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Pakistan Sanitary and Phytosanitary Distance Learning Program

June 2018

COVER PHOTO:
A farmer tills soil for seedbed preparation, Khushab, Punjab, Pakistan.

CREDIT:
Habibullah Nawaz, November 27, 2016.

SPS DISTANCE LEARNING PROGRAM

A partnership between the U.D. Department of Agriculture (USDA) and the Agency for International Development (USAID) to support Pakistan's increasing participation in international trade.

June 2018
This evaluation was made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this evaluation are the sole responsibility of Texas A&M University and do not necessarily reflect the views of USAID or the United States Government.
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CONTENTS

ACRONYMS

APHIS	United States Department of Agriculture Animal and Plant Health Inspection Service
CABI	Centre for Agricultural Biosciences International
DPP	Department of Plant Protection
FAO	Food and Agriculture Organization of the United Nations
FAS	United States Department of Agriculture Foreign Agricultural Service
IPPC	International Plant Protection Convention
OIE	World Organisation for Animal Health
PRA	Pest Risk Analysis
SPS	Sanitary Phytosanitary Standards
TAMU	Texas A&M University
USDA	United States Department of Agriculture
USAID	United States Agency for International Development

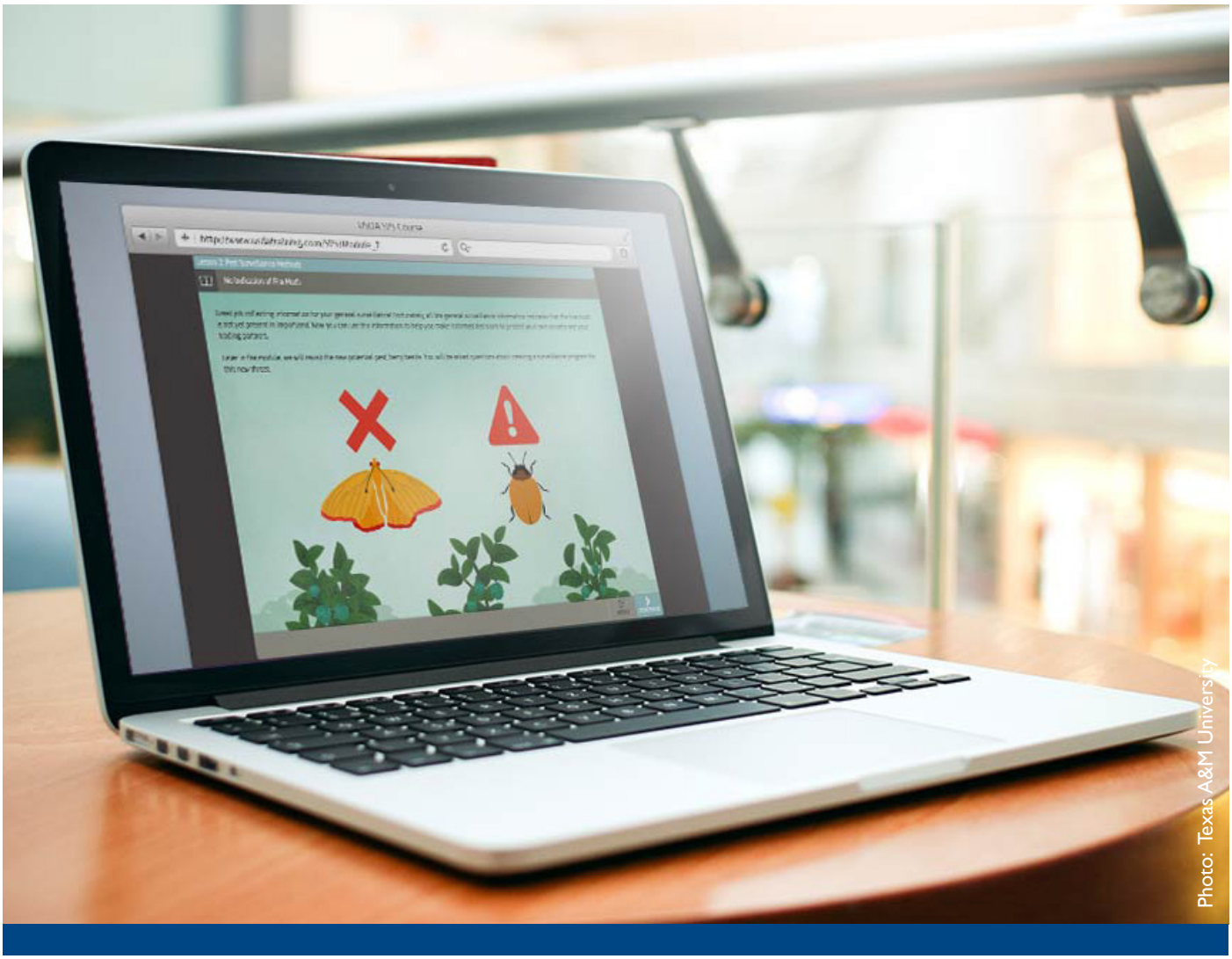


Photo: Texas A&M University

EXECUTIVE SUMMARY

This is a joint final evaluation of the Sanitary Phytosanitary Standards (SPS) Distance Learning Program implemented by United States Department of Agriculture (USDA), Texas A&M University (TAMU), and Centre for Agriculture and Biosciences International (CABI). The evaluation was conducted March 2013 to December 2017 by the Center for Educational Technologies (CET) at TAMU. The CABI office in Pakistan collected the data from participants, while the CET surveyed the project team. The purpose of the evaluation is to (a) evaluate the degree to which the SPS Distance Learning Program achieved the planned results; (b) determine how the program strengthened Pakistan's plant health capacity; and (c) identify lessons learned and recommendations for future programs; The evaluation will inform the strengthening of Pakistan's plant health capacity under the SPS Distance Learning Program. Relevant lessons from this evaluation will be applied to work planning and the development of new blended learning training programs.

In 2010, United States Agency for International Development (USAID) and USDA, introduced an initiative to support the Government of Pakistan's effort for boosting agricultural trade. The interagency partnership launched the *SPS Distance Learning Program* with the goal of strengthening Pakistan's ability to comply with international trade standards.

The distance learning program was a four-year effort that involved two USDA agencies, FAS and APHIS, and partnerships with TAMU and CABI. The program included resources for both the development of the modules and the in-country portion of the program. The SPS training program used a blended learning approach. The 172-hour, program included a series of 14 computer-based modules, in-person module review sessions, seven in-person workshops, and in-person workshop review sessions. Program participants acquired the essential skills needed to collect and analyze data and to formulate effective policies to increase productivity and expand markets. More information about the program can be found at tamucet.org.

RELEVANCE

The SPS program was valuable in improving job performance. Before the SPS training program, federal and provincial staff were conducting inspections, treatments, and other procedures. The SPS training program exposed federal and provincial staff to international organizations, such as Food and Agriculture Organization (FAO) and International Plant Protection Organization (IPPC), and their corresponding standards, such as Codex Alimentarius and International Standards for Phytosanitary Measures (ISPMs). Now that Pakistanis are aware of international organizations they are conducting inspections, treatments, and other procedures using techniques that are aligned with these organization's guidelines.

Since the implementation of the SPS program, the Director Generals and Deputy Director Generals of Department of Plant Protection (DPP) have rescinded several regulations based on science. The DPP is now conducting pest-risk assessments to determine measures to take and implement policies and regulations that are scientifically justified.

EFFECTIVENESS

The SPS training program was effective in achieving the intended outcome of the program and benefitting participants from the DPP who were involved in different SPS-related roles. Participants reported a gain in knowledge and skills of SPS-related topics, a change in perspective of trade access, tools to support them in meeting their trade access goals, and opportunities to self-evaluate Pakistan's current SPS practices relative to IPPC guidelines.

EFFICIENCY

The program was efficient in delivering the modules given the unique circumstances of Pakistan's technology infrastructure. Early into the project, the team recognized that access to internet and electricity were unreliable in the region. The optimal delivery method for the distance learning modules to Pakistan was to put the modules on USB drives. USB drives allowed participants to work through the modules without the need for internet connection.

IMPACT

The SPS training program made an impact at a federal and provincial level. As a result of this training, Pakistan has seen changes to policies, regulations, and the organization of SPS units in federal and provincial governments, improved implementation of SPS techniques and procedures in the field, increased trade access for U.S. products to Pakistan, and an increase in value of Pakistani exports. This program has updated the DPP SPS training program established in the 1960s and reformed the structure and mindset of the DPP. Pakistan has seen growth in knowledge and the skills of SPS techniques and procedures and an increase in Pakistani federal staff's and Pakistani provincial staff's confidence to implement specific techniques and procedures in the field.

SUSTAINABILITY

To sustain this program, the modules and workshop materials can be made available to more people. The strategy would include making the curriculum accessible to a wide audience, a marketing strategy aimed at various audiences, and marketing materials to accompany the program.

RECOMMENDATIONS

- The program should expand the recruitment efforts to include more women, faculty and/or students from the university, staff from the department of crop protection, and personnel from the exporter and importer industries.
- Stakeholders of the program shared that the biggest challenge was communicating the value of this program. They requested materials to assist them in sharing the program with potential adopters (e.g., universities, extension agencies, industry). The program gained advocates over the years by showing the modules to individuals. However, these champions have struggled in creating a concise message that encompasses the vision and value of the program to reach individuals who do not immediately understand blended learning and the demand for the type of content presented. A strategy on how to share this program with others would support these champions' efforts in disseminating this program, as would a strategy on how to communicate to new workshop facilitators on how to use these materials.
- The most common recommendation to improve the content and delivery of the SPS program was to have one-to-one coverage of module to workshops. Some workshops cover multiple modules, while some module topics are not covered in workshop format. By covering one module in one workshop, participants (10%) felt they would have more time for hands-on exercises, case studies, and field investigations on a specific module topic. By covering fewer topics in one workshop, participants can gain a deeper understanding of a single topic and spend more time practicing procedures. Participants (16%) most often asked for more case studies to practice procedures and opportunities to observe an expert go through the process.
- USDA, CABI, and TAMU personnel recommended that the program expand to animal health topics. They would like to see a blended learning program created to build capacity for animal health topics and follow the World Organisation for Animal Health (OIE) standards. Babar Bajwa, CABI Regional Director, summarized other animal health advocates comments as, "I would say that it is a very good program, what we would like is that the chain can be completed if OIE [standards] is there, and it completes the big picture."
- CABI staff and participants recommended that the program should add a summary module and workshop of the entire program or a lighter version of the course.
- Given the working language of IPPC is English, one instructor suggested that materials be written and spoken in multiple languages. One recommendation was that the workshop materials be provided in English on the left side of the page and in Urdu on the right side of the page so that participants can go back and forth between the two languages.
- Agencies interested in hosting in-person trainings should consider security risks and select locations that meet partnering agencies' and organizations' security guidelines. USDA-FAS navigated all the parameters surrounding USDA and CABI's security standards. Given the security environment in Pakistan, restrictive travel limited access for some of the USDA-selected facilitators to deliver the workshop.
- Agencies interested in using a blended learning approach should conduct a learner analysis, context analysis, and task analysis. A Learner analysis gathers information about learners' educational background, prior experiences, and motivation for learning to inform who is learning. A context analysis utilizes information about the setting(s) in which instruction will take place and the setting(s) in which the learned knowledge and skills will be performed to direct how learning will take place. A task analysis details the steps to competently perform a specific task to determine what skills learners will gain.
- These analyses provide information on what support systems are needed to successfully deliver the training.

Market in Mardhan, Khyber Pakhtunkhwa, Pakistan

EVALUATION PURPOSE AND QUESTIONS

EVALUATION PURPOSE

This is a joint final evaluation of the SPS Distance Learning Program implemented by USDA, TAMU, and CABI. The evaluation was conducted March 2013 to December 2017 by CABI and TAMU. The CABI office in Pakistan collected data from participants using end-of-workshop assessments, surveys, and in-person interviews. The Center for Educational Technologies conducted semi-structured interviews using the evaluation questions below with representatives from USDA, CABI and TAMU who were on the project team. The purpose of the evaluation is to (a) evaluate the degree to which the SPS Distance Learning Program achieved the planned results; (b) determine how the program strengthened Pakistan's plant health capacity; and (c) identify lessons learned and recommendations for future programs; The evaluation will inform the strengthening of Pakistan's plant health capacity under the SPS Distance Learning Program. Relevant lessons from this evaluation will be applied to work planning and the development of new blended learning training programs.

EVALUATION FOCUS AREAS AND QUESTIONS

FOCUS AREAS	KEY QUESTIONS
Relevance	• To what extent did the SPS content in the modules meet the technical needs of Pakistani federal staff in the Department of Plant Protection (DPP) to implement specific techniques and procedures in the field? Pakistani provincial staff? • To what extent did the specific content in the modules meet the policy needs of Pakistani federal policy makers to develop and implement SPS regulations or comply with international trade? Pakistani provincial regulators? • To what extent did the project integrate gender considerations into its activities?
Effectiveness	• To what extent have the SPS modules achieved the intended outcome? • Which participants benefitted the most from the training? Technical? Policy? Federal? Provincial? • To what extent did the translation of the modules into Urdu benefit the comprehensiveness and effectiveness of the training modules?
Efficiency	• What is the optimal delivery method for the distance learning modules?
Impact	• To what extent did the SPS distance learning training result in changes to policy, regulations, or organization of SPS-related units/branches/divisions/agencies in the federal government? Provincial government? • To what extent will the SPS distance learning modules/training result in improved implementation of SPS techniques and procedures in the field? • What is value of trade access for US products into Pakistan compared to the cost of the development and delivery of the SPS modules and training? • What is the value of exports of targeted Pakistani products as a result of SPS training?
Sustainability	• How will the Pakistani federal regulatory agencies integrate the SPS training into its operations? Pakistani provincial government regulatory agencies? • What progress has the Pakistani federal government made toward implementing changes to policy, regulations, or field operations? Pakistani provincial governments?
Lessons learned	• Were there any unintended outcomes, either positive or negative, of the SPS training? • To what extent can the results of the Pakistan training be expected in other developing countries? • What changes can be implemented to the program to improve content and delivery of SPS modules for regulators and technical staff?

Rice field near Askole Village in Baltistan, Pakistan

PROJECT BACKGROUND

Khan and colleagues (2008) captured Pakistan's challenges to comply with international plant health standards, particularly the IPPC standards. In 2009, the United States and Pakistan developed goals and priorities to address this issue for Pakistan. Officials from the United States and Pakistan identified the need to build sanitary and phytosanitary regulatory capacity to advance Pakistan's agricultural trade objectives. In 2010, United States Agency for International Development (USAID) and USDA, introduced an initiative to support the Government of Pakistan's effort for boosting agricultural trade. The interagency partnership launched the *SPS Distance Learning Program* with the goal of strengthening Pakistan's ability to comply with international trade standards. The Foreign Agricultural Service(FAS) and the Animal and Plant Health Inspection Service (APHIS), USDA agencies, led the project in partnership with the Pakistan's Ministry of National Food Security & Research, DPP and coordination with the provincial governments. In 2012, USDA partnered with TAMU and CABI to deliver the SPS training program. The goal of the program was to increase Pakistan's ability to export by improving adherence to international plant health standards.

The distance learning program was a multi-year effort that involved two USDA agencies, FAS and APHIS, and partnerships with TAMU and CABI. FAS played a critical role in coordinating country-to-country discussions, agency-to-agency logistics, development workflows with TAMU, and travel and security issues with CABI. FAS's primary roles were to

keep both agencies and both partners on the same timelines. The program included resources for both the development of the modules and the in-country portion of the program. APHIS and TAMU staff developed the modules and workshop materials, while APHIS, FAS, and CABI staff delivered the review sessions and workshops in Pakistan.

The APHIS staff served as subject matter experts for the content taught and worked with instructional designers at TAMU to create ways to teach the content most effectively. A Steering Committee peer reviewed each module and workshop before TAMU produced the materials. The modules included interactive case studies, videos, and self-check opportunities, while the workshops included short talks, group discussion, and hands-on activities. The modules were available in English and Urdu, and the workshop materials were printed in English.

The team continually assessed the progress of project activities to ensure strategic alignment and achieve a process of improvement. The program was initially intended to include plant and animal health modules, however, based on early assessments, the priority focused on the current needs of Pakistan. Based on the current need, it was decided that the program would prioritize plant health. As the project focused on plant health, the module development team moved from a text-based format to case studies and practical examples. The USDA and TAMU envisioned a contextualized and immersive learning experience, and so the team quickly made adjustments in identifying subject matter experts and created an author handbook to share the USDA's and TAMU's vision for the modules and workshops. TAMU and USDA personnel found that having a subject matter expert willing to present topics using the instructional design strategies selected for this audience streamlined the development of the modules and workshops. Another adjustment the team made was to translate the module into the participants' national language, Urdu. Once this change was made, participants completed the modules in a more reasonable time frame and their comprehension of the content increased.

Rice farmers process a harvest in Punjab, Pakistan.

PROJECT DESCRIPTION

The SPS training program used a blended learning approach. Blended learning combines online and in-person instruction to teach concepts. Blended learning training programs give learners access to an expert's content knowledge anywhere in the world. The SPS training program included a series of 14 computer-based modules, in-person module review sessions, seven in-person workshops, and in-person workshop review sessions. The modules were delivered to Pakistan on a USB drive in English and Urdu. The online modules are available via CABI's website and each range from one to four hours of learning time.

In the beginning, participants had trouble completing the modules independently. Participants reported they did not have personal computers or time to study outside of work. To mitigate these issues, CABI held module review sessions to provide dedicated time to work on the modules and receive technical assistance. Each workshop lasted two to three days and was held on a weekend, in addition to participants' regular professional responsibilities. The module review sessions were held at the DPP offices. First, participants completed an online module on their own or during the module review sessions. Next, participants applied concepts they learned in the modules to real-world activities during the in-person workshops in Pakistan. After the workshop, participants attended a workshop review session. Module reviews, workshops, and workshop review sessions were hosted in Islamabad, Karachi, or Lahore depending on accessibility to the city.

The SPS training program spanned a period of four years, beginning with an orientation workshop in March 2013 and ending with certificate ceremony in May 2017 and a summative module in October 2017. Upon completion of the 172-hour program, participants acquired the essential skills needed to collect and analyze data and to formulate effective policies to increase productivity and expand markets.

MODULES

The SPS Agreement

The IPPC and the Standard Setting Process

Market Access Process

Pest Risk Analysis

Pest Risk Communication

Pest Risk Assessment

Plant Pest Risk Management

The SPS Agreement

The IPPC and the Standard Setting Process

Market Access Process

Pest Risk Analysis

Pest Risk Communication

Pest Risk Assessment

WORKSHOPS

Workshop 1: Orientation

Workshop 2: IPPC and WTO Principles, Standards, and Terminology

Workshop 3: Market Access

Workshop 4: Pest Surveillance

Workshop 5: Pest Risk Analysis

Workshop 6: Phytosanitary Certification

Workshop 7: Inspections

Workshop training locations.

SPS workshop participants getting a hand's-on demonstration of insect trap preparation.

SPS TRAINING PROGRAM DELIVERY TIMELINE

SELF-PACED MODULES

- Online tutorials
- Self-check assessments

REVIEW TRAININGS

- Discussion forums on module topics
- Social networking
- Facilitated by CABI

WORKSHOPS

- Instructor led
- Hands-on activities
- Group problem solving
- Facilitated by USDA Pakistan, USDA SMEs and CABI

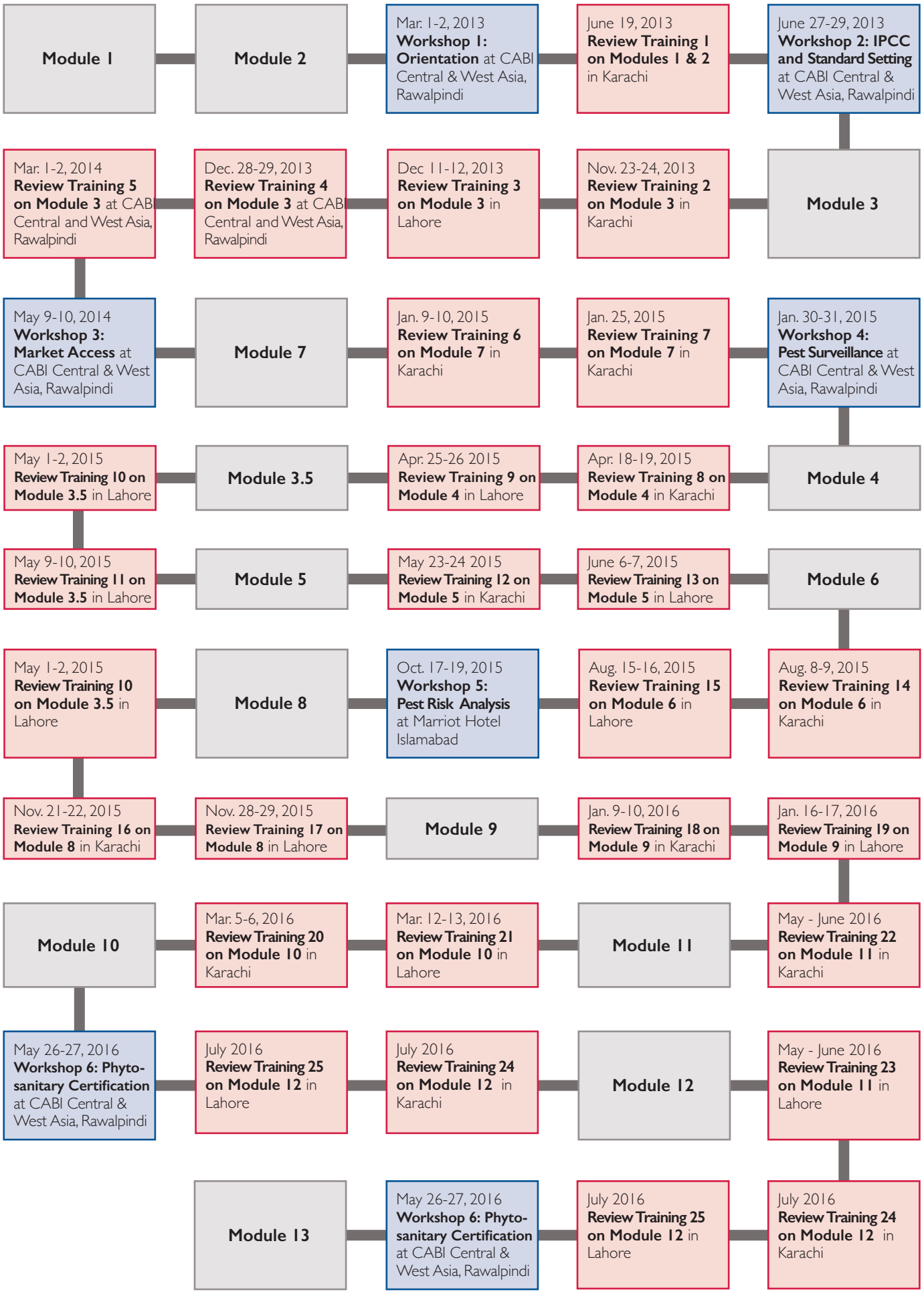

Module 1
Module 2
Mar. 1-2, 2013 Workshop 1: Orientation at CABI Central & West Asia, Rawalpindi
June 19, 2013 Review Training 1 on Modules 1 & 2 in Karachi
June 27-29, 2013 Workshop 2: IPCC and Standard Setting at CABI Central & West Asia, Rawalpindi
Module 3
Nov. 23-24, 2013 Review Training 2 on Module 3 in Karachi
Dec 11-12, 2013 Review Training 3 on Module 3 in Lahore
Dec. 28-29, 2013 Review Training 4 on Module 3 at CABI Central and West Asia, Rawalpindi
Mar. 1-2, 2014 Review Training 5 on Module 3 at CABI Central and West Asia, Rawalpindi
May 9-10, 2014 Workshop 3: Market Access at CABI Central & West Asia, Rawalpindi
Module 7
Jan. 9-10, 2015 Review Training 6 on Module 7 in Karachi
Jan. 25, 2015 Review Training 7 on Module 7 in Karachi
Jan. 30-31, 2015 Workshop 4: Pest Surveillance at CABI Central & West Asia, Rawalpindi
Module 4
Apr. 18-19, 2015 Review Training 8 on Module 4 in Karachi
Apr. 25-26 2015 Review Training 9 on Module 4 in Lahore
Module 3.5
May 1-2, 2015 Review Training 10 on Module 3.5 in Lahore
Module 6
June 6-7, 2015 Review Training 13 on Module 5 in Lahore
May 23-24 2015 Review Training 12 on Module 5 in Karachi
Module 5
May 9-10, 2015 Review Training 11 on Module 3.5 in Lahore
Aug. 8-9, 2015 Review Training 14 on Module 6 in Karachi
Aug. 15-16, 2015 Review Training 15 on Module 6 in Lahore
Oct. 17-19, 2015 Workshop 5: Pest Risk Analysis at Marriot Hotel Islamabad
Module 8
May 1-2, 2015 Review Training 10 on Module 3.5 in Lahore
Jan. 16-17, 2016 Review Training 19 on Module 9 in Lahore
Jan. 9-10, 2016 Review Training 18 on Module 9 in Karachi
Module 9
Nov. 28-29, 2015 Review Training 17 on Module 8 in Lahore
Nov. 21-22, 2015 Review Training 16 on Module 8 in Karachi
May - June 2016 Review Training 22 on Module 11 in Karachi
Module 11
Mar. 12-13, 2016 Review Training 21 on Module 10 in Lahore
Mar. 5-6, 2016 Review Training 20 on Module 10 in Karachi
Module 10
May - June 2016 Review Training 23 on Module 11 in Lahore
Module 12
July 2016 Review Training 24 on Module 12 in Karachi
July 2016 Review Training 25 on Module 12 in Lahore
May 26-27, 2016 Workshop 6: Phyto-sanitary Certification at CABI Central & West Asia, Rawalpindi
July 2016 Review Training 24 on Module 12 in Karachi
July 2016 Review Training 25 on Module 12 in Lahore
May 26-27, 2016 Workshop 6: Phyto-sanitary Certification at CABI Central & West Asia, Rawalpindi
Module 13


Photo: Pul Pitis

Vegetable fields in Hunza Valley, Northern Pakistan

EVALUATION METHODS AND LIMITATIONS

EVALUATION METHODS

The evaluation used a mixed methods design. The evaluation collected longitudinal data from four sources: (1) quantitative surveys of program participants' perspective of the program, (2) quantitative multiple-choice exams on learning outcomes of the module and workshop content, (3) open-ended interviews with program participants, and (4) open-ended interviews with members of the project team. Frequencies, means, and standard deviations were computed for the quantitative instruments. Interview data was coded using axial/ thematic coding and triangulated.


Photo: CABI

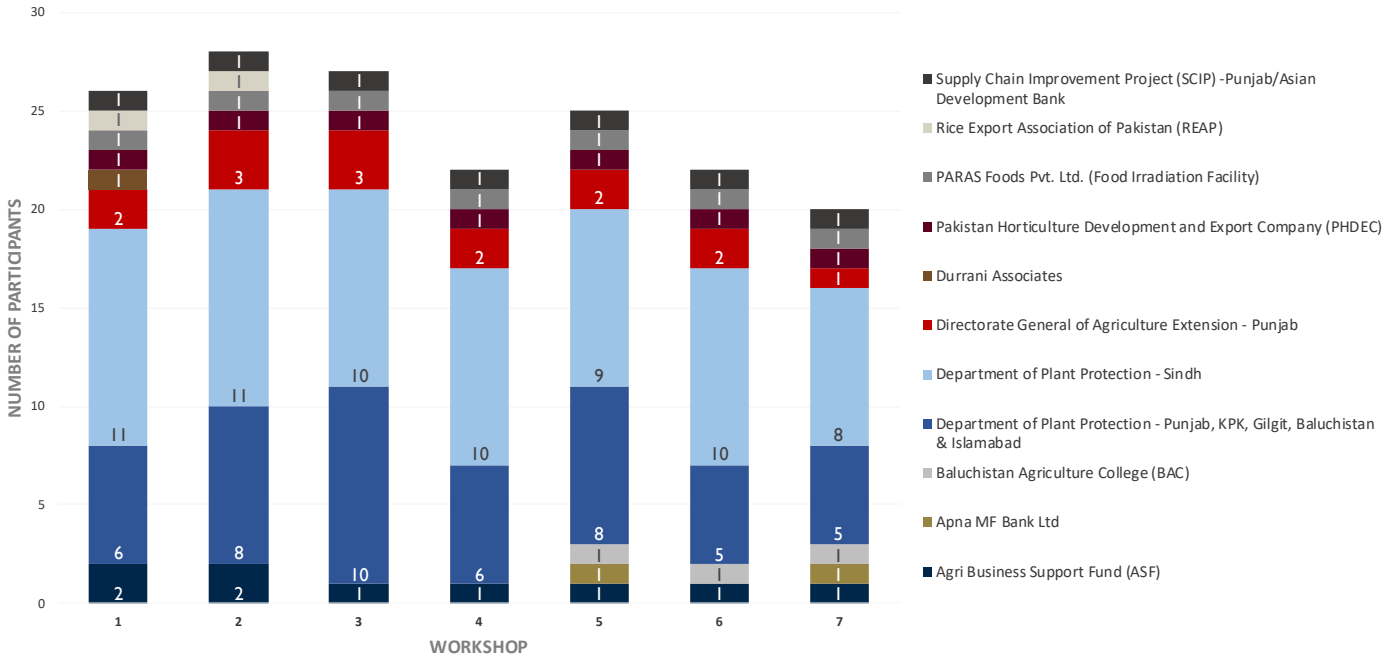
INSTRUMENTS

TAMU created a multiple-choice test for each workshop. The assessments measured the learning objectives of the online module(s) that corresponded to the workshop and the learning objectives of the workshop. TAMU created a questionnaire for participants to provide feedback on the modules and workshops after each workshop. CABI conducted in-person interviews with participants after the workshops using a semi-structured interview protocol.

EVALUATION PARTICIPANTS

The target audiences for the SPS training program were regulatory and scientific officials of the DPP of the Pakistan Ministry of Agriculture and provincial agriculture departments. Participants were nominated by the DPP. Most participants were from the Department of Plant Protection, but professionals from industry and students and faculty from local universities also attended portions of the program. Students and faculty from the local universities did not participate in the study. Over the span of the program, 50 Pakistani participated in the program. Of the 50, 35 regulatory officials and scientific professionals agreed to participate in the program evaluation, giving a 70% response rate. All 35 respondents were male. All the females who participated in this program were from Karachi University and did not participate in the program evaluation. Among the 50 participants, 27 completed the program and received certificates. A total of five participants agreed to be interviewed. Additionally, TAMU conducted semi-structured interviews with key stakeholders from USDA, TAMU, and CABI. A total of 13 key stakeholders were interviewed.

Role of Participants



LIMITATIONS

A limitation of the program evaluation is attrition and irregular participation of participants. Participants participated irregularly due to travel constraints and other work-related commitments. Some participants were not able to participate in every component of the program. Results may vary by participant based on their participation in the program. The project did not initially include a program evaluation plan. The study design was created using the existing instruments included in the instructional design of the program. The project team developed a semi-structured interview protocol with key stakeholders from the USDA, TAMU, and CABI to gain perspectives on questions of interest that were identified toward the end of the project.

A farmer inspects a rice field in Swat Valley, Northern Pakistan

FINDINGS AND CONCLUSIONS

RELEVANCE

EXTENT THE MODULES MET THE TECHNICAL NEEDS OF FEDERAL AND PROVINCIAL STAFF TO IMPLEMENT SPECIFIC TECHNIQUES AND PROCEDURES IN THE FIELD

Most participants (99%) stated that the SPS program was valuable in improving their job performance. Before the SPS training program, federal and provincial staff were conducting inspections, treatments, and other procedures. The SPS training program exposed federal and provincial staff to international organizations and their corresponding standards. Now that Pakistanis are aware of organizations such as Codex and IPPC, they are conducting inspections, treatments, and other procedures using techniques that are aligned to these organizations' guidelines.

> *"Government officials who are benefiting from the training have reported that they are already applying their increased knowledge of trade rules on the job."*
>
> — **KELLY SKUPNIK, USDA PROGRAM MANAGER**

EXTENT THE MODULES MET THE POLICY NEEDS OF PAKISTANI FEDERAL POLICY MAKERS TO IMPLEMENT SPS REGULATIONS AND COMPLY WITH INTERNATIONAL TRADE

Since the implementation of the SPS program, the Director Generals and Deputy Director Generals of DPP have rescinded several regulations based on science. The DPP is now conducting pest-risk assessments to determine measures to take and implement policies and regulations that are scientifically justified.

EXTENT THE PROJECT INTEGRATED GENDER CONSIDERATIONS INTO ITS ACTIVITIES

A balanced representation of gender was considered in the design of the modules and workshops. The program intentionally included a balance in female and male characters in the module's case studies and scenarios. The program also included a balance between female and male subject matter experts who wrote the modules or presented sections of the workshop. The recruitment process did not consider gender as a criterion for participating in the program. The DPP recommended participants based on their role in the DPP. Among the fifty participants, four were female.

EFFECTIVENESS

EXTENT THE SPS MODULES ACHIEVED THE INTENDED OUTCOME

Participants unanimously stated that the SPS training program increased their capacity to implement SPS techniques and procedures. During this project, many participants shared how they increased their knowledge and skills related to SPS topics. Some participants gained promotions, including one participant who originally worked at a provincial extension office and was promoted to a research position with the Pakistan Research Council due to his increased knowledge and his ability to advocate for practices based on IPPC standards. Participants also had a change in perception of trade access. Participants now have an understanding that trade agreements are not based on subjective discrimination of a country but rather objective international rules as outlined by IPPC guidelines. Between 2014 and 2017, Pakistan has tried to increase mango exports to the United States and citrus fruit exports to Malaysia. The primary challenge for Pakistan was to improve inspections of these commodities so that other countries could receive those consignments. The program included a specific SPS module and workshop on inspections, and modules and workshops on creating pest-free areas, managing pest risks, and surveying pests. Participants also shared that the program offered them the opportunity to evaluate their country's current SPS practices relative to IPPC guidelines. Participants expressed the need for a well-organized SPS program run by the Pakistani government.


Photo: CABI

"The old perception about discrimination in trade with small countries by the most influential countries, now finds no place in reality as the international trade is now based on well-defined and agreed upon principles and phytosanitary measures."

— **SPS PARTICIPANT**

PARTICIPANTS BENEFITING FROM THE TRAINING

The majority of the participants came from the DPP. Participants from the DPP benefitted the most from the training. The second group to most benefit from the SPS training program was the assistant professors from local universities. Dr. Aamir Humayn Malik, CABI, says, "the SPS [agreement] is new to us and so even now in the universities, so many teachers and staff are not aware of these things." These assistant professors will now include SPS principles and measures in their curriculum and establish a continuum for a broader discussion with their students.

The SPS training program was created to benefit individuals in a variety of SPS-related roles because some SPS standards are more technical in nature while others are more regulatory in nature. Both federal and provincial participants benefited from the training. Those in technical roles and policy makers "took away different things from different modules." Some modules and workshops, such as "Inspections," were focused on technical skills that were most beneficial to participants in their technical roles. While other modules and workshops, such as, "The IPPC and the Standard Setting Process," were focused on regulatory topics that were most beneficial to participants involved with policy making.

Stakeholders suggested the modules and workshops were designed for individuals who were newly hired or early into the SPS field. Individuals mid-career or beyond may already have experience in some of the topics presented in this training program. On average, 82% of the participants stated the content was appropriate for their current level.

EXTENT THE TRANSLATION OF THE MODULES BENEFITTING THE EFFECTIVENESS OF THE TRAINING

The translation from English to Urdu benefitted all participants. Although participants spoke or were educated in English, participants' English-speaking level was a factor that contributed to participants' learning. During the workshops, facilitators noticed that during group work, participants would discuss the case study or exercise in Urdu and then report back the group's results to the larger group in English. Participants also expressed they were more comfortable learning new material in their native language. Participants requested early on in the program that the training materials be written and spoken in Urdu.

EFFICIENCY

OPTIMAL DELIVERY METHOD FOR THE DISTANCE LEARNING MODULES

The original plan was to disseminate the modules online. Early into the project, the team recognized that internet and electricity was unreliable in the region. The optimal delivery method for the distance learning modules to Pakistan was to put the modules on USB drives. USB drives allowed participants to work through the modules without the need for an internet connection.


Photo: CABI

IMPACT

CHANGES TO POLICIES AND ORGANIZATION OF SPS UNITS IN FEDERAL AND PROVINCIAL GOVERNMENTS

Updated DPP's SPS training program

The DPP last provided training on SPS content in 1960. The SPS training program provided materials with the latest information and skills needed to comply with international trade and implement SPS regulations that align with the SPS agreement.

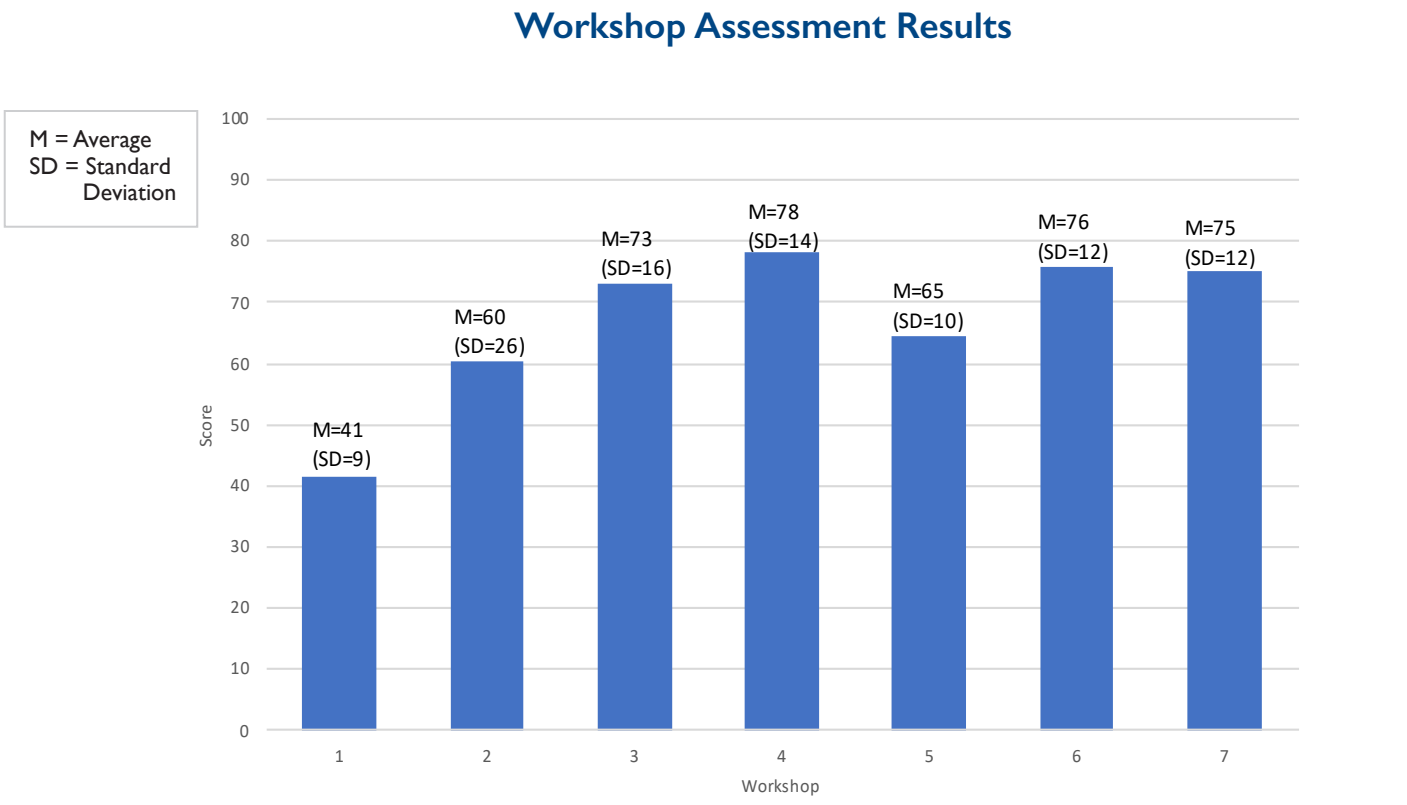
Reformed the DPP

Participants are appealing to the federal government to reform the DPP. They have proposed a new structure and organization of SPS-related roles in the federal government, along with more personnel and resources. Participants are proposing new SPS policies and regulations that align to international guidelines and will increase trade capacity. The DPP has proposed five new quarantine offices to facilitate trade with three countries.

IMPROVED IMPLEMENTATION OF SPS TECHNIQUES AND PROCEDURES IN THE FIELD

Growth in knowledge and skills of SPS techniques and procedures

Participants' knowledge and skills grew over the course of the program. Initially, Pakistani federal staff struggled with the amount of new information. As participants became more familiar with the content, they were able to comprehend new knowledge and skills more easily. Program developers and participants, alike, stated that the first set of modules covered within the first four workshops created a foundation for the more technical topics covered later in the program. Participants found using a case study or scenario particularly helpful to them in implementing specific techniques and procedures in the field. Participants particularly valued the pest-risk analysis modules. Participants realized the importance of conducting pest-risk analysis on their imports and exports. All participants indicated that the modules and workshop improved their understanding of the role of pest risk analysis (PRA) in trade decisions, while 92% stated that PRA modules and workshops improved their ability to find and access useful information sources to perform a PRA.



INCREASED PAKISTANI FEDERAL STAFF AND PAKISTANI PROVINCIAL STAFF'S CONFIDENCE

The training program boosted Pakistan's confidence in implementing specific techniques and procedures. For the federal staff, this program empowered them to "sit at the table" with their trading partners and negotiate terms. As a result, federal staff was more effective in negotiations and added more than seven trade protocols with other countries. The provincial staff shared that the program helped them improved their job. Similarly, the provincial staff had more confidence in the federal staff's ability to negotiate trade agreements after seeing the increase in trade. Specifically, participants stated they had more confidence in their ability to perform a PRA using the steps provided by the training. Among the 24 respondents, 71% stated they were confident. One CABI staff member stated, "I did notice a definite improvement over the years in terms of participation in the workshops, the number of questions asked, the sort of discussion and debate in small groups, and the language they were using." At the beginning of the program, some of the senior participants who had more experience with these topics and more confidence dominated the discussions. Over time the junior participants, who were less confident in the beginning, contributed equally to the discussions and performed similarly on workshop tests.

Photo: CABI

"The USDA SPS Distance Learning Training Course has significantly improved Pakistan's ability to have trade dialogues based on science, not politics."

— **DAVID WILLIAMS, AGRICULTURAL ATTACHÉ IN ISLAMABAD**

VALUE OF TRADE ACCESS FOR U.S. PRODUCTS TO PAKISTAN VS. COSTS OF SPS TRAINING PROGRAM

There are a few examples that provide some insight to the value of trade access for U.S. products into Pakistan. One individual shared a time when a new federal official put into place a series of new procedures and measures that effectively would have stopped trade of U.S. soy beans, soymeal, dried distillers' grains, and several associated products valued at approximately $200 million dollars annually. Due to the SPS training program, Deputy Director Generals were able to inform the officials that Pakistan needed scientific justification to impose such a measure. As a result, trade has continued as the team conducts the pest-risk assessment according to the SPS agreement.

The cost of developing the SPS training program was approximately $1.5 million. In comparison to other training programs, the cost of developing the SPS training program was an inexpensive program. More than half of the instruction was delivered online, which minimized or eliminated costs associated with hosting an in-person training, such as travel costs and location fees. Additionally, Pakistanis can still access the content covered in the modules long after the program has ended. To determine the value of trade access versus the costs of this program, we can look at the soy bean sector. "If we look at only the continued market access for $200 million worth of soy beans, that's a positive cost/benefit. That's a benefit many times over," says Lottie Erickson, SPS Regulator Advisor, USDA.

VALUE OF EXPORTS OF TARGETED PAKISTAN PRODUCTS

Agriculture is the backbone of Pakistan's economy and almost 70% of Pakistan's exports are agricultural-based exports. For every 100 rupees, 70 are from agricultural-based exports. Twenty-four percent of Pakistan's GDP directly or indirectly comes from the agriculture sector and 47% of Pakistan's labor force is involved with the country's agriculture.

> *"The SPS program has made a real contribution to Pakistan's agriculture sector."*
>
> — **LOTTIE ERIKSON, SPS REGULATORY ADVISOR, USDA**

Mangoes

Prior to the SPS training program, Pakistani SPS officials faced unclear challenges in exporting their mangoes to other countries. As a result of the SPS training, officials have a better understanding of the barriers to trading mangoes and have made changes that will expand access to trading. Officials understand that Pakistan must comply with IPPC standards and that many stakeholders, from farmers to federal officials, have a role in fulfilling IPPC standards. Between 2013 and 2016, Pakistan built treatment facilities to treat this commodity according to IPPC guidelines. Pakistan has entered agreements with the U.S. and other countries to treat mangoes on arrival. As of 2016, Pakistan reports that 100% of its mangos are passing IPPC guidelines.

Rice

Pakistani rice is a $1.7 billion industry and makes up 8.5% of total world rice exports[1]. Khapra beetles have plagued Pakistan's rice exports in the past. Before the SPS training program, officials were using unsuccessful pest management, inspections, and treatment techniques. After the SPS training program, officials were trained in a variety of pest management, inspection, and treatment techniques. In the coming years, we expect to see fewer shipments returned or destroyed due to improved phytosanitary inspections and management best practices.

[1]Workman, D. (2017). Rice Export by Country. World's Top Exports. Retrieved September 11, 2017.

SUSTAINABILITY

WAYS TO INTEGRATE THE SPS TRAINING INTO PAKISTANI FEDERAL & PROVINCIAL AGENCIES' OPERATIONS

- Pakistani federal and provincial government regulatory agencies plan to integrate the SPS training into its new hire onboarding process.

- Punjab, Pakistan's second largest province, plans to use the training at the provincial level. The province plans to train a cadre of SPS technical staff to complete technical skills (e.g., inspections, treatments) and work under the supervision of the federal agency.

- Pakistani provincial government regulatory agencies have discussed integrating the SPS training into extension initiatives. Punjab's extension efforts plan to use a lighter version of the program that will include a portion of the modules and workshops. Punjab's extension office will use modules and workshops that cover technical skills, such as pest-risk assessment, pest management, and inspections, to train local producers. The provincial agencies view SPS measures as the responsibility of multiple groups, from the federal government to the farmers.

- The Pakistan Agricultural Research Council plans to implement the modules with their research staff.

- There were a few participants from industry settings that either exported or imported commodities. Pakistani exporters and importers have also requested that their personnel integrate the SPS training into its operations.

- Universities are interested in integrating the SPS training program into their coursework.

Photo: CABI

"Currently the plant protection policy of agriculture extension is not addressing the issue of farming community with regard to phytosanitary measures. So, in plant protection efforts, there should be the involvement of all stakeholders."

— **SPS PARTICIPANT**

PROGRESS OF PAKISTANI FEDERAL AND PROVINCIAL GOVERNMENTS IN IMPLEMENTING CHANGES TO POLICY, REGULATIONS, OR FIELD OPERATIONS

Collaborating with DPP to Change Policies and Regulations

The SPS training program has strengthened and expanded communication between the Pakistani government officials and DPP staff. The DPP is in regular conversations with government officials in writing legislation and negotiating trade protocols that align with IPPC guidelines.

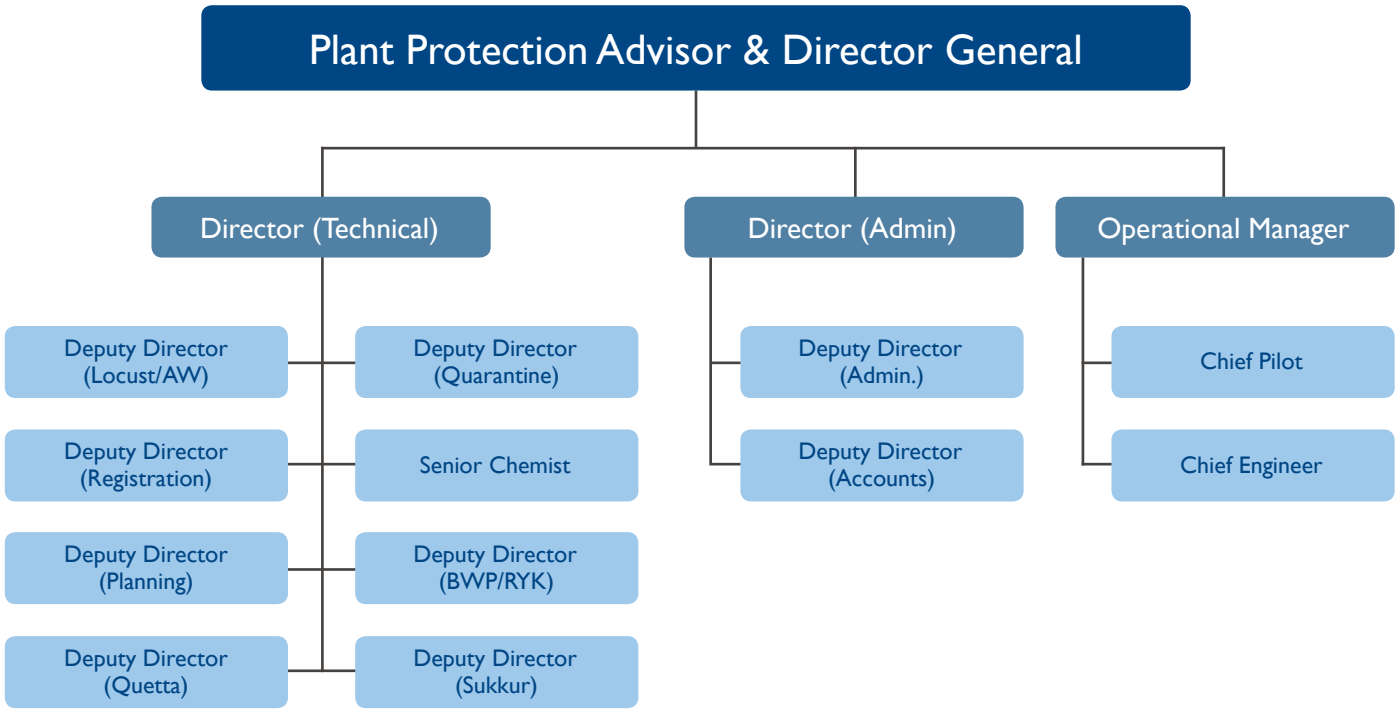
Increasing SPS Capacity

- The federal and provincial governments understand the need for a well-organized DPP program. The government is adding more personnel to the DPP. As of fall 2017, the DPP has created seven new SPS positions, including a pest-risk analysis expert. DPP is headed by the Plant Protection Advisor & Director General, who is assisted by the Director (Technical) and Director (Administration) as heads of technical and administrative wings. The technical wing is composed of five divisions located in Karachi; namely Plant Quarantine, Pesticides Registration, Locust Control, Aerial Pest Control, and Planning & Development, and three regional offices located in Quetta, Bahawalpur, and Sukkur. All these offices are headed by a Deputy Director. The administration wing is composed of Administration Division and Accounts Division, which are led by Deputy Directors.

ORGANIZATIONAL CHART

Department of Plant Protection

Government of Pakistan



- The DPP is creating a communication strategy to connect all stakeholders including researchers, importers, exporters, and farmers. The DPP website is actively sharing new policies, procedures, and plant health information to stakeholders. As of September 2016, the DPP has joined the FAO and is in compliance with FAO's national reporting obligations.
- The federal government created an action plan to reduce the number of non-compliance notices. Through the action plan, the federal government has built modern treatment plants between 2013 and 2016.
- The DPP has proposed five new quarantine offices to facilitate trade with three countries.

Updating Field Operations

The federal government is updating their field operations to promote bilateral trade.

- The DPP, in collaboration with the provincial governments, conducts general pest surveillance and specific surveys of crops.
- The DPP provides the pests status of a particular commodity to the importing country as part of their PRA process.
- Per FAO's national reporting obligations, the DPP established a list of non-compliances and is actively reporting this information to FAO and trading partners.

Photo: CABI

Farmer inspecting a citrus crop.

RECOMMENDATIONS

Participants shared both positive and negative unintended outcomes of the program, the extent to which the SPS program can be replicated in other countries, and recommendations to improve the content and delivery of the content.

OUTCOMES

- The USDA and DPP developed a strong relationship based on trust. This mutually beneficial relationship opened pathways for broader trade discussions and better understanding of each unit's role in gaining trade access.
- The SPS training program created networking opportunities among different groups. Regulators, academics, extension officers, and technical staff shared their perspectives and experiences with topics during the workshops.
- Universities, private companies, and other government agencies, such as the Pakistan Agricultural Research Council and extension offices, have requested to use the program within their organizations.
- The USDA is sharing modules on USBs with international offices that are distributing them to countries' agriculture counterparts. The USDA views the modules as part of a capacity-building toolkit that can be disseminated widely and cost effectively. Modules were sent to China, Thailand, India, and Pretoria, South Africa.
- The USDA is using the modules to train new staff in its onboarding process.

- The original plan was to disseminate the modules online. Due to unreliable internet connection, the project team decided to deliver the modules on USB drives. Once the modules were offline and on USB drives, the project team no longer had the ability to track participant's progress with the modules. If the modules remained online, the project team would have been able to track how long it took for participants to complete the modules and record participants' responses to questions in the module.

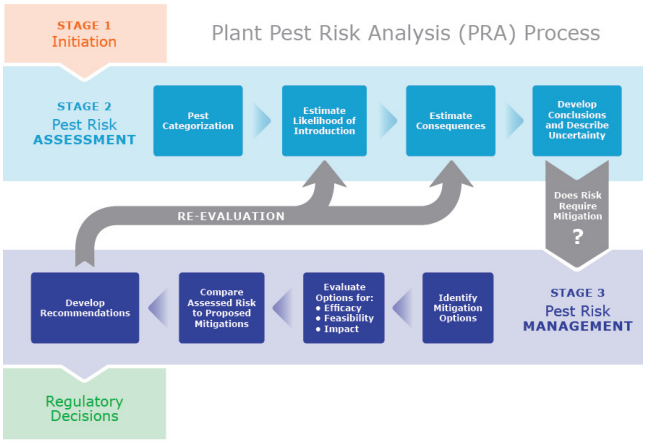
EXTENT RESULTS SEEN IN PAKISTAN ARE EXPECTED IN OTHER DEVELOPING COUNTRIES

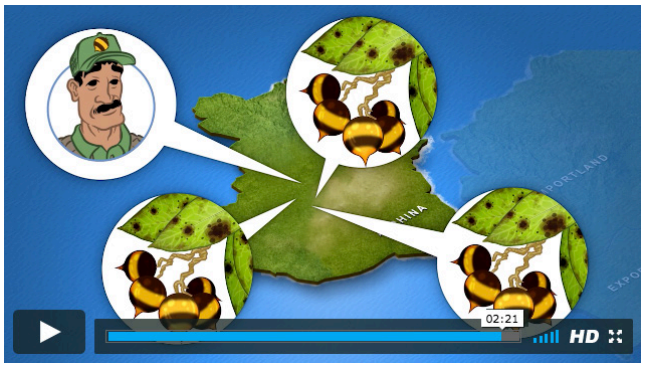
Most respondents expect to see similar results from the SPS training program in Pakistan for other countries. Each country has unique aspects that will impact the extent of the results seen in Pakistan. Some countries are already using a system that is based on science and standards. It will be easier for these countries to adjust their system according to internationally accepted standards and scientific results than for countries whose systems are not based on science or standards. As seen in Pakistan, one expects to see the SPS training program align a country's plant health operations to scientific decision making and international plant health standards to increase trade to the global market.

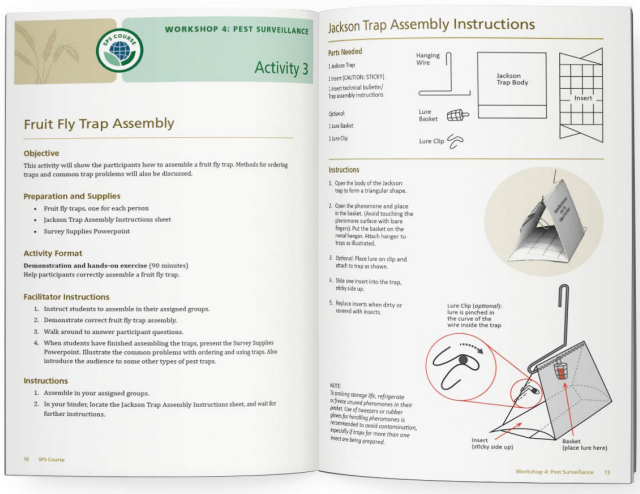
SUGGESTIONS TO IMPROVE CONTENT AND DELIVERY OF SPS TRAINING PROGRAM

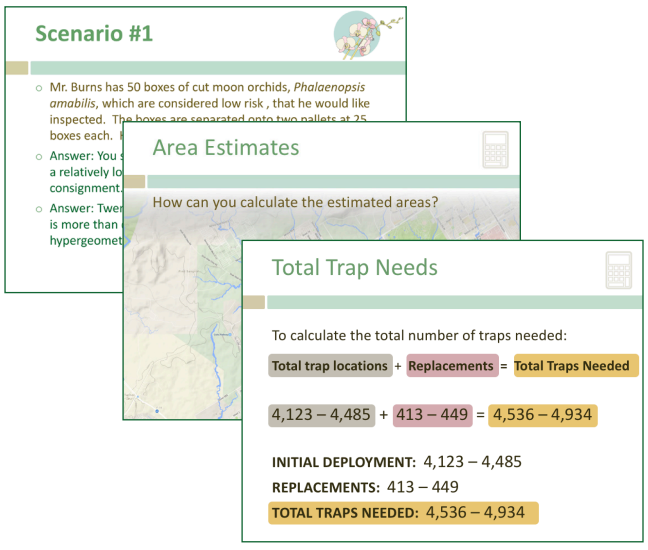
- Program developers recommended that the program should expand the recruitment efforts to include more women, faculty and/or students from the university, staff from the department of crop protection, and personnel from the exporter and importer industries.
- Stakeholders of the program shared that the biggest challenge was communicating the value of this program to the recruited participants. They requested materials to assist them in sharing the program with potential adopters (e.g., universities, extension agencies, industry). The program gained advocates over the years by showing the modules to individuals. However, these champions have struggled in creating a concise message that encompasses the vision and value of the program to reach individuals who do not immediately understand blended learning and the demand for the type of content presented. A strategy on how to share this program with others would support these champions' efforts in disseminating this program, as would a strategy on how to communicate to new workshop facilitators on how to use these materials.
- The most common recommendation to improve the content and delivery of the SPS program was to have one-to-one coverage of module to workshops. Some workshops cover multiple modules, while some module topics are not covered in workshop format. By covering one module in one workshop, participants (10%) felt they would have more time for hands-on exercises, case studies, and field investigations on a specific module topic. By covering fewer topics in one workshop, participants can gain a deeper understanding of a single topic and spend more time to practicing procedures. Participants (16%) most often asked for more case studies to practice procedures and opportunities to observe an expert go through the process.
- USDA, CABI, and TAMU personnel recommended that the program expand to animal health topics. They would like to see a blended learning program created to build capacity for animal health topics and follow the OIE standards. Babar Bajwa, CABI Regional Director, summarized other animal health advocates comments as, "I would say that it is a very good program, what we would like is that the chain can be completed if OIE [standards] is there, and it completes the big picture."
- Given the working language of IPPC is English, a consideration of providing access to both languages was recommended.
- Agencies interested in hosting in-person trainings should consider security risks and select locations that meet partnering agencies' and organizations' security guidelines. USDA-FAS navigated all the parameters surrounding USDA and CABI's security standards. Given the security environment in Pakistan, restrictive travel limited access for some of the USDA-selected facilitators to deliver the workshop.
- Agencies interested in using a blended learning approach should conduct a learner analysis, context analysis, and task analysis. These analyses provide information on what support systems are needed to successfully deliver the training.

EXAMPLE MODULE & WORKSHOP MATERIALS









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