE INCLUSIVE OPPORTUNITIES

# Introduction

The youth population in Africa keeps increasing and will reach 30% of the world's youth by 2025. Two thirds of this youth live in rural areas where agriculture is the main provider of jobs. The job market is challenging and in Kenya, 5.6 million young people out of 9.6 million living in rural areas are seeking gainful employment. This session explored how technology can support youth in finding high-value jobs in rural areas, and more specifically how to provide youth with attractive agricultural jobs and with the required skills to prepare them. There are several barriers to address, from the negative perception of agricultural jobs, to the fact that only 46% of youth have access to smartphones. This session drew on AgriFin's work on the case study "Rural Jobs Landscape Study: exploring rural job opportunities for youth in agriculture", to be published Q1 2020.



## KEY TAKEAWAYS

1

### **A shift from smallholder farming to commercial large and medium scale farms is now necessary to respond to both the food security and rural unemployment crisis**

This transition can be facilitated by technology, which will also interest youth in agriculture. The New Rural Pathways model developed by RAFL offers a dynamic view of the rural clients and shows how unique the youth pathway is: more mobile from a job to another, from rural to urban, from formal to informal; less likely to own or manage agricultural assets; more likely to use technology. Trutrade developed a digital platform to create transparency through the value chain and provide clear route to market to smallholder farmers. It is digitally enabled but relies on a strong base of licensed local entrepreneurs who register the farmers, locate what and when they produce and help aggregate for better prices.

2

### **There is a great potential for the gig economy to formalize youth employment in rural areas**

While the offline gig economy has existed for centuries, the online gig economy is an opportunity to bring short, independent jobs that generate daily revenues in a formalized way. This is however to mitigate with the fact that agriculture requires long-term vision and investments and that the gig economy is providing structure for short-term activities only.

3

### **The aim should not just be to create new formal jobs, but to create decent jobs leaving no one behind**

Online platforms can bring more transparency and more trust (use of ratings for instance) but could also lead to increased competition and a race to the bottom in terms of remuneration. It requires further regulations in order to protect more vulnerable workers and to promote more inclusion. On the online ride hailing platforms, only 3% of the workers are female. Governments will also play an essential role in ensuring that training content is updated and adjusted to the new needs of the agricultural sector, throughout the whole value chain.

4

### **Negative perception of agricultural jobs is a major hurdle for rural youth to enter this sector**

Changing mindsets about agriculture such as demystifying the everyday life of farmers and the associated risks is essential. Digital platforms could be essential in this regard as technology is attractive to youth, can bring new financing tools and provide advisory services. However not all potential solutions should focus on technology as it is only an enabler and cannot replace in-person field contacts, especially for all those still not having access to technology.



## SESSION 3

# SMART FARMING TECHNOLOGIES

## Equipping farmers with the tools to adapt to climate change

### Moderators

John Mundy | Country Program Director - Tanzania, Mercy Corps AgriFin

Emmanuel Makau | Technology Data Decision Manager - Mercy Corps AgriFin

Victoria Clause | Agriculture and Technology Consultant - Mercy Corps AgriFin

### Presenters



**Kristin Girvetz**

Senior strategy and Technical  
Consultant in Agriculture



**Ava Zhang**

Chief of Staff  
SunCulture



**David Bergvinson**

Chief Science Officer  
aWhere



**Jitesh Shah**

Chief Revenue Officer  
CropIn



**Chandrakanth PS**

Lead Sales - Middle East  
and Africa  
CropIn



**Rui Antunes**

Chief Commercial Officer  
Ignitia

### Panelists



**Stewart Collis**

Senior Program Officer  
Gates Foundation



**Boniface Akuku**

Director  
KALRO



**Shanna McClain**

Risk Reduction & Resilience  
Program Lead – Disasters  
NASA



**Shreya Agarwal**

Head of Strategy  
Digital Green



“Planning for the  
worst case scenario is  
critical”

– Kristin Grivetz, *Climate Smart Agriculture*



## Session 3

### SMART FARMING TECHNOLOGIES

# Introduction

How do we equip farmers with the appropriate tools - challenges and opportunities - How to bring out the best in precision ag for smallholder farmers? How do partnerships between data hubs, tech companies, government and farmers to address climate change with tech? Bundling of boots on the ground and data providers, how does it work in practice?



## KEY TAKEAWAYS

1

### Forging partnerships

Governments should build infrastructure and create policies that will enable the private sector to ride on innovation, solutions, tools and expertise. They both bring complementary roles and no one can claim sole proprietorship

4

### Increased collaboration in the private sector

Open data and information should be sharable among the stakeholders in agriculture so that other firms do not have to mine the same data

2

### Relevance and usefulness of data and knowledge

It is important to downscale information in order to bring solutions to the ground level. The end user has to understand the tools used especially with literacy barriers

3

### Farming has to make business sense

This is especially true for smallholder farmers who do not make enough money and profits to invest in technology. If the costs of farming are lowered, then the smallholder farmers can afford the technology that the large scale farmers invest in.

## AFTERNOON PLENARY

# Learning together

### Presenter

Christabell Makokha  
Director  
*Strategic Learning*

This session aimed at showing how Agrifin embraces the use of digital technology and digital enabled platforms to drive meaningful job creation for 1 million youth. This is set to be achieved through platforms such as:

*Whatsapp for Business Sandbox: this platform allows organizations to directly connect to customers and engage them at scale through natural language programming, machine learning capabilities and AI, including guided conversations.*

*It also tracks behavioral change journeys in real time and product- / service-related advice is more easily customizable and effective, driving customer engagement with the product.*

*The platform will be piloted for 6 months, this was from December 2019. Agrifin has engaged 10 partners who include research organizations, social ventures and other service providers, who will have an allowance of 10,000 active users each.*

“Technology is an enabler, but it is not the answer. It only soars when paired with deep user insights that point to the most-needed and most-demanded use cases”

– Tamara Cook, CEO FSDK





## SESSION 4

# SCALING MARKET ACCESS TO THE LAST MILE

## Reimagining the role of the middleman/woman & disruptions in last mile logistics and distribution

### Moderators

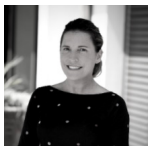
John Mundy | Country Program Director - *Tanzania, Mercy Corps AgriFin*

### Facilitators

Elena Holtkotte | Strategic Learning Consultant - *Mercy Corps AgriFin*

Gabriel Smales | *Dalberg Design*

### Presenters



**Hillary Miller**

Wise, Founder and CEO  
*Tulaa*



**Olushola Fashedemi**

Head of Commercial (Nigeria)  
*Flour Mills*



**Benjamin Njenga**

Cofounder and Director of  
Operations  
*Apollo*



**Elizabeth Mudogo**

Senior Manager  
*Digital Solutions -  
MAgri, Safaricom*



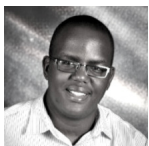
**Jehiel Oliver**

CEO  
*HelloTractor*



**Sriram Bharatam**

Founder  
*Kuza*



**Caine Wanjau**

CTO  
*Twiga*



**Sebastian De Escoriaza**

Country Coordinator  
*FtMA*



**Rosemary Mutuku**

CEO  
*Smart Logistics*





## Session 4

### SMART FARMING TECHNOLOGIES

# Introduction

Market access and last mile logistics face a myriad of well-known challenges but at the same time present opportunities to disrupt, innovate and re-imagine the “middleperson”. This session was organised into two parts:

- 1. Brief introductions by each innovator responding to the questions of: how their model scaled; how their model is re-imagining the middleperson; and how their solution is disrupting last mile logistics and distribution.*
- 2. Human Centred Design (HCD) workshop charting journey maps of four distinct middleperson personas.*

This brainstorming session for stakeholders in the sector aimed at sharing innovative ideas and new trends in the last mile logistics and how to create synergy among different stakeholders. The aim of the session was to:

- Answer, how do we drive scale, economies of scale, re-define the role of middleman?*
- Present innovators in last mile logistics and the new trends in the emerging logistics/distribution sector*
- Seek opportunities for synergy between different stakeholders in the sector*



## KEY TAKEAWAYS

Driving scale, economies of scale and re-defining the role of the middleman/woman can be achieved through:

1

Using data to drive algorithms and automate transactions

2

Operational efficiency that not only focuses on digital interaction but also human interaction

3

Leveraging on the existing supply chain i.e distributors and retailers to make them more efficient

4

Building automated operations such as bundling needs like fertilizers, seeds and insurance to reduce cost inputs and inefficiencies and eventually increase output.

5

Use of USSD services to automate partnerships with farmers with no access to smartphones and internet

6

Giving loan vouchers to farmers to help them access farming products from depots and agro vets

7

Using village advisors to create behavior change through disseminating knowledge of best farming practices to farmers in a way that can be easily understood

8

Incorporating value adds such as insurance to enable farmers derisk when it comes to climate change

9

Creating short videos for social, business, farming and communication content which can be disseminated through mobile hotspots, digital projectors and tablets

10

Using a digital platform to source for fresh fruit & produce and FMCGs. The platform shows how and when the farmers will harvest, it also shows where the farmers and vendors are located



# How are organizations disrupting the last mile logistics?

1

Apollo Agriculture connects the farmers with partners such as manufacturers of agro vet products, thus reducing transport costs for farmers by having the products directly delivered to them

3

Twiga aggregates retail demand and supply by bringing the produce straight from the farm to the vendors on a daily basis. They are currently serving up to 10,000 vendors in Nairobi

2

Digi Farm connects the farmers directly to the market, such as milk farmers to the manufacturers to increase their profits and cut out the middle-man

4

Smart Logistics uses young people as distributors as opposed to the big and known distributors. They are able to penetrate the market easily and earn commissions at the same time as either full time or part time distributors





## SESSION 5

# MAKING DIGITAL FINANCIAL

# SERVICES AND FINANCIAL

# MARKETS WORK FOR AGRICULTURE

### Moderators

Leesa Shrader | Program Director - *Mercy Corps AgriFin*

Betty Muriithi | Digital Banking Manager - *Mercy Corps AgriFin*

### Facilitators

Collins Marita | Senior Manager, Monitoring, Evaluation and Impact Assessment - *Mercy Corps AgriFin*

### Presenters



**Hedwig Siewertszen**  
Head Inclusive Finance  
AGRA



**Milton Lore**  
Team Leader  
KPMG



**Jessica Chisompola**  
Head Alliances, Digital  
Banking  
ZANACO PLC



**Dan Zook**  
Executive Director  
ISF Advisors at GDI



**Sijmen De Hoogh**  
Director  
AgriWallet



**Sitati Kituyi**  
CTO  
Pula

### Panelists



**Rebecca Mincy**  
Investment Director  
Acumen



**Michael Mbaka**  
Senior Project Manager  
FSD Kenya



**Nicomed Bohay**  
Managing Director  
Private Agricultural Sector  
Support



**Albert Boogaard**  
Head of Innovations  
Rabobank Foundation



**Milton Lore**  
Team Leader  
KPMG



## Session 5

### MAKING DIGITAL FINANCIAL SERVICES AND FINANCIAL MARKETS WORK FOR AGRICULTURE

# Introduction

This session was meant to explore the ongoing barriers in expansion of DFS to farmers through formal financial institutions, including banks, guarantees and other sources, working toward breakthrough solutions to increase the flow of capital to smallholder farmers.

The session was used to discuss new advances in digital financial services for farmers and present case materials, as well as explore progress with credit-scoring algorithms.

About 89% of farmers in Kenya have access to mobile phones, whether owned or borrowed. But with this kind of penetration, only 9% have formal digital loans and savings and 4% have informal digital loans and savings. The biggest challenge is to increase the uptake of digital loans and savings, but also challenge banks to change their mindsets around smallholder farmers.

About **89%** of farmers in Kenya  
have access to mobile phones

“Technology information is the most promising way to advance financial inclusion because it lowers the cost of certain low-income earners and makes the provision of financial services viable to buyers and affordable for users”

– Christine Lagarde



## KEY TAKEAWAYS

1

Develop products that meet specific needs for the particular group you are targeting. For example, creating a savings account for farmers that is flexible in terms of withdrawing because of the farmer's ongoing needs.

2

Farmers are very important in bringing referrals when they believe in the products and they see the benefits. They are the most sure way of increasing the user base of the services offered.

3

Blended financing is important in financing farmers, this is financing from both the public sector and private sector. None of them can do this alone, so there needs to be a collaboration.

4

As the competitive dynamics play off and as digital fintech evolves, banks should be able to finance small holder farmers and value chain actors, and also hire people who are agronomists to influence the lending of finance to farmers.



## SESSION 6

# EMERGING TECHNOLOGIES

## Blockchain & Cryptocurrencies, AI & Machine Learning, Drones & Satellites, IoT

### Moderators

Emmanuel Makau | Technology and Data Positioning Manager - *Mercy Corps AgriFin*

Shanoo Saran | Global Growth and Partnership Lead - *Mercy Corps AgriFin*

### Facilitators

Collins Marita | Senior Manager, Monitoring, Evaluation and Impact Assessment - *Mercy Corps AgriFin*

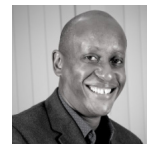
### Presenters



**Gustav Praekelt**  
Founder  
*Praekelt Consulting*



**Ric Shreeves**  
Director of Emerging  
Technologies  
*Mercy Corps*



**John Waibochi**  
Founder and CEO  
*Virtual City*



**Pierre Guillaume  
Wielezynski**  
Chief of Digital  
Transformation  
*WFP*

### Debate with



**Tamara Cook**  
CEO  
*FSDK*



**Bitange Ndemo**  
Senior Information and  
Communications Specialist  
*Government of Kenya*



**Boniface Akuku**  
Director  
*KALRO*



**Johann  
Bezuidenhout**  
Digital Payments  
Specialist



“Over time more smallholder farmers should become suppliers rather than recipients of aid”

– Pierre Guillaume Wielezynski, *WFP*

## Session 6

### EMERGING TECHNOLOGIES

# Introduction

Emerging technologies generate a large amount of essential information and represent a great potential for de-risking agriculture investments. Among all opportunities for the use of technology are the following: traceability of the agricultural value chain, scalability and transparency, providing farmers with digital ID, designing products tailored to smallholder farmers' needs, digitization of value chain processes and payments, bundle digital financial services and digital information systems for impact, leveraging data for credit scoring, supporting adaptation to climate change. This session aims at exploring the potential use of some of the latest technologies, from blockchain and cryptocurrencies to drones and satellites and what the implications for the whole agricultural value chain are.



## KEY TAKEAWAYS

1

There is no lack of data but rather an overload of information. Technology, such as machine learning can help filter, select and analyze data in a meaningful way in order to act.

2

**While blockchain continues to be explored for increased transparency and traceability along the value chain, cryptocurrencies, such as the imminent LIBRA, represent an enormous potential for farmers.**

Cryptocurrency could solve the volatility issue faced by farmers and create a more stable and safer financial environment for the whole industry.

3

**Solving the enormous challenges the agriculture is facing is going to involve a transformation of the whole value chain at the same time. Technologies are key for more integration and coordination of the different actors.**

While drones and satellites help for crop or precipitation monitoring, AI and machine learning help processing large amount of information for better predictions such as price predictions, but the essential part is to connect all this information through the improvement of platform interoperability.

4

**All these technologies do not come without their own challenges and limitations, ranging from consumer protection to regulation through high costs.**

With a proliferation of digital tools addressing farmers' challenges, it is essential to keep in mind that these services need to be designed for the farmers themselves rather than asking ourselves if the farmers are ready for these new technologies. The digital gap can create rising inequalities with the increased use of technologies if not addressed. Investment in digital literacy is essential in order to scale any digital solution.

## CLOSING SESSION

# THE POTENTIAL OF DIGITALLY ENABLED PLATFORMS TO TRANSFORM AGRICULTURE SYSTEMS

### Moderators

Sieka Gatabaki | Deputy Program Director - *Mercy Corps AgriFin*

Christabell Makokha | Director of Strategic Learning - *Mercy Corps AgriFin*

### Closing panel



**Mirafe Gebriel  
Marcos**  
Senior Director  
Agribusiness and Markets  
*ATA*



**Bitange Ndemo**  
Representative  
*Government of Kenya*



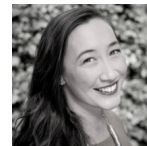
**Pierre Guillaume  
Wielezyski**  
Digital Transformation  
Services  
*WFP*



**Olushola  
Fashedemi**  
Head of Commercial  
(Nigeria)  
*Flour Mills*



**Jessica  
Chisompola**  
Head Alliances, Digital  
Banking  
*ZANACO*



**Erica Bliss**  
Business Development  
Manager  
*GoogleX*



**Ava Zhang**  
Chief of Staff  
*SunCulture*



**Kiette Tucker**  
CEO  
*One Acre Fund*





“Free trade without free  
movement is an impediment to  
farming and scaling technology”

– Dr Bitange Ndemo



## KEY TAKEAWAYS

1

Less than 3% of financing in the agricultural sector comes from commercial banks. It is important to find new and innovative financial options for farmers

2

We have had 100% mobile penetration without a class to teach people how to use mobile phones. Show a few farmers how to use innovative technology and watch them replicate that and disrupt the supply chain in the agricultural sector.

3

Companies need to design technology and products together with the people on the ground, with their needs in mind, so as to be able to execute them. They also need to make use of better and much less expensive hardware and technology, and invest in marketing education and research on the ground to meet the needs of the people.

4

Moving smallholder farmers to become large scale farmers means consolidating land. However, farmers need to see the benefits of land consolidation so that they can buy in. Political decisions in Kenya have contributed to the inhibition of the capping of land sizes at a minimum of 5 acres.

5

The value chain is not the same from end to end, it has different notes which are potentially independent of each other, the work of the government is to ensure that those independent notes are well regulated, and they work in the most efficient way possible

Other governments should borrow a cue from Ethiopia which introduced blanket exemptions for all agricultural technologies recognizing their importance to food security and to the national economy

7

Recognize the importance of accelerating public private collaborations in the agricultural spaces, to build business cases which show what the return on investment will be for governments in order for them to invest more in scaling agricultural technologies

“We have to move from gender inclusion to gender transformation”

– Christabel Makhoha

8

Bridging the gender gap can be done through increasing productivity and financial inclusion. This is through;

*Digitizing payments through platforms such as MPESA*

*Bringing in alternative data sets and creating transparency across the value chain and around payments, payments should not go to the person bringing the produce but to the person planting the crops*

*Programmable currency: where the money is allocated directly to different spending units in the family, to avoid misuse by men*

“Formalize informal farming tools, commodities and assets to make them credit worthy for farmers to get loans”

– Mwombeki Baregu

9

Embracing technology will be key in getting the youth to consider farming, so as to help them not the same mistakes their parents made

10

Including agriculture in the curriculum and giving incentives to the youth that are interested in agriculture will be key in enticing them to take on agriculture



Leesa Shrader  
AgriFin Program Director  
*Mercy Corps*

## Closing remarks

- 16 trillion dollars have been committed through the Paris Accord to flow to the eight priority sectors geared towards climate change, only 1 trillion has been utilized so far
- This is the beginning of the converging science and data and we need to make it work for smallholder farmers and the agri industry
- We need to make farming climate smart
- There is optimism in terms of creating frameworks for partnerships between governments and the private sector.
- The demand for food is going to keep growing, and countries like Kenya are not food secure. The developing world is behind and it is important to have a convergence and create a community for the development world



# APPENDIX



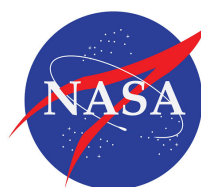
## APPENDIX

# Opening plenary case studies

### Case Study 1.1

The **Digital-Climate Smart Agriculture playbook** (D-GCS) developed by AFA leverages digital tools to help smallholder farmers increase productivity and resilience in the face of climate change while contributing to mitigation where possible and appropriate.

A pilot program built as a Public-Private Partnership was launched in Kenya in September 2019 for 6 crops with the aim of reaching 45,000 smallholder farmers. It aims at providing data (weather, diseases and pest etc.) from various partners, to transform it into agronomic advice and sharing it with farmers.



### Case Study 2.1

**NASA** leads several programs to create know how, put data in contexts in order to advise decision-makers early enough to take action. The idea is to derisk and reduce surprise around climate events such as droughts. The NASA Water Resources Program looks at optimizing reservoir operations for hydropower production or predicting water deficits.

The Global Precipitation Mission (GPM) is a global collaboration to combine data from different partners and cover more areas. Partnerships are essential to put data in perspective, store it and analyze it. The Digital Earth Africa project brings socioeconomic data with other scientific data around water which allows for refinement of analyses done with only climate data. NASA also uses AI to understand and simulate scenario. It developed technology forecasting systems to inform famine early warning in order to prevent the risk.



### Case Study 3.1

In 2019, CIAT partnered with Usika Games, KALRO and ishamba to develop a gamified weather information tool as a way to provide two-way weather information between agronomists and farmers. CIAT also partnered in the last two years with MasterCard to reimagine agribusiness development and deploy innovative technology to accelerate shared prosperity: The MasterCard Farmers Network. This is a digital platform that connects all types of actors (farmers, buyers, banks, government in East Africa) and allows farmers to buy and sell and receive payments for agricultural goods. Since its launch in July 2019, 250,000 farmers through aggregators have conducted over 2,400 transactions worth 11.2 million dollars. By December 2020, the target is to increase to 1 million clients.



## APPENDIX

# Session 3 case studies

### Case Study 3.1

#### Climate Smart Agriculture

CSA works through:

- *Productivity: sustainably increase productivity, food security and income*
- *Adaptation: Increase resilience of farmers to adapt to climate change*
- *Mitigation: reduce emissions*

5 technology groups account for 50% of technology considered to be climate smart. These include: water management, crop tolerance to stress, intercropping, organic inputs and conservation agriculture. It is important to identify the best CSA practices for each region, they have to be relevant to farmers.

Working on the value chain is also very important: credit access  
-> insurance -> post-harvest loss -> market access -> supply chain efficiencies -> climate proofing the value chain

#### Why digitize?

- *Real time and better decision making. Digital technologies are becoming more available to farmers*
- *Digital learning reaches people faster and at a lower cost than traditional extensions*
- *Digital financial and insurance services lower the cost of customer acquisition, de-risk financing SHFs, reduce the finance barrier to CSA adoption and protect SHFs from weather shocks.*
- *Provides platforms for multiple providers to reach small holder farmers with bundled products and services across the value chain*



### Case Study 3.2

#### AWhere

This is a software built to provide weather intelligence to help farmers adapt to climate change through machine learning, AI and deep neural networks. It gives farmers real time data on weather patterns and rainfall for only \$1 per farmer per year.

Key Highlights of the software include:

- *2 million weather stations, every farmer is within 6km of the stations with access to weather data since 2006*
- *Real time weather maps with GIS ready data files for your country or crop of interest*
- *Models and insights with advanced analytics for decisions support.*
- *Capacity building to empower users with custom consulting and training services*



### Case Study 3.3

#### Crop-In

This is an intuitive, intelligent and self-evolving system that delivers future ready farming solutions to the agricultural sector. This system is useful for digitizing farms while providing near real time data reporting and data managing the entire ecosystem. This enables farmers to archive patterns, predict trends, and make blueprints for their businesses in times to come.

##### **It does this through:**

- Data Storage
- Machine Learning
- Satellite Monitoring
- Weather Analysis

##### **Highlights of Crop – In**

- 5.5 M acres of farmland digitized
- 98% client retention rate
- 46+ countries
- 207+ clients
- 384 crops

## APPENDIX



## Case Study 3.4

## Sun Culture

With about 96% of smallholder farmers in Kenya relying on rainfall to irrigate their farms, Sun Culture has come up with solar irrigation systems that can pull water from any source up to 70m below ground level and this irrigation covers up to 3 acres of land. The system is IoT enabled and can therefore be monitored remotely

**Impact:**

- *2x to 5x increase in yields*
- *1.5x to 2x increase in milk production*
- *5x to 10x increase in income*
- *17 hours saved from fetching water weekly*



## Case Study 3.5

## Ignitia

This is a weather forecasting model that delivers weather updates to farmers via sms and development partners (B2B) via a web interface.. It has an accuracy rate of 84%. Over the last 3 years, it has increased its reach from 90,000 farmers to about 1.2M farmers currently. It is operational in Ghana, Nigeria, Mali, Burkina Faso and Côte d'Ivoire. They are planning to soon launch in South America

**Highlights of the software:**

- *Better seasonal planning*
- *Optimal crop selection*
- *Successful germination*
- *Preventing fertilizers from being eroded*



## Digital Green

### Case Study 3.6

#### Digital Green

Digital green seeks to provide in depth learning of best practices in farming through the creation of videos. The videos capture best practice farming methods used by local farmers, they are then shown to farmers through projectors. The smallholder farmers are now able to understand fully as the videos are more relatable even in terms of the language used.

*Their solutions;*

**Community videos**

facilitate the dissemination of relevant videos allowing farmers to share knowledge with one another

**Training Courseware**

use of digital tools to train the trainers

**Farmstack**

delivers location and time specific advice to farmers to boost productivity

**Coco**

provides data accessible to anyone, anywhere and on any device



## APPENDIX

### Session 6 case studies

#### PRAEKELT

##### Case Study 6.1

##### **Praekelt**

Praekelt Consulting presented why machine learning is becoming more and more essential to their mission and projects. Machine learning allows to understand and act upon unstructured, real-world data. For instance, while there are 4 billions users of text messages sending 20 billions messages per day, with the rise of internet and social media, there are already 2.4 billions users of chats, sending 100 billions daily messages. This is an example of proliferation of data and making sense of such a volume requires new tools.

#### Virtualcity

##### Case Study 6.2

##### **Virtual City**

Virtual City is a technology firm that develops and delivers supply chain automation solutions in East Africa. They focus on end to end transformation of supply chains for meaningful impact. For instance, the AgroForce solution creates an opportunity to determine, measure and track the true value due to a farmer and aggregation center by having visibility to its farm, crop, harvest, deliveries, quantity, payments and credit check off datasets in real time against preset KPIs. It provides the outputs in easy to understand real-time analytical dashboards creating visibility along the food value chain.





