Experiences and Insights for Developing and Delivery of Plant Pest Risk Information to Smallholder Farmers in Kenya...and Beyond

Plant Pathogen Pandemic Preparedness Workshop
Session 3: Diagnostic Networks at the National and International Level

Bryony Taylor, Roger Day, Phil Taylor, Marc Kenis, Joseph Mulema, Hannah Fielder, Elizabeth A Finch, Josephine Mahony, Alex Cornelius, James Salter, Sarah E Thomas, Tim Beale, Suzy Wood, Mary Lucy Oronje, Duncan Chacha, Charlotte Day, Jon Styles, Sean T Murphy, Gerado Saldana Lopez

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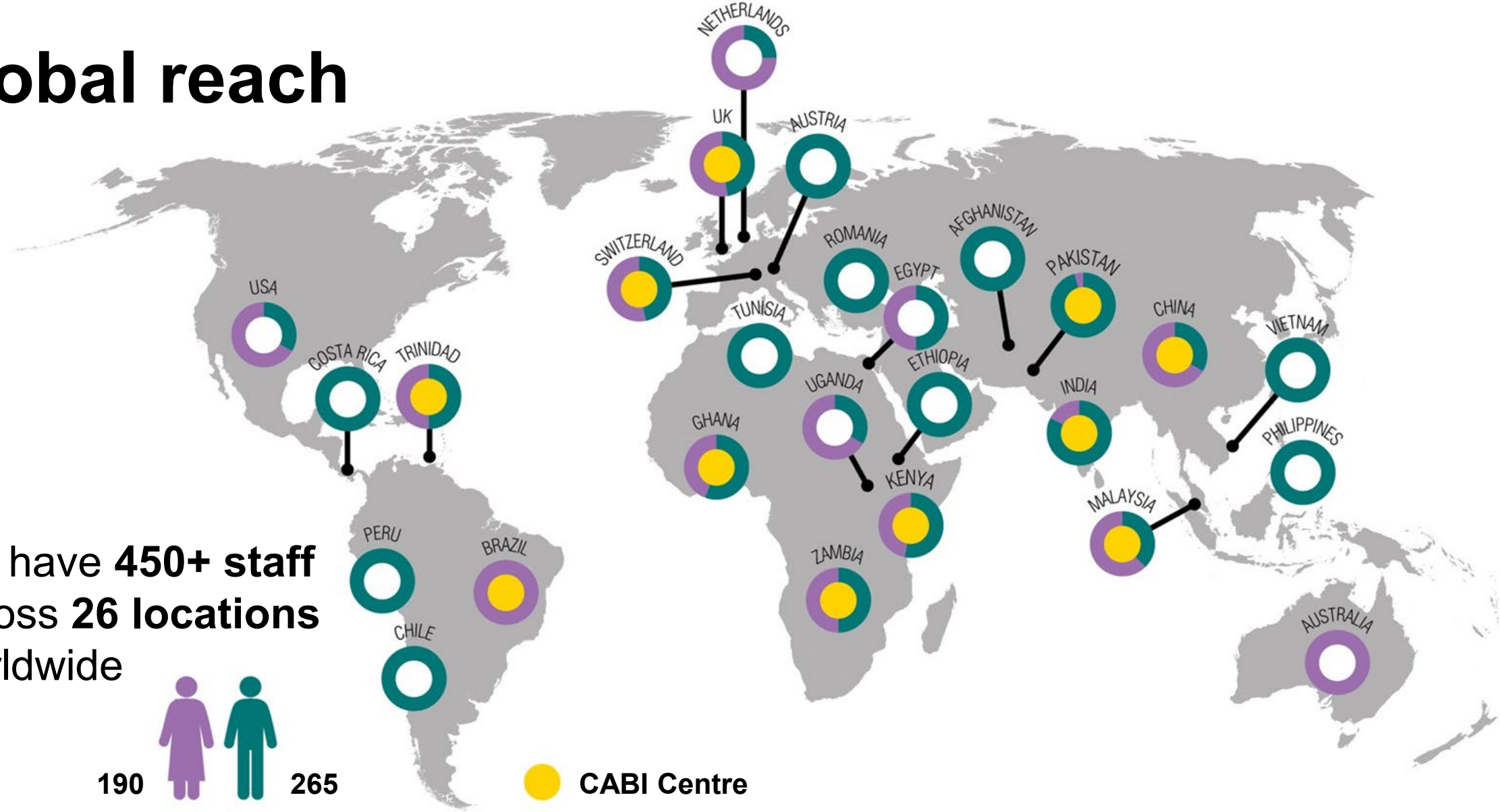
KNOWLEDGE FOR LIFE

CABI

Global reach



We have **450+ staff** across **26 locations** worldwide

190 265

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Vietnam

Zambia

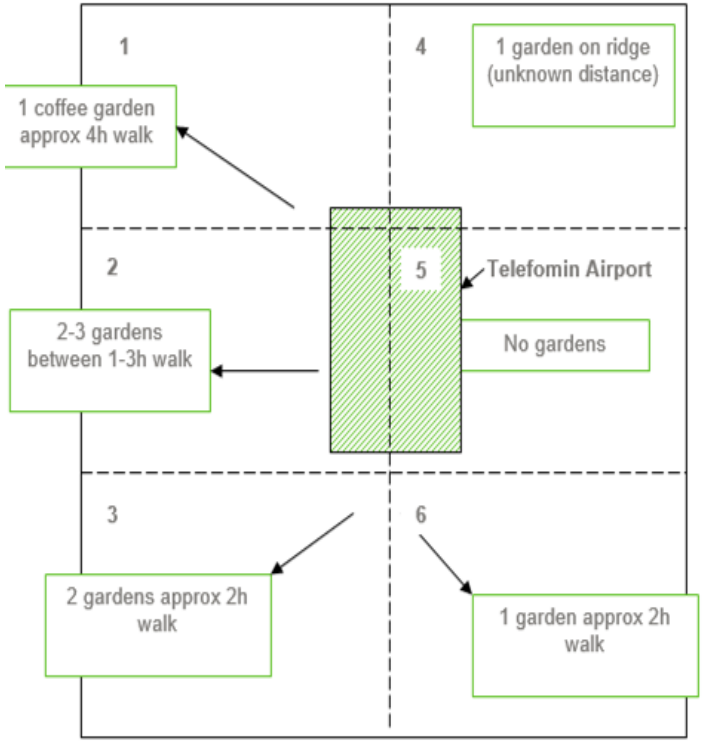
Zimbabwe

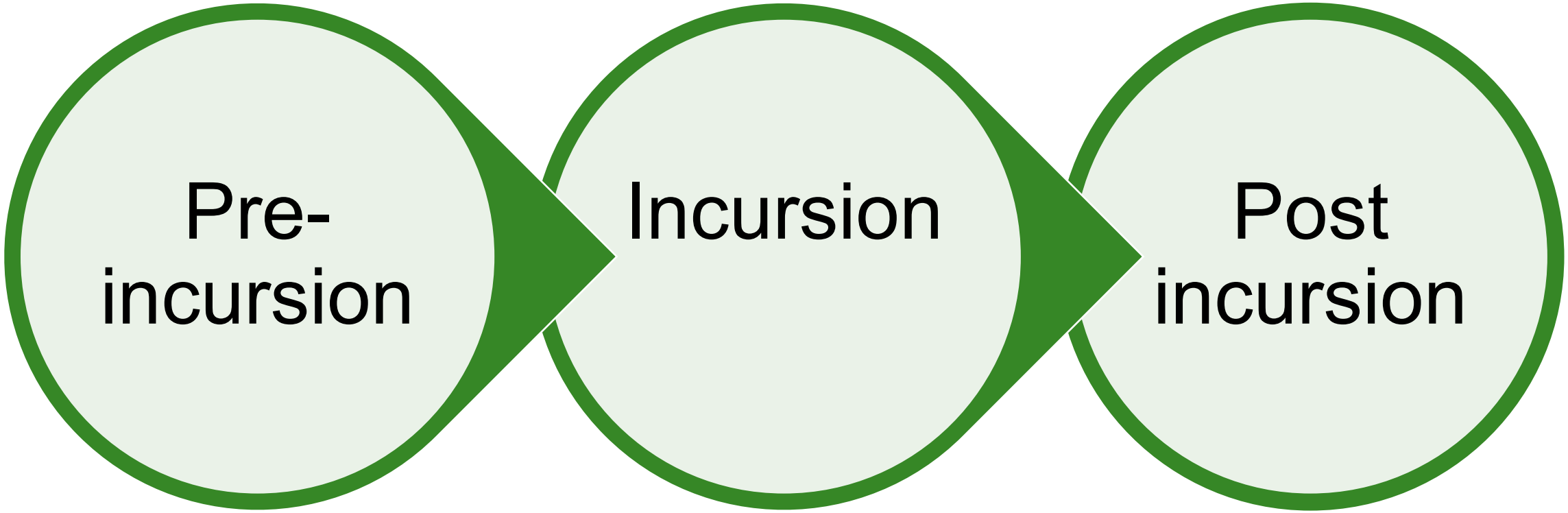
Background

- Rapid response is essential.
- Sub Saharan Africa (SSA), 73.8% of farms are <2ha in size
- Information about newly occurring outbreaks may go under reported
- Capacity to prepare, detect and respond can be limited due to resource limitations and lack of prioritisation
- How do we better help prepare LMIC for rapidly spreading outbreaks and ensure quick response?

Challenges in LMIC countries

- Resource limited organisations
- Poor infrastructure in some cases/difficult to reach locations
- Lack of equipment
- Poor/disparate data



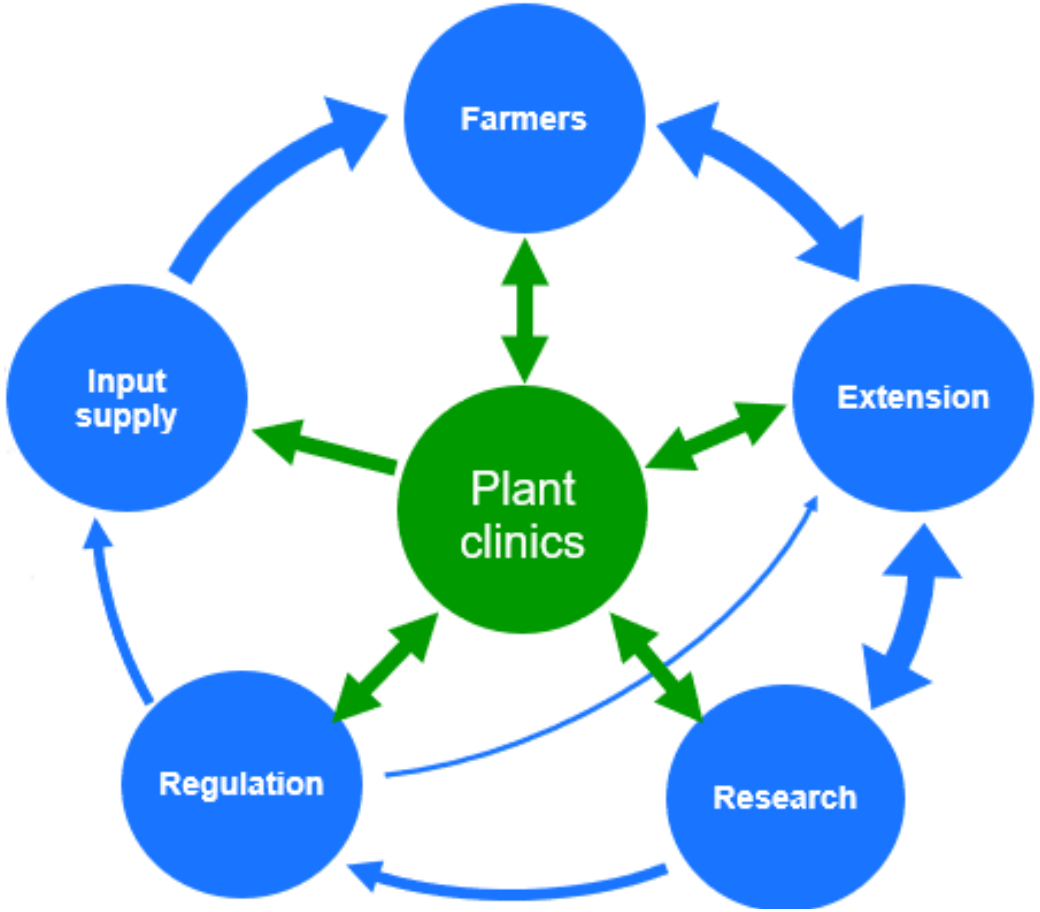

Pre-incursion
Incursion
Post incursion

Plantwise Plus

5,000+
plant clinics established

13,200+
plant doctors trained

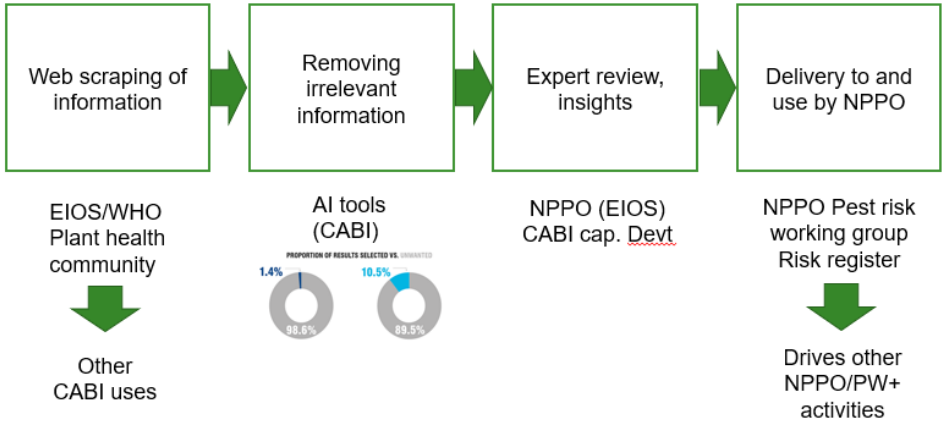
54,000,000+
farmers reached



Pre-incursion: Plantwise plus

- Develop tools & processes that allow countries to characterize and prioritize pest threats effectively (horizon scanning, pest risk analysis, insight reporting).
- Generate evidence of the impacts of identified pest threats
- Support countries to develop national planning capabilities for responding to crop health threats, such as the fall armyworm, before they arrive.
- Work with partners to explore nature-based solutions to invasive species

Scanning for changes in the status quo: Pest insights



Case study: PNG –pre-incursion assistance

Australian Government
Australian Centre for International Agricultural Research

Final report

project

Incursion Prevention and Management of Coffee Berry Borer (CBB) in Papua New Guinea (PNG) and Indonesia (South Sulawesi & Papua)

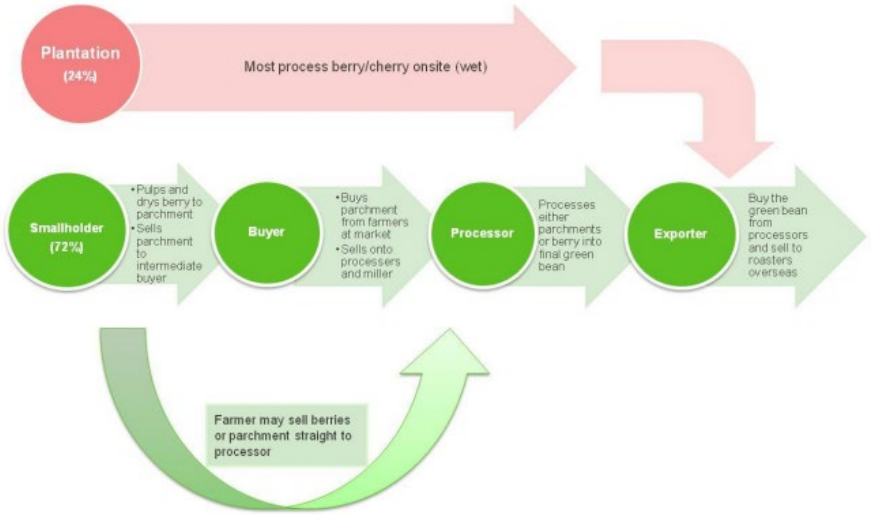


Figure 5 Processing chain for coffee cherries from farmers (72% of supply chain) and plantations (24% of supply chain).

Figure 7 Map of overall movement pathways of coffee including processing plants as reported by CIC 2009.

----- = Road pathways ◎ =Processing facilities in locality

Post incursion/ management phase

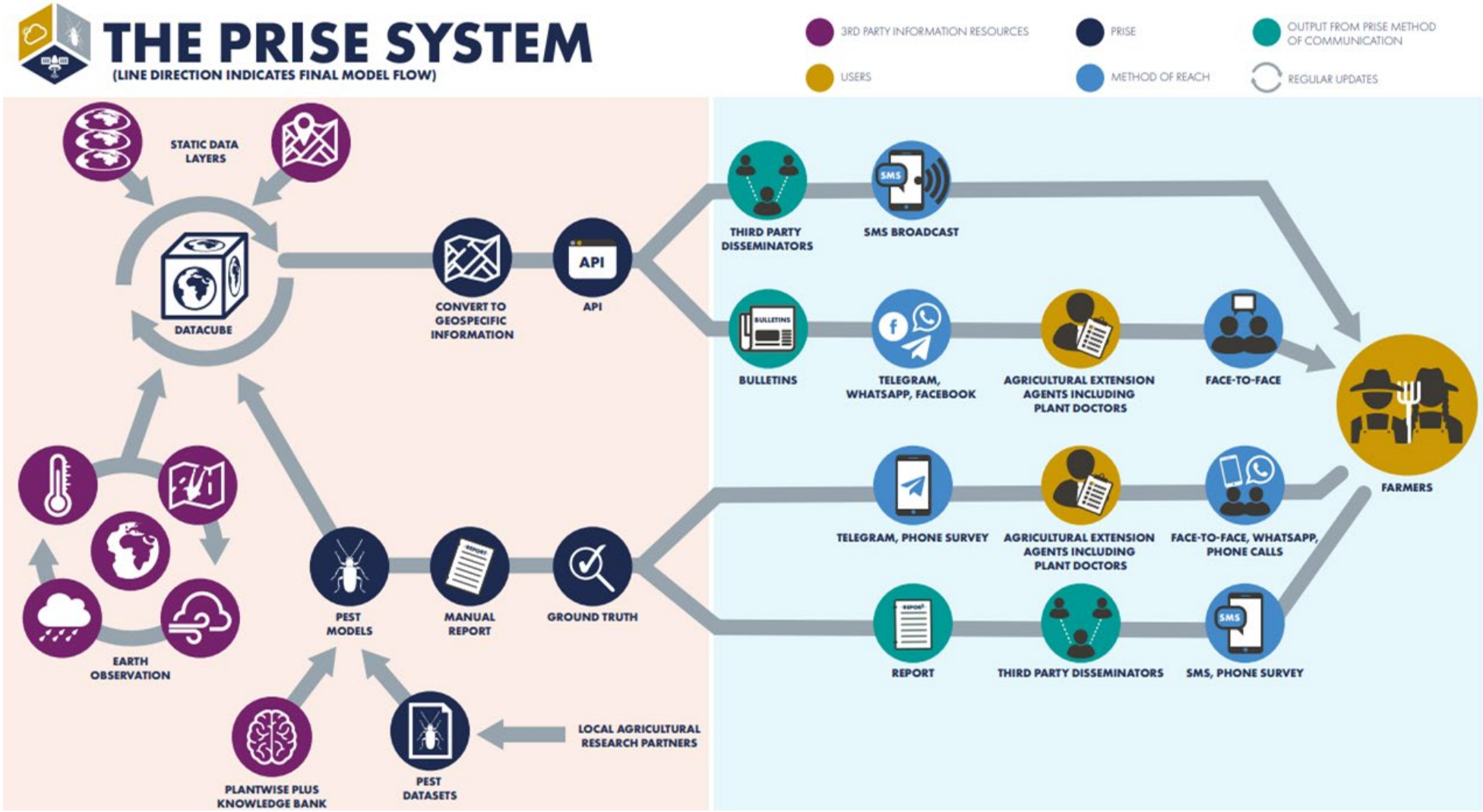
- Evidence notes – rapid evidence synthesis
- Species distribution modelling /suitability modelling
- Eradication /limit spread
- Management
- Education and extension
- Surveillance

Fall armyworm: impacts and implications for Africa

Evidence Note Update, October 2018

Rwomushana, I., Bateman, M., Beale, T., Beseh, P., Cameron, K., Chiluba, M., Clottey, V., Davis, T., Day, R., Early, R., Godwin, J., Gonzalez-Moreno, P., Kansiime, M., Kenis, M., Makale, F., Mugambi, I., Murphy, S., Nunda. W., Phiri, N., Pratt, C., Tambo, J.

Case Study: Pest Risk Information Service



PRISE pathology alerts

- Ensure that information generated and disseminated is **actionable and effective** for farmers.
- In low income countries, the means to intervene can be resource limited
- Initial survey results showed barriers to uptake of management practices reported by farmers i.e frequent sprays could be unaffordable
- We developed a prototype risk map for *P. griseola* infection showing areas a high risk from infection generated using data from the PRISE datacube and disease parameters.

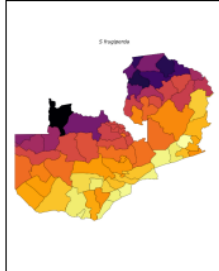
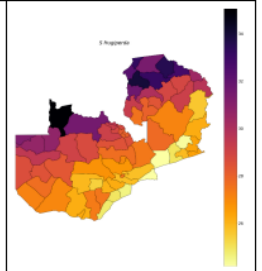
Zambia Update 17/03/21

The Pest Risk Information Service (PRISE) bulletin service provides pest information focusing on some of the most damaging pests of maize, tomato and bean crops.

The IPM advice contained in this document has been approved and validated by in-country experts. Always check for these pests in the field before alerting farmers.

Maize

Fall armyworm - *Spodoptera frugiperda*

Action Midpoint 1	Action Midpoint 2
	

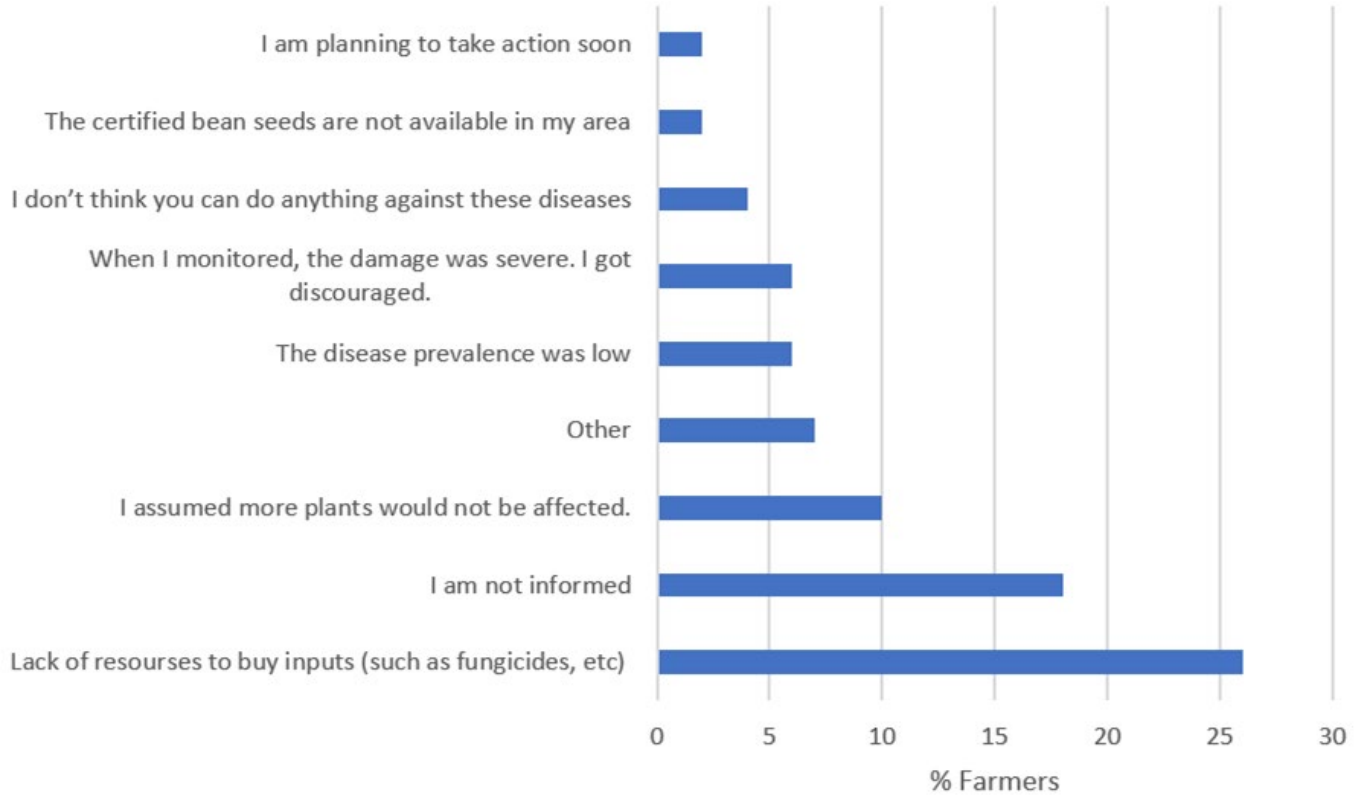
How to monitor:	Decision point:
Check crops for pests and signs of infestation weekly, 1 week after germinations. Do so during early mornings and late evenings.	Monitor 10 consecutive plants in 10 random sites in the field. Consider control actions if over 20% of plants observered show signs of infestation during early whorl stage or 40% during late whorl stage.
How to identify:	
Eggs: Pale yellow/cream coloured, commonly 0.4 mm in diameter. Egg masses are found on the underside of leaves, covered in a layer of green/gray scales.	**Larvae:** Light green/dark brown caterpillars with striped running along the length of the body. Can grow up to 4.5 cm long. Best identification feature is the dark head with yellow/white inverted Y-shape.
 Frank Peairs, Colorado State University.	 LyleBuss, University of Florida, Bugwood.org
Pupae: Shiny brown coloured, can grow ip to 1.7 cm long. Commonly found in the soil but can sometimes be found in mature maize ears.	**Adults:** Moths have a wingspan of 3.7 cm. Grey/brown coloured forwings with yellow/cream hingwings. Most active during evenings.

Send feedback on this bulletin to prise@cabi.org

Pest Risk Information Service (PRISE) by CABI December 2021

Symptoms:	
Most common symptoms include feeding damage on leaves and cobs, notably elongated holes. Brown frass can be found at the base of stems and inside whorls.	
Cultural control:	
• In low infestations, handpick and destroy egg masses and larve by burning. • Use a handful of sand, sawdust or soil in the whorl to suffocate and kill larvae. • If available, spray larvae with neem-based products before they enter the whorl.	
Chemical control:	
• Always wear protective equipment when using chemicals.	
• Use Lufenuron+Emamectin Benzoate (e.g. Match fit). • Use Lambda-cyhalothrin – WHO Class II (moderately hazardous). • Use Deltamethrin based insecticides.	• WHO Class III (slightly acute hazard). REI: 2 days, PHI: 14 days. • WHO Class II (moderately hazardours). REI: 0.5 days, PHI: 14 days. • WHO Class II (moderately hazardous). REI: 0.5 days, PHI: 3 days.

Farmer survey results



- 80% of 290 farmers had encountered *P. griseola*
- 33% sprayed fungicides
- 6% said that they uprooted and burned heavily infected plants
- 6% practiced intercropping (maize) and 3% practiced crop rotation.
- Fifty percent of farmers said that they took no actions or preventative measures against *P. griseola*.
- Other measures used include applying ash and manure.

Summary

- Plan for how to prepare and deliver information in resource limited countries in advance if possible
- Plug into existing extension systems and work with them to identify threats, and channels through which incursions can be rapidly identified
- Understand limitations and design approaches that take these into account

UK SPACE AGENCY GCRF

With co-finance from:
CABI plantwise

PRISE

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Australian Government
Australian Centre for International Agricultural Research

Agriculture and Agri-Food Canada

Ministry of Foreign Affairs of the Netherlands

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