

Surveillance structures for curbing pest incursions threatening food security and trade in Kenya

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Outline

- Introduction
- Key pest incursion cases in Kenya
- Efforts to address pest incursions
- Surveillance structure
- Case study

Introduction

- Agriculture contribute over 30% of the GDP of Kenya and 65% of export earnings
- Although Kenya has a well-developed phytosanitary system to regulate introduction of plant and plant products, several pest incursions have been reported in the last two decades
- Pest incursions have impacted negatively on some sectors of agriculture, biodiversity and economy

Pests incursions present different challenges

- Pest introduction has impact on food security and trade e.g maize, mango and avocado in Kenya due to fruitflies
- Emerging, or poorly managed pests, also impacts market access
- Both significantly undermine a willingness to invest in agriculture



Fall army worm (*Spodoptera frugiperda*)

Pest incursions/outbreaks

Water hyacinth (*Eichhornia crassipes*)



- Native to South Africa
- Introduced in the 1980s
- Affected water way and lakes

Large Grain Borer (*Prostephanus truncatus*)



LGB is native to Central America, tropical South America, and the extreme south of the USA.

It was accidentally introduced into Tanzania, spread into Kenya, Uganda, Burundi, Rwanda, Malawi, Zambia, Mozambique, Namibia and South Africa

It has become a serious pest of stored maize and dried cassava.



Georg Goergen/ITA Insect Museum, Cottbus, Berlin

Larger grain borer

Cypress aphid (*Cinara cupressi*)





Cassava Mosaic virus (CMD)

Cassava brown streak virus (CBSV)

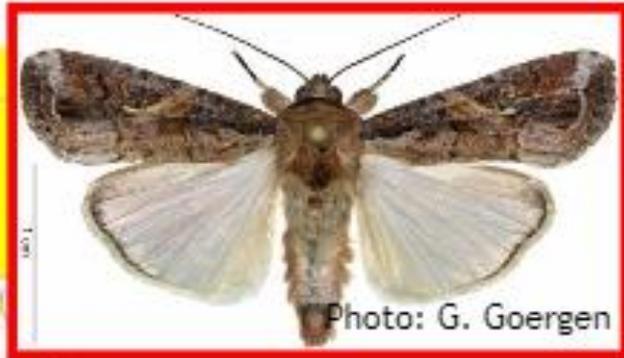


Fruitfly (*Bactrocera dorsalis*)

- Introduce in 2000s
- Lost of market in EU and USA for fruit and vegetables (Mangoes, Avocado, Banana)
- Expensive management measures



FALL ARMYWORM (*Spodoptera frugiperda*)



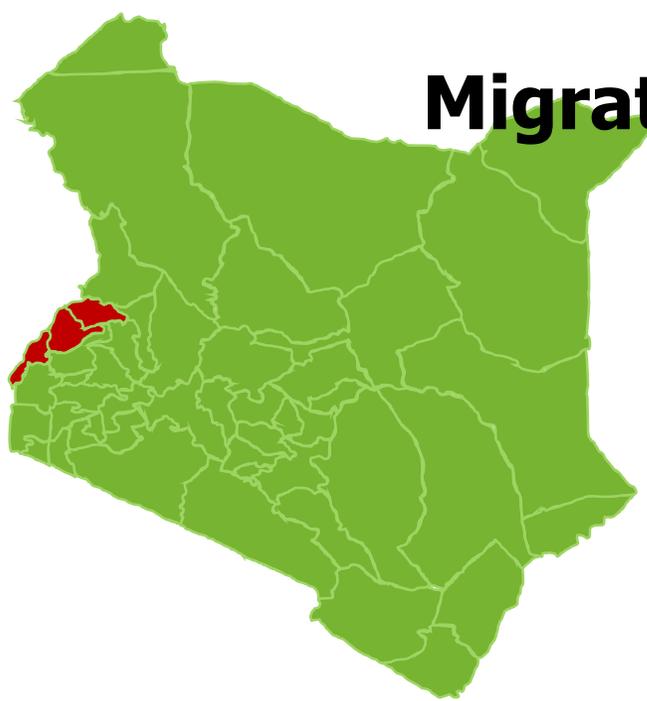
- Fall army worm (FAW) which is native to South America was introduced in Kenya in 2017 and spread to all maize production areas.
- Strong fliers, polyphagous and a high reproduction



Fall armyworm
(*Spodoptera frugiperda*)



Migration of Fall Army Worm (42 counties)



March 2017



Photo: G. Goergen



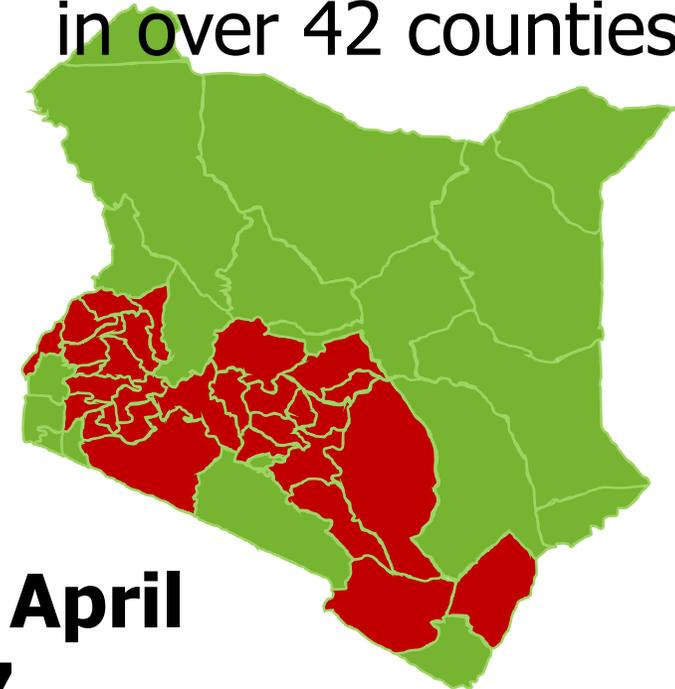
Photo: Kansas State University

Fall armyworm
(*Spodoptera frugiperda*)



April 2017

- First detection in Western Kenya in March 2017
- It spread rapidly and has since been reported in over 42 counties



Late April 2017

Pest incursion in Kenya between 1998 and 2018

Name of pest or disease	Year first reported	Status	Current Distribution	Yield loss Potential	References
<i>Spodoptera frugiperda</i> (Fall army worm)	2017	Widespread	All maize growing areas	73%	CABI, 2018
<i>Diaphorina citri</i> (Asian citrus psyllid).	2016	Restricted	Coast Kenya	100% by greening disease	Rwomushana, et al 2017
<i>Paracoccus marginatus</i> (Papaya mealybug)	2016	Regulated	Coast Kenya	100%	Macharia et al. 2017
<i>Globodera rostochiensis</i> (Potato cyst nematode)	2015	Regulated	Potato production areas	80%	Mwangi et al., 2015
<i>Tuta absoluta</i> (Tomato leaf miner)	2014	Widespread	All tomato producing areas	100%	Duressa, 2018
Maize lethal necrosis	2011	Regulated	Maize production areas	90%	Wangai et al., 2012
<i>Parthenium hysterophorus</i> (Parthenium weed)	2010	Noxious weed	Most open farming lands	High	Bulletin OEPP/EPPO Bulletin 2014
Cassava brown streak disease	2006	Restricted	Coastal and Western	70%	Were et al, 2016
<i>Xanthomonas campestris</i> pv. <i>Musacearum</i> (Banana xanthomonas wilt)	2006	Restricted	Western Kenya	100%	Kwach et al., 2013
<i>Bactrocera (dorsalis) invades</i>(Mango fruit fly)	2003	Invasive	All host crops producing areas	70%	Luc et al 2003; Ekesi et al 2011

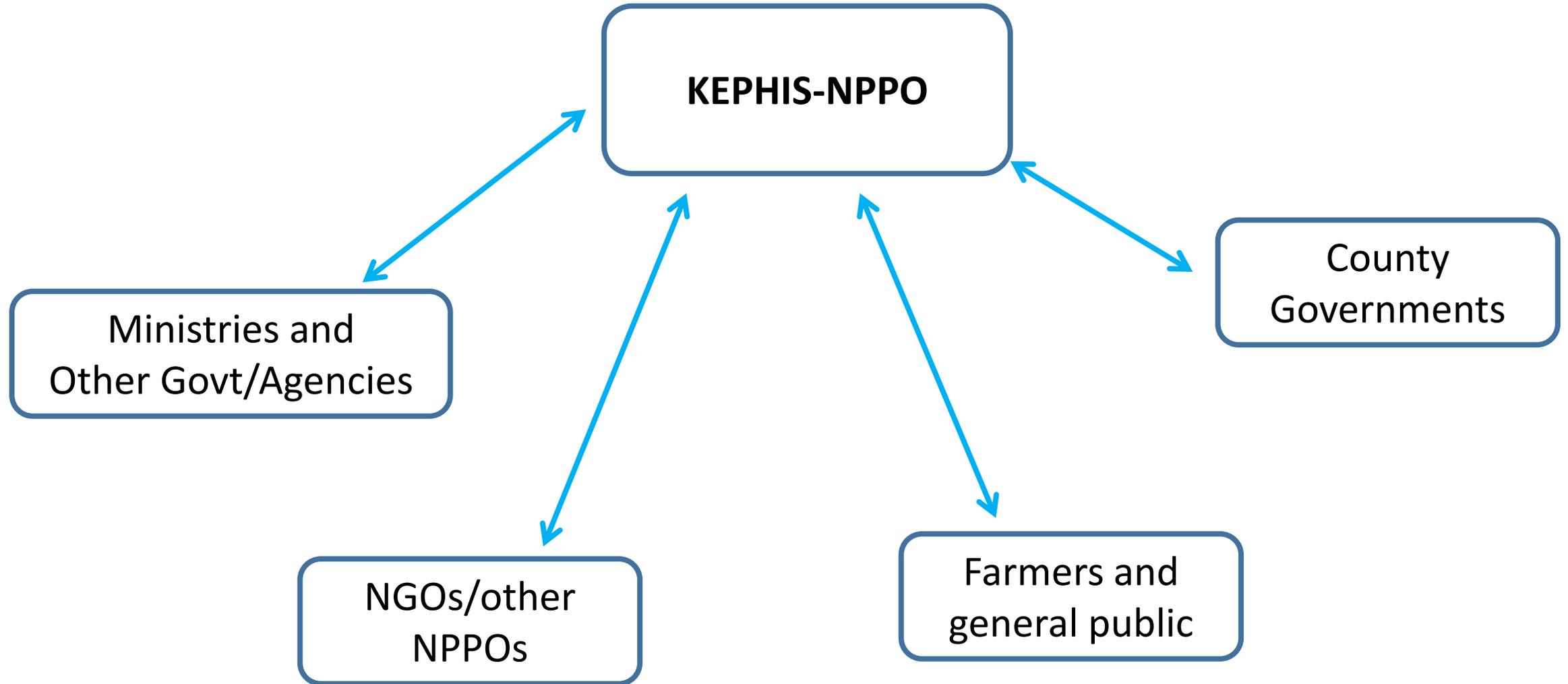
Efforts to address pest incursions

- Developed and implemented national surveillance strategy to Improve pest detection and management
- Enhance Import regulatory system (Pre-border, Border, post border inspection)
- Strengthening pest diagnosis capacity
- Improving stakeholder collaboration on pest related matter
- Strengthening KEPHIS regulatory frame work
- Improving early warning and rapid response system

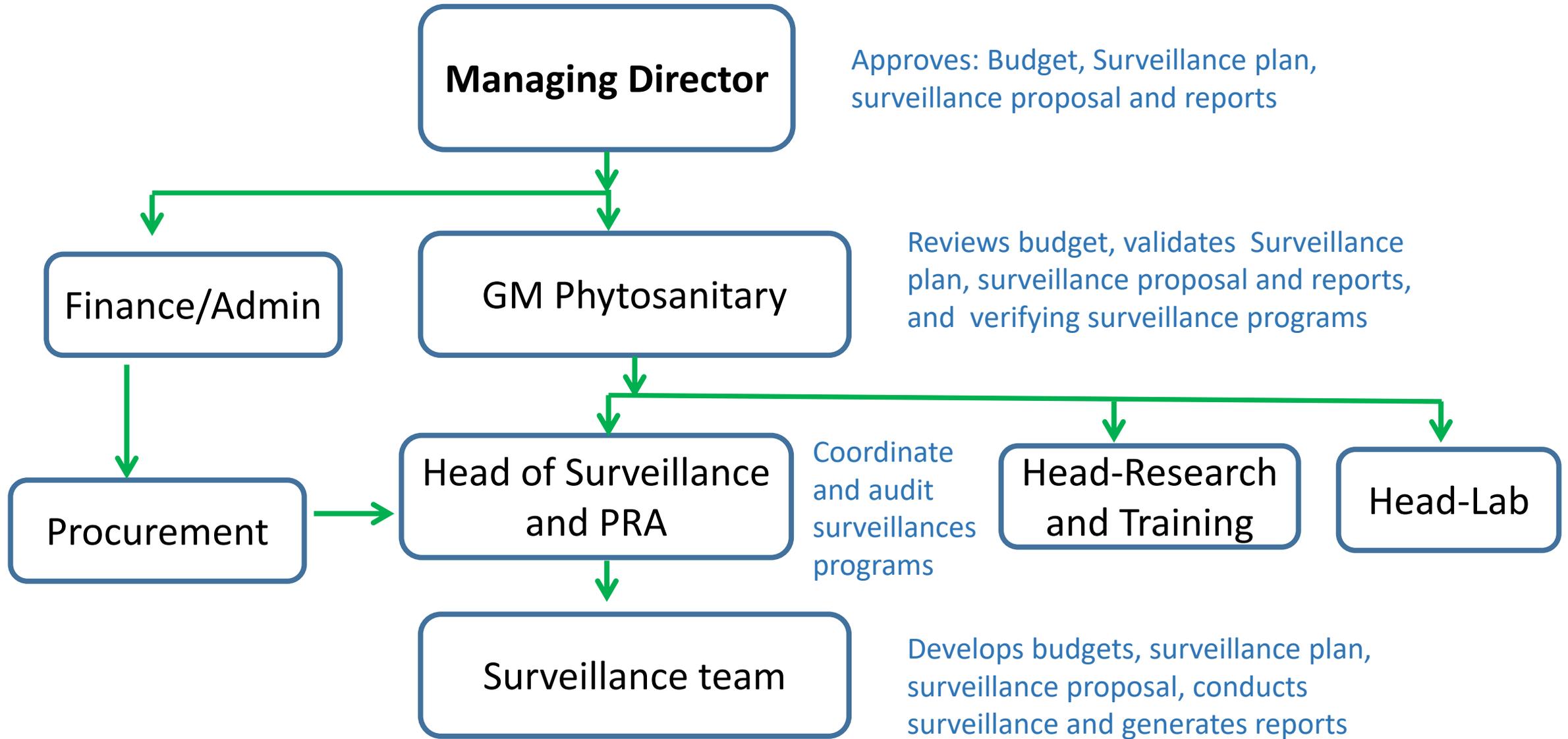
Surveillance: national organizational structure

- KEPHIS (NPPO) is in charge of coordinating pest surveillance in Kenya
- Works with government ministries/departments, County government, farmers and non government organizations
- Key Regulations supporting surveillance: phytosanitary policy ,KEPHIS act 2012, and cap 324,

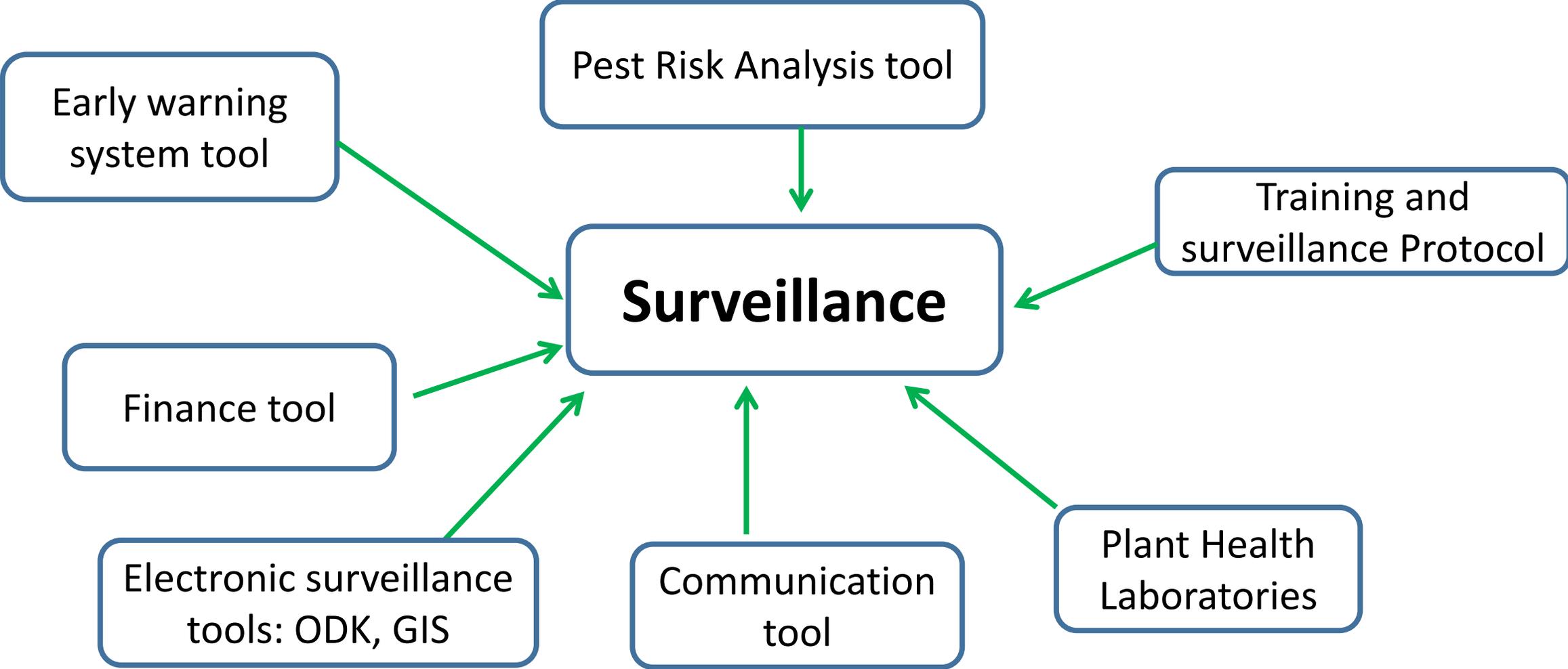
Surveillance: national organizational structure



Surveillance: KEPHIS organizational structure



Surveillance: supporting tools



Case study: Fall army worm surveillance and management

Action taken following the outbreak of FAW in 2017

- A multi-Institutional Technical Team (MITT) was formed as per the national surveillance strategy
- About Ksh.300 million from Government and funds from other sources were allocated to facilities:
 - ❖ Surveillance (delimiting and monitoring surveillances)



Faw case study

- ❖ Capacity building and awareness creation,
- ❖ Procurement of demonstration materials (pesticides, knapsack sprayers and PPE equipment).
- ❖ Distribution of the procured materials to vulnerable farmers



Main achievements and challenges

Achievements

- With the national surveillance system, there is improved national capacities for, early detection and management of pest incursions

Challenges/opportunity

- There is need for strengthening of diagnostic, coordination and communication tools for better response to pest incursions in the future
- Inadequate funding to run the surveillance programs