



Fall armyworm response in Ghana: Stakeholder workshop

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Directors and representatives from the various departments of the Ministry of Food and Agriculture (MOFA) linked up with participants from 5 universities and institutes, 6 civil society organisations, 5 information services, 6 key donors, as well as private sector producers and service providers to discuss a national response to the impending invasive fall armyworm (*Spodoptera frugiperda*).

The workshop (participant list in annex 1) was organised by PPRSD and CABI and sponsored by the UK's Department for International Development (DFID). CABI's new Invasive Species programme, dedicated to developed regional, national and local coordinated approaches to invasive species, delivered various background materials. The workshop's objectives were to share experiences and information on the insect's outbreak and impacts in the country, and draft an initial comprehensive action plan in the short, medium and long term.

The workshop's facilitators, Eric Quaye of the Plant Protection and Regulatory Services Directorate (PPRSD) of MOFA and Dr Victor Clottey of CABI, urged the participants to be motivated and creative in their efforts to develop a well-coordinated approach plan that takes into account latest research and the needs of the many farmers already, and soon to be, affected by this devastating pest.

"We need to have structures to coordinate the deployment and monitoring of management strategies."

Ebenezer Aboagye, Agriculture Director of PPRSD gave an update on the pests' impacts:

- In 2016, the pest was present in 9 of the 10 regions of Ghana; it is currently present in all regions of Ghana
- In 2016, the insect affected up to 10,000 ha; up to March 2017, it has already affected 500 ha, with the impending maize planting season thought to be particularly at risk

Recent estimations done by CABI in a report commissioned by DFID have estimated the pest to affect up to 500,000 tonnes of maize and sorghum in Ghana, potentially costing the country up to \$163 million in 2017.

In the Americas, where this pest originates from, many different control measures are utilised: synthetic pesticides are effective if used in the right manner (rigorous monitoring, spray early morning, rotate active ingredients used); *Bacillus thuringiensis* (Bt) sprays are less damaging to the environment and can be very effective, but are more costly and less available; virus-based biopesticides show a lot of promise and are extremely safe, but need to be registered quickly for trials and dissemination across the country; classical and augmentative biological control using parasitoids such as *Trichogramma* species or *Telenomus remus* have been reported as effective, but need to be imported and trialled, and questions remain on their cost effectiveness and local business sustainability; pheromones are actively being developed to mass-trap males, and are effective when used at large scale; finally, cultural control techniques may work, but need testing and wide diffusion to the public through mass media communications.

To develop the comprehensive national action plan, participants were divided into four groups. These groups attempted to list key activities and institutions involved in their development. A full version of the action plan can be found in Annex 2.

1. Collaboration and coordination

- Establish steering committee with balanced representation of all interests
- Keep all stakeholders up-to-date with technical and advocacy information
- Coordinate future fall armyworm stakeholder fora
- Identify potential collaborative institutions and national and international sources of funding (friendly insecticide subsidies / spray trials)
- Establish a national feedback communication system to spread awareness and collect information

2. Surveillance

- Increase information collection on the frontline by developing standardised reporting format for district level staff, setting up reporting channel and data management system
- Establish a monitoring and pest scouting network to prevent mass outbreak

3. Control, management and research

- Assess which insecticides are effective and available in Ghana, whilst developing insecticide resistance measures
- Research fall armyworm population biology and ecological adaptation to Ghana climate
- Development of novel control techniques, such as virus insecticides, sterile insect mating techniques, natural enemies, and resistant variety research
- Utilise data from surveillance network to analyse and understand pest impacts and predict future problems

4. Awareness raising

- Use latest research to develop farmer-appropriate technical content into a package of effective surveillance and control techniques
- National capacity building workshop plan developed for agricultural professionals
- Develop mass media strategy utilising radio and television networks, plant health rallies, electronic and print media, and local workshop/seminars

Annex 1: Participants' list

Organization	Name of Participant	Location	E-mail
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Annex 2: Comprehensive action plan

COMPREHENSIVE ACTION PLAN FOR MANAGEMENT OF THE FALL ARMYWORM (Ghana MoFA/PPRSD) - May 8, 2017				
SHORT TERM ACTIVITIES				
Theme	Activities	Who is involved	Who already has plans	Timeline
Coordination and collaboration	Identify key stakeholders and establish a steering committee with balanced representation of men, women and youth	PPRSD/MOFA-Lead/CABI/ Farmers(men, women and youth)/Researchers/Input dealer/solution providers/ Development partners/Civil societies/Non-governmental org/The media/District assemblies/Funding agents/Private sector groups	MOFA/PPRSD CABI ACDI/ADVANCE (USAID) GIZ ETC	21st to 30th April,2017
	Networking with all stakeholders to enhance information flow. Who to contact, how to organize the information, dissemination, how regular is the information flow, where to locate this platform	Policy makers (PPBD,PPRSD,EPA,CSD and DAES), NGO's, FBO's, GAIDA, CSO's, ECOWAS, Donors, AU, CSIR, Farmers AEAs, General public and the Universities	PPRSD/CABI, ADVANCE, AGRA, FAO, USAID	End of May
	Organize stakeholder fora Identify roles and responsibilities of the various responsibilities(TOR)	PPRSD -MOFA/ CABI	PPRSD-MOFA CABI	1ST -2ND WEEK OF MAY
	Identify collaborating institutions such as EPA, GSA, GES, Information services, NGO's, Funding Partners, (Ghana should consider public funding of armyworm control for maize growers. (Example: partial subsidy for biologically rational pesticides like Bt and Spinosad.)Ghana should consider public funding for armyworm insecticide spray trials.)	PPRSD-MOFA/CABI	PPRSD-MOFA CABI	1ST -2ND WEEK OF MAY

	Develop an Action Plan. Formation of operational committees to implement the action plan. Field activities (trials)	Steering Committee	Steering Committee	Periods within the next six months.
Awareness raising	Capacity building (training and equipping) for various competency levels (frontline/extension staff, data analyst, farmers, etc) on identifying the moths (with or without pheromone traps), identifying early damage (field scouting) and checking field edges (sweep net sampling).	MoFA-PPRSD, Dept of Agriculture, Regional Agric Dept, CSIR, Universities, NGOs (ADVANCE, GIZ, etc), Data Analyst	MoFA-PPRSD, ADVANCE (USAID), CABI	Q2 2017 onwards
	Talk show/jingles on radio (and TV if possible) programs in English and major local languages	Farmers, General public, AEAS, ADVANCE, Farm Radio, PPRSD, CABI, ADVANCE, DADU, RADU, NADU, CABI, PPRSD	ADVANCE (USAID) have plans to do jingles on 8 radio Stations in 11 local languages; CABI could potentially organize some radio announcement	End of May
	Announcement using information vans and during public meetings including worship programs (churches, mosque etc.), similar to plant health rallies from Plantwise	MoFA, DA, CABI, PPRSD, (PPBD, EPA, CSD and DAES), media partners NGO's, FBO's, CSO's, AU, CSIR, Farmers AEAs and Universities		Organized before October 2017
	Develop and disseminate identification, monitoring/ field scouting guide on FAW and its management(including resistance management.	MoFA-PPRSD, CABI, DAES, Dept of Agriculture, Regional Agric Dept, CSIR, Universities, NGOs (ADVANCE, GIZ, etc), Data Analyst /ADVANCE/Solidaridad West Africa, NGOs/Research	ADVANCE (USAID) have plans to do jingles on 8 radio Stations in 11 local languages; CABI could potentially organize some radio announcement	
	Short articles in selected newspapers (electronic or print)on social and economic implications of FAW in Ghana	Scidev.net; local media partners; international media outlets, international newsletters PPRSD, CABI	Scidev.net, GNA; Graphic business	All year round

	Workshops and seminars for farmer groups and AEAs, country reps and organizations in all regions:	Solidaridad W/A, CABI, ECOWAS,FAO, CYMMIT, ADVANCE, PPRSD, Farmers, FBOs and AEAs; international donors and organizations	ADVANCE (USAID) training for monitoring traps, CABI/MoFA/ECOWAS & CIMMYT have international meetings planned	June to October
	Establish a user-friendly feedback system (communication mechanisms) for extension officials in various communities. WhatsApp, Facebook groups/platforms. Media (Radio+ICT)	Steering committees, All stakeholders, Operational committee members, etc.	From all angles, specifically; Farmers, Media, Etc.	Apr-17
Surveillance	Set up reporting channel (from frontline staff to regional to national level and back)	MoFA-PPRSD, DAES, Dept of Agriculture, Regional Agric Dept, Assistant RELC Coordinators, Research, Universities	MoFA	Q2 2017
	Develop standardized reporting format for district level frontline staff (Report should capture geographical area, area/extent of infestation, target crop, estimated yield loss, etc)	MoFA-PPRSD, DAES, Dept of Agriculture, Regional Agric Dept, Assistant RELC Coordinators, Research, Universities	CABI, MoFA	Q2 2017
	Identify candidate natural enemies and initiate classical biological control programme	PPRSD/MOFA, CABI, FAO		Oct-17
	Conduct laboratory efficacy test for recommended pesticides and Provide emergency or temporal registration of recommended pesticides. Registrant should provide supporting data from sources with fall history such as the America	PPRSD-MOFA, EPA, Input Dealers		
	Regularly review recommendations for fall armyworm control and publish the changes promptly and widely	PPRSD-MOFA, EPA, Input Dealers, CABI-Plantwise CSIR-CRI		

MEDIUM TERM ACTIVITIES				
Awareness Creation	Establish a user-friendly feedback system (communication mechanisms). Toll free lines. SMS alert /voice notes for mobile phone users, IVR system	MoFA-PPRSD, CSIR, Universities	Extension officers, NGOs (Farm Radio)	2018 onwards
Surveillance	Set up a national monitoring and Early Warning System	MoFA-PPRSD, DAES, Dept of Agriculture, Regional Agric Dept, CSIR, Universities	MoFA-PPRSD, CABI, ADVANCE (USAID), CSIR, Universities	Q2 and onwards
	Establish and maintain a regional or national network of both pheromone traps and field scouting efforts.	Farmers/Public and Private Extension/Community Lead Farmers/Departments of Agric/PPRSD/	CABI/Plantwise System	PPRSD/CABI/ Plantwise (ongoing)
Control, management and research	Insecticide Research			
	Comprehensive assessment of effective and available insecticides on the Ghanaian market for the fall armyworm management in Ghana (spray trials at different ecological zones on efficacy, application timing, number of applications, crop stage, etc)	PPRSD/EPA, CABI, Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC) Input dealers, Farmer, NGOs	PPRSD/EPA, CSIR-CRI	End 2017
	Cost Control			
	Assess armyworm insecticides in terms affordability, accessibility, and availability. Agricultural economist to study of the most cost effective methods of armyworm control.	Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC)		2018
	Establish pesticide subsidies for the control of the fall armyworm	MOFA		
	Process and analyse information (link to other data sets); The data from pheromone traps and field scouting needs to be collected at a central point, analysed, and reported.	MoFA-PPRSD, CSIR, Universities	MoFA-PPRSD, CSIR, Universities, CABI	2018

LONG TERM ACTIVITIES				
Control, management and research	Insecticide Research			
	Low Tech Insecticide Strategies: Develop effective, low toxicity, low technology strategies for insecticide applications by small farmers. (Example: mixing Bt or Spinosad with corn meal and dropping it, by hand, into the whorl.)	Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC)		2018
	Armyworm Biology			
	Research-into Fall Armyworm biology, ecology and population dynamics, susceptibility to pesticides, subtle differences in life patterns that may affect insecticide strategy (for improved recommendations that may affect pesticide use	Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC)		2018
	Cultural Controls			
	Research-based recommendations on how planting date affects risk of crop damage in the various maize production regions of Ghana.	Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC)		2018
	Development of novel control strategies			
	Research into new ways of controlling the Fall Armyworm. Strategies such as the sterile insect technique, GM crops, resistant varieties etc	Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC)		2018
	Conservation Bio-Control			
	Research on the diseases and natural enemies of Fall Armyworm, especially indigenous diseases and natural enemies that may cross over from African to the Fall Armyworm	PPRSD/MoFA Parliamentary Select Committee on Agricultural/Development Partners/FAO		2018
	Evaluation/assessment of impact of the awareness and sensitization programs carried out in the country	PPBD, CABI		Year ongoing
	Insecticide Resistance Management	PPRSD/EPA/CABI/Research/Universities (CSIR-CRI, CSIR-SARI, BNARI/GAEC, UG, UDS,UCC)		End 2017
	Research-based recommendation on how to slow armyworm insecticide resistance that involved pesticide dealers, agencies, farmer groups, and others.	NGOs/FBOs/Input dealers		
Monitor resistance in Fall armyworm populations				

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