





Case study by UNESCO-Pearson Initiative for Literacy



Name

The Rainforest Alliance Farmer Training App



Implementing organization

The Rainforest Alliance, Dimagi Incorporated



Focus of intervention

Promote sustainable farming methods through on-demand training, data collection and communication between experts and local farmers



Location

Guatemala (current case study) and 28 other countries



Year launched

2017



Reach

Piloted among 600 Guatemalan farmers with a potential to reach more than 1.3 million farmers around the world trained in sustainable farming methods



Summary

According to estimates from the Food and Agriculture Organization of the United Nations (FAO), one in nine people around the world go hungry every day due to food insecurity (FAO, IFAD and WFP, 2014). Agricultural development is an essential factor in fulfilment of the first two Sustainable Development Goals of eliminating poverty and hunger (Samberg et al., 2016; United Nations, 2015). To continue to reduce both global poverty and hunger there needs to be a multi-stakeholder approach, including investments to enhance the supply chain network, improved access to inputs and technologies for smallholder farms, and promoting rural development while protecting the most vulnerable communities (FAO, IFAD and WFP, 2014).

Seventy per cent of the food calories produced in the developing world, and about 55 per cent of global food production, come from smallholders (Samberg et al., 2016). However, limited knowledge and communication barriers between farmers and other supply chain counterparts can put smallholders at a disadvantage. To meet the first two Sustainable Development Goals, this vitally important group must keep up with new sustainable productivity techniques, important industry information, changing climate patterns and market volatility.

The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods with over a million producers and 6,000 companies around the world. In 2014, it piloted a digital platform among 600 smallholders in Guatemala as a proof of concept for using technology to improve communication and information exchange between farmers and along the supply chain while providing distance learning for improved sustainability and productivity standards. Designed for offline use among low-literate farmers, the Rainforest Alliance's Farmer Training App has the potential to deliver training content to over a million farmers with limited reading proficiency and technical training who work in remote areas around the world without reliable internet connectivity.

ABOUT THIS CASE STUDY

Through the UNESCO-Pearson Initiative for Literacy: Improved Livelihoods in a Digital World, this case study is part of a series highlighting how inclusive digital solutions can help people with low skills or low literacy levels use technology in ways that support skills development and, ultimately, improve livelihoods – in contribution to achieving the Sustainable Development Goal on education. For more information go to en.unesco.org/themes/literacy-all/pearson-initiative.

Why selected

The Rainforest Alliance Farmer Training App offers an interesting example of using digital technologies to increase farmer knowledge, connect farmers into peer-sharing networks and promote sustainable agricultural practices. The need for upfront digital skills assessment of users, and incorporating digital skills training into the onboarding process, cannot be stressed enough for successful uptake and long-term usability of digital solutions.

Key takeaways

- 1 / The Rainforest Alliance Farmer Training App enhances the food supply chain network by improving communication and information exchange through a simple and intuitive digital platform.
- 2 / It is designed as an offline resource, so farmers can access important content to help them better prepare for the impacts of climate change without the need for internet connectivity.
- 3 / By updating the content features of the app to include the Rainforest Alliance's Sustainable Agricultural Standard, certified farmers can use the app to maintain and stay current on their accreditation.

Context and project origins

The Rainforest Alliance works to protect forests and biodiversity while providing training and technical assistance to improve the livelihoods of farming communities in rural areas around the world. However, training resources are scarce and there are not enough technicians to support every farmer. Therefore, the organization turned to digital tools to improve its training capacity.

Guatemala is one of the ten countries most affected by climate change, and the Rainforest Alliance wanted to provide more support to help farmers better prepare for the many challenges ahead. In 2014, the organization began to develop a tablet-based digital training app for Guatemalan coffee producers with funding from the Leon Lowenstein and Flora L. Thornton Foundations. A pilot of the digital platform was carried out in the country's Western Highlands region to assess the effectiveness of improving communication between farmers and along the supply chain network. Farmers were able to connect with each other and with other stakeholders in the supply chain to share information, ask questions and learn about the

global impact of farming on the environment. The app reached 600 coffee farmers, with the goals of improving information exchange, increasing yields and farmer incomes, and learning better farmland management strategies.

The Rainforest Alliance Farmer Training App now supports the rollout of the Rainforest Alliance Sustainable Agriculture Standard (Rainforest Alliance, 2017). This Standard is required for all previously certified groups of the Rainforest Alliance network. The app will now enable smallholder farmers to maintain their certification and continue to use the Rainforest Alliance seal on their product packaging, signalling climate-smart agricultural practices.

1 The Rainforest Alliance developed the Standard in collaboration with the Sustainable Agriculture Network (SAN) to help farms reduce their environmental footprint while operating productively and efficiently (Rainforest Alliance, 2017). For more information, see www.rainforest-alliance.com/business/sas



Designing with the user

The Rainforest Alliance Farmer Training App was developed for smallholders in remote, lowtechnology areas of the world who are either currently Rainforest Alliance Certified™ or preparing for certification. As part of the 2014 pilot, the Rainforest Alliance partnered with CRECER to design and conduct needs assessments in the Guatemalan pilot communities.² Findings revealed low literacy rates and digital skills, with over 60 per cent of respondents indicating income levels below Guatemala's established poverty line (CRECER, 2014). Specifically, 19 per cent of the farmers interviewed could not read or write, 14 per cent had never attended school, 38 per cent had attended less than three years of school and only 17 per cent had completed Grade 6 or higher (CRECER, 2014). In many instances, farmers included in the pilot were using tablets for the first time.

Informed by these preliminary findings, the Rainforest Alliance project team was able to design training materials that were appropriate for the skill levels of the intended users and software that was not reliant on cost-prohibitive data packages. Ultimately, the project team pursued a text-light platform design that could function offline and where they could invest regional staff time to assist

with digital skills development and training.

The team partnered with software developer Dimagi to incorporate its Commcare platform for the initial pilot-testing in Guatemala. Commcare is an open-source mobile data collection platform for building mobile apps.³

In addition to the needs assessments, the Rainforest Alliance also conducted several workshops throughout the life of the pilot. The first workshop helped assess the farmers' information needs, build out the initial structure of the application and develop training materials. The initial tool consisted of several videos, photos and survey questions. The content focused on two main themes: information and messaging about eco-friendly farming from the Rainforest Alliance, and technical information about best management practices for coffee production specifically.

2 CRECER is a Guatemala-based civil association that promotes and facilitates entrepreneurship services to improve productivity and competitiveness among economically disadvantaged producer groups in Central America and Mexico.

3 For more information, see: www.dimagi.com/products

INSIGHT

Striking the right balance among intended end-users For the Guatemala pilot, the Rainforest Alliance worked with two primary target groups, the leaders of the local coffee cooperatives and younger farmers belonging to the cooperatives. Given their position in the group, the cooperative leaders were more invested in trying to learn the digital solution. While younger farmers had no problem learning the technology, they did not have the field experience to understand the challenges and limitations in their communities. Therefore, the Rainforest Alliance had to work to the strengths of both user groups. The project team also tried to work with a pair of older farmers, but they were not interested in learning about technology. The median age group seemed to strike the best balance in being willing to learn and understand the benefits of using technology, and having the capacity to extend technical assistance to other farmers in their cooperatives.

During each of the workshops, the project team provided demonstrations of the app in small groups, allowing the farmers to explore the software and provide feedback (Figure 2). Many farmers were initially hesitant to use the new technology, but became more comfortable by the end of the workshops. These interactions were important for understanding farmer preferences and introducing design changes to the platform. Informed by the workshops, the project team switched to using videos as learning tools instead of still images or diagrams. Other content changes included adding a farmer-specific financial literacy section, a question and answer section, and an image library of best management practices from other farmers around Guatemala.

Lead farmers were provided with access to upload photos to a private section of the platform while project staff chose top photos to include on the app. This feature allowed farmers to visualize what their peers were doing from around the country. Each month was dedicated to a different best practice theme such as irrigation tips or enhanced composting techniques. Since most farmers are offline when using the app, content is stored locally on the device and later synced to the server when a connection is established, for instance when the farmer visits their cooperative building.

The Rainforest Alliance works with a network of over 1.3 million certified smallholders. For their global scale-up efforts, the project team targets certified group administrators and trainers, or lead farmers. This target group typically has greater access to the internet, greater ability to travel to connected

areas than the wider network of local farmers, and is supported in investing in tablets for training purposes from their local cooperatives or trader organizations.

Now that the platform has begun to extend across the Rainforest Alliance's global network, it is collecting feedback from liaisons from around the world. Field liaison staff provide their own input and feedback on behalf of the farm groups they work with, generating a large database of user information that is incorporated into regional and global design updates.

Inherent in the global scale-up are region-specific infrastructure constraints. Technological infrastructure, and specifically access to strong and reliable internet connections, has been one of the largest barriers to scaling the project. Some areas where the Rainforest Alliance operates are limited to low bandwidths, requiring longer download times that can be a deterrent for some prospective users.

Another challenge for the project team is that farmers and trainers are required to register with the Rainforest Alliance before using the app. While this is critical for tracking and assessing outcomes of the certified farmer network, requiring registration can pose a barrier to lower-skilled farmers. During the Guatemala pilot the Rainforest Alliance team provided direct field support. For the scale-up phase, they now rely on the how-to video along with two staff members who help via email, as well as field liaison staff who provide additional assistance during training events.







INSIGHT

Focusing on users' skills to improve uptake Many farmers were not familiar with tablets or any type of 'smart' technology when presented with the Rainforest Alliance Farmer Training App for the first time. Younger farmers were always the first to pick up the tablets and in many cases helped other farmers navigate the tool. In some cases when farmers had difficulty learning features, for example how to take a picture, their children stepped in to help them (Figure 3). By the end of the workshop, all the farmers were much more comfortable with the tool. Through this experience, the Rainforest Alliance noted the need for digital skills development in the region and modified their training to spend more time helping farmers familiarize themselves with the devices and platform.

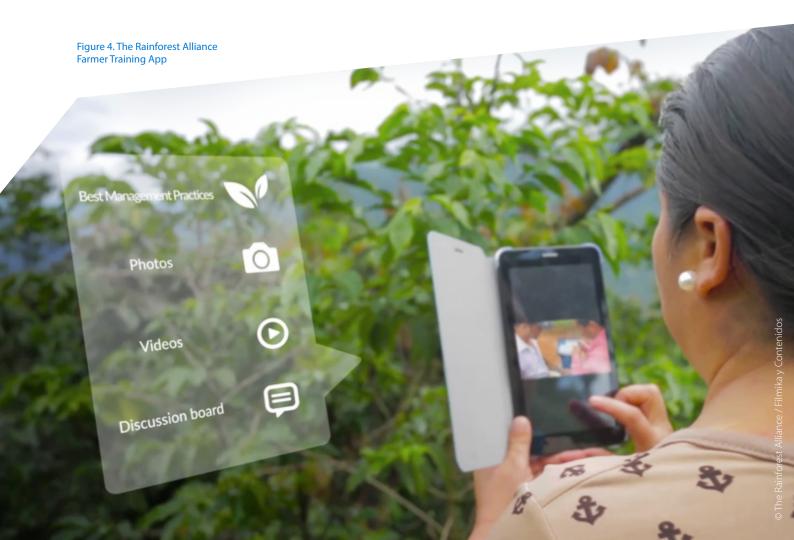
The digital solution

The Rainforest Alliance Farmer Training App delivers sustainable agriculture training information to rural farmers in developing countries around the world. All app content is available offline after an initial download once farmers are registered with the Rainforest Alliance network. Typically users have access to internet connectivity at their local cooperative buildings, but in places where connectivity is difficult and project funds are available the Rainforest Alliance delivers preloaded tablets to farmer communities. Occasional software updates are then downloaded at farmer cooperative buildings, a method that requires much less data transfer and bandwidth. The platform includes a series of interactive training modules and videos, and operates on any Android-based smart device (Figure 4).

Although the app is primarily an information delivery and training service, it incorporates

communication features and a collaborative learning environment by allowing farmers to submit pictures from their farm, showing how they employ best management practices. Farmers can also track their progress toward certification by registering training event information with a training registration and training event management section. All training modules and platform features are accessed through tap and swipe gestures. Each training module uses a progress bar and a self-assessment component, with interactive quizzes to help with self-learning.

The structure of the training modules requires farmers to watch a video and in some cases read a small amount of text. In addition to sharing pictures of best practices, farmers are encouraged to upload pictures to illustrate concepts covered in the training modules (Figure 1, above). Since many of the farmers have low technical skills, a how-to



video is built into the app and on the Rainforest Alliance training website. All videos are produced with the guidance and support of local translators. Additionally, field support on the functionality of the app and continuous training are provided by regional liaison staff in person or by phone. Liaisons can also consult an email-based helpdesk for additional technical support.

The training videos and the user interface content are translated into the regional language most broadly used within the deployment community. Currently the app is available in Spanish, English and Bahasa Indonesian, with additional languages expected to become available soon. Where possible, the audio is available in subnational dialects (as is the case with Guatemala). During the registration process, farmers select which language version of the app they prefer prior to initial download.

Based on the circumstances of the individual farmers, they will either register with the field liaison staff directly during a training session or reach out to the help desk independently or with the help of their group representative. While technical literacy is not formally tracked, field liaison staff provide basic orientation to the devices and platform to improve digital literacy and help users download and navigate the app. The orientation covers basic device functionality such as how to turn off and on the tablet, operating the volume and menu navigation, charging and connecting to the wireless network. There have also been cases where farmers or trainers with low digital skills turn to younger community members or family members for help in operating the platform.

The Rainforest Alliance
Farmer Training
App offers content
about eco-friendly
agricultural techniques
to promote sustainable
farming practices on
the following topics:

- / native vegetation
- / wildlife management
- / soil conservation and management
- / water conservation
- / water quality
- / integrated pest management
- / pesticide management
- / waste management
- / energy and greenhouse gas emissions
- / labour rights and working hours
- / living wage
- / well-being of workers and communities
- / housing conditions for workers
- / occupational health and safety (general issues and use of agrochemicals)
- / effective planning and management of systems (daily planning and high-level management)

The Rainforest Alliance uses a cascade training model for in-person training and orientation to the digital platform. Currently there are ten field liaison staff around the world who work with farm groups and host in-country training sessions. These representatives are the first point of contact for new farmers in-country. The Rainforest Alliance prepares its field liaison staff through training sessions held during regional technical summits, after which the liaisons programme in-country training with farmer groups in their region. When the field liaison staff cannot resolve issues independently, further support is provided by email through the help desk. A final layer of technical support is provided through the Commcare software provider, Dimagi.

Training on the app is a small part of a larger system of training on the Rainforest Alliance Sustainable Agriculture Standard. During these training sessions, the field liaison staff primarily provide an overview of the application and help with downloads, and troubleshoot issues as they arise. For instance, farmers may not have experience with touch-screen technology (using techniques such as swiping and touch to select) or connecting to a wireless network (syncing locally stored data and updating software). In addition to the in-person training, the Rainforest Alliance has also created a training module specific to the app providing detailed download instructions and a general overview of the app content for interested farmers.



The Rainforest Alliance

Monitoring and evaluation strategy

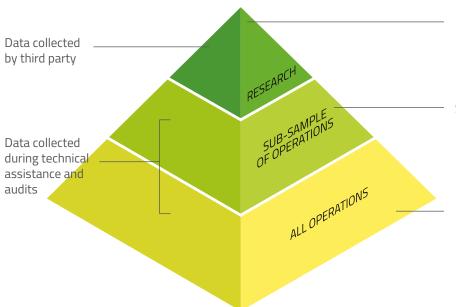


Figure 6. The Rainforest Alliance (2016) approach to assessing results

For the Rainforest Alliance, farmer training and certification is intended to improve farming practices, management systems and farmer knowledge, with the collective goals of improved biodiversity conservation, preservation of natural resources, livelihood

development and overall well-being (Rainforest Alliance, 2018).

For each of its programmes, the organization evaluates effectiveness by collecting data at three levels: programme-wide monitoring, sampled monitoring and focused research (Figure 6). For the Guatemala pilot of the Rainforest Alliance Farmer Training App, evaluation efforts focused primarily on programme-wide monitoring, with plans to enhance evaluation efforts as the project expands. Programme-wide monitoring includes data collection on basic indicators reflecting project inputs, demographic information and project reach.

Key indicators for the Farmer Training App are categorized across two project components: activity and training. For each component, the Rainforest Alliance uses either registration data or usage statistics collected within the app. The key indicators across both project components include the following:

Focused Research

- impact studies
- hypothesis testing to verify performance results

Sampled Monitoring

- assessement of socioeconomic and environmental outcomes
- stratification across geographies/ commodities

Programme-Wide Monitoring

- programme reach
- charateristics such as operation size
- geographic location
- change in practices
- change in selected outcomes

Activity indicators

- number of mobile users registered
- number of times app was opened by users in a period of surveillance
- time spent active on the platform
- number of weekly/monthly viewings
- number of mobile users viewing announcements from the Rainforest Alliance

Training indicators

- · number of producers receiving training
- geographic regions of producers receiving training
- local farm group associations of all producers receiving training
- contact information of training facilitators
- number of producers receiving training, disaggregated by gender
- number of certified farms making improvements on continuous improvement criteria



Figure 7. Project staff sharing information with a local farmer group during a site visit

The Rainforest Alliance prepares monthly reports on the indicators listed above. Key indicators of user activity help illustrate how farmers are engaging with the platform. Monthly tracking allows the project team to enhance the user experience through updating design features according to use patterns. In addition and subsequent to the training, field liaison staff serve to identify risks, challenges and needs from their assigned farmer groups.

The Rainforest Alliance is also working on updates to deploy in-app surveys for large-scale data

collection on key usability indicators. The Rainforest Alliance does not formally track learning gains in digital skills or reading proficiency, but focuses on metrics related to platform activity and training reach. Environmental impact behaviour change in farm operation is measured through formal assessment of randomly selected farms in the Rainforest Alliance country network.

All data from the application is stored in CommCareHQ. All data is privacy-protected, secured and stored on Dimagi's data standards-compliant servers.

INSIGHT

Tracking user data to improve platform engagement

On review of monthly tracking data, the project team noted that many users regularly accessed the News section of the app. In response the Rainforest Alliance focused more resources on updating that section regularly. The project team also noted some variance in the viewer frequency of the training videos, indicating limited visibility of new training content. Therefore, they started adding prompts for the training updates in the News section for each available language, which improved in-app user engagement.

This has been a wonderful experience for me and for my colleagues and I would like to say that we should not get left behind.

Technology is far advanced and each one of us has the right to take advantage of these kinds of projects, but we have to be well organized.

– Leticia Monzón, with Arnolodo Cifuentes, lead coffee farmers, Huehuetenango, Guatemala



IMPACT

Learning through digital engagement

'Nowadays technology is well advanced but thanks to this project, I have improved my skills and have been able to go out and share this project with other members of [my local farmer cooperative]. My colleagues and I have really enjoyed the videos where we can learn about best farming practices that we can replicate in our coffee farms. Another very nice thing is that before we did not know what happened with our coffee once it left the association. Now we know that 45 per cent of the coffee produced in Guatemala goes to the United States and that 17 per cent goes to Japan. I am very happy to know the destination of my coffee.' (Figure 8)

-Leticia Monzón, lead coffee farme





Results to date

In the Guatemala pilot, the Rainforest Alliance worked with 25 lead farmers who supported about 600 smallholder farmers. During the pilot, they collected preliminary information from participants on how to address the challenges of implementing best practices in sustainability and how to provide the information that would be most useful to producers (on pricing, crop destinations and so on). At the end of the pilot, the team noted an increase in farmer awareness about the Rainforest Alliance and an increase in knowledge about sustainable best practices through personal stories shared by pilot farmers. Women who participated in the pilot also felt particularly empowered as the project gave them access to information that they might not have been able to access freely through the regular channels of information on the farm.

The Rainforest Alliance is now focused on scaling the app and using it to distribute training materials for producers requiring updated certification of the Sustainable Agriculture Standard. While it is still relatively early in the project lifecycle, project staff have noted persistence in use of the app among pilot communities. However, with limited staff expansion the continued use of the software depends on the capacity of the field liaison staff to deliver continued support on the tool.

The Rainforest Alliance has now expanded deployment of the app beyond Guatemala into neighbouring countries in Latin America. Globally the app is being used in 29 countries across the world. The updated global version of the app emphasizes general training materials for the Rainforest Alliance Sustainable Agriculture Standard Certification instead of information specific to coffee producers in Guatemala.



Sustainability and future plans

The costs for the Guatemala pilot, including initial development of the platform and CommCare user licence, multiple in-country workshops, hardware and staff travel totalled approximately US\$300,000. The ongoing programme costs are around US\$150,000 per year depending on the amount of training materials needed and travel costs. The Rainforest Alliance anticipates that the recurring expenses will go down substantially once training materials, initial user interface translations and incountry training have been completed.

Scale-up efforts will require working closely with local producers, trainers and group administrators to refine the application and training content as

well as expanding content to additional languages and contexts. The Rainforest Alliance would also like to use the platform to pilot digital internal management systems (IMS) for farm cooperatives. Building IMS functionality into the app will allow farmers to collect, manage and analyse their farm data. This feature has the potential to help cooperatives manage information on group members and facilitate the Rainforest Alliance's understanding of localized challenges for continuous improvement to its support services. There are also plans to replicate the agricultural training model and to work with clients in the forestry industry.



Lessons learned and recommendations

Successful ICT deployment requires community collaboration. Working closely with community members on the design and development of ICT tools is critical for ensuring successful deployment.

Assess baseline skills to improve user design. Needs

assessments detailing reading proficiency, digital skills and content knowledge should be collected as extensively as possible. These preliminary steps allowed the project team to adjust their content delivery model from text-based to visual early in the software development phase, saving considerable resources while increasing inclusion for groups with low literacy levels.

Plan for digital skills training.

The Rainforest Alliance recognized the need to incorporate digital skills training into the in-person sessions to coach users with lower technical proficiency. Providing dedicated time during the training sessions and through the how-to video were important factors for adoption of the digital solution among farmers using technology for the first time.

Contact information

The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods. Through creative collaboration it aims to help build strong forests and healthy communities around the world.





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This case study was commissioned by UNESCO and Pearson as part of the UNESCO-Pearson Initiative for Literacy: Improved Livelihoods in a Digital World. The views and opinions expressed in this case study are those of the authors; they are not necessarily those of UNESCO and do not commit the Organization.

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UNESCO is grateful to the Rainforest Alliance and Jessie Baker for their support in developing this case study.

UNESCO Education Sector

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UNESCO, as the United Nations' specialized agency for education, is entrusted to lead and coordinate the Education 2030 Agenda, which is part of a global movement to eradicate poverty through 17 Sustainable Development Goals by 2030. Education, essential to achieve all of these goals, has its own dedicated Goal 4, which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." The Education 2030 Framework for Action provides guidance for the implementation of this ambitious goal and commitments.



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Project Literacy is a global campaign founded and convened by Pearson to make significant and sustainable advances in the fight against illiteracy so that all people – regardless of geography, language, race, class, or gender – have the opportunity to fulfill their potential through the power of words.



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