STATUS OF FAMILY FARMING IN USE OF ADVANCED TECHNOLOGIES IN KENYA

State Department for Crop Development
Ministry of Agriculture and Livestock Development

JANE N. KIOKO

AGRICULTURE STATISTICS UNIT-nzisajane@yahoo.com/jkioko@kilimo.go.ke

CURRENT STATUS-CONTEXT OF FOOD SECURITY IN KENYA

- The Ministry of Agriculture and Livestock development consolidates and pursues policies that deal with the challenges of food security while taking into account the resources available.

- The Ministry's strategic plan, the Agriculture Sector Development Policy and the National Food and Nutrition Policy (FNSP) are the key policies that addresse key issues associated with chronic, poverty-based food insecurity and malnutrition

- The ministry is currently, implementing the Agricultural Sector Transformation and Growth Strategy (ASTGS) that focuses on use of data, ICT and digital systems and innovations as enablers to address three broad areas: expansion of productivity; increasing farmers incomes; increasing farmers resilience to climate change and emerging challenges.

THE KENYAN FARMER

Kenya

6.4 million agricultural households(2019 KPHC).

Main purpose of farming
- 76.0 %-subsistence farming
- 23.3% -commercial farming

Average holding size

1.5 acres, especially for the key food crops

Age of head of the farming households

23.2 % (35- 44 yrs)-the majority

20.1% (25 - 34 yrs)

19.6% (45-55 yrs)

15.7%-55-64 yrs

16.5% -the elderly (age 65 years and above

Most government policies are geared towards supporting these farmers(small scale), either to expand and become commercially oriented, or address recurrent challenges

KENYAN FARMING

- Most of the farmers practice mixed farming: growing of crops, combined with livestock. Of the 6.4 million households,60.9 % practiced mixed farming in 2019.

- The proportion growing crops only stood at 26.7% and those rearing livestock was 12.0%

- Kenya's main food crops are classified into:
  - Cereals (maize, wheat, sorghum, rice, millet);
  - Pulses (beans, pigeon peas, cow peas, green grams);
  - Roots and tubers (Irish potatoes, sweet potatoes,cassava,arrow roots and yams

- Maize is the main staple food followed by beans, potato and rice.

- Kenya has two main growing seasons: long rains season from March to May; and Short rains from October to November.

- Most of the crops are grown as mixed (one main crop eg maize planted with a second crop eg beans).

STATUS OF USE OF ICT BY FARMING HOUSEHOLDS IN KENYA(2019 KPHC)

- Ownership and use of mobile phones by households promotes communication among other uses.

- At the national level, 50.4 % of the population in farm households owned and used mobile phones with internet use at 15.0 % in 2019.

- In rural areas, 48.9 per cent of the population in farm households owned and used mobile phones with internet use at 13.2 per cent.

USE OF ADVANCED TECHNOLOGIES IN FAMILY (SUBSISTENCE) FARMING

- The National Research Institution- Kenya Agricultural and Livestock Research Organisation (KARLO) has developed a web based platform namely- [Kenya Agro-Weather & Market Advisories System](#) which farmers can access through their mobile phones and get real-time advisories on weather for their localities .

- The farmers can also use the **KARLO crop selector application** that guides suitable crop types the farmer can grow.

- The institution has developed a number of mobile applications that the farmer can install on their phones and access information on various enterprises husbandry practices and pest control.

Disruptive Technology in Agriculture

- Kenya is a digital innovation hub of Africa and has a number of innovative start-ups on digital agriculture however few farmers make use of these digital innovations.

- In 2019 a group of partners, led by the World Bank Group organized a a challenge competition to identify most promising agri-tech innovations with an aim of getting one million Kenyan farmers onto a digital platform over the next three years.

- The initiative was a part of the World Bank's two major agriculture development initiatives in Kenya – the Kenya Climate Smart Agriculture Project and the National Agricultural and Rural Inclusive Growth Project

- The first cohort of entrepreneurs selected from the challenge competition included the following and the respective innovations;

CATEGORY 1 –PRODUCTIVITY

1. **Digi Cow,** a simple record keeping app used by dairy farmers
2. **Digital Green** -for use by smallholder farmers to get agricultural extension advisory services
3. **Farmers Pride -**bridges inputs, services and information gap among rural smallholder farmers
4. **Precision Agriculture for Development,**- reaches farmers with personalized agricultural advice through their mobile phones-Vihiga county pilot.
5. **SunCulture** - develops and offers solar-powered smart irrigation systems

Disruptive Technology in Agriculture cntd

- **CATEGORY 2:MARKET LINKAGES**

1.**M-Shamba,** a digital extension platform that uses interactive voice response services to transfer technologies to smallholder farmers

2.**TruTrade Africa**-cloud-based mobile and online applications intended to provide smallholder farmers with a reliable route to market and fair prices for their produce.

3.**Tulaa,** which uses mobile technology connect agri-input suppliers, financial service providers and commodity buyers to smallholder farmers

Disruptive Technology in Agriculture cntd

- **CATEGORY 3-FINANCIAL INCLUSION**

1.ACRE Africa-links farmers to crop, livestock and index insurance products to shield them against unpredictable weather conditions

2.Agri-Wallet-provides mobile cash transfers for agri-buyers and farmers

3.Arifu-a personal learning tool one can chat with on any mobile device to learn new skills and access opportunities

Disruptive Technology in Agriculture cntd

- **CATEGORY 4:DATA ANALYTICS**

1.Astral Aerial, which operates drones with sensors to detect crop health for clients, During the locust invasion,it provided data collection on desert locust infestation in Kenya under a project by Mercy corps to understand movement and damages.

2.Oakar Services, a geospatial consulting firm focused on providing GIS, remote sensing, and other related geospatial consultancy services.

3.UjuziKilimo, a real-time soil testing service using technology to provide precise and actionable agricultural information to farmers using sensors and mobile phone technology.

Example -Precision Agriculture pilot in Kenya

The Airbus group, together with other stakeholders implemented a baseline project in Vihiga county known as **Kilimo Project** to show-case use of earth observation for geo-data collection, crop monitoring and early warning and precision agriculture

- Geo-data collection: Crop area; maps and yield forecast models

- Crop Monitor and Early Warning: use satellite technology to compare historical crop biophysical indicators with current crop, and detects cases of abnormalities (atypical) eg due to pest attack, moisture stress, etc

- Precision Agriculture: satellite technology is used to analyze soil carbon; soil fertility, moisture levels, etc and advise farmers in the types of fertilizers to apply; quantities based on specific areas; type of seed varieties per specific areas, etc.

- The team has developed mobile phone tools that send SMS to farmers; eg when to plant and answers to farmers common queries

OTHER CONVENTIONAL TECHNOLOGIES USED BY FARMERS IN FAMILY AGRICULTURE/FARMING HOUSEHOLDS

- Use of certified Crop seed, for animals rearing dairy animals,broilers,layers,improved indigenous birds or cross breeds.

- Use of climate smart technologies eg Conservation Agriculture especially is the semi arid regions

- Use of drought tolerant varieties in the semi arid areas for food production.

- Due to inadequate Policy and regulatory framework , the use of drones for data collection is still a work in progress

Ahsante(Thank you)
End