Plantwise – an Innovative Approach to Reduce Crop Losses by Sharing Plant Health Knowledge

Washington Otieno

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Basis & justification

For pre-harvest & post-harvest food losses:

- Timely access to actionable information by all actors along entire value chains is essential & necessary
- Improving capacity of countries to deliver agricultural advice contributes to reducing the losses

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Plantwise overview

- A **global programme** led by CABI aims to **reduce crop losses** by
- strengthening systems for managing plant health
- Operates through
  - networks of **plant clinics**
  - **Knowledge Bank**: database with information on diagnosis & management built on, *inter alia*, data from PCs.
  - **M&E system**: builds in lessons learnt for continual improvement

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Plantwise components

Plant Clinics

Knowledge Bank

Monitoring & Evaluation

Performance criterion	Monitoring method
1. Quality of diagnosis	1. Monitoring visits to plant clinics 2. Analyses of plant clinic records 3. Follow-up meetings 4. Feedback from farmers 5. Visits to farmers' fields
2. Quality of advice	1; 2; 3; 4; 5.
3. Staff attitude, communication	1; 4.
4. Organization	1; 2; 3; 4.
5. Material, equipment	1; 3; 4.
6. Backstopping, networking	1; 3.
7. Timeliness, regularity	1; 2; 4.
8. Coverage, access	1; 2; 4 (e.g. causes of non-attendance)

Plant clinics

- Situated at **locations easily accessed** by farmers
- Run on **regular basis** (time & place) by ‘plant doctors’
- **‘Plant doctors’**
  - extension officers trained in visual diagnosis & management recommendations
- Farmers bring **‘*sick*’** plants & receive practical advice
- Advice documented in a **prescription form** – paper or electronic

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Knowledge Bank

Pest information resource - (online & offline)

- Pest diagnostic support
- Pest management decision guides
- Repository for plant clinic data (POMS)

Users

- Extension services, farmers
- Plant health regulators
- Agricultural research organizations
- Academia
- Agro-input suppliers, etc

Visit www.plantwise.org/KnowledgeBank

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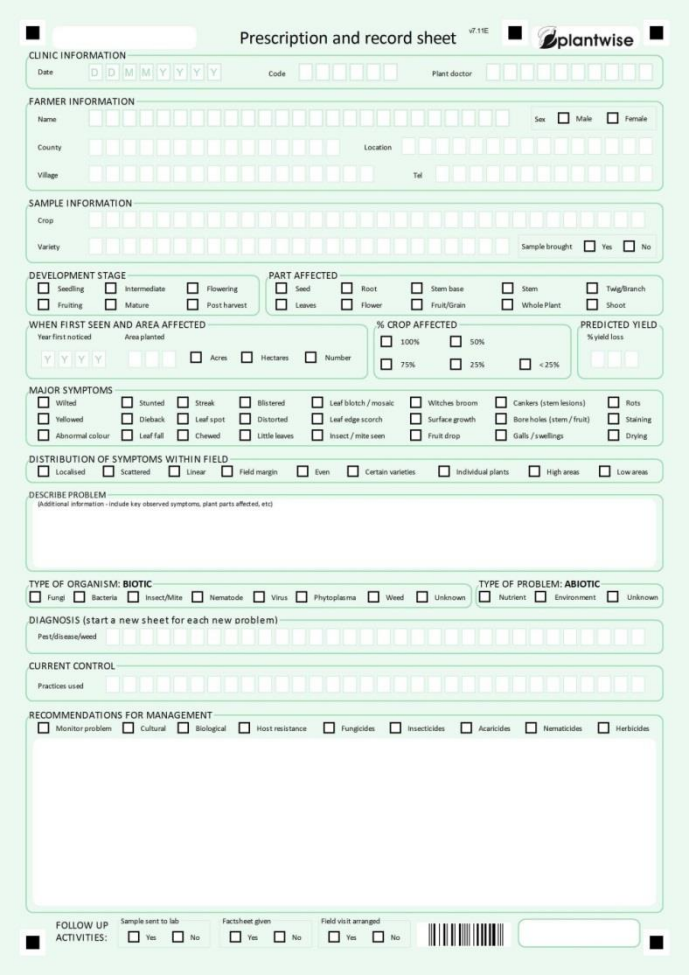
Data capture & use


Prescription and record sheet v7.11E plantwise

CLINIC INFORMATION
Date D D M M Y Y Y Y Code Plant doctor

FARMER INFORMATION
Name Sex Male Female
County Location
Village Tel

SAMPLE INFORMATION
Crop
Variety Sample brought Yes No

DEVELOPMENT STAGE
Seedling Intermediate Flowering
Fruiting Mature Post harvest

PART AFFECTED
Seed Root Stem base Stem Twig/Branch
Leaves Flower Fruit/Grain Whole Plant Shoot

WHEN FIRST SEEN AND AREA AFFECTED
Year first noticed Y Y Y Y
Area planted Acres Hectares Number

% CROP AFFECTED
100% 50%
75% 25% <25%

PREDICTED YIELD
% yield loss

MAJOR SYMPTOMS
Wilted Stunted Streak Blistered Leaf blotch / mosaic Witches broom Cankers (stem lesions) Rots
Yellowed Dieback Leaf spot Distorted Leaf edge scorch Surface growth Bore holes (stem / fruit) Staining
Abnormal colour Leaf fall Chewed Little leaves Insect / mite seen Fruit drop Galls / swellings Drying

DISTRIBUTION OF SYMPTOMS WITHIN FIELD
Localised Scattered Linear Field margin Even Certain varieties Individual plants High areas Low areas

DESCRIBE PROBLEM
(Additional information - include key observed symptoms, plant parts affected, etc)

TYPE OF ORGANISM: BIOTIC
Fungi Bacteria Insect/Mite Nematode Virus Phytoplasma Weed Unknown

TYPE OF PROBLEM: ABIOTIC
Nutrient Environment Unknown

DIAGNOSIS (start a new sheet for each new problem)
Pest/disease/weed

CURRENT CONTROL
Practices used

RECOMMENDATIONS FOR MANAGEMENT
Monitor problem Cultural Biological Host resistance Fungicides Insecticides Acaricides Nematicides Herbicides

FOLLOW UP ACTIVITIES:
Sample sent to lab Yes No
Factsheet given Yes No
Field visit arranged Yes No

Prescription form

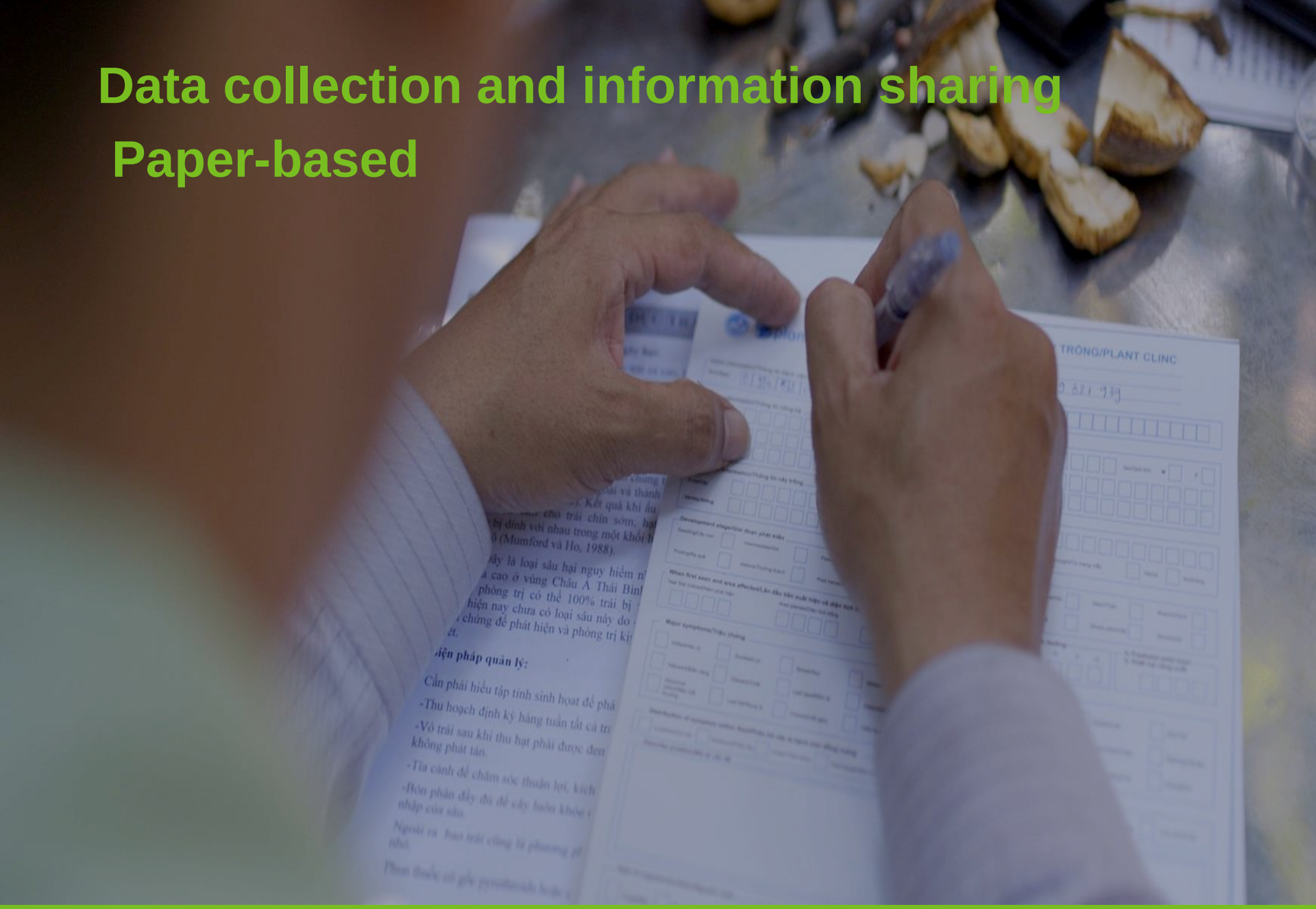
- Paper version
- E-version
  - Use of tablets & SMS messaging
  - Link with other E-Systems in extension

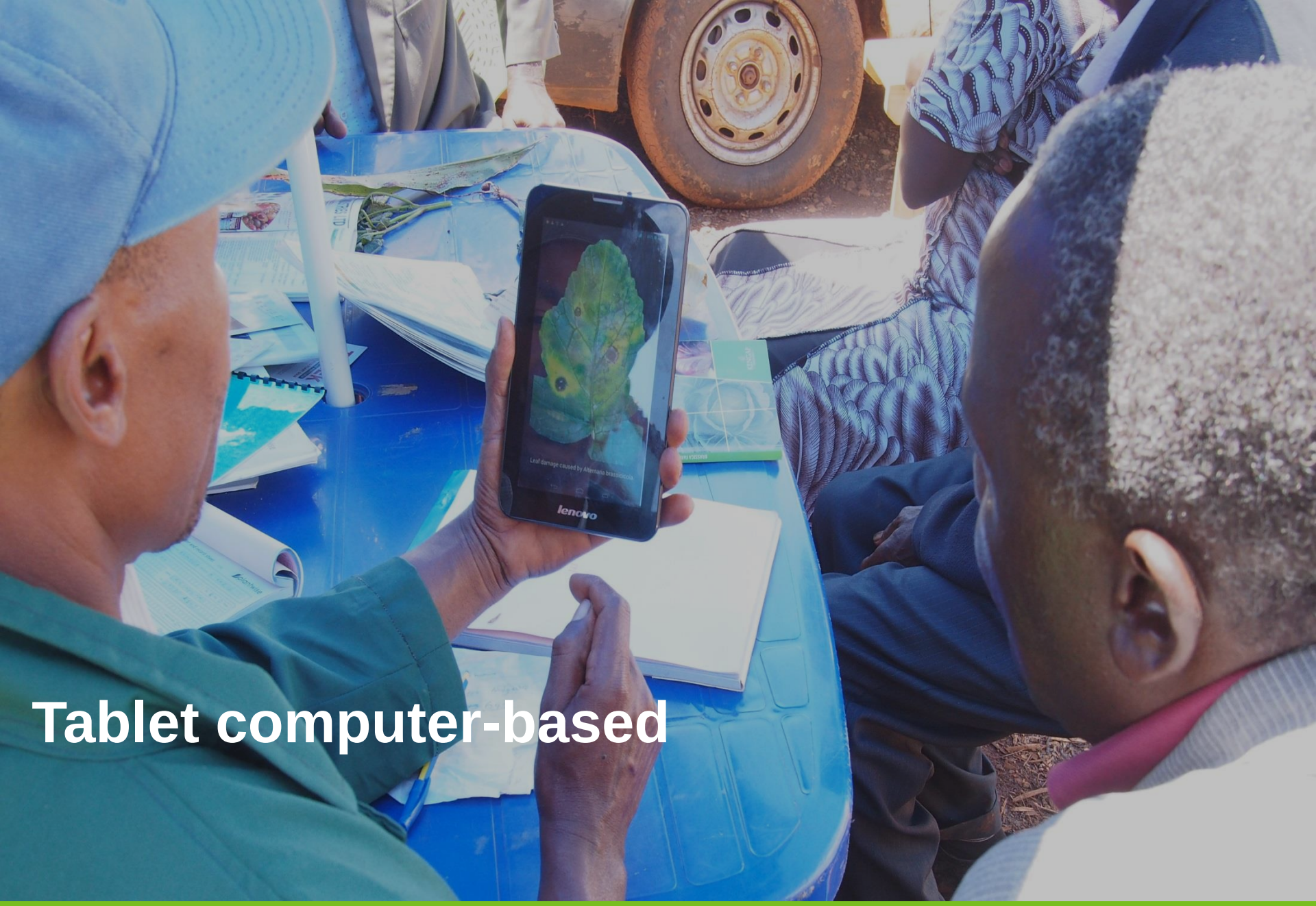
Vision i.e. forward plan

- Scale up & sustainability
  - Country support & update
  - Justification: uses of pest data – surveillance, pest listing, pest reporting
  - Opportunity – EWS function of NPPOs

Data collection and information sharing

Paper-based

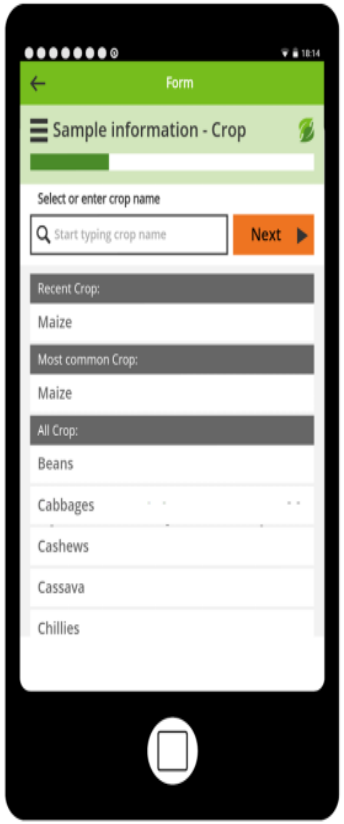




Tablet computer-based

Tablets deliver information

Tablets collect data



"It is not even comparable with the paper one... wherever you go this one is in the pocket."

Kenyan plant doctor

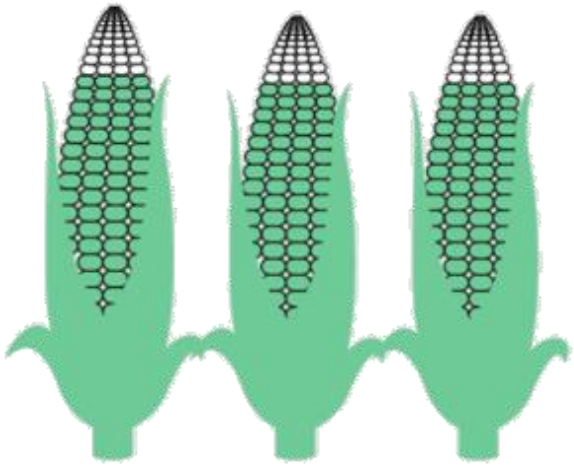
E-plant clinics

- Piloted in 4 countries (Kenya, Rwanda, Sri Lanka and India)
- App to deliver info.
- App to collect data
- SMS messaging to farmers
- Training
- Network of plant doctors & experts to improve diagnostic capacity

ICT Tools in Plantwise

- PW has constructed an ICT structure
  - ICT tools - for collecting, sharing and delivering agricultural data an effective inter-link among actors in plant health
- SIM-equipped android tablet computers enable
  - real time capture of pest data
  - instant access to diagnostic support and advice
- Enable '*plant doctors*' to:
  - use the Factsheet Library app
  - communicate via instant messaging services.
  - Log relevant data online.
- A requisite when there is need to trigger prompt mitigation actions

Reducing crop losses



79% of farmers reported yield increases after using plant clinic advice

70% of farmers reported their income increased after using plant clinic advice

Reducing the reliance on hazardous pesticides

Parameters	Pre-Plantwise: 2009 - 2012	Plantwise: 2013 - present
No. of pesticide sprays per crop	4-7x	2-3x
Total cost (in Baht) of insecticides per rai (6.25rai = 1ha) per season	฿650	฿350
Farmers using only pesticides (%)	80%	50%
Mean crop loss per crop per rai (%)	50%	10%
Income per crop per rai (Baht)	฿1,000	฿4,000

The results of a farmer survey conducted by the Thai national implementing partner undertaken in 2015 by plant doctors in 3 different regions. 6 plant doctors interviewed 90 farmers in total.

Opportunities

- Prompt online diagnostic support
- Instant access to pest management information
- Real time data capture enabing early warning and emergency action
- Dynamic platform to use pest information and act to mitigate pest risks
- Easy link with other tools – e.g. PestPoint, Plant Village, etc
- Excellent opportunities for effective pest monitoring & control actions needed to mitigate loss.

Thank you

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