



*KENYA AGRICULTURAL  
BIOTECHNOLOGY  
SUPPORT PROJECT*

*KENYA AGRICULTURAL RESEARCH  
INSTITUTE*

*In Collaboration with:*

*ABSF, KEPHIS, NCST, Moi University,  
CRF, TRF, Kenya Seed Co., GTL,  
Coopers EA, Bioafric, ISAAA, ILRI,  
KEVEVAPI, JKUAT*



# BACKGROUND

KABSP was developed through a series of participatory stakeholders' workshops

Stakeholders:

- ❖ Government
- ❖ NARS
- ❖ IARCs
- ❖ Farmers Rep (KNFU)
- ❖ Agro-based industry
- ❖ NGOs
- ❖ Development partners



## BACKGROUND cont'd

Workshops defined:

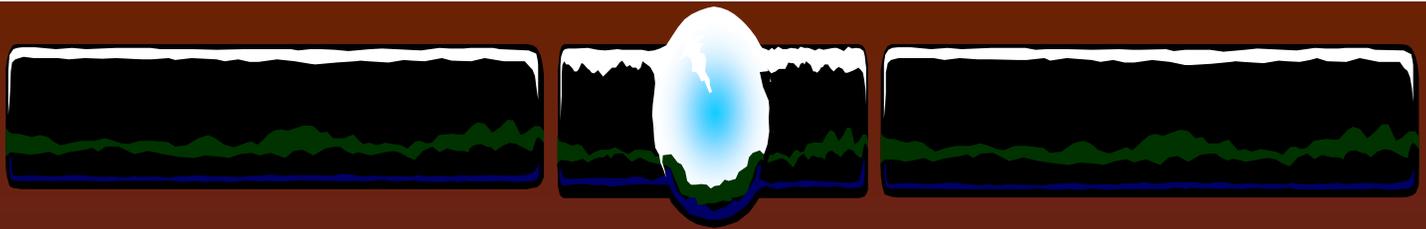
- ❖ National priorities for ag-biotech taking into account key commodities with potential impact on livelihoods of smallholders
- ❖ Institutional capacities
- ❖ Areas of collaboration



# Why Biotechnology?

Africa grapples with food insecurity

*... poverty, hunger and malnutrition; most people eking a living from farming on impoverished soils; declining crop yields, incidence of crop, livestock and human pests and diseases; threat to environmental health ...*



# KABSP: Three Components

- ❖ Technology Development
  - ❖ Horticulture
  - ❖ Dairy
  - ❖ Maize
  
- ❖ Technology Transfer/Diffusion
  - ❖ To foster impact on end users
  
- ❖ Public policy and Awareness



# Technology *Horticulture*

## ❖ Target Crops

- ❖ Banana
- ❖ Tomato
- ❖ Potato
- ❖ Passion fruit
- ❖ Flowers

## ◆ Constraints

- ▶ Planting materials - scarce
- ▶ Superior vars. - scarce
- ▶ Pests and diseases
- ▶ Post harvest problems
- ▶ Marketing



# Technology Development

## ... Horticulture

### ❖ Objectives

- ❖ Develop banana vars. Resistant to pests, diseases and nematodes
- ❖ Develop diagnostic kits for diseases
- ❖ Establish *in vitro* conservation methods for banana, potato, flowers
- ❖ Identify and produce Bts for control of pests
- ❖ Strengthen HR capacity



# Technology *Dairy*

## ❖ Target areas

- ❖ Control of diseases through vaccines & diagnostics
- ❖ Improving forage production
- ❖ Improving forage utilization

## ◆ Constraints

- ▶ Major diseases (CBPP, RVFV, LSD)
- ▶ Nappier head smut
- ▶ Low quality forage
- ▶ Marketing



# Technology Development

## ... DAIRY

### ❖ Objectives

- ❖ Develop technologies for improved disease diagnosis
- ❖ Develop technology for improved production, utilization and conservation of fodder crops
- ❖ Develop technologies for improving genetic potential of livestock breeds
- ❖ Strengthen HR capacity



# Technology

## *Maize Sub-Sector*

### ❖ Major Constraints

❖ Moisture stress

❖ Pests

❖ Diseases

❖ Weeds

❖ Edaphic factors

❖ Low nutrient  
quality

### ◆ Interventions

▶ MMAS

▶ Genetic engineering



# Technology Development ... MAIZE

## ❖ Objectives

- ❖ Develop maize lines tolerant to biotic and abiotic stresses using MAS
- ❖ Develop lines resistant to post harvest pests using GE
- ❖ Develop lines with improved lysine/tryptophan, vitamins through markers
- ❖ Strengthen HR capacity



# Technology Transfer

- ❖ Objective

- ❖ To establish a strong collaboration between research and technology development system and the private sector for effective TT



# Policy Environment and Awareness

## ❖ Objective

- ❖ To ensure the presence of an enabling biosafety legal framework in Kenya in which novel technologies can be developed and tested safely and sustainably
- ❖ To create awareness on biotechnology and biosafety at all levels of society



## *Kenya Agricultural*

# *Biotechnology Support Project*

- ❖ Originally formulated to address the *THREE* components
- ❖ Proposal document was compiled by KARI and submitted to USAID for support
- ❖ USAID commissioned a team of consultants to examine, review and advice on feasibility of KABSP



## *KABSP – Review Team...*

- ❖ Carried out an assessment of status of biotechnology in Kenya
- ❖ Key Institutions involved in biotech research and technology development
  - ❖ (KARI , ILRI , Public Universities)
- ❖ Institutional Infrastructure
  - ❖ Status of HR, lab. Facilities and Equipment, key training needs, existing collaborative linkages
- ❖ IPR and Technology Transfer Issues
  - ❖ Status
- ❖ Regulatory/Biosafety Policy
  - ❖ Biopolicy and legislation, Regulatory <sup>15</sup> agencies, Awareness, Risk Assessment



## *KABSP – Review Team...*

- ❖ Narrowed down on identifying activities that involve the use of recombinant DNA (eligibility criterion for USAID funding)
- ❖ Sought to capture activities with potential impact for enhancing food security
- ❖ Sought to capture activities with high probability of success
- ❖ Sought to capture activities with potential for demonstrable near-term achievements



## *KABSP – Review Team...*

- ❖ A range of recommendations

- ❖ EXECUTIVE SUMMARY



# *Recommendations*

## *...Review Team*

- ❖ While technology base for genetic engineering exists in the country, expertise in transformation and engineering of genes is lacking
- ❖ A biosafety framework has been established but some revision is needed to address commercialization decisions
- ❖ Risk assessment research has begun, and needs to be enhanced
- ❖ IPR regime exists



## *Recommendations ...*

- ❖ Review Team recommended USAID support for advancement of activities on transgenic sweet potato at KARI
- ❖ On the Maize Sub Sector, the Team recommended support for development of maize resistant to storage pests
- ❖ Regarding the Dairy Sector, the Team recommended support for further development of vaccines and diagnostics ... including establishment of commercial pathways for dissemination



## *KABSP – Review Team...*

- ❖ Recommendations for enhanced education and outreach were also made
  
- ❖ Recommendation for enhanced collaboration with groups possessing expertise in rDNA research
  
- ❖ Recommendation for elimination areas that fall outside scope of USAID funding:
  - ❖ Activities under horticulture
  - ❖ Dairy (Forage improvement)
  - ❖ Maize (MAS)



## *KABSP – Current Position*

1. Activities to further the develop transgenic sweet potato. *Development of DNA idfcn. profiles ... could be considered for support*
2. Development of maize resistant to storage pests through transgenesis
3. Development of disease diagnostics (for both livestock and crops) and vaccines



## *'New' KABSP*

- ❖ Re-examine areas of partnership and collaboration
- ❖ Examine areas of project management (Steering Committee)
- ❖ Others...
- ❖ Address Technology Transfer Issues
- ❖ Address Public Policy Issues



# *PROPOSED KABSP MANAGEMENT STRUCTURE*

- ❖ Proposed Structure Needs:
  - ❖ Discussion
  - ❖ Consensus
  - ❖ Recommendation



# *PROPOSED KABSP MANAGEMENT STRUCTURE ...*

1. Implementing Institution
2. Steering Committee
3. Technical Committee
4. Secretariat



# *PROPOSED KABSP MANAGEMENT STRUCTURE ...*

1. Implementing Institution
  - ❖ KARI to be the implementing institution on behalf stakeholders



# *PROPOSED KABSP MANAGEMENT STRUCTURE ...*

## Steering Committee

- ❖ Membership:
  - ❖ MOA (2)
  - ❖ MoH (2)
  - ❖ MoEnv. (1)
  - ❖ Trade & Industry (1)
  - ❖ NCST (1)
  - ❖ NARS (?)
  - ❖ Farmers' Organizations (1)
  - ❖ Private Sector (?)
  - ❖ NGOs and CBOs (?)
  - ❖ Socio Economist (1)



# *PROPOSED KABSP MANAGEMENT STRUCTURE ...*

## Technical Committee

- ❖ Composed of Experts in:
  - ❖ Plant Science (2)
  - ❖ Animal Science (2)
  - ❖ NRM (1)
  - ❖ Biosafety (2)
  - ❖ TT (IPR) (1)
  - ❖ Outreach (1)

Technical Committee to be  
constituted as and when needed  
to accomplish a specific task<sup>27</sup>



# *PROPOSED KABSP MANAGEMENT STRUCTURE ...*

## KABSP Secretariat (Coord. Unit)

- ❖ Programme Coordinator
- ❖ Administrative Assistant
- ❖ Secretary
- ❖ Office Assistant
- ❖ Driver



# *PROPOSED KABSP MANAGEMENT STRUCTURE ...*

## KABSP Secretariat : Responsibilities

- ❖ Project M&E
- ❖ Drawing Budgets
- ❖ Preparation of Project Reports
- ❖ Networking (national & regional)
- ❖ Mobilization of resources
- ❖ Org. of project meetings