



# Integrated Pest Management Strategies

Food System Impacts of Pests & Pathogens in a Changing Climate

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Aspen, CO

KNOWLEDGE FOR LIFE





# what is CABI?

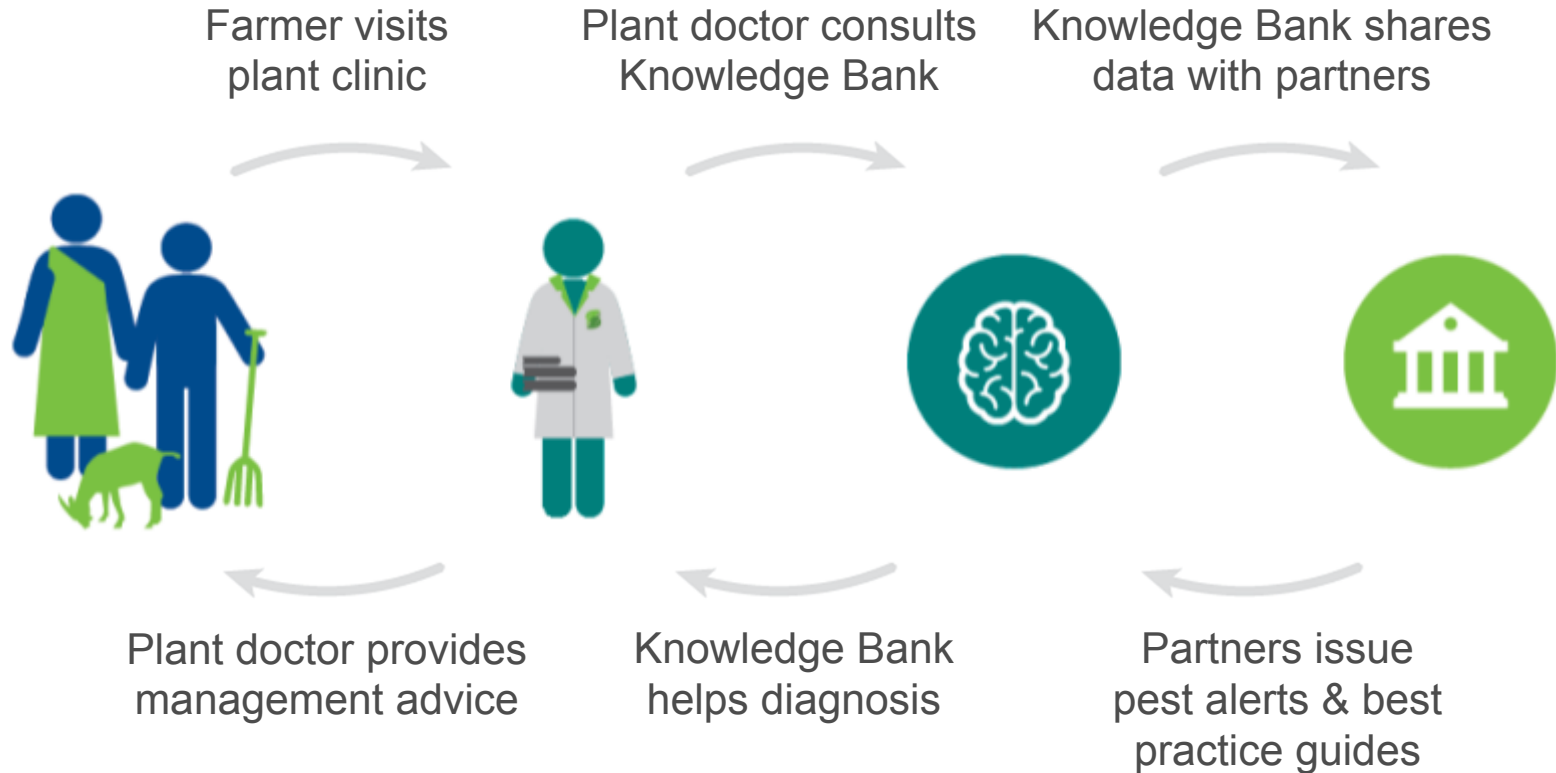
**CABI is a not-for-profit science-based  
development and information  
organization**



**Plantwise is a global programme led by CABI to increase food security and improve rural livelihoods by reducing crop losses**



# Plantwise Process: 2 way flow







# Plant doctor Training

## Module 1

- Pest Diagnosis



## Module 2

- Pest Management recommendations
- Practical, IPM focused

**ICT tools to support advisory services**

# Fall Armyworm (FAW) on Maize

*Spodoptera frugiperda*
**Kenya**

	Prevention	Scouting	Direct control	Direct control	Restrictions			
	<ul style="list-style-type: none"><li>Plant early, with the first rains. Fall Armyworm populations build up in the crop</li></ul>	<ul style="list-style-type: none"><li>Start scouting as soon as major whorls emerge.</li></ul>	<p>This Green Column describes control options that are safe for the environment.</p>	<p>This Yellow Column describes control options that require additional safety precautions for smallholder farmers.</p>				
<b>Prevention</b>	<p>Includes <b>cultural</b>, <b>physical</b> and <b>mechanical</b> practices, and enhancing <b>habitat for natural enemies</b></p> <p>Also includes the use of <b>resistant or tolerant varieties</b> and <b>seed treatments</b></p>	<b>Monitoring/</b> <b>Yellow Direct Control</b>			<b>Step 6- Restrictions</b>			
		<p><b>WHO class II, III and some WHO class U chemicals</b></p> <p><b>Available nationally registered pesticides that are <u>not</u> on the Plantwise Pesticide Red List (highly hazardous)</b></p>			<p>Restrictions are <b>considerations and limitations</b> for use</p> <ul style="list-style-type: none"><li>WHO class of active ingredient</li><li>Maximum number of applications per season</li><li>Timing of application</li><li>Chronic or other human health effects</li><li>Toxicity to non-target organisms</li><li>Environmental considerations</li><li>PHI and REI</li><li>PPE (if specific to active ingredient)</li></ul>			
	<p>perennial flowering plants around the fields, to the extent possible, to provide shelter to beneficial insects, predators and birds.</p> <ul style="list-style-type: none"><li>Intercrop maize with compatible and less susceptible crops, such as beans and cassava.</li></ul>	<p><b>Decision point:</b></p> <ul style="list-style-type: none"><li>At early whorl stage (knee high), take action if &gt;20% of plants are damaged.</li><li>At late whorl stage (shoulder high), take action if &gt;40% of whorls are freshly damaged.</li><li>At tassel and silk stage, do not spray pesticides.</li></ul>	<ul style="list-style-type: none"><li>Spinosad</li><li>Chlorantraniliprole</li></ul>	<table><tr><td>Indoxacarb</td><td><ul style="list-style-type: none"><li>REI 1 day; PHI 21 days</li><li>WHO class II Moderately Hazardous</li></ul></td></tr><tr><td>Alpha-cypermethrin</td><td><ul style="list-style-type: none"><li>REI 1 day; PHI 21 days</li><li>WHO class II Moderately Hazardous</li></ul></td></tr></table>	Indoxacarb	<ul style="list-style-type: none"><li>REI 1 day; PHI 21 days</li><li>WHO class II Moderately Hazardous</li></ul>	Alpha-cypermethrin	<ul style="list-style-type: none"><li>REI 1 day; PHI 21 days</li><li>WHO class II Moderately Hazardous</li></ul>
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**Globally,**

- **PW reach of 31 million farmers (cumulative) by 2018 mainly through PCs and other complementary extension campaigns**
- **3700 PCs established across countries**
- **10,000 PDs trained**





# PW Knowledge Bank for Pest Management Information

- an **open access** internet resource
- covering **2,500 crop pests** in 80 languages
- **> 13, 600 factsheets** to provide practical information on integrated pest management options
- **thousands of images** to assist with diagnoses
- **interactive maps** showing pest distribution
- **pest alerts** to inform of new pest outbreaks
- **plant health news** from online sources
- **available offline** and via apps



[www.plantwise.org/KnowledgeBank](http://www.plantwise.org/KnowledgeBank)



**.. mass  
dissemination of  
information on early  
warning and  
management of key  
pests is essential..**



mobile



video



radio

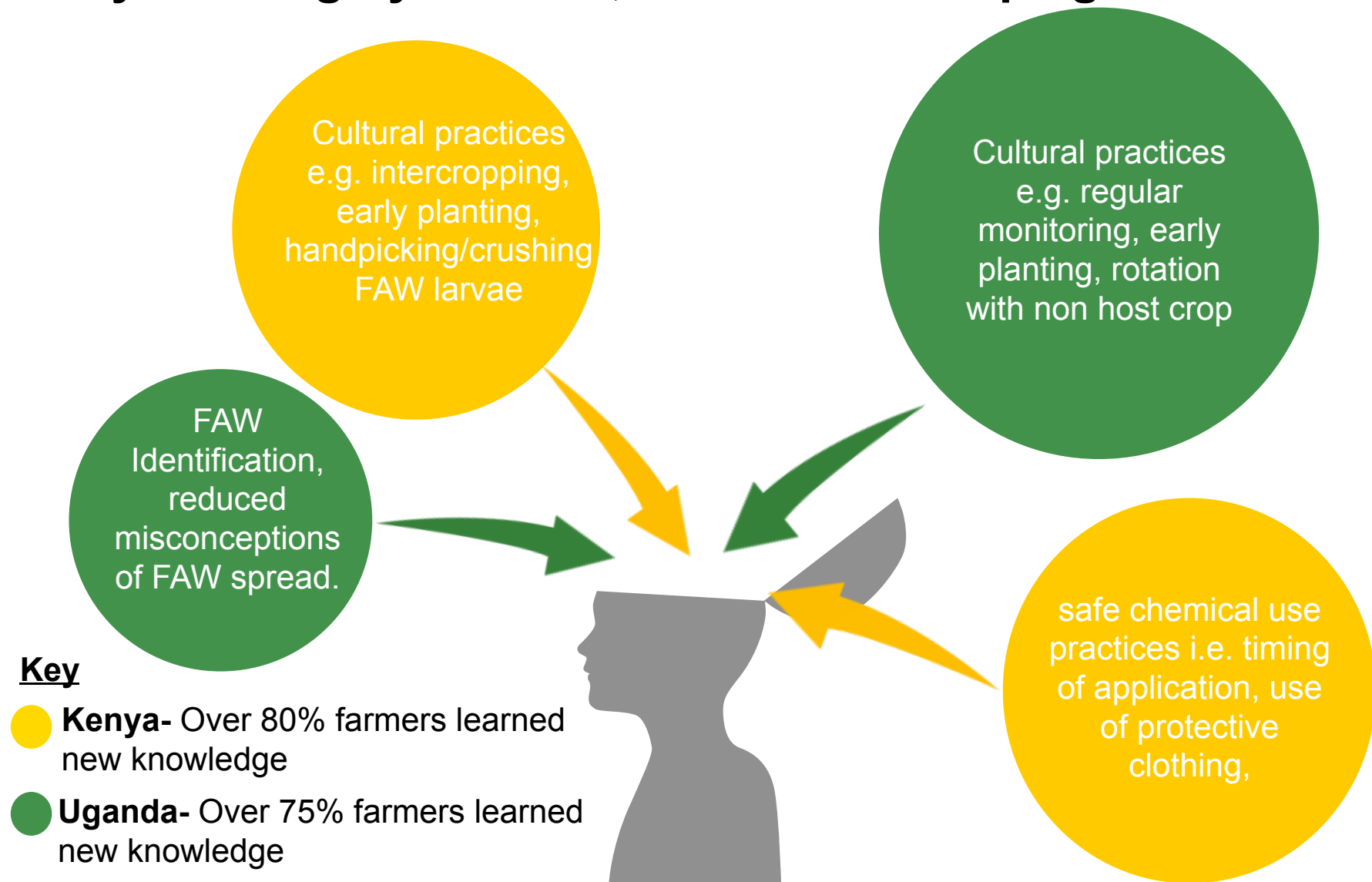




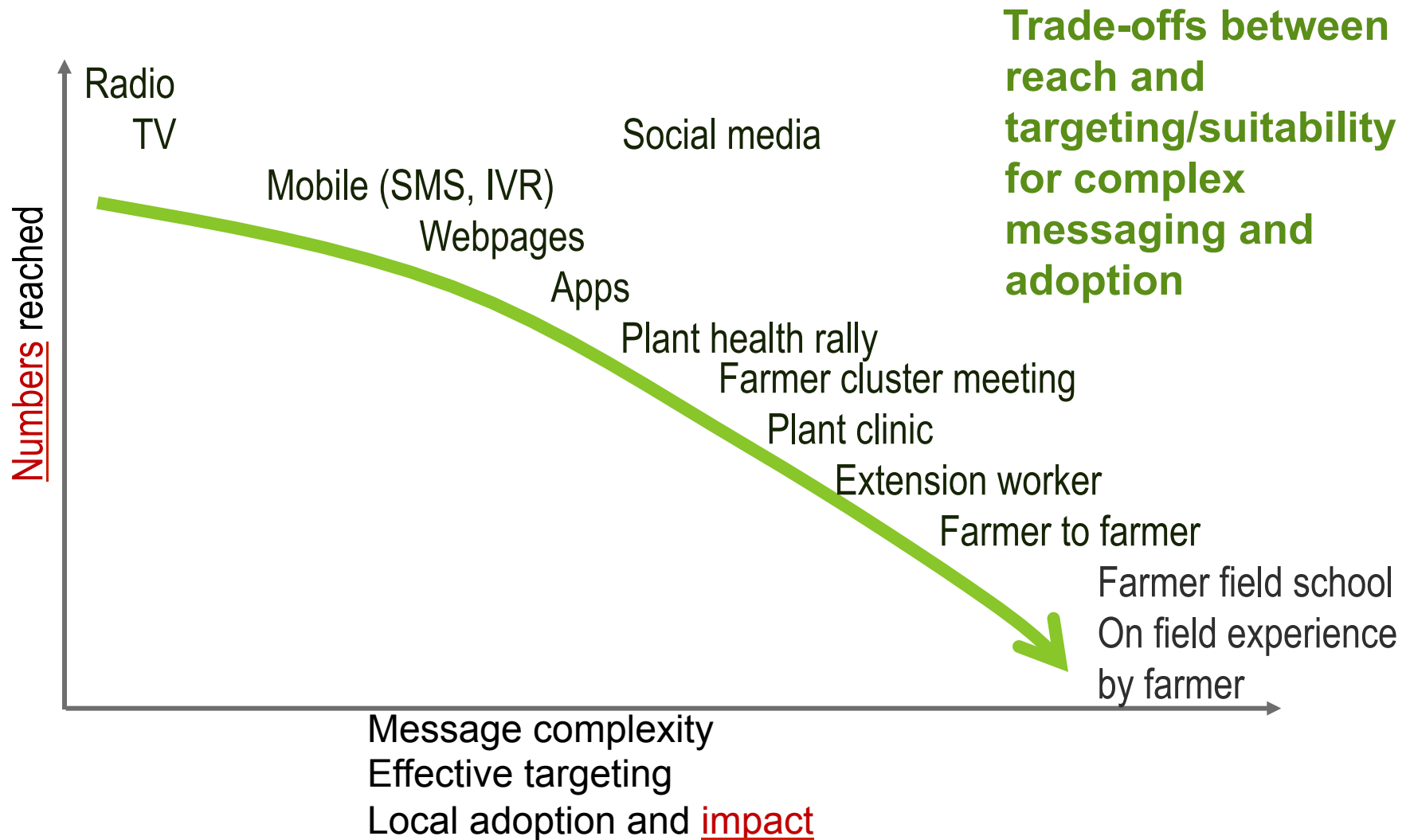
## Reaching Farmers with FAW information through Extension officers with different ICT tools in Uganda



# Key learning by farmers; FAW mass campaigns



# Farmer Communication channels





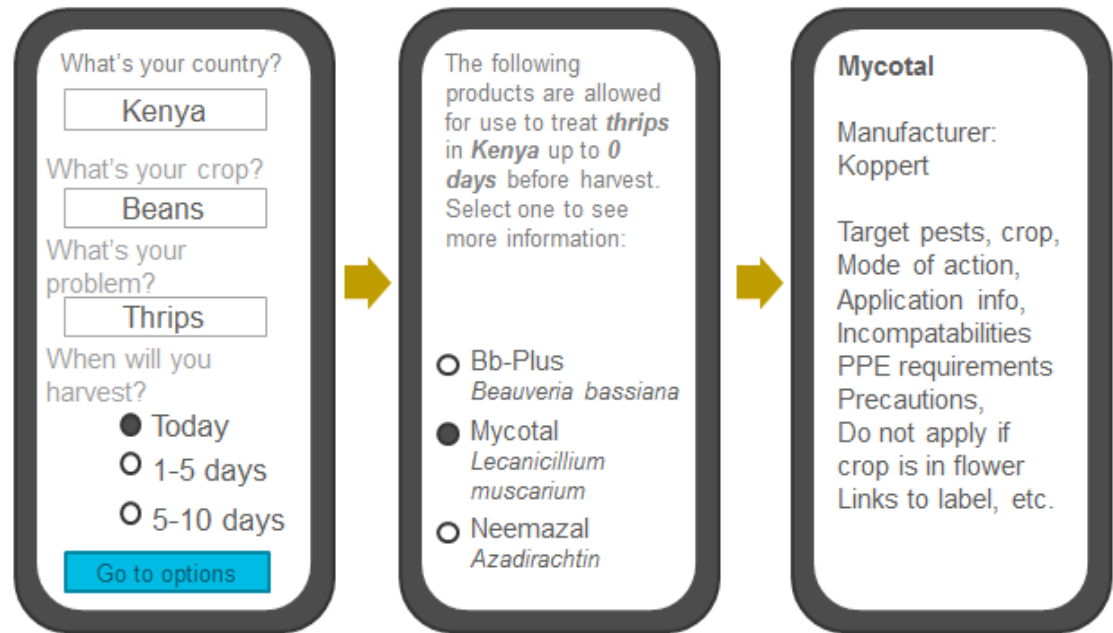
# Bio Pesticide Portal

Your one-stop  
information shop for  
identifying and  
sourcing biopesticides



Login

- *Bio pesticides Portal – an online tool that facilitates the identification, sourcing and application of biological control products*



Dougoud, J., Cock, M. J., Edgington, S., & Kuhlmann, U. (2018). A baseline study using Plantwise information to assess the contribution of extension services to the uptake of augmentative biological control in selected low-to lower-middle-income countries. *BioControl*, 63(1), 117-132.

Your free one-stop shop for  
identifying, sourcing and applying biopesticides

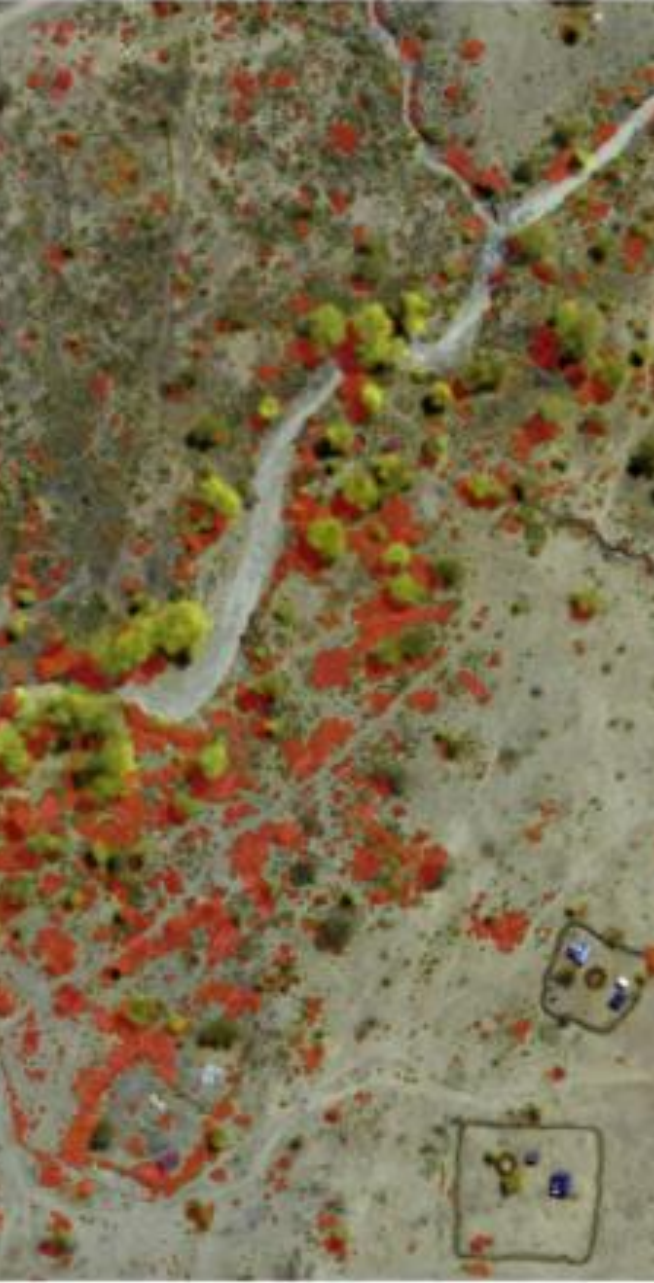
## Partners





# PRISE

- Pest Risk Information Service for sub-Saharan Africa is a 5 year project funded by the UK Space Agency International Partnerships Programme
- Combines **earth observation technology**, plant health **modelling**, and real-time **field observations**,
- Works with 3 UK based and 4 Africa based organizations as partners to create an **EWS to forecast the risk of pest outbreaks** using space infrastructure, **earth observation data** and **modelling** techniques
  - Initially Kenya, Ghana, Zambia ( + Malawi, Rwanda + 1 other) but later scalable to other countries/regions

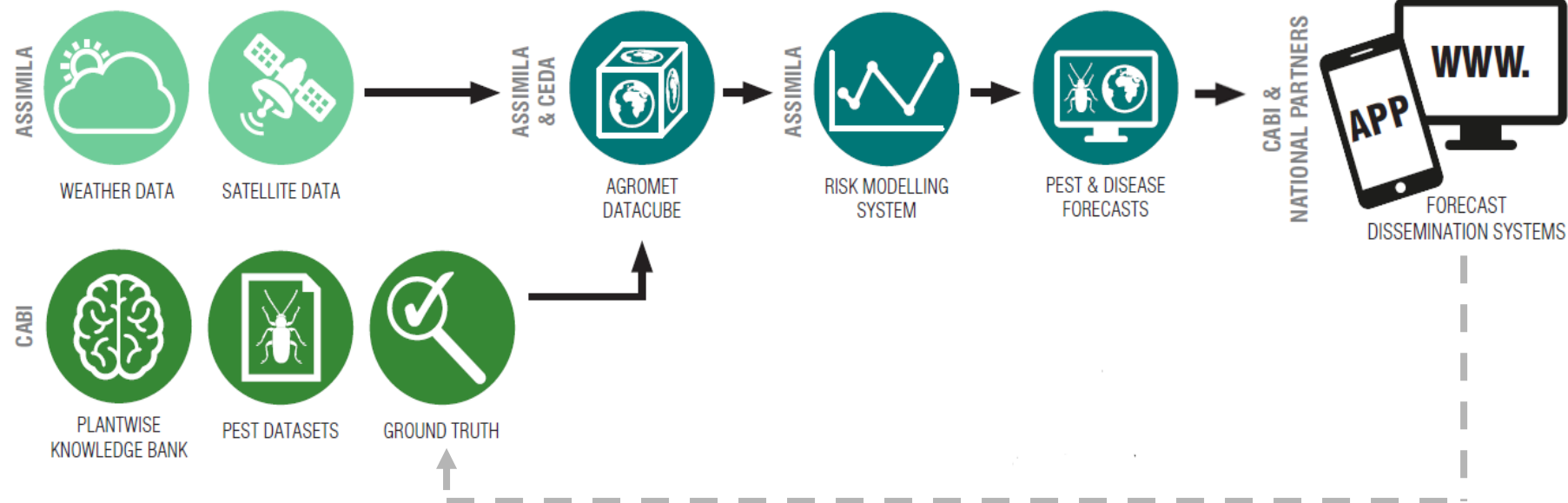


# End to End: Science, Knowledge and Research into Use

## STATIC SOURCES

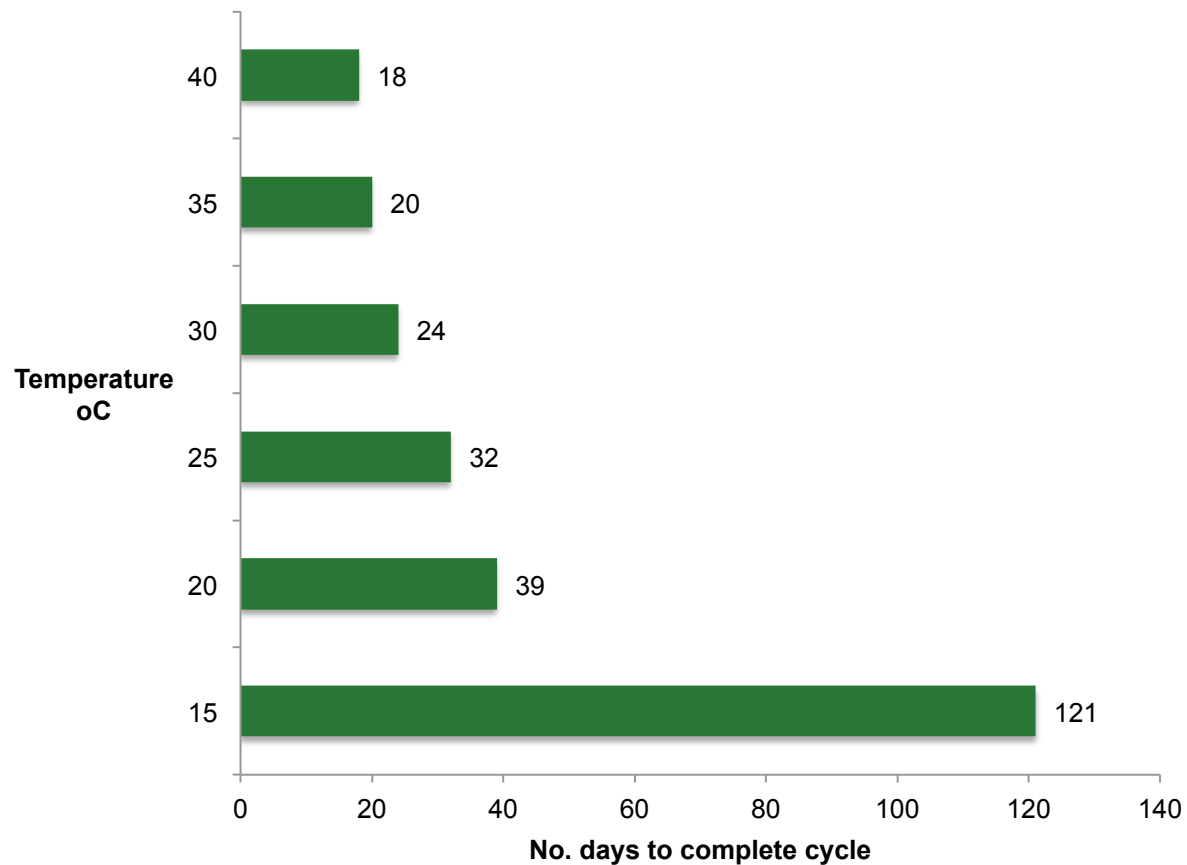


## DYNAMIC SOURCES





## Preliminary Results





# First continuous greenhouse gas measurements and validation of satellite derived land surface temperature estimates in East African drylands

Posted on October 23, 2018 by LUTZ MERBOLD

[Leave a comment](#)

by Thomas Dowling (King's College London) and Lutz Merbold (Mazingira Centre, ILRI)



# Partners

*Implementation partners:*



*National partners:*



MINISTRY OF  
**FOOD & AGRICULTURE**  
REPUBLIC OF GHANA



Republic of Kenya  
**Ministry of Agriculture, Livestock and Fisheries**





# Capacity Building on IPM and ICM Champions; Extension officers

Masters of Advanced Studies and Diploma of Advanced Studies  
in Integrated Crop Management



- *Collaboration between Plantwise, University of Neuchâtel, Switzerland and the Jura Canton*
- *Inaugural class in March 2015*
- *60 strong IPM ICM champions trained (12 per year)*
- *Opportunity for more ...*

	2015	2016	2017	2018	2019
gender f:m	3:9	2:10	6:6	6:6	6:6

*“Masters of Advanced Studies in Integrated Crop Management exposed me to practical new models and knowledge in Agricultura production. I am applying these new skills and knowledge on ICM and IPM in my interaction with farmers and extension officers in Machakos County,” Eunice Sakong, County Extension Training officer and Business Officer.*



## Partnerships

Sustainability of IPM strategies relies on a strengthened national **plant health systems**.

Linking stakeholders, such as:

- national/local governments
- extension services
- diagnostic services
- research institutions
- agro-input suppliers
- universities/colleges
- NGOs
- farmers and community-based organisations



A photograph of three men standing in a cornfield. The man on the left is wearing a light-colored long-sleeved shirt and a brown cap. The man in the middle is wearing a white t-shirt with 'SAMSUNG' and a 'BARCLAYS' logo. The man on the right is wearing a red t-shirt and is holding a document or a small book. They are all looking at the document. The background shows a cornfield with green plants and some trees in the distance under a cloudy sky.

**CABI is working and  
is willing to continue  
working with  
partners to deliver  
sustainable  
approaches and  
solutions for pest  
management in  
Africa and beyond**

شكرا جزيلًا  
merci  
शुक्रिया  
xie-xie  
obrigado  
efharistó  
asante  
terima kasih  
dhanyawaad  
ke itumetse  
gracias  
zikomo  
tak  
urakoze  
danke  
kiitos  
thank you  
merci  
zikomo



Precision  
Agriculture for  
Development



**MAAIF**  
Ministry of Agriculture  
Animal Industry and Fisheries

CABI is an international intergovernmental organisation, and we gratefully acknowledge the core financial support from our member countries (and lead agencies) including:



Ministry of Agriculture and  
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People's Republic of China



Agriculture and  
Agri-Food Canada



Ministry of Foreign Affairs of the  
Netherlands



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra  
  
Swiss Agency for Development  
and Cooperation SDC