The Fall Armyworm project achievements and impacts in Rwanda
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RWANDA. “When phones become farm hands, fighting Fall Armyworm with digital innovations is possible.”
Abbreviations and acronyms

Food and Agriculture Organization of the United Nations
Ministry of Agriculture and Animal Resources
Rwanda Agriculture and Animal Resources Development Board
Fall Armyworm
Technical Cooperation Programme

FAO
MINAGRI
RAB
FAW
TCP
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This publication was prepared as part of a series of communication materials that were developed to depict the achievements and impacts of the Fall Armyworm project, as well as an overview of the challenges faced by the farmers in controlling the spread of Fall Armyworm in Rwanda.

The content in this publication generally comprises of the background, testimonials, photographs and articles from FAO, RAB, agronomists and farmers. This report is an important step in assessing the impact of Fall Armyworm on the livelihoods of maize farmers in Rwanda, how they are fighting it, the project achievements and its future prospects in Rwanda.
INTRODUCTION

Fall Armyworm (FAW) is native from Latin America; it was detected in Africa for the first time in 2016 in the western part of Africa and spread across 40 African countries including Rwanda. The pest has ravaged many countries in the sub-Saharan Africa impacting mostly smallholder farmers – affecting both their livelihoods and food security.

It feeds on more than 80 species with high preference on maize but also it has alternative host crops such as sorghum. It has a voracious appetite, and can reproduce and spread quickly given the right environmental conditions. In 2017, Rwanda woke up to the devastation by the invasion of the FAW during which year some maize farmers lost the season’s yield.

The invasive pest has been present since then because of its high ability to stay for long determined by its biology and ecology. The devastation in Rwanda was concentrated in one of Rwanda’s most productive crops – maize in all its 30 districts. The Ministry of Agriculture and Animal Resources (MINAGRI) requested Food and Agriculture Organization of the United Nations (FAO) to provide technical support and advice on the management of this newly introduced noctuid cereal pest.

In December the same year, FAO launched the project “Support to the Government of Rwanda in Sustainable Control and Management of Fall Armyworm TCP/RWA/3608” to provide capacities and equipment to farmers for better monitoring, management and early warning.

Through a close collaboration with Rwanda Agriculture and Animal Resources Development Board (RAB), FAO implemented the technical support project in six maize growing districts most affected by the invasion, they are; Nyamagabe, Nyanza and Muhanga of Southern Province and Nyagatare, Rwamagana and Kayonza of the Eastern Province as well as more other wider rural communities growing maize.

Trainings were conducted to empower farmers with the knowledge and tools for better monitoring, management and early warning of FAW invasion. Working together with the Government of Rwanda and other stakeholders, FAO is committed to the fight against the Fall Armyworm and to help local farmers in other unreached districts to build capacities in fighting the invasive FAW insect.
Support to the Government of Rwanda in Sustainable Control and Management of Fall Armyworm
Lessons learnt from some of the districts where the project was implemented

Nyamagabe, Nyanza and Rwamagana
“At an earlier stage of the invasion, we conducted intense community work in farms affected by FAW”

In Nyamagabe district, maize is a staple food.

When the Fall Armyworm invaded Rwanda, it was first reported in our district. It was an unusual pest farmers had never seen.

When farmers informed us about it, we were not sure what it was; we alerted RAB specialists who later found out it was the FAW.

The urgent thing then was to inform the farmers about the pest. We handpicked them while spraying pesticides.

Later on, a project from FAO in collaboration with RAB came and gave farmers traps and mobile phone application which have helped us to monitor and control the multiplication of the FAW.

“With the capacity we have, we’re now able to control the Fall Armyworm. It’s no longer severe like it was before”

Before the Fall Armyworm, we planted maize with a target in mind, but the invasion brought a huge loss to a point that no harvest was achieved in that season and all farmers were so worried.

The affected maize stopped growing. We tried the pesticides we normally use but it was all in vain. So we informed the local authorities, they visited us and told us that it was the Fall Armyworm.

Through FAO we received trainings; we were given traps to control the multiplication of the pest. When you succeed fighting the Fall Armyworm when the maize is still young, then you’re sure of the harvest because the pest doesn’t eat mature maize.

At this point now, we can grow maize and harvest, and take our children to school, I believe the spread of the Fall Armyworm was controlled, thanks to the trainings and knowledge given to farmers on early warning, detection and management.
“Without the support from FAO, we wouldn’t have been able to restore our maize production this quickly”

Cyril Nzagumandore
Farmer in Nyamagabe District

Before, from this 10 hectare marshland, we used to harvest 5 to 6 tons, but in 2017 the produce reduced to 3.5 tons.
We did our best to fight the FAW but there was nothing to show of our efforts. When the FAO project came, it made us understand the FAW, and trained farmers in the new technologies to fight it. The FAW mobile phone application I received enables me to collect and share information on the status of my field.

When the information is shared, depending of the interpretation of that information, sometimes the agronomist comes and inspects the field. Maize is very important to us because it supports most Rwandan families and that’s why the invasion on our maize affected our livelihoods.

Thanks to the collective efforts to fight against the Fall Armyworm, we continued to plant maize and in 2018 maize production revamped and the farmers were happy. Today, from our 10 hectares, we harvest 7 tons.
We eat maize roasted and boiled, when we take it to the market, we sell it and pay school fees, pay health insurance and buy shares in the cooperative.
“We now have a target to reach 4 tons or even 4.3 tons of maize”

When the Fall Armyworm was reported, we organized special community activities with all partners including police, army, and local people. Together, we handpicked it for several days. This encouraged the farmers in other areas to go in their farms and handpick the caterpillars.

FAO came in at the beginning of 2017; at first we were pessimistic about their innovations of the traps and the mobile phone application because we couldn’t see how they would address FAW issue we had. They trained us how to detect Fall Armyworm and how to use the new technology to trap the adult moths that produce the Fall Armyworm. When you see the moth, it is an indicator that the Fall Armyworm is present in the field.

Another good practice to fight FAW is to sensitize farmers in the neighbouring farms also to control the pest because if they don’t it will spread to my farm. Every farmer must take the responsibility to fight it.

There are good results reported thus far; back in 2017, our maize yield declined to 2.5 tons because of the Fall Armyworm and increased to 3.8 tons in 2018.

With this support, we shall sustain the progress made with the FAO project and other partners to eradicate Fall Armyworm.

“The training exposed us with the characteristics of the Fall Armyworm”

I am the president of the “Abahuje Intego Busogwe” cooperative. It works in three sectors; Busasamana, Kigoma and Mukingo. We cultivate maize on 120 hectares.

The invasion of the Fall Armyworm had an impact on our produce. We depend on maize flour for food, porridge for our children and generating income. We failed to pay school fees for our children, I failed to pay my local insurance and members of the cooperative did not get dividends.

When FAO came in, they gave us four traps and free mobile phones fully installed with an application.

We started fighting it and our produce gradually increased. Now all is well.
There was a huge difference before and after the Fall Armyworm invasion in Rwamagana district. Before the pest we harvested around 4.2 tons of maize but after the invasion, the yield reduced to 3.8 tons.

One year later our maize production has been revived. We now produce 4.5 tons. It was those trainings we received that helped us to control the Fall Armyworm and thus increase the maize harvest, if possible we would wish all farmers to buy those traps themselves instead of waiting for partners to donate to them because these traps really helped us a lot in the fight against the Fall Armyworm.

The traps and the application in the mobile phones were easy to use. Any farmer can use them.

We cannot say that the Fall Armyworm is no longer a problem in our district, but given the methods we learnt of fighting it, we are not worried of it affecting our produce unless we become reluctant.

Usually pesticides are used when all the other methods have failed. We also used army ants to eat the Fall Armyworm.

I was trained by FAO on how to fight the Fall Armyworm; we were given traps that trap the Fall Armyworm adult moth. The application installed in the mobile phones that were given to the farmers also help farmers to collect data and report on the situation of the field as regards to the Fall Armyworm.

In the mobile phone application you enter information such as, when it last rained, when you last changed the lure in the trap, what kind of insects were found in the trap and other data. After gathering all this information, you send the report to the servers.

Immediately you receive feedback guiding you on the next step depending on the information obtained from the field. Sometimes we are challenged by lack of internet while using the application.
To what extent did the project achieve its projected objectives?

Food and Agriculture Organization of the United Nations (FAO) implemented the project in collaboration with Ministry of Agriculture and Animal Resources (MINAGRI) through Rwanda Agriculture and Animal Resources Development Board (RAB). When it began it had to address the issue of the knowledge gap in the farming communities as regards to FAW monitoring, pest biology, ecology and management.

Since the pest was new in Rwanda, we had to strengthen the capacities of community farmers, district and sector agronomists, extension agents, farmer field school facilitators and RAB scientist researchers in FAW identification, monitoring and management.

- Close to 2,000 pheromone traps and lures were given to maize farmers in the six districts where the project operated.

- The project introduced new technologies in the fight against FAW such as the pheromone traps and lures, and the FAW monitoring and early warning system (FAMEWS) mobile application. These innovations promote high productivity and effectiveness in agriculture.

It was the first time for most of the rural farmers to use android phones, so it was an opportunity to usher them into a new dimension of employing technology in the sector.

- About 2,950 farmers, technical personnel, experts and community representatives, farmer facilitators and promoters, were trained in routine monitoring and management of FAW, early warning, integrated pest management and pesticide use reduction. They are now able to detect and manage FAW incidences.

- More than 110 smart phones fully installed with FAW monitoring and early warning system (FAMEWS) mobile application were distributed to farmers and sector agronomists, and trained them how to use the app while collecting and sharing information.

- The existing national taskforce to coordinate Fall Armyworm interventions was supported and strengthened, involving also other stakeholders from the private sector, civil society, farmers’ federations and development partners. The Taskforce had been established but not functioning, today members meet once in three months.

What was the biggest challenge while carrying out the project?

- New technologies need learning. Of course, this was going to be a challenge for the rural farmers to use, but through trainings and peer learning they were able to manipulate the FAMEWS software. Some of them it was their first time to use a smart phone. The application is now in the local dialect – Kinyarwanda – understood by all the farmers in the country.

- Limited funds to support more farmers with FAW monitoring tools is an obvious impediment. The project couldn’t reach all the farmers even in those six districts. We only worked with few farmers selected to receive monitoring tools.

What role did partnerships play both at national and local levels in the implementation of the Technical Cooperation Programme (TCP)?

At National level, the FAW national taskforce played a key role in coordination of the project activities.

At the local level, the project was implemented in collaboration with district, sector and local leaders. The capacities of these institutions were developed to ensure ownership and sustainability of interventions.

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"The FAMEWS mobile app is easy for farmers to use. It is used every time a field is scouted and pheromone traps are checked for FAW"
Any suggestions on how the project activities can be sustained?

Going forward, there is a need for continuous support to the community farmers in collecting and sharing information using FAMEWS app, and transferring information to other farmers and stakeholders that didn’t directly benefit from the project.

Lack of research on sustainable management of FAW in the country is a challenge. FAW is a new pest in the country and there is no available research work conducted on its management. Management options advised are mainly handpicking and spraying.

"Continuous advocacy to research institutions is necessary to establish effective management options which are economically and environmentally sustainable"

"To manage FAW effectively, it is important to strengthen farmer's capacity in FAW monitoring, early warning and best management practices. FAW is still present in Rwanda, continuous monitoring and early actions are important to manage FAW effectively"

Jean Claude Rwaburindi
National Project Manager/FAO
Let’s continue putting our efforts together to manage this pest and protect our yields because the pest is still present in the country.”

“The feedback from farmers about the project was good”

Jeanne Priscille Ingabire
Crop Protection Specialist at RAB

How did RAB first learn about FAW and what were its earliest interventions in fighting the pest?

The FAW was first reported in Rwanda in March 2017 in Mushishito marshland found in Nyamagabe district in the Southern Province. Since that time, control measures to manage this pest were applied across the country where maize was cultivated, such as handpicking and disposing of eggs and caterpillars.

What have been RAB’s partnership activities in implementing the project with FAO?

During the implementation of the project, RAB contributed to trainings on FAW identification, damage symptoms and its management, use of pheromone traps in monitoring FAW, how to collect data from the traps and reporting system using FAMEWS app.

and also in development of extension materials on FAW management.

In the districts where the project has been implemented, to what extent has the maize yield improved?

Farmers in those districts gained a lot from the capacity development they received and have used it in managing the pest, and this has led to improved maize yield.

How is RAB supporting farmers in districts where the project did not operate?

RAB continues to support in management activities such as, community works for FAW management, distribution of extension materials, training, pesticides supply to farmers in affected areas, radio programs and radio spots to raise awareness in all the districts.

“One trap can work on two hectares of maize field. They are safe, environmentally friendly, easy to use and inexpensive, a valuable tool for monitoring Fall Armyworm populations”

How did the local farmers respond to the project? ...the trainings and pheromone traps?

The feedback from farmers about the project was good. They were using FAMEWS mobile application and pheromone traps for FAW monitoring and early warning system which helped them in early detection of the presence of the pest in their fields. The results were in form of reduction in the cost related to the management of the pest thanks to early interventions.

Let’s continue putting our efforts together to manage this pest and protect our yields because the pest is still present in the country.”
Lessons from districts not supported by the FAO Project

Bugesera and Nyabihu
In Bugesera district right now we still have the Fall Armyworm. It was first identified in 2017.

We practice rotational farming, if we planted maize in this season, in the next we plant beans.

In that way, we reduce the Fall Armyworm. We grow a lot of maize in every season, in one season we grow maize on 17,000 hectares.

Maize occupies the largest farming area in our district followed by beans cultivation. At first many farmers lost the motivation to plant maize due to the much effort that was needed to fight the pest.

With more support, our maize produce could increase as farmers would be in position to control the pest early.

The Fall Armyworm invaded our crops in 2016. Since then, we are fighting it through good crop management practices; we also hand pick the Fall Armyworm, gather them together and burn them.

We are 46 members of cooperative cultivating maize on 7 hectares. The crop helped improve income and welfare of the members.

We afford paying school fees, and health insurance. We also get food to feed our families.

Thanks to maize farming, the cooperative built a commercial house worth 5 million Rwandan francs in Bugesera town center.

Jean Damascene Sinjyenibo
Director of Agriculture, Bugesera District

Germain Ntamugabumwe
Farmer in Bugesera District
Aloys Maguru
Agronomist in Shyira sector, Nyabihu District

Farmers knew the Maize Stalk Borer. They would find it in the harvested maize. So, from the time they declared it was the Fall Army worm, in 2016, we started controlling it at early stage by handpicking.

When we trained the farmers on how to identify Fall Army worm, we sensitized them to always wake up early in the morning because this is when the pest comes to eat maize and also, to do the same in the evening.

Farmers have now known how to identify it in their farms; we would like to request the district to advocate on our behalf for these traps to reach us too. We hear that they were distributed by FAO.

“We sensitized them to always wake up early in the morning because this is when the Fall Armyworm comes to eat maize.”
In our cooperative we are 52 members with 16 women and the rest are men.

We grow maize on 5 hectares. Almost all the members are agro-promoters; we teach and sensitize other farmers on good farming practices.

When the FAW invaded our maize, the maize stalks started falling down. We were told by the sector leaders that it was the FAW. Security organs and youths in our cooperative started handpicking the pest from the farms.

The FAO project never reached our sector. We have never heard about the traps, we are yet to know how they are used. We would appreciate if we received them to complement our efforts in fighting against the FAW.

“\textit{The damage was severe that we thought we had lost the whole harvest}”

Laurent Habimana
Farmer in Nyabihu District
Food and Agriculture Organization of the United Nations (FAO)
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