Plantwise in Burundi

Annual Report 2022

KNOWLEDGE FOR LIFE

Plantwise is a global programme, led by CABI, that aims to increase food security and improve rural livelihoods by reducing crop losses. Working in close partnership with relevant actors, Plantwise strengthens national plant health systems from within, enabling countries to provide farmers with the knowledge they need to lose less and feed more.

Contents

Acronyms

BBN	Bureau Burundais de Normalisation et Contrôle de la Qualité
BECEPTFP	Bureau d'Etudes et des Curricula de l'Enseignement Post Fondamental Technique et de la Formation Professionnelle
BXW	Banana Xanthomonas Wilt
CC	Community Conversation
CEF	Formation Professionnelle
CEM	Centres d'Enseignement de Métiers
DCA	Data Collection App
DPV	Directorate of Plant Protection
FFC	Family Farming Council
GALS	Gender Action Learning System
IPM	Integrated Pest Management
ISABU	Institut des Sciences Agronomiques du Burundi
ITAB	Institut Technique Agricole du Burundi
KAP	Knowledge, Attitude and Practice
MEC	Mass Extension Campaign
NGO	Non-Governmental Organization
NPPO	National Plant Protection Organization
NRO	National Responsible Organization
PHR	Plant Health Rally
PIP	Peasant Integration Plan
PMDG	Pest Management Decision Guide
POMS	Plantwise Online Management System
PRA	Pest Risk Assessment
Pro-WEAI	Project Level Women's Empowerment in Agriculture Index
ToT	Training of Trainers

Executive summary

Project description

Plantwise is a global programme led by CABI, which helps farmers lose less of what they grow to plant health problems. Working closely with national agricultural advisory services and other partners, the programme establishes plant clinic networks, run by trained plant doctors, where farmers can find practical plant health advice. The plant clinic networks are reinforced by the Plantwise Knowledge Bank, a gateway to practical online and offline plant health information, including diagnostic resources, best-practice pest management advice, and plant clinic data analysis for targeted crop protection. Together, these resources contribute to strengthening national plant health systems by catalyzing stakeholder linkages and information exchange. The stronger the national plant health system, the better equipped the country will be to help farmers provide a safe and sustainable food supply and improve their livelihoods. Since its inception in 2011, Plantwise has been introduced into 35 countries, working in partnership with over 200 partners, including governments, NGOs, civil societies, and farmers' associations. Since late 2020, Burundi has joined the list of countries where Plantwise interventions have been introduced. In Burundi, Institut des Sciences Agronomiques du Burundi (ISABU) is the National Responsible Organization (NRO) for Plantwise with funding for the project provided by Nuffic (July 2020-March 2022), and the Embassy of the Kingdom of the Netherlands based in Bujumbura, Burundi (November 2020-October 2023).

Project highlights

This report describes and highlights results that contributed towards achieving the objectives of the Plantwise project in Burundi during the calendar year 2022. The project, working closely with ISABU and other key implementing partners, made great strides in introducing Plantwise to support smallholder farmers in Burundi.

Progress against impact indicators has not been measured yet (due in 2023), but all three outcome indicators are on (or over) target, six out of seven output indicators are on (or over) target, and 11 out of 13 results indicators are on (or over) target (see Annex 1).

Key project highlights for 2022 include:

- 34 new plant clinics established; for a cumulative total of 50 clinics
- At least 244,078 farmers reached in 2022 (244,653 cumulative) directly (face-to-face) through partner-led plant clinics, plant health rallies (PHRs), community conversation (CC), and indirectly through mass extension campaigns (MECs)
- 215 persons (138 of whom will operate plant clinics; for a cumulative total of 238 plant doctors) completed the plant doctor training
- 1,545 plant clinic queries reported in 2022 (1,776 cumulative) in the Plantwise Online Management System (POMS)
- 2,414 sessions on the Plantwise Factsheet app made in 2022
- 671 visits to the online Plantwise Knowledge Bank made in 2022 (1,130 cumulative)
- Eight Pest Management Decision Guides (PMDGs) and four Factsheets for Farmers produced by local partners in 2022 (31 cumulative, of which 16 published in the Plantwise Knowledge Bank)
- Positive outcomes from result monitoring, namely the majority of farmers (89%) satisfied with the advice from plant doctors, with most of them (63%) fully implementing the advice
- 20 persons (five female) trained as trainers on gender-sensitive agriculture extension service provision
- 405 persons (48% female) participated in CC meetings
- The country's laboratory infrastructure for diagnostic support assessed with technical gaps in terms of facilities and human resources identified
- Deliberate steps taken towards the institutionalization of plant doctor training, namely exposure of personnel from prospective institutions to Plantwise modules, and signing of a partnership and training material license agreements with two institutions.

Project challenges and measures taken

In 2022, the Plantwise project in Burundi experienced challenges in the execution of some tasks, which in certain instances, resulted in delays. These challenges include:

i. Transmission of plant clinic data. Despite an increase in the transmission of plant clinic data (170% increase from 2021), some plant doctors still hold data on their tablet computers mainly due to challenges with internet connectivity, or because they need data collection app support. Further, some plant doctors still use paper prescription forms, and a number of these forms have not yet been digitized. In 2023, there will be further investments geared toward backstopping plant doctors.

ii. In as much as farmers indicated a willingness to adopt the best practices prescribed by Plantwise interventions, some of those recommendations are deemed expensive by farmers, for example, the use of protective equipment. Coupled with this, the availability of the equipment and access to agro-dealers remains an issue. Issues relating to these cannot be resolved within the scope of this project but should be noted for follow-up or complementary activities in the country.

iii. There is emerging evidence that the skills and diagnoses of those trained in plant doctor modules are improving. However, challenges persist when it comes to the quality of diagnosis and advice given to farmers. This is normal given the short time plant doctors are practising what they have learned. In other Plantwise countries, these skills improve over time, thus continued investment will be made to support plant doctors through regular self-assessments and in-service training.

iv. Lengthy public procurement process. Whilst it was the intention of the project to launch 69 new plant clinics in the fourth quarter of 2022, this was not possible due to delays in the finalisation of the public procurement process for the requisite plant clinic material.

v. Due to administrative challenges at the partner level, the implementation of the community conversation (a gender-related activity) was delayed. To mitigate this challenge in 2023, a consultant will be onboarded to fasttrack the activity.

Lessons learned

Arising from the implementation of the project, the following are some of the key lessons learned in 2022, including those derived from the challenges identified:

- Strengthening linkages between various extension and advisory approaches is important when it comes to optimizing farmer reach and fostering synergies.
- Sustained effort is still needed to keep plant clinic data flowing, with different processes supported according to national capabilities and needs.
- There is an urgent need for the country to invest in, at least, the basic level of technology required for the identification of quarantine pests and chemical contaminants (e.g. pesticides, heavy metals, mycotoxins, antibiotics, etc.). There is also a need to support surveillance and pest risk analysis, particularly for controlling the spread of transboundary pests.
- Regular plant doctor self-assessments should be encouraged to allow plant doctors an opportunity to interact with the data and provide a platform for peer-to-peer learning.
- There is a need for further awareness among plant doctors on hazardous pesticides leading to a reduced frequency of recommendations of banned or restricted pesticides.
- To minimize delays in the future, occasioned by procurement challenges, the project will be deliberate in developing procurement plans and schedules. This will help in estimating procurement lead times for various goods.

Next steps

- The project will prioritize scaling up and sustainability of plant clinics and complementary activities (PHRs and MECs) in 2023.
- The project will engage in-country partners through a 'self-assessment' utilizing the country scoring tool (roadmap) to essentially assess the status of project implementation, anchored on milestones reached.
- Enhancing linkages between national plant health system stakeholders will be given increased attention through connecting plant doctors to information and support services they need to deliver effective support to farmers.
- To support the country, primarily the Directorate of Plant Protection (DPV), build capacity for diagnostic support. The project will conduct a pest horizon scanning workshop to support the planning and management of quarantine pests at the country level, as well as to inform policy and practice. Horizon scanning will also be utilized to support updating of the country's pest list (pest species present in the country), last updated in the 1990s. Though strictly speaking this activity would go beyond the scope of the project, we will be using tools already developed by CABI's flagship programme, PlantwisePlus, and hence the project will be able to help strengthen the national plant health system in this regard.
- As a step towards institutionalisation of plant doctor training within the Institut Technique Agricole du Burundi (ITAB), pedagogy staff from Bureau d'Etudes et des Curricula de l'Enseignement Post Fondamental Technique et de la Formation Professionnelle (BECEPTFP) will be introduced to plant doctor modules, followed by a technical workshop for integrating elements of plant doctor modules into the curricula of ITAB.
- The project will prioritize quality control of the data collected, as well as demonstrate the value of the data to stakeholders.
- Considerable effort will be geared towards the continuation of embedding systematic and basic monitoring and evaluation processes and protocols in project activities.

Project outputs and implementation progress

Output 1: Plant clinic networks established and complemented by other extension methods to enhance access to information on sustainable management of crop health

Overall project target: 100 plant clinics established and 600,000 farmers (cumulative, as measured interactions through plant clinics, PHRs, and MECs) receive plant health information

Progress in 2022

In 2022, activities were planned to establish new plant clinics and reach more farmers through various outreach activities, including plant clinics, PHRs, and MECs. A total of 34 new plant clinics were established in 2022, bringing the cumulative total to 50 since the inception of the project.

It is estimated that at least 244,078 farmers were reached in 2022 through a concerted effort involving direct reach – plant clinics, PHRs, CCs, and, indirectly, through MECs (Table 1).

On account of data recorded in POMS, plant clinics handled 1,545 queries. This represents a 170% increase from 2021, with this increase partly attributed to the 34 new plant clinics established in 2022. However, the plant clinic data recorded in POMS is known to be a gross underestimation of the actual number of farmers reached through plant clinics. This is because backstopping visits and cluster meetings have shown that plant doctors hold data on tablet computers, due mainly to challenges with internet connectivity or the need for data collection app support. Further, some plant doctors use paper prescription forms and a number of these forms have not yet been digitized. Of the queries recorded in POMS, approximately 37% were from women farmers (compared to the previous year, this represents a 4% increase in the proportion of women raising queries at plant clinics).

A total of 93 PHRs were carried out in 2022 with an estimated 7,309 farmers (41% female) receiving plant health advice through them. Cumulatively, there have now been 104 PHRs held between 2021–2022, delivering targeted messages on six (6) plant health problems and on five (5) different crops.

MECs were jointly conducted with AUXFIN as a way of reaching a larger number of farmers with information on common issues relating to plant health in Burundi, as prioritized by the country. The MECs targeting Banana Xanthomonas Wilt (BXW) and safe chemical use involved the production of educational videos for farmers and

disseminating them through AUXFIN's AgriCoach platform to the G50 groups. A report from the AgriCoach platform shows 8,697 leaders of the G50 groups (same as lead farmers responsible for training other farmers) had installed and aired the videos on their tablet computers. The G50 groups have weekly training meetings where 25-30 farmers (members) participate. Based on this, we estimate that by the end of November 2022, the outreach activity reached 234,819 farmers (42% female).

Feedback from farmers on MEC content is generally positive. They indicated that the information in both videos (BXW and safe chemical use) was clear and understandable. Additionally, the farmers indicated a willingness to adopt the best practices taught in the videos. However, some of the recommendations are deemed expensive by farmers, for example, the use of protective equipment. Coupled with this, the availability of the equipment and access to agro-dealers remains an issue that cannot be resolved within the scope of this project but should be noted for follow-up or complementary activities in the country.

Research commissioned by PlantwisePlus in 2022 provided detailed evidence of the extent of sharing of agricultural information/solutions from one farmer to another. The survey asked individual farmers how many other farmers they tend to pass extension information on after receiving it from the original source. The research showed variability in the amount of information shared in different countries and how many people the information was shared with, depending on the information source (e.g. face-to-face, SMS, radio). Detailed analysis is still ongoing but, based on these data, we continue to estimate farmer-to-farmer sharing at four additional farmers receiving extension information for each one who has received the original message. It should be noted that this is a conservative figure, with strong indications from the new dataset that farmer-to-farmer sharing is higher. It is expected that a more precise, evidence-based estimate for farmer sharing will be used in future reporting.

For now, we are confident that the project has in 2022 delivered Plantwise information to more farmers than originally targeted for the entire project. This is the result of training more plant doctors than originally planned.

Table 1: Plantwise farmer reach in 2022 segregated by the extension method

Extension method	Farmers reached
Plant clinics (under-estimation as based on POMS entries only)	1,545
Community conversation	405
Plant health rallies	7,309
Mass extension campaigns (in collaboration with AUXFIN)	234,819
Total	**244,078**

To shift social norms that restrict women's access to agriculture extension activities, such as visiting plant clinics, participating in plant health meetings, and making decisions on crop production and household income, the project has introduced a 'Community Conversation' activity. Community Conversation (CC) is a community dialogue process that brings together people in a community to regularly meet and discuss development challenges and find solutions. The discussion is led by trained facilitators who work alongside plant doctors and use a guiding discussion manual. In 2021, a CC manual was developed and 20 (10 men and 10 women) facilitators selected from the 10 communes were trained on the manual and facilitation skills.

Lessons learned

Strengthening linkages between various extension and advisory approaches is important when it comes to optimizing farmer reach and fostering synergies.

The continuing progress in implementation was mixed with occasional setbacks. The launch of plant clinics is preceded by the procurement of plant clinic equipment and material. Whilst it was the intention of the project to launch 69 additional plant clinics in the fourth quarter of 2022, this was not possible due to delays in the finalization of the public procurement process for the requisite material by ISABU. To minimize delays in the future, the project will be deliberate in developing procurement plans and schedules. This will help in estimating procurement lead times for various goods.

Next steps

Following the pilot and consolidation phases (2021-2022), the project will prioritize scaling up and, where feasible, sustainability of plant clinics and complementary activities (PHRs and MECs) in 2023.

The project will engage in-country partners through a 'self-assessment' utilizing the country scoring tool (roadmap) to essentially assess the status of project implementation, anchored on milestones reached. This analysis will enable the project to plan more targeted interventions to enhance the readiness of the national system to consolidate and scale-up project activities.

Output 2: Plant doctors deliver advice at plant clinics

Overall project target: 200 plant doctors offering advice to farmers at plant clinics

Progress in 2022

In 2022, a total of 68 plant doctors (trained in December 2021) were enabled to offer advice to farmers at plant clinics, bringing the cumulative total number of plant doctors to 100 since the inception of the project.

Additionally, through its varied partnerships, the project in 2022 provided capacity building for roughly 450 staff members (12% female) of partner organizations. There were 15 Plantwise training events in the year, covering topics including plant doctor training and plant clinic operations, electronic capture of plant clinic data, and data validation. The main contributor to this is plant doctor training, with 215 personnel (11% female) – 138 of whom will operate plant clinics from 2023 – trained in the Plantwise modules on field diagnostics and giving good advice. Only one (1) out of eight (8) plant doctor trainings in 2022 was led by CABI, with the remainder led by local master trainers and with CABI staff present in a few instances to monitor and backstop. Moreover, another of the eight (8) plant doctor trainings, involving 20 staff members of the African Institute for Economic and Social Development (INADES), was financed exclusively by INADES. There were two additional Trainer of Trainers (ToTs) in 2022 to enhance the local capacity to train plant doctors, with 40 local trainers (18% female) in attendance.

The technical performance of plant doctors, regarding diagnosis and advice, is the subject of continued attention for CABI and its partners. The increased transmission of plant clinic data has enabled data validation, (i.e. reviewing the quality of diagnoses and recommendations given to farmers). In 2022, the project conducted comprehensive training to introduce the data validation process and tools to partners in Burundi. The outcome of the data validation exercise indicated, for instance, that there is a need for further awareness of hazardous pesticides leading to a reduced frequency of recommendations of banned or restricted pesticides.

Linking plant doctors to diagnostic support

At a national level, the country's diagnostic support system has remained largely at a nascent stage. Poor laboratory capacity and lack of coordination among institutions have increased the country's vulnerability to transboundary pests and diseases and weakened the potential for agricultural food trade. To help strengthen the capacity of the DPV, the National Plant Protection Organization (NPPO), and a critical stakeholder in the implementation and sustainability of Plantwise interventions in the country, the project commissioned an assessment of the country's laboratory infrastructure. The assessment carried out in 2022 identified technical gaps in terms of facilities and human resources impeding the successful delivery of institutional mandates. In addition to DPV, ISABU, the Burundais de Normalisation et Contrôle de la Qualité (BBN), and the University of Burundi were also assessed.

Results from the assessment show the country has limited capacity for diagnosis and protection from pests beyond moderately easy-to-identify insects and a few diseases by the morphology of causal agents or by symptoms. In addition, the in-country laboratories lack the prescribed standard equipment or processes for the identification of quarantine pests and analysis of the entire series of chemical contaminants that pose definite risks to consumers. Recommendations have been provided to mitigate that situation, but the implementation of these recommendations will take time and resources.

Institutionalization of plant doctor training

Crucial to the continued training of new personnel is the integration of the training modules into the training curricula of higher education institutes. As a step towards this, and realizing that the process of formal integration into the curriculum can be long, a situational analysis was carried out to realistically evaluate the prospects, including engaging stakeholders on the same. Arising from the analysis, three types of institutions were identified as being ideal for integrating the plant doctor modules into their curricula. The three institutions are: technical professional agricultural schools – ITAB, public and private universities, and vocational training schools, Centres d'enseignement de métiers (CEM) et de formation professionnelle (CEF). The integration of the material would entail either the incorporation of Plantwise content into existing plant protection materials or the inclusion of Plantwise content as standalone units (modules) in plant protection education curricula.

At the close of the year, the Université Lumière as well as BECEPTFP, responsible for all ITABs, had signed a partnership and training material licence agreements with CABI. The University of Ngozi had started incorporating some Plantwise training materials into their new plant protection curricula while the Université Espoir d'Afrique had also expressed an interest.

Lessons learned

There is emerging evidence that the skills and diagnoses of those trained in plant doctor modules are improving. However, challenges persist when it comes to the quality of diagnosis and advice given. This is normal given the short time plant doctors are practising what they have learned. In other Plantwise countries, these skills improve over time, thus continued investment into supporting plant doctors is still needed.

Arising from the assessment of laboratory facilities, there is an urgent need for the country to invest and build capacity for diagnostic support. To improve diagnostic capacity, the country should invest in, at least, the basic level of technology required for the identification of quarantine pests and chemical contaminants (e.g. pesticides, heavy metals, mycotoxins, antibiotics, etc.). There is also a need to support surveillance and pest risk analysis, particularly for controlling the spread of transboundary pests.

Next steps

Enhancing linkages between national plant health system stakeholders will be given increased attention through connecting plant doctors to the information and support services they need to deliver effective support to farmers. The PMDGs have been favoured by partners as a useful tool for empowering plant doctors. These decision guides, which include local knowledge, facilitate the inclusion of integrated pest management (IPM) principles in the recommendation given to farmers besides providing a linkage with agro-input suppliers. In addition, more emphasis is needed on linking plant doctors to diagnostic support in the country. This will be enabled through the development of a country-specific directory of diagnostic services and through the identification and, where possible, strengthening of mechanisms for plant doctors to obtain prompt support when it is required.

At the national level, to support the country (primarily DPV) build capacity for diagnostic support, and following the recommendation of the assessment carried out in 2022, the project will conduct horizon scanning of invasive alien species (quarantine pests). Horizon scanning of quarantine pests is an approach that has been used to generate information on the possible introduction of quarantine pests to support the planning and management at the country and regional level, as well as to inform policy and practice. Horizon scanning, as seen elsewhere (in Ghana, Kenya, and Zambia, where CABI conducted the same), is instrumental in prioritizing pests for surveillance (something that will effectively support Plantwise), pest-initiated pest risk analysis (PRA), and pathway-initiated PRA. In Burundi, horizon scanning will also be utilized to support updating of the country's pest

list, last updated in the 1990s. Although horizon scanning is primarily an activity of the DPV, it is essential that the training includes staff from ISABU and the University of Burundi and other qualified stakeholders to support the activity. Besides building a wider pool of skills in the areas, the inclusion of these institutions will address the staffing gap in DPV.

As a step towards the institutionalization of plant doctor training within the ITABs, pedagogy staff from BECEPTFP will be introduced to plant doctor modules followed by a technical workshop for integrating elements of plant doctor modules into the curricula of ITAB (content selection and organization). Lastly, deliberate steps will be made toward the execution of the revised curriculum at ITAB (transition from written to taught).

Output 3: Plantwise information resources used by plant doctors and other plant health stakeholders

Overall project target: 350 stakeholders using Plantwise Knowledge Bank (data and other information resources) and 30 extension materials developed/adapted by local experts and stored in the Knowledge Bank for use in Burundi

Progress in 2022

In 2022, the number of Plantwise Knowledge Bank users in Burundi continued to increase. The open access online resource has received 1,130 visits in Burundi since the launch of the project. There were 671 visits in 2022, an increase of 47% over 2021. Views of the factsheet app in 2022 were 2,414. Analysis shows that information on key pests, like tomato leafminer (*Phthorimaea absoluta*), is mostly accessed on both offline and online sources. In the face of increased usage, there is an ongoing effort to broaden content. Over 40 Plantwise-produced PMDGs are now available through the online Plantwise Knowledge Bank.

Lessons learned

Advancing the use of the Plantwise Knowledge Bank content leads to the enhanced expectation for extension materials. Now that plant doctors and others can access Plantwise Knowledge Bank content more easily, through a mobile application, there is an expectation that a majority of the main pests in the country will have a relevant resource document. The country will thus need to be incentivized to regularly produce these resource materials.

Next steps

In 2023, the project aims to populate the Knowledge Bank further with more PMDGs that have already been developed but awaiting validation and publication. Additionally, the use of the Knowledge Bank content by different users will be promoted, assessed, and augmented.

Output 4: Data-driven ICT-based processes adopted in systems for plant health management at the smallholder farmer level

Overall project target: 250 male and female plant doctors and other stakeholders using the Plantwise ICT toolkit (Data Collection App (DCA), Factsheet App, etc) and 10,000 plant clinic records stored in the Burundi site of POMS.

Progress in 2022

Cumulatively, 100 plant doctors have been trained in the use of tablet computers for the electronic capture of plant clinic data and access to the Knowledge Bank. In 2022, 1,545 plant clinic records were submitted through

tablet computers. The sustained increase in the number of plant clinics invariably leads to an increase in the number of plant clinic records submitted to POMS, and this frame of data could potentially have various uses, including monitoring trends of pests in farmers' fields and assessing plant doctor performance.

Notwithstanding the transmission of data through these digital processes, some remaining challenges were reported by some plant doctors in the field. For some of the plant doctors, using tablet computers is a new skill and some are struggling, as seen in the fewer records that they have submitted.

Lessons learned

Sustained effort is needed to keep plant clinic data flowing within the country, with different processes supported according to national capabilities and needs. Each in-country stakeholder must be motivated by demonstrating to them the importance of the analysis of plant clinic data thus ensuring they continue to engage in the data processing. Plantwise personnel may need to be closely involved to provide technical support, working with the in-country infrastructure available, and enhancing it where possible. To make data processing easier, several suggestions have been made as to how to improve the prescription form, with a majority expressing a desire to shorten it. Nevertheless, it is imperative to the key stakeholders that data that is important for analysis is not lost. A new prescription form format can be explored that will allow for the collection of essential information that must be captured.

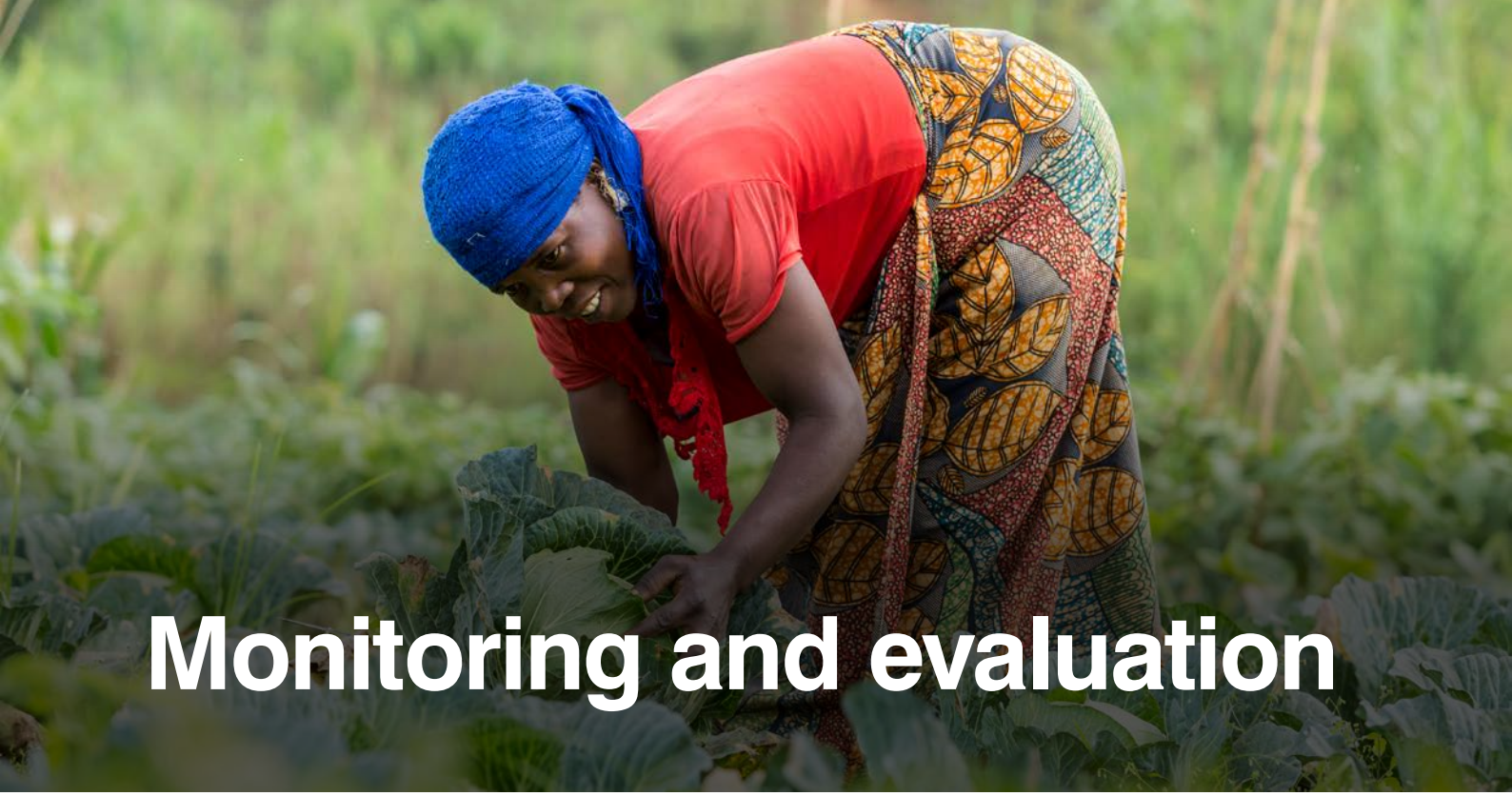
Plant doctors need regular backstopping/follow-up to provide them with the support they need to submit data to POMS. Backstopping visits have resulted in a significant number of data records being submitted to POMS, showing that many plant doctors hold the data on their tablets.

In some instances, the use of paper prescription forms to capture data at the plant clinics is still ongoing, due to the challenges involved with Plantwise DCA use. It will be necessary to find out ways of having this data digitized as soon as possible, and submitted to POMS.

It is worthwhile to encourage regular plant doctor self-assessments as an alternative or complementary activity to data validation workshops. This will allow plant doctors an opportunity to interact with the data and provide a platform for peer-to-peer learning. Such self-assessments are also relatively cheaper, less complex, and easier to organize than data validation workshops.

Next steps

During 2023, the focus will be more on quality control of data collected, as well as demonstrating the value of the data to stakeholders e.g. through holding a data-sharing event. Quality control activities will take the format of data validation and/or plant doctor self-assessments during cluster meetings. Cluster meetings will also provide a forum to provide backstopping support to plant doctors, for instance on DCA use. Owing to a large number of paper forms yet to be digitized (approx. 1,500), future cluster meetings may need to incorporate additional time for these forms to be keyed in and submitted to POMS.



Monitoring and evaluation

Systematic monitoring and evaluation procedures have been consolidated to ensure effective monitoring of project performance in the country. Building capacity for monitoring plant clinic performance continued with an additional 21 national partners (41 cumulative) trained. To widen the stakeholder base and align responsibilities and roles with the national mandates of the implementing country, a stakeholder analysis was carried out.

Progress in 2022

Special study

As part of the results monitoring, a special study was conducted targeting evidence collection against top-level logframe indicators. The study assessed the early results emerging from over 15 months of project implementation and how capacity-building efforts to agriculture extension officers and the establishment of plant clinics are affecting the skills, knowledge, behaviours, and attitudes of the smallholder farmers towards the services of plant clinics. These included tracking the adoption of behaviours and recommendations that are being promoted by Plantwise Burundi in the targeted plant clinic sites. The list of plant clinic clients captured in the plant clinics registers was taken as the study population from which 414 farmers were randomly selected into the survey sample.

Results from the study show a vast majority of farmers (plant clinic clients), 89% (91% female and 89% male) were satisfied with the advice and recommendation they received from plant doctors. Furthermore, with regards to the implementation of advice obtained from plant doctors, the majority (63%) of the plant clinic clients reported having fully implemented the advice on their key crops in the previous 12 months, while 35% indicated they had partially implemented it. This demonstrates the trust and confidence plant clinic clients have in plant doctors.

Finally, according to the study, almost half (49% female and 49% male) of farmers who applied the advice and recommendations indicated that the recommendations fully worked and 48% (47% female and 48% male) of farmers indicated that the recommendations partially worked.

Cluster meetings

Plant clinic cluster meetings complement monitoring activities and facilitate the experience and information sharing, and learning between plant doctors. Through the meetings, plant doctors have an opportunity to share experiences, lessons and information, successes and notable achievements, challenges or constraints as well as efforts or approaches used to overcome those constraints.

In 2022, five cluster meetings, involving 146 participants, including 100 plant doctors, plant clinic supervisors, and members of the in-country coordination team, were conducted to monitor plant clinic performance, improve the quality of services and facilitate the experience and lesson sharing. In addition, plant doctors' self-assessment exercises were carried out (using completed plant clinic forms) during the cluster meetings to assess the quality of data and identify gaps that require intervention.

Among the challenges (and their probable solutions) identified by plant doctors include difficulties distinguishing bacterial, oomycetes, and fungal diseases; difficulties distinguishing beneficial insects from harmful ones (pests); absence of agro-input stores (agrovets) in some communes; inhibitive costs of some inputs; unavailability of some prescribed pest control products; difficulties transmitting plant clinic data using tablet computers; and lack of synergies between plant doctors and agro-input suppliers.

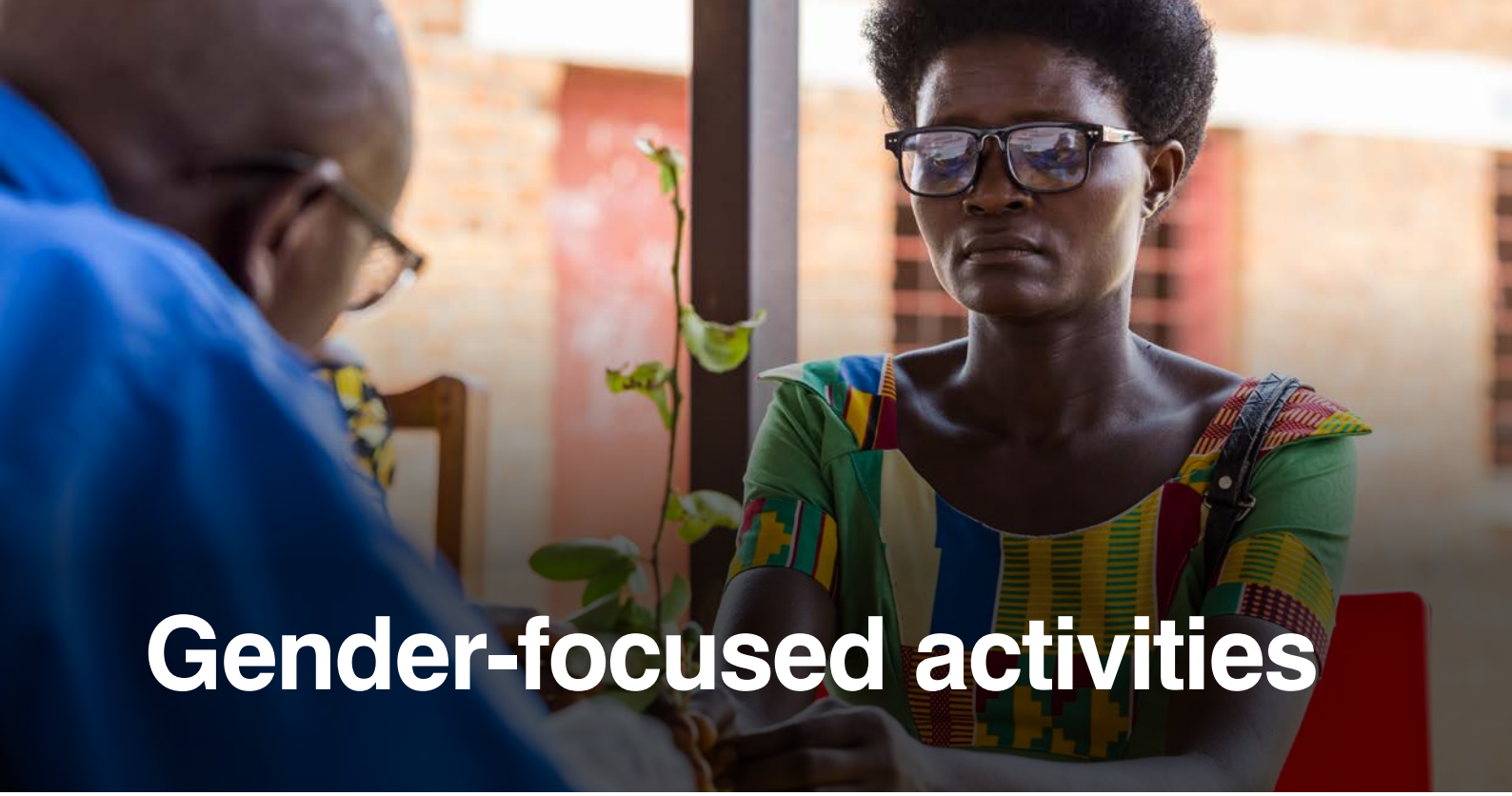
Lessons learned

The special study conducted in Burundi provided useful and positive feedback on the implementation of the project. The report concluded that farmers (plant clinic clients) have shown trust in plant doctors and applied the plant health advice they received. Overall, almost 90% of the surveyed farmers were satisfied with the advice, and recommendations received from the plant doctors at plant clinics. Many of the report's recommendations were already priorities for project implementation. However, the report is an added incentive to ensure progress on those issues in the coming year.

Next steps

The year 2023 will see greater use of lessons learned and consolidation of study findings for project improvement. Considerable effort will be geared towards the continuation of embedding systematic and basic monitoring and evaluation processes and protocols in project activities.

An external end-of-project evaluation will be carried out in 2023. This external evaluation will provide an assessment of the project and facilitate review and discussions with the donor.



Gender-focused activities

The gendered approach to the implementation of the project continued in 2022, complemented by some analyses and research in the areas of training and increasing reach. These focused on training women in a variety of roles and reaching more women.

Progress in 2022

Training

A ToT workshop was organized on gender-sensitive agriculture extension service provision to stakeholders working on plant health issues, including representatives from agriculture research organizations, the plant protection department of the Ministry of Agriculture, NGOs, and private sector organizations. A total of 20 people (5 women) were trained. The training covered topics such as basic gender concepts, the importance of integrating gender in agriculture extension programmes, and gender analysis tools that can be applied by agriculture extension agents. A knowledge attitude and practice (KAP) survey was taken before and after the training to measure the participants' knowledge and level of confidence about explaining gender concepts and applying them in their work. The trainees are expected to cascade down the training to plant doctors. In addition, 138 plant doctors were trained on gender by ISABU trainers during the year.

Community conversation

In 2022, CCs were started in 10 communes where plant clinics are established. About 40 men and women participants from each commune were selected by CC facilitators together with plant doctors. During the year, four CC sessions were held in nine of the communes, while only one was conducted in Gitega, one of the communes. In total, about 194 women and 211 men participated in the CC sessions in the 10 communes. During the CC discussions, issues such as the unequal distribution of unpaid care and domestic work and its impact on women's participation in development activities; women's lack of decision-making on land and income; social norms that create unequal power relationships between men and women, and women's acceptance of the status quo as normal were raised and discussed. Participants agreed on the necessity of sensitizing men and distributing care work more evenly among household members.

Project Level Women's Empowerment in Agriculture Index (Pro-WEAI) survey

To be able to measure the impact of the gender activities, and specifically the community conversation, a baseline survey was conducted in April 2022 using the Pro-WEAI tool. The Pro-WEAI measures women's empowerment in agriculture programmes by using 12 indicators that focus on three empowerment domains: intrinsic agency, instrumental agency, and collective agency.

The Pro-WEAI survey was conducted in three project communes, where CC activities are implemented, and three control communes, within the same provinces as the project communes, where there are no plant clinics and CC activities. A total of 387 respondents from 215 households participated in the survey. Both men and women from the same households were interviewed in male-headed households, while single women heads of households were interviewed in women-headed households. The household survey was complemented by focus group discussions and key informant interviews to collect qualitative data on social norms affecting women's participation in agriculture extension activities, including visiting plant clinics.

Experience sharing on good practices in gender-sensitive extension advisory service provision

One of the planned gender activities in the project was to map good practices in providing gender-sensitive extension advisory services in Burundi and share experiences with stakeholders working on plant health. The mapping was conducted and good practice approaches implemented by six organizations were identified. The mapping included a description of the good practices identified, changes observed by implementing the approaches, and successes and challenges from which lessons can be drawn. Identified good practices included basic gender mainstreaming approaches, such as setting targets for women to be reached by the project, bringing extension training closer to women farmers, and household-level methodologies that tried to shift attitudes about fair distribution of labour and decision making at the household level, such as Gender Action Learning System (GALS), Peasant Integration Plan (PIP) and Family Farming Council (FFC). Based on the mapping exercise, an experience-sharing workshop was organized to facilitate learning and raise awareness about the approaches among organizations working on plant health. A total of 25 participants, representatives of government, civil society, and donor organizations participated in the experience-sharing workshop.

Lessons learned

The CC facilitators did not have support from the local administration in some communities to be able to organize the CC meetings. Plant doctors, as agriculture extension staff working in the local government, were able to support the CC facilitators in organizing the meetings. The presence of the plant doctors in the CC meetings also helped them to communicate information about plant clinic services to farmers in the community. Realizing that bringing plant doctors on board as co-facilitators of the CC sessions together with the CC facilitators is beneficial, the project will include plant doctors in the refresher training that will be given to CC facilitators in the 10 communes in 2023.

Due to administrative challenges at the partner level, the implementation of the CC was delayed in 2022 and the first CC sessions were only held in June 2022. In 2023, CABI will organize more supportive monitoring visits to ensure smooth implementation and, if necessary, consider alternative implementation modalities of the CC activity.

It will be useful to assess plant doctors' awareness of gender-sensitive service delivery to identify strengths and gaps in their service delivery from a gender perspective. Based on the assessment, it will be useful to organize experience-sharing and refresher training in 2023.

Next steps

In 2023, the project will continue implementing CC meetings on a bi-weekly basis in the 10 communes, until the participants graduate, completing the CC cycle. There will be a refresher training on the CC manual for CC facilitators and plant doctors in the 10 communes where the CC sessions are being conducted. Also, plant doctors will be assessed on their awareness of gender. Finally, an endline Pro-WEAI survey to measure change as a result of the CC activity will be carried out.

Visibility

The project was featured in several online publications including journal articles, blogs and, news articles.

Publications:

Ochilo WN, Toepfer S, Ndayihanzamaso P, Mugambi I, Vos J, Niyongere C. (2022) Assessing the plant health system of Burundi: What it is, who matters and why. Special issue: Special Issue "Sustainable Crop Plants Protection: Implications for Pest and Disease Control" MDPI Sustainability 14 (21): 14293. https://doi.org/10.3390/su142114293

Toepfer S, Niyongere C., Ndayihanzamaso P, Ndikumana D, Irakoze W, Cimpaye E, Minani D, Bindariye P, Ochilo WN, (2023) Improvements of diagnostic capabilities of plant health practitioners through short in-service trainings. CABI Agriculture and Bioscience. (subm).

CABI news

Coles, W. (2022). Study proposes measures to strengthen Burundi's plant health system. PlantwisePlus Blog. https://blog.plantwise.org/2022/11/03/study-proposes-measures-to-strengthen-burundis-plant-health-system/

Coles, W.; Grossrieder, M, Toepfer, S. (2022) Burundi steps up training efforts to meet country's need for more Plantwise plant doctors. CABI News. https://www.cabi.org/news-article/burundi-steps-up-training-efforts-to-meet-countrys-need-for-more-plantwise-plant-doctors/

Hutchinson, D. (2022). How are plant health rallies supporting plant health in Burundi? PlantwisePlus Blog. https://blog.plantwise.org/2022/11/09/how-are-plant-health-rallies-supporting-plant-health-in-burundi/

Hutchinson, D. (2023) How community conversations help to close the gender gap in Burundi. PlantwisePlus Blog. https://blog.plantwise.org/2023/03/07/how-community-conversations-help-to-close-the-gender-gap-in-burundi/

Blogs

Nuffic (2022) Protecting Burundi's crops through community-building. Nuffic Global Development's Post.
Visual post LinkedIn: https://www.linkedin.com/feed/update/urn:li:activity:6971406538468945920,
Visual post Facebook: https://www.facebook.com/NufficGlobalDevelopment/photos/a.229144012421862 4/6166918066670791/

Nuffic (2022) Education contributing to build Burundi's food security. Nuffic Global Development's Post.
Data post LinkedIn: https://www.linkedin.com/feed/update/urn:li:activity:6973203250585960449
Visual post Facebook: https://www.facebook.com/NufficGlobalDevelopment/photos/a.229144012421862 4/6180494655313132/

Annex 1: Plantwise Burundi results against indicators and targets

Impact	Indicator	Disaggregation	Unit	Baseline	Achieved in 2021	Progress made (2022)			Project target (project end)
						New	Cumulative total	Narrative	
Impact: Improved crops productivity and income for smallholder farmers in Burundi contributing to agricultural growth	**IM1.1**. Number of family farms [farming households] (sub-sector, male/female, age: % < 35) with increased productivity directly as a result of Plantwise interventions	F	No.	0	-	-	-	Not applicable in the current reporting – information to be collected during endline planned for 2023	60,000
		M	No.		-	-	-		
		Y	No.		-	-	-		
	IM1.2. Number of family farms [farming households] (sub-sector, male/female, age: % < 35) with increased income directly as a result of Plantwise interventions	F	No.	0	-	-	-		60,000
		M	No.		-	-	-		
		Y	No.		-	-	-		
	IM1.3. Number of family farms (sub-sector, male/female, age: % < 35) whose farming enterprise became more resilient to shocks directly as a result of Plantwise intervention	F	No.	0	-	-	-		60,000
		M	No.		-	-	-		
		Y	No.		-	-	-		

Outcomes	Indicator	Disaggregation	Unit	Baseline	Achieved in 2021	Progress made (2022)			Project target (project end)
						New	Cumulative total	Narrative	
Outcome 1: Plant doctors reach more farmers with better quality advice	**OC1.1.** Number of farmers reporting satisfaction with plant doctor services (disaggregated by male/female)	F	No.	0	90	604	694	On-course to achieve project target	8,000
		M	No.		118	784	902		
Outcome 2: Plantwise contributing to prompt identification and action on plant health problems	**OC2.1.** Number of new and emerging plant health problems identified or solved through Plantwise interventions		No.	0	–	3	3	Project target surpassed	2
Outcome 3: Farmers adopt practices according to advice given by plant doctors	**OC3.1.** Number of farmers adopting Plantwise advice (disaggregated by male/female)	F	No.	0	-	63,016	63,016	On-course to achieve project target	180,000
		M	No.			89,101	89,101		

Outputs	Indicator	Disaggregation	Unit	Baseline	Achieved in 2021	Progress made (2022)			Project target (project end)
						New	Cumulative total	Narrative	
Output 1: Plant clinic networks established and complemented by other extension methods to enhance access to information on sustainable management of crop health	**OT1.1.** Number of plant clinics operating in Burundi	NA	No.	0	16	34	50	On-course to achieve project target	100
	OT1.2. Number of male and female farmers accessing advice from plant clinics and Plantwise led complementary extension approaches	F	No.	0	188	102,378	102,566	On-course to achieve project target	600,000
		M	No.		387	141,700	142,087		
Output 2: Plant doctors deliver advice at plant clinics	**OT2.1.** Number of plant doctors offering advice to farmers at plant clinics (disaggregated by sex)	F	No.	0	3	8	11	On-course to achieve project target	200
		M	No.		29	60	89		
Output 3: Plantwise information resources used by plant doctors and other plant health stakeholders	**OT3.1.**Number of stakeholders using Plantwise Knowledge Bank (data and other information resources)	NA	No.	0	115	195	310	On-course to achieve project target	350
	OT3.2. Number of extension materials developed/adapted by local experts and stored in the Knowledge Bank for use in Burundi	NA	No.	0	19	12	31	Project target surpassed	30

Output 4: Data-driven ICT based processes adopted in systems for plant health management at smallholder farmer level	**OT4.1.** Number of male and female plant doctors and other stakeholders using the Plantwise ICT toolkit (DCA, Factsheet App etc)	F	No.	0	10	–	10	Project target surpassed	250
		M	No.		90	199	289		
	OT4.2. Number of plant clinic records stored in Burundi site of POMS	NA	No.	0	231	1,545	1,776	Running behind schedule occasioned by: (i) delay in the launch of an additional 69 new plant clinics, and (ii) backlog of data either yet to be digitized or transmitted*	10,000

* OT4.2 results only include recorded numbers, which is an under-representation of actual numbers reached and exclude farmer-to-farmer sharing. Please see page 8 for further explanation and details.

Results	Indicator	Disaggregation	Unit	Baseline	Achieved in 2021	Progress made (2022)			Project target (project end)
						New	Cumulative total	Narrative	
Result 1: Stakeholder linkages established/ strengthened with key actors to ensure complementarity of activities in service delivery to farmers	**R1.1**. Number of collaborating institutions in Plantwise interventions	PbIc	No.	0	12	–	12	Project target surpassed	12
		Pvt	No.		3	–	3		
	R1.2. Number of organizations represented in the national forum and steering committee	PbIc	No.	0	10	–	10	Project target surpassed	7
		Pvt	No.		2	–	2		
Result 2: Plantwise steering committee involved in planning and overseeing implementation of project activities	**R2.1.** Number of Plantwise steering committee meetings	NA	No.	0	2	2	4	On-course to achieve project target	6
Result 3: Plant clinics piloted in selected districts/colonies	**R3.1.** Number of pilot plant clinics established	NA	No.	0	16	–	16	Project target achieved	16

Result 4: Webpage specific to Burundi established on the Plantwise Knowledge Bank and used in the country	**R4.1.** Number of organizations using Knowledge Bank resources	Pblc	No.	0	4	3	7	Project target surpassed	10
		Pvt	No.		–	6	6		
Result 5: Additional plant doctors trained to run expanded networks of plant clinics in Burundi	**R5.1.** Number of additional male and female plant doctors trained and operating plant clinics	F	No.	0	7	15	22	Project target surpassed	168
		M	No.		61	123	184		
	R5.2. Number of new plant clinics successfully established and operational	NA	No.	0	–	34	34	On-course to achieve project target	84
Result 6: Content of Plantwise training modules included into curricula of agricultural colleges and universities	**R6.1.** Number of college and university curricula with Plantwise training materials/content	NA	No.	0	–	1	1	On-course to achieve project target (strong interest expressed by 4 institutions including ITAB)	≥ 1

Result 7: Monitoring plant clinic performance and assessment of Plantwise outcomes conducted	**R7.1:** Number of plant clinic performance monitoring reports, including lessons learnt		No.	0	–	5	5	On-course to achieve project target	16
	R7.2. Baseline and end line surveys completed	Bsl	No.	0	1	–	1	On-course to achieve project target	2
		El	No.		–	–	–		
Result 8: Rapid Care Analysis (RCA) conducted; Community conversation dialogue process carried out; plant doctors trained on gender-sensitive advisory service provision; learning on good practices for gender-sensitive agriculture extension conducted	**R8.1.** Percent (%) of men doing unpaid care work activities in the household	M	%	To be determined	-	-	-	To be established during the Women's Empowerment in Agriculture Index (WEIA) survey planned for 2023	10%
	R8.2. Percent (%) of women having control or joint control over household income and farm products	F	%	To be determined	-	-	-	To be established during the Women's Empowerment in Agriculture Index (WEIA) survey planned for 2023	20%
	R8.3. Number of plant doctors trained on gender	F	No.	0	10	15	25	On-course to achieve project target	300
		M	No.		90	123	213		

Key: F = female; M = male; Y = youth; Pblc = public; Pvt = private; Bsl = baseline; El = endline; No = number

Colour key: green = on track; orange = minor delay

Plantwise is a global programme, led by **CABI**, to increase food security and improve rural livelihoods by reducing crop losses

National Responsible Organization:

Plantwise Burundi is financially supported by:

Ministry of Foreign Affairs of the Netherlands

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