



OPPORTUNITIES FOR ENHANCING FOOD AND NUTRITION SECURITY; THE ROLE OF KARI

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PRESENTATION OUTLINE



- **Status in Kenya**
- **Challenges to food security & nutrition**
- **Opportunities; the role of KARI**
 - **KARI's Role and Core Functions,**
 - **Research, Outreach and Partnerships Programmes,**
 - **KARI's approach; Agricultural Product Value Chain**
 - **Some examples of KARI activities**
- **Conclusions**



STATUS IN KENYA

- **>10 million suffer from chronic food insecurity & poor nutrition,**
- **~30% children are classified as undernourished & 35 % stunted**
- **Micronutrient deficiencies (iron, vitamin A, Zinc and iodine) widespread, with emerging rise in rickets.**
- **0.8% GDP lost due to vitamin and mineral deficiencies (UNICEF & MI, 2004)**
- **Poverty (46% Kenya), low income vs. high input & food prices**

CHALLENGES TO FS & NUTRITION



Inefficient value chains

- Lack of concern for VC processes and actors (weak linkages)
- Inadequate access to information & knowledge
- Market dysfunctions,
- Poor infrastructure; (roads, water, financial services, electricity) & food distribution
- Lack of value addition, bulkiness ► high transport & transaction costs
- Gender disparities



Inadequate adoption of technologies



Degradation of natural resources



**Moisture stress
Drought**



**LOW FARM
PRODUCTIVITY**

Striga weed



Pests



Insect pests

10/05/2006

Diseases



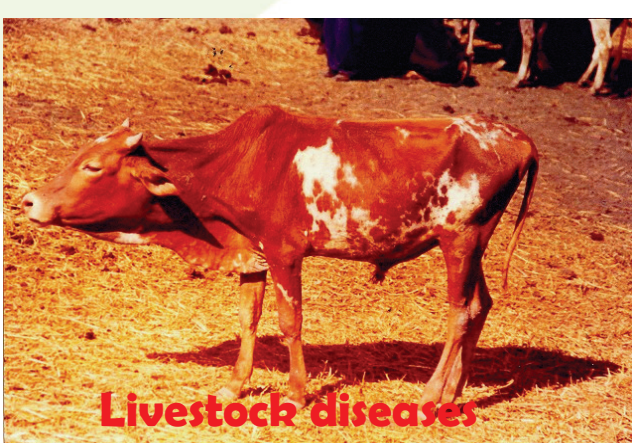
Foliar diseases

- **Over-reliance of rainfed agric**
- **Post harvest losses**
- **Climate Change**

Low soil fertility



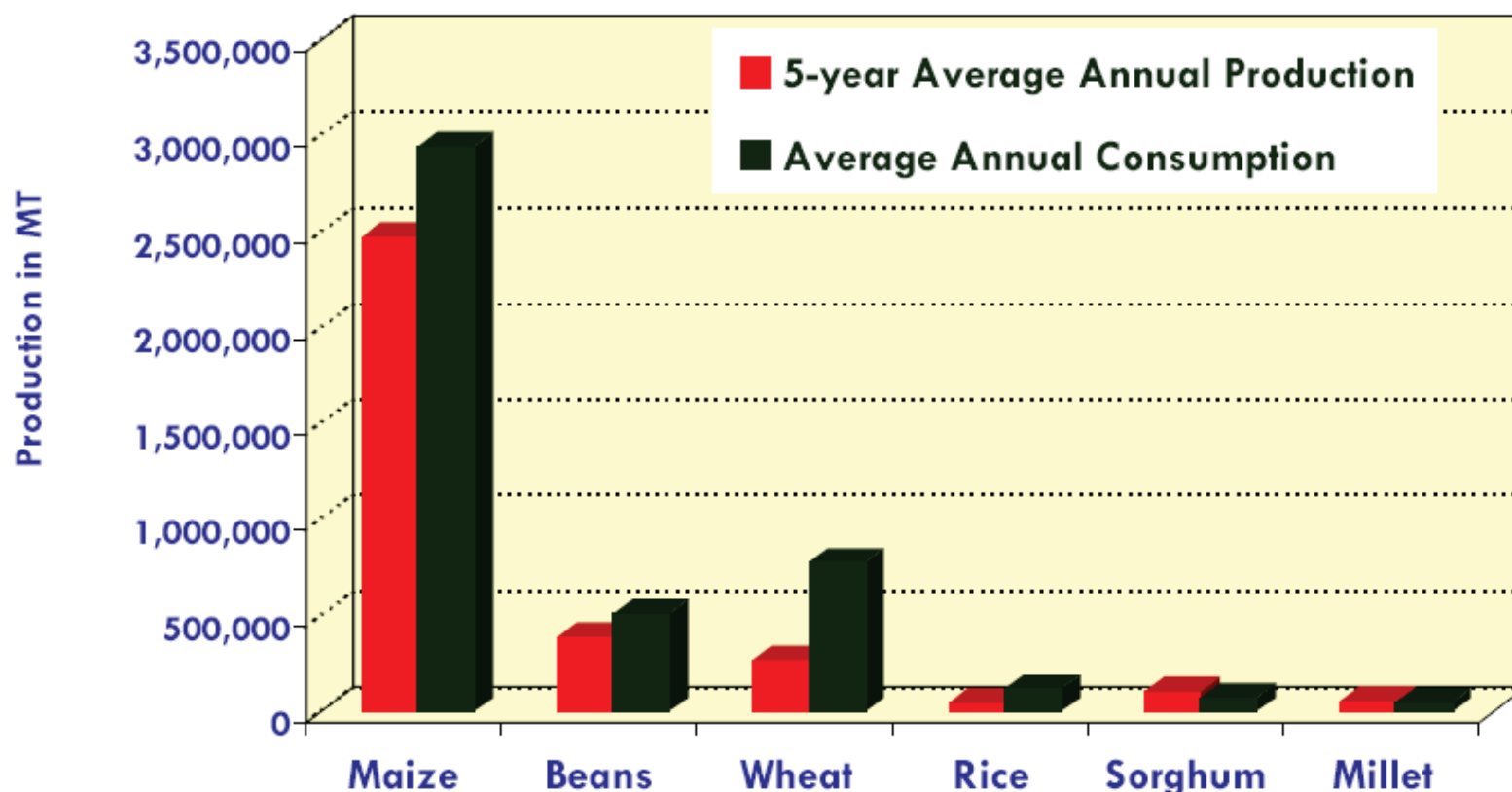
Livestock diseases





DEPENDENCY ON MAIZE

Fig. 3.1: Food security largely dependent on production of one crop; consumption exceeds production for all key food commodities



VAGARIES OF WEATHER & LAND DEGRADATION



Flooding



Droughts



Soil erosion



Severely eroded soils





OPPORTUNITIES:
**The role of KARI's in
food security and
nutrition**



Role and Core Functions

- **Conduct strategic, adaptive and applied research to produce technologies, information and knowledge.**
- **Catalyze dissemination of relevant research findings**
- **In collaboration with partners, contribute to the production of regional & international public goods**
- **Creating and strengthening partnerships for impact**
- **Promotion of commercialization of technologies and products**



Food crops



Crops (var, bio-fortification)

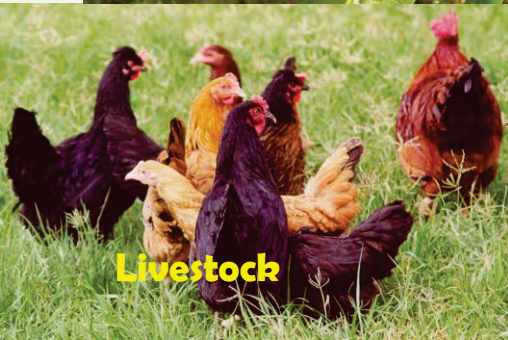


Horticulture & industrial Crops

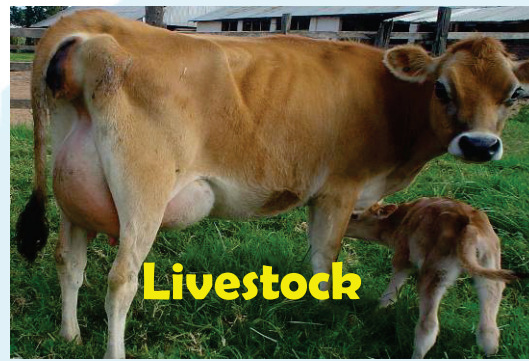


RESEARCH PROGRAMMES

Achievements / technologies



Livestock



Livestock



Natural Resource Mgt

- Socioecon & applied stat
- Biotechn & biodiversity



Natural Resource Mgt



TPT

**(Field days, Exhibition, Shows
Leaflets, Bulletins, Inventory)**



AROP

(Adapting techn, Methodologie



Outreach & Partnerships

**Programmes
& Activities**

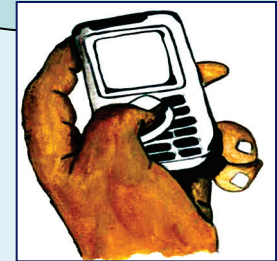
Partnerships

MoU, Delegations



Communications

PR, Media, Customer C



KSU

**(OPV, Seedlings, Maintenance B. seed
Cuttings, Vines etc)**

IMCT

(ICT, Publication, Library)



KARI'S APPROACH

The KARI Strategic Plan advocates for **'market responsive products'** (driven by needs & pref of consumer) & not **'pushing of commodities'** (prodn of commodities driven by existing agric potential), APVC = Impact oriented

APVC: Banana Value Chain





SOME EXAMPLES OF KARI ACTIVITIES



Variety development, evaluation & agronomic packages



Disease and pest management



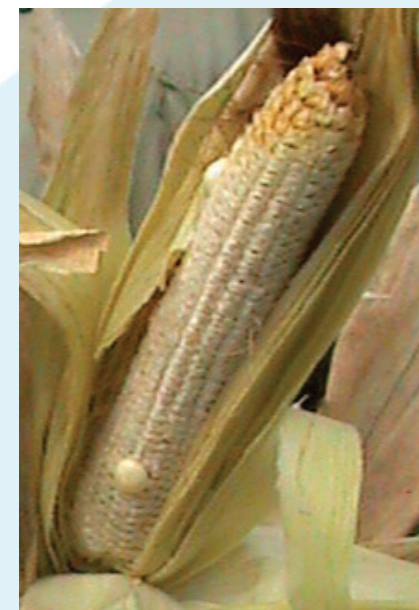
Maize chlorotic mottle virus



Dead heart symptoms



Husks dry prematurely



Poor or no grains fill in the cobs

Efforts to combat MLND

Food Safety (Aflatoxin studies)



● Aflatoxins are metabolites produced mainly by *Aspergillus flavus*, *Aspergillus parasiticus* fungi; Colourless, odourless, tasteless; Heat stable.

● Poisoning thru livestock (milk, eggs), grain



Livestock breeding, nutrition & health (vaccines)



Spotted



Brown



White



Naked Neck



Research in low input, drought tolerant traditional crops

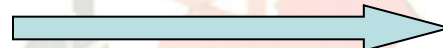
FINGER MILLET:

Nutritional security

☐ Calcium, iron,

☐ Protein, fibre

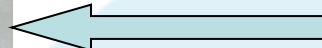
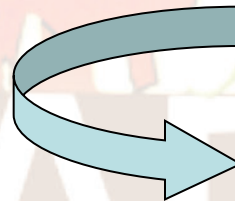
Farmer's Landrace



Breeding Hybrids



Finger-millet Crop



Finger Millet Products



African Indigenous Leafy Vegetables:

Rich in glutamic acid; is linked to lower blood pressure



Amaranthus spp. : Mchicha, emboga



Cleome gynandra L. Chinsaga; Chisaka



Crotalia brevodens; Mito, Miro



Solanum americanum L; Mnavu; Rinagu

KARI/McGill Food Security Research Project

Linking farmers to input & output markets



Objectives

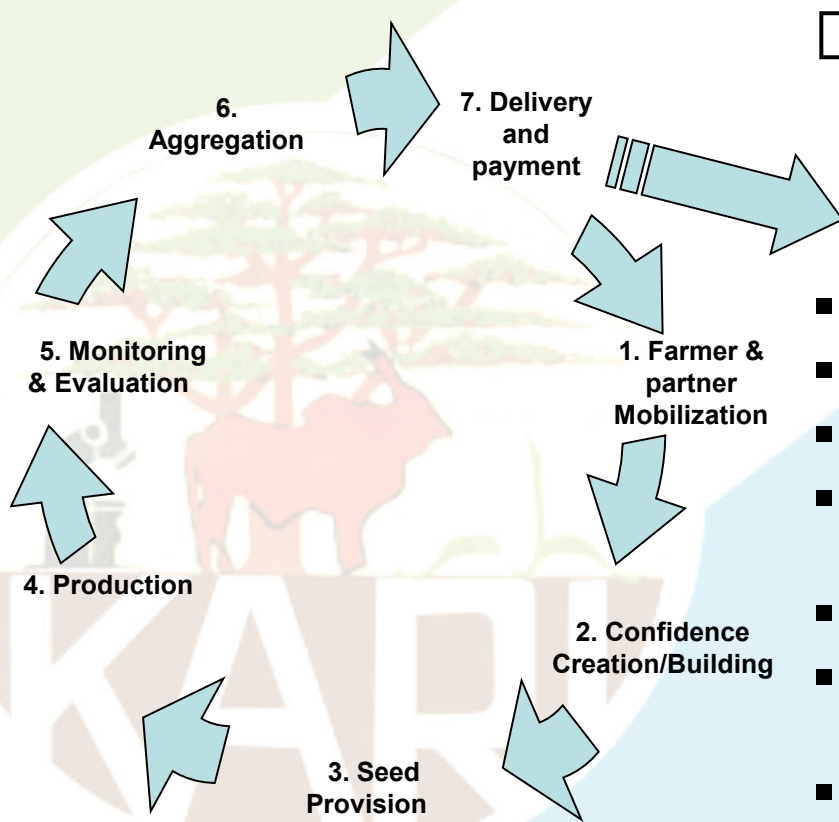
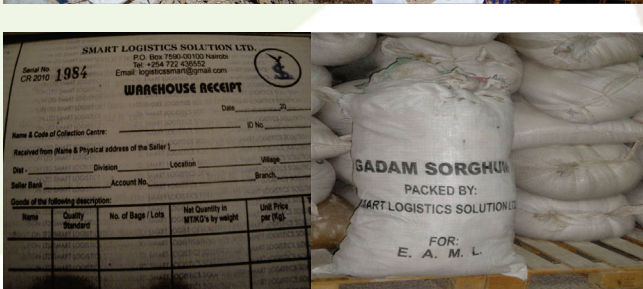
- **Enhancing farmers capacities to source high quality inputs (Fertilizers, certified seeds)**
- **Enhancing farmers capacities to participate profitably in output markets**

Inputs and outputs





Example of Kenya's agribusiness models

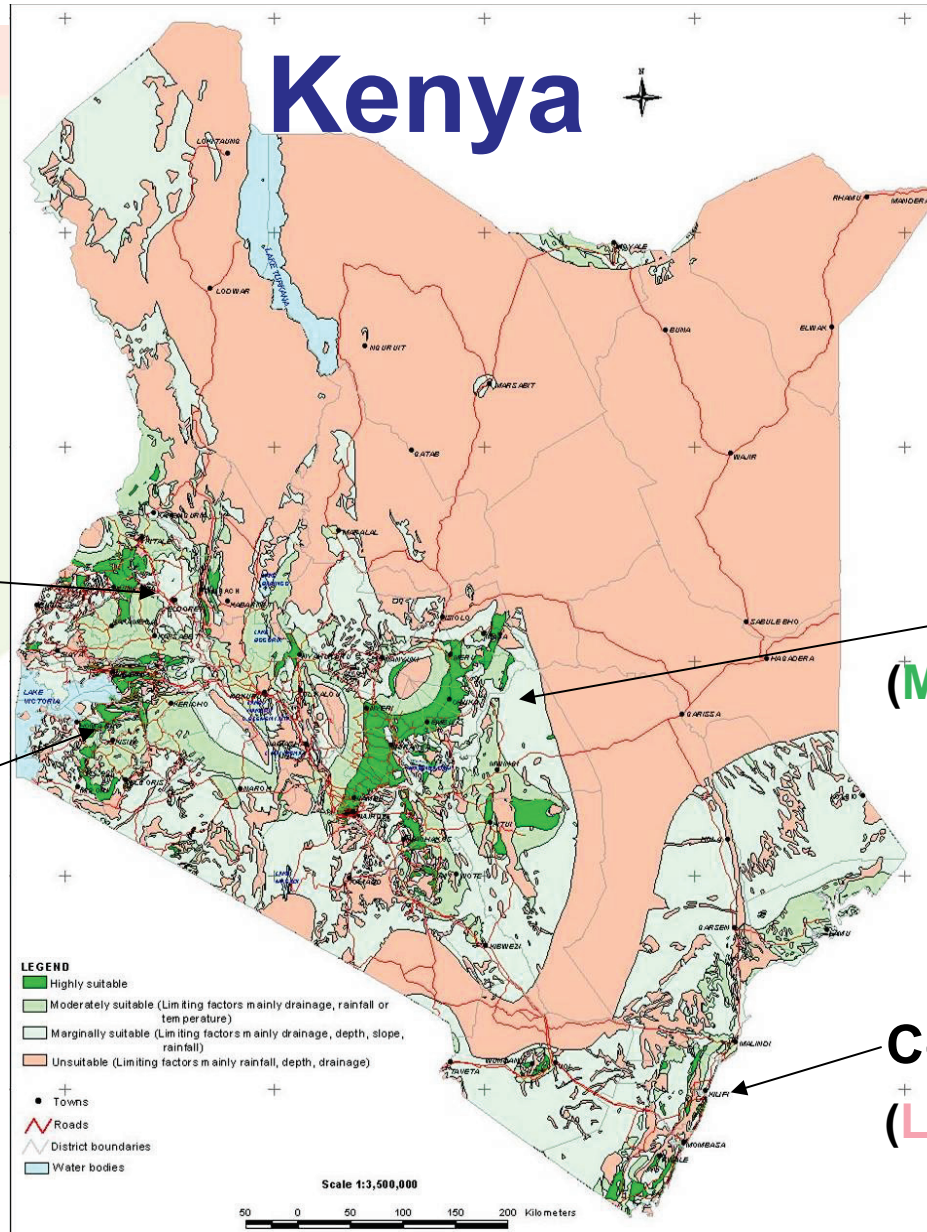


□ Key Partners involved

- KARI
- MOA
- EABL, EAMC
- Smart Logistics
- Equity bank
- Small Scale Farmers
- NGO'S (World Vision, Catholic Diocese)



Maize Suitability Map



Grain Basket
(Acid Soils)

Western Kenya
Striga weed
& Poor Soils

Central Kenya
(MSV & GLS diseases)

Coastal Landraces
(Loose Sandy Soils)



Improving policy environment for the AS

- **Conducted policy analysis studies on price incentives and dis-incentives for 10 agricultural commodities in collaboration with KIPPRA, FAO and MoALF.**
- **Hosted a national policy dialogue forum at KARI Hqs. The commodities analyzed were: Food Crops - Maize, Sorghum, Cassava; Export Crops - Tea, Coffee; Import food crops - Wheat, Rice, Sugar and Livestock - Dairy, Live cattle**



Technology Packaging & Transfer

- Launched Technology Innovation Units
- Inventory of Technologies
- Farmer/Extension materials





Exhibitions, Shows & Field days



Katamani



Embu



Kitale



Muguga South



Use of Media

- **Mkulima program, KARI/KBC/JKUAT, field & studio recordings, frequently asked questions by farmers responded to thr Q&A service (QAS)**
- **KTN TV programme**
- **“Shamba shape up” Citizen TV (our scientists)**
- **Radio programmes**

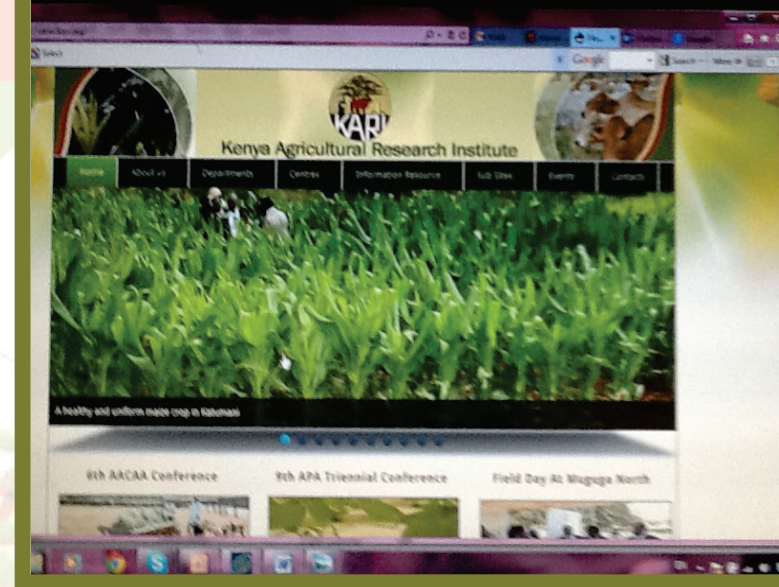


Mkulima programme on rice business with Mr Oketch, KARI Kibos being interviewed



Use of ICT

- **Websites, Redesigned KARI website, KRKB & E-Mimea (plant) Clinic & SMS technology**
- **KAINet SH awarded best e-Agriculture award by Computer Society of Kenya**
- **KARI is blg a robust ICT platform & modern infrastructure (business enabler)**



KARI re-designed website



E-Mimea (Plant) Clinic



CONCLUSION

- **There are Opportunities to enhance FS & nutrition but concerted effort to out scale and up scale required**
- **Partnerships**
- **Innovation Platforms**
- **Feedback into research**



THANK YOU

God bless you

