

Sustainable Fall Armyworm IPM Technologies for Demonstration, Adoption and Scaling



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25-29 Oct 2021, West Africa Technology Fair



Presentation Outline

1. Introduction
2. Validated IPM-based FAW management technologies
3. Accessing the technologies
4. Conclusions

Introduction

- ❑ The advent of the Fall armyworm (FAW) in sub-Saharan Africa has impacted crop productivity in 3 main ways:
 - a) **increased maize yield losses** → food and income security at the household and national levels adversely affected;
 - b) **increased costs in international trade** due to the need to comply with stricter quarantine regulations; &
 - c) **increased costs of pest control.**





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***Overall objective of the FAW
Enabler Compact***

**To deploy sustainable FAW IPM-based technologies
to smallholder farmers in collaboration with the
maize and sorghum value chain compacts**

Key Specific Objectives

- 1) Technologies validation and subsequent scaling and deployment.
- 2) Capacity building of NARES, farmers and other TAAT stakeholders.
- 3) Bring visibility to TAAT program activities and achievements.



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Operational Modalities

Research pipelines

Technology 1
Technology..n

CG-centers, NARS,
SROs, private sector,
farmer experimentation

Technology
validations by the
Compact

Technology demos, Capacity
building, Promotional campaigns



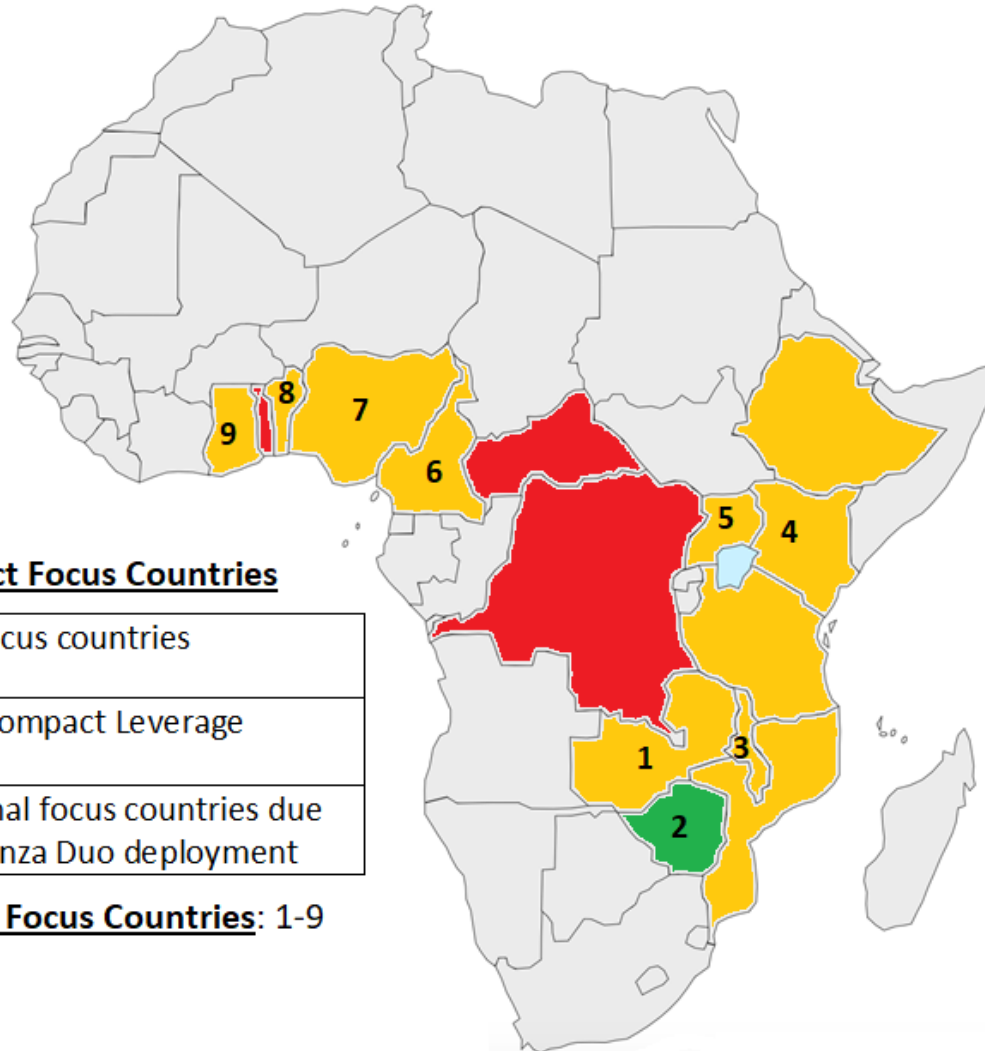
Technologies
scaling and
deployment

← In partnership with NARES, Private sector, Commodity compacts →




TAAT FAW & Maize Compacts' Footprint in SSA



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Maize Compact Focus Countries

	Initial focus countries
	Maize Compact Leverage Teams
	Additional focus countries due to Fortenza Duo deployment

FAW Compact Focus Countries: 1-9

Some Key Achievements



- ✂ 27 out of an end target of 30 technologies validated.
- ✂ 21 national and regional partners mobilized and working with the FAW Compact





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- ✂ > 900,000 farmers trained by the Compact in collaboration with NARES.
- ✂ About 1 million smallholder farmers have accessed Fortenza Duo seed treatment technology.
- ✂ 40 types of information and training materials produced and disseminated through NARES and private sectors partners



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FAW IPM Guides



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Identification of Fall Armyworm and Confounding Pests in Maize Agroecosystems: An Illustrated Guide

FALL ARMYWORM IPM GUIDE no. 1



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GUIDE DE GESTION INTEGREE DE LA CHENILLE LEGIONNAIRE D'AUTOMNE # 1



Validated IPM-based FAW Management Technologies



- ❑ Before prescribing technologies for scaling, it is important to understand the factors which make FAW highly damaging in SSA:
 - a) **ideal climate** – enables the cultivation of its principal host-maize – almost all year-round in most countries;
 - b) **the pest has a very wide host range**;
 - c) **the pest lacks a resting stage** (diapause);
 - d) **the pest has high dispersive capacity** - enables it to track maize closely in space and time;



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- e) the pest does not yet have effective natural enemies which can regulate its populations below economically damaging levels;
- f) the pest has a high propensity to develop resistance, including to genetically-modified crops; and
- g) most of the farmers are resource-poor smallholders.

- 1) Fortenza™ Duo seed treatment
- 2) Synthetic pesticides (for rapid curative control):
 - ✓ chlorantraniliprole (SC),
 - ✓ emamectin benzoate (EC)
 - ✓ chlorantraniliprole 100 g/L + lambda cyhalothrin 50 g/L (SC)
 - ✓ emamectin benzoate 100 g/L + lufenuron 400 g/L (WG),
 - ✓ deltamethrin 0.1% + pirimiphos methyl 0.4% (GR)
 - ✓ brofranilide**
 - ✓ alphacypermethrin + teflubenzuron**

** - Not yet registered but very effective

- 3) Fawligen® [Occlusion bodies of *Spodoptera frugiperda* Multiple Nucleopolyhedrovirus (SfMNPV)]
- 4) *Bacillus thuringiensis* kurstaki strain
- 5) *Lactobacillus plantarum*
- 6) Fish hydrolysate
- 7) AgriX365® - clove oil-6%, sesame oil-5%, Rosemary oil-3%, Thyme oil-3%, inert ingredients, water & vegetable oil-83% (1:250 parts water)

Lactobacillus plantarum (LaB) + Fish hydrolysate (FH)

- ❑ LaB and FH – organic microbials
- ❑ LaB – a lactic acid bacterium that helps to boost resistance of plants to stresses.
- ❑ FH – also boosts plant immunity





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- ❑ LaB and FH are manufactured by Climate Smart Organic Green Initiative (CSOGI) and distributed by Lifeworks Global.
- ❑ It is likely that formal registration as biofertilisers is also required before the products can be made available commercially.

Fortenza Duo

- ❑ A Syngenta “**technology in the seed bag**” – i.e., farmers purchase already-treated seed
- ❑ Fortenza Duo – a combination of two 2 products: Fortenza® 600 FS (**cyantraniliprole 600 g/L**) + Cruiser® 600 FS (**thiamethoxam 600 g/L**).
- ❑ 292 ml of each product are mixed with 100 kg of maize seed, giving 5.84 L of the mixture/tonne of seed.



Sticker to indicate that seed has been treated

Targeted protection

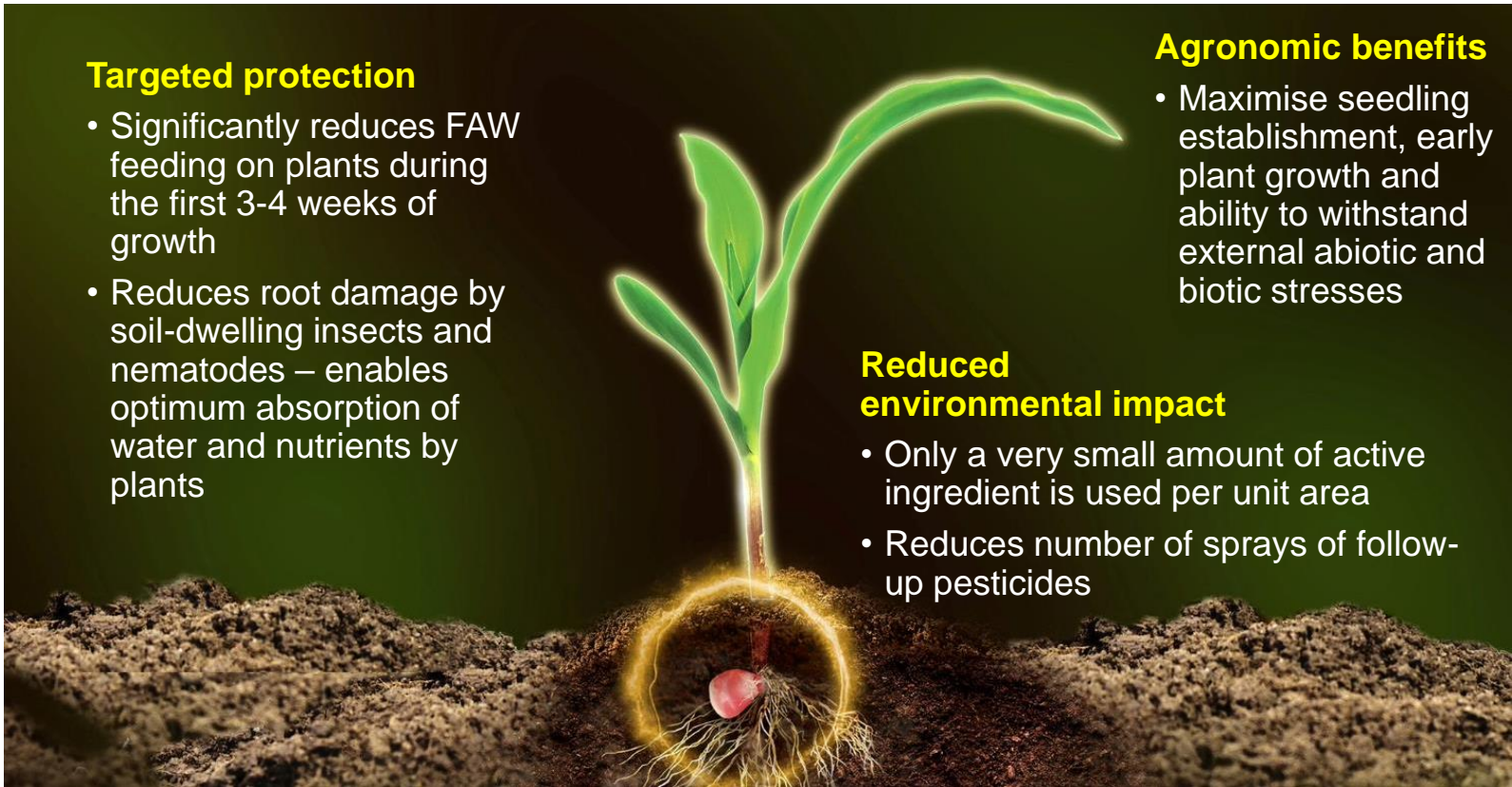
- Significantly reduces FAW feeding on plants during the first 3-4 weeks of growth
- Reduces root damage by soil-dwelling insects and nematodes – enables optimum absorption of water and nutrients by plants

Agronomic benefits

- Maximise seedling establishment, early plant growth and ability to withstand external abiotic and biotic stresses

Reduced environmental impact

- Only a very small amount of active ingredient is used per unit area
- Reduces number of sprays of follow-up pesticides





4-week-old maize established from untreated seed (A) and FD-treated seed (B) at IITA-Zambia

Fawligen®

- ❑ A commercial formulation of occlusion bodies of FAW-specific nucleopolyhedrovirus provided by AgBitech.
- ❑ Volume application rate - 100 ml/ha.
- ❑ FAW larvae get infected through ingestion of virus particles on leaf surface.
- ❑ Virus yield - at least 7.5×10^9 particles per mL



- ❑ In the last stages of the virus replication cycle, larval body dissociates/liquefies → releases more infective virions onto plant foliage.
- ❑ Infected larva typically climbs to the top of the plant where it hangs in the form of an inverted “V”.
- ❑ Fawligen is especially effective if sprayed against early instar FAW larvae.



Accessing the Technologies

LaB and FH

- ❑ Manufactured by Climate Smart Organic Green Initiative (CSOGI) and distributed by Lifeworks Global.
- ❑ Although these 2 biorationals do not have the properties of synthetic chemical pesticides, formal registration may be required.

Fortenza Duo

- ❑ Technology is available through treated maize seed → formal registration in each country is needed.
- ❑ To date, the product is registered in Zambia, Zimbabwe and Kenya.





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Fawligen

- ❑ Technology also needs to be formally registered before it can be accessed.
- ❑ Fawligen is very suited for FAW IPM programs as it can be used in place of synthetic pesticides which are damaging to natural enemies.

Conclusions

- ❑ Fortenza Duo, LaB, FH and Fawligen fit perfectly into the basket of FAW IPM technologies and offer:
 - ✓ early seedling protection (**FD**),
 - ✓ plant immunity boost (**LaB & FH**), and
 - ✓ self-perpetuating pest suppression under the right environmental conditions which facilitate natural horizontal transmission of infective virus particles (**Fawligen**).

- ❑ Because FAW is a transboundary pest which needs to be managed on an area-wide basis, it is important to have regionally harmonized registration procedures for plant protection products.
- ❑ NARES are critical partners of the FAW Compact as it is through them that technologies can be scaled and deployed, and the needed capacity building of farmers be done.
- ❑ Business opportunities for the youth and SMEs exist particularly on technologies which are arising from farmer experimentation or observations, e.g. urine, fish soup spray, urea fertilizer application, etc.



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Thanks for Your Attention

