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The U.S. Government's Global Hunger & Food Security Initiative



Sanitary and Phytosanitary Distance Learning Program



USAID
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Sanitary and Phytosanitary Distance Learning Program

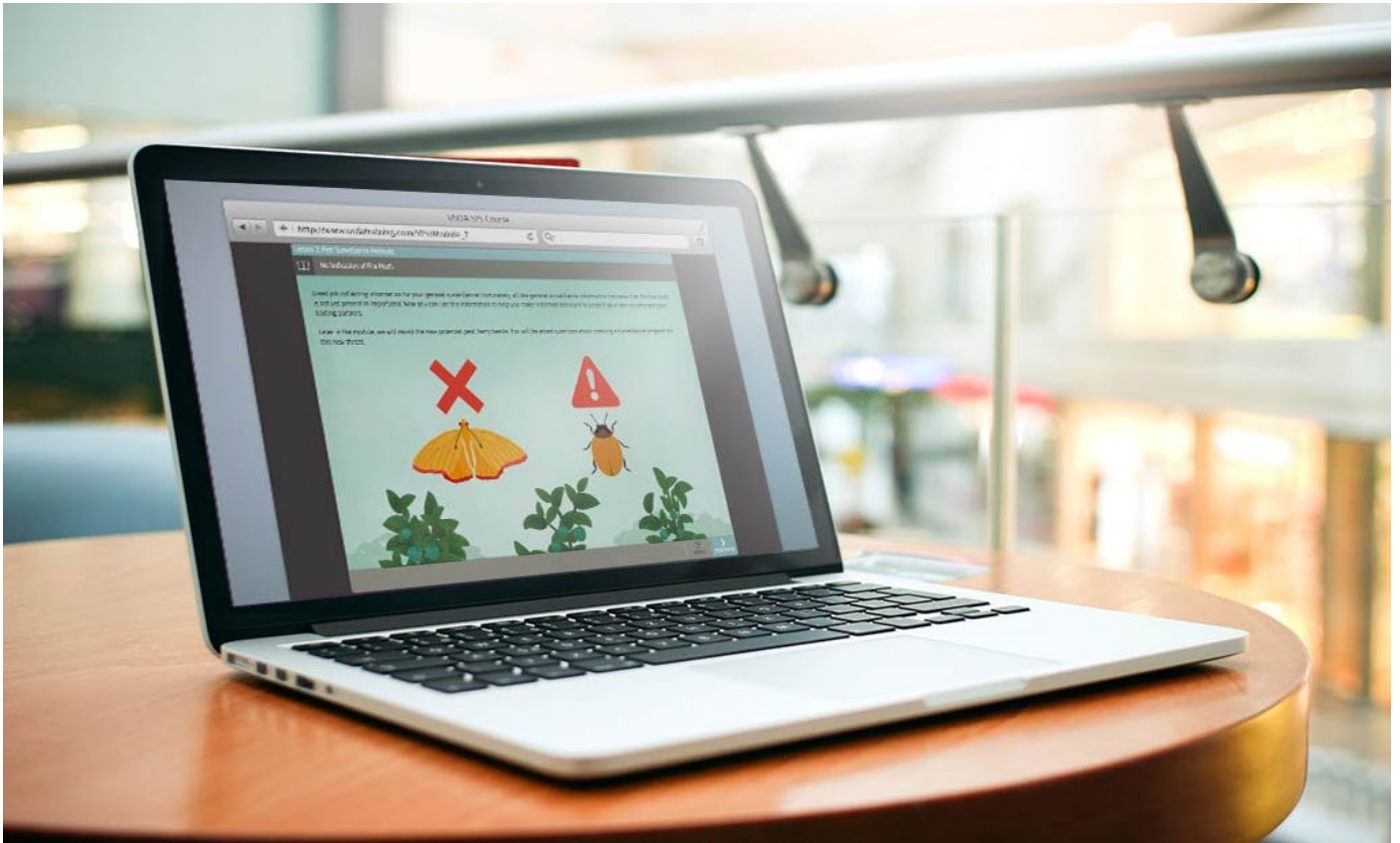
A partnership between the U.S. Department of Agriculture (USDA) and the Agency for International Development (USAID) to develop and share online training modules on sanitary and phytosanitary standards (SPS) concepts across plant health, animal health, and food safety with the international community.

Contents

- Executive Summary..... 1
- Deliverables..... 2
- Deliverables In-Depth..... 3

June 2022

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USDA # TA-CR-17-008



Executive Summary

This is a final program summary of the Sanitary Phytosanitary Standards (SPS) Distance Learning Program implemented by the United States Agency for International Development (USAID), the United States Department of Agriculture (USDA), and Texas A&M University (TAMU). The program was conducted April 2017 to April 2022 by the Center for Educational Technologies (CET) at TAMU. In 2017, after reviewing the impact that the SPS Distance Learning Program had on the Pakistan community, United States Agency for International Development (USAID) and USDA, viewed the modules as key components of a capacity-building toolkit that could be disseminated widely and cost effectively. The interagency partnership decided to convert the existing 14 SPS plant modules from USB drive to a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform, a site developed specifically to host and share these learning modules and materials for the international community. New modules, workshops, and knowledge management content were developed as part of this five-year effort that involved collaboration across multiple USDA agencies including, the USDA-FSN team, USDA-APHIS, USAID, FDA, and USDA-APHIS Veterinary Services. This effort included resources for both the conversion of the modules, their translation into Spanish and French, and the development of new modules and workshops.

Knowledge management was also a priority of this program with multiple blogs, webinars, promotional videos, and one-pagers developed in dedication to promoting the SPSCourses.com platform and the robust suite of resources available for free to all learners. The SPS training program continues to support a blended learning approach. The existing program contains over 180 hours of content, including 26 computer-based modules and 10 workshops. 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.

Deliverables

The list immediately below briefly outlines the deliverables tasked and completed during the duration of this program. Each deliverable will be discussed more comprehensively in the following section.

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1. Conversion of the existing 14 SPS plant modules from USB drive to a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

 2. Translation of the existing 14 SPS (plant) modules to Spanish as a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

 3. Development of 2 additional two-day SPS workshops, including all accompanying resources such as Facilitator's Guide, PowerPoint presentations, handouts and activity worksheets (all in English language). USDA, USAID and other appropriate stakeholders will determine the workshop topics.
 - a. Plant Pest Identification Systems and Pest Free Concepts Workshop
 - b. Phytosanitary Treatments Workshop

 4. Development of 1 additional SPS module, up to 4 contact hours in duration, focusing on Animal Health. The module will be delivered in a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

 5. Development of 1 additional SPS module, up to 4 contact hours in duration, focusing on Food Safety. The module will be delivered in a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

 6. Development of a workshop on Food Safety.

 7. Translate Animal Health module to Spanish.

 8. Development of a workshop on Animal Health.

 9. Translation of 2 original workshops into Spanish.
 - a. Inspections Workshop
 - b. Pest Risk Analysis Workshop

 10. Transform the Post-Harvest Handling Manual in Spanish into a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

 11. Provide knowledge management and communication services.

 12. Develop 5 train-the-trainer toolboxes to host capacity building workshops online.

Deliverables In-Depth

DELIVERABLE

Conversion of the existing 14 SPS plant modules from USB drive a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

After the success of the SPS Distance Learning Program project in Pakistan, the USDA requested that the Center for Educational Technologies (CET) convert all existing plant health modules from Flash to HTML5 capability. Initiated in 2017, this deliverable was completed by the end of August 2018. All 14 modules were made available on the SPSCourses.com for free to learners across the globe who created an account. Since the launch of SPSCourses.com, 3,364 users have created accounts. Among the 3,364 current learners, more than three-quarters (75%; n=2,510), access the learning resources in English. Since the release of the Plant Health modules in English, 510 learners have completed a total of 1,681 modules. The Pest Surveillance module has the highest number of completions with 258 users [See Figure 1.1]. The second most popular module is Plant Pest Identification Systems with 210 completions. In 2019, the CET created individual module certificates of completion that could be earned by learners who review all content with an individual module and achieve a passing score on the module post-assessment. This addition has been extremely popular amongst participants interested in having documentation of their coursework. Since their release, 930 certificates have been generated across 13 modules (*note: SPS Course Review does not have a certificate*).

The online plant modules have demonstrated learning gains in learner knowledge of module content. For example, of the 366 learners who completed the Inspections module, learners' average score on the pre-test was 46.84 (SD = 12.37), and they scored an average of 83.02 (SD = 13.58) on the post-test. The difference between pre-test and post-test demonstrates a statistically significant and very large learning gain after completing the Inspections module ($t(365) = 45.22, p < .001, \text{Cohen's } d = 15.31$). The table below displays that all of the modules demonstrated a statistically significant and very large learning gain by learners after completing the plant health module.

MODULE NAME	PRE-TEST Mean (SD)	POST-TEST Mean (SD)	t	P value	Cohen's d
Inspections (n=366)	46.84 (12.37)	83.02 (13.58)	-45.22	<.001	15.31
IPPC and the Standard Setting Process (n=121)	28.6 (10.43)	77.19 (17.14)	-31.01	<.001	17.24
Market Access (n=75)	4 (13.38)	46 (19.92)	-16.81	<.001	21.64
Pest Free Concepts (n=104)	73.55 (14.29)	90.5 (13.99)	-15.33	<.001	11.28
Pest Risk Analysis (n=228)	42.16 (10.67)	90.9 (10.13)	-58.92	<.001	12.49
Pest Risk Assessment (n=252)	52.31 (12.83)	79.76 (18.07)	-26.59	<.001	16.38
Pest Risk Communications (n=15)	28 (12.65)	84 (13.52)	-16.04	<.001	13.52
Pest Risk Management (n=209)	70.72 (17.65)	81.63 (18.06)	-10.75	<.001	14.66
Phytosanitary Certification (n=18)	53.09 (15.03)	59.26 (11.43)	-2.40	0.028	10.93
Phytosanitary Treatments (n=153)	46.08 (21.34)	60.78 (33.23)	-9.99	<.001	18.20
Pest Identification (n=251)	68.08 (14.53)	91.28 (12.67)	-28.16	<.001	13.06
SPS Agreement (n=239)	45.65 (6.17)	85.15 (13.02)	-47.02	<.001	12.99
Surveillance (n=490)	55.82 (14.19)	67.71 (12.95)	-22.92	<.001	11.49

DELIVERABLE

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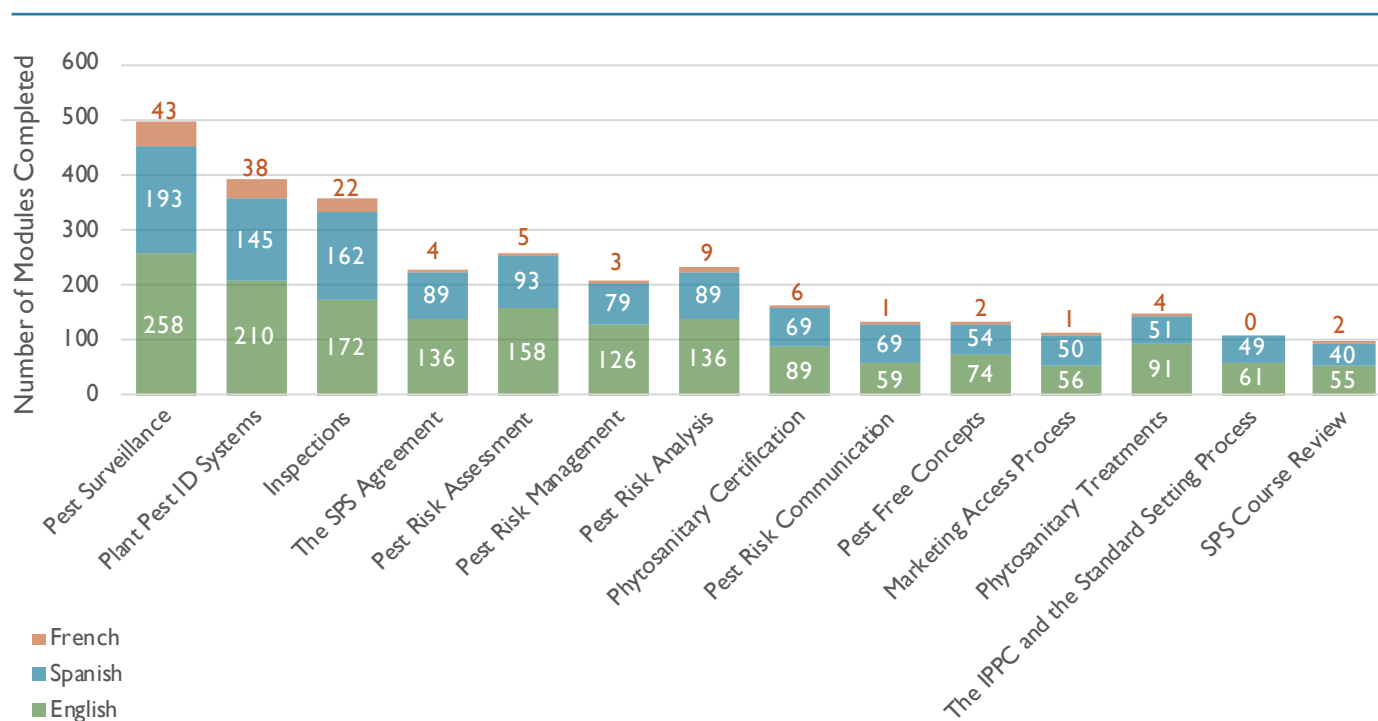
Translation of the existing 14 SPS (plant) modules to Spanish as a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

As each of the 14 SPS plant health modules in English were converted from Flash to HTML5 capability, the Center for Educational Technologies (CET) worked with a third-party translation vendor to translate each of the modules into Spanish, with a focus on the Latin American-Spanish dialect. Initiated in 2017, this deliverable was completed by the end of August 2018. All 14 modules were made available on the SPSCourses.com for free to learners across the globe who created an account. Among the 3,364 current learners, 603 learners have accessed these learning resources in Spanish. Since the release of the Plant Health modules in Spanish, 253 learners have completed a total of 1,232 modules. The Pest Surveillance module has the highest number of completions with 193 users [See Figure I.1]. The second most popular module is Inspections with 162 completions. Since certificates of completion were added to the course, 892 certificates have been generated across 13 modules (*note: SPS Course Review does not have a certificate*).

Note: During this time via a separate agreement with USDA-FAS Agreement No. TA-CR-17-010, the 14 SPS (plant) modules were translated to French as a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform. For marketing and reporting purposes, additional details on course activity in French is provided directly below.

In 2018, the CET worked with a third-party translation vendor to translate each of the modules into French as part of an agreement with USDA-FAS. Initiated in 2017, these modules were completed and added to SPSCourses.com by December 2018. Among the 3,364 current learners, 246 learners have accessed these learning resources in French. Since the release of the Plant Health modules in French, 60 learners have completed a total of 140 modules. The Pest Surveillance module has the highest number of completions with 43 users [See Figure I.1]. The second most popular module is Plant Pest Identification Systems with 38 completions. Since certificates of completion were added to the course, 68 certificates have been generated across 13 modules (*note: SPS Course Review does not have a certificate*).

Figure I.1. Stacked bar chart reflecting the number of learners who completed each SPS Plant Health learning module across the English, Spanish, and French translations.



After the success of the SPS Distance Learning Program project in Pakistan, the USDA requested that the Center for Educational Technologies (CET) convert all existing plant health modules from Flash to HTML5 capability. Initiated in 2017, this deliverable was completed by the end of August 2018. All 14 modules were made available on the SPSCourses.com for free to learners across the globe who created an account. Since the launch of SPSCourses.com, 3,364 users have created accounts. Among the 3,364 current learners, more than three-quarters (75%; n=2,510), access the learning resources in English. Since the release of the Plant Health modules in English, 510 learners have completed a total of 1,681 modules. The Pest Surveillance module has the highest number of completions with 258 users [See Figure 1.1]. The second most popular module is Plant Pest Identification Systems with 210 completions. In 2019, the CET created individual module certificates of completion that could be earned by learners who review all content with an individual module and achieve a passing score on the module post-assessment. This addition has been extremely popular amongst participants interested in having documentation of their coursework. Since their release, 930 certificates have been generated across 13 modules (*note: SPS Course Review does not have a certificate*).

a. Plant Pest Identification Systems and Pest Free Concepts Workshop

In Spring 2019, TAMU worked with subject matter experts Yilmaz Balci and David Robinson to author and develop a workshop on Plant Pest Identification and Pest Free Concepts. Within the Plant Pest Identification workshop, participants learn how to identify basic diagnostic features and characteristics of known pest groups to help inform the identification process. They also explore how to leverage available pest identification resources to differentiate between harmless organisms and actionable pests. By the conclusion of the workshop, learners review what steps are taken with a pest of concern during the identification process. In the Pest Free Concepts workshop, participants consider how pest free areas and other management programs can be utilized to support phytosanitary certification for exported commodities and strengthen the scientific justification for an importing country to require phytosanitary measures. These two workshops were piloted in Cambodia in early Spring 2020.

b. Phytosanitary Treatments Workshop

In Summer 2019, TAMU worked with subject matter expert David Kleinguenther to author and develop a workshop on Phytosanitary Treatments. Within this workshop, participants explore different types of treatments and the pros and cons of their use. In addition to building a deeper understanding of the complex treatments process, learners are introduced into the phases a commodity must move through before it enters the market for purchase. Once learners can show their understanding of the basics, they are given opportunities across different activities to apply their knowledge to real-world scenarios where they must review documentation, set treatment schedules, make decisions necessary to prevent the introduction of foreign pests and diseases and protect the agricultural health of the fictional nation they are representing. The Treatments workshop was piloted in Cambodia in late August 2019.

DELIVERABLE**4**

Development of 1 additional SPS module, up to 4 contact hours in duration, focusing on Animal Health. The module will be delivered in a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

Texas A&M and the USDA collaborated together to devise an outline for an Animal Health Module discussing the high-need training areas of risk-based surveillance, assessment and emergency response to outbreak. In October 2019, the USDA hosted a conference call with members of APHIS Veterinary Services, to discuss the project, establish a steering committee and begin the process of identifying subject matter experts to author the module and workshop alongside Texas A&M. In Spring 2020, the USDA Veterinary Services identified three subject matter experts: Robyn Corcoran, Lisa Rochette, and Rebecca Gordon. Authoring for the module was completed in Summer 2020 and production began in Fall of 2020. Leveraging a state-of-the-art authoring platform, the module highlights historical and recent animal disease events from around the globe and supports foundational learning ideas with high-quality graphics, illustrations, and professional videos including: The Value of a Modern Surveillance and Emergency Response Process; International Trade and Animal Health; Import Risk Analysis; Risk Management and Risk Communication; and Emergency Preparedness and Response. The module concludes with a case study that places learners in a fictional country that's on the brink of an African swine fever outbreak. Learners walk through the surveillance and emergency response process and are asked questions along the way to see if they can correctly identify best practices and next steps in the outbreak scenario. With the knowledge gained from this learning module, countries gain further insight into the development and implementation of modern animal disease surveillance and emergency response systems. The final module was released publicly on March 11, 2021. Since its release, the module has been completed by 33 learners. The online animal health module has demonstrated learning gains in learner knowledge. Of the 33 learners, learners' average score on the pre-test was 50.57 (SD = 11.46), and an average of 81.82 (SD = 9.59) on the post-test. The difference between pre-test and post-test demonstrates a statistically significant and very large learning gain after completing the animal health module ($t(32) = 12.69, p < .001, \text{Cohen's } d = 14.07$).

DELIVERABLE**5**

Development of 1 additional SPS module, up to 4 contact hours in duration, focusing on Food Safety. The module will be delivered in a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

Texas A&M, USDA, FDA, and FSIS collaborated together to devise an outline for a Food Safety Module discussing the high-need training areas of International Food Safety standards and Codex Alimentarius; Overviews of food safety policy setting, regulations, and monitoring; Key concepts in a food safety system, including risk assessment, risk mitigation, hazard analysis, certificates, audits, inspections, testing, communication and education, Roles of government officials and private sector representatives (complexities of food safety regulatory environment); Equivalence; TBT issues (Quality standards, labeling requirements, etc); and Roles of official regulations and private standards. In October 2019, the steering committee approved the module outline and identified subject matter expert Karen Stuck to author the module and workshop alongside Texas A&M. In September 2020, production of the Food Safety Module began. The module highlighted all of the key training areas noted above and concludes with a case study that places learners in the shoes of a fictional country who is just beginning the modernization process for their existing food control system. Learners walk through the planning process and are asked questions along the way to see if they can correctly identify best practices and what should happen next. With the knowledge gained from this learning module, countries gain further insight into the development and

implementation of a modern, national food control/safety system. Further, equips them with the knowledge necessary to initiate conversations and begin taking steps forward and encourage progress towards food security. The final module was released publicly on March 31, 2021. Since its release, the module has been completed by 119 learners. The online food safety module has demonstrated learning gains in learner knowledge. Of the 119 learners, learners' average score on the pre-test was 59.69 (SD = 8.83), and an average of 74.75 (SD = 6.69) on the post-test. The difference between pre-test and post-test demonstrates a statistically significant and very large learning gain after completing the animal health module ($t(118) = 20.64, p < .001, \text{Cohen's } d = 8.01$).

DELIVERABLE

6

Development of a workshop on Food Safety.

After the public release of the Food Safety Module on March 31, 2021, Texas A&M continued their collaboration with author Karen Stuck to develop a complementary workshop on Food Safety. The workshop includes 8 separate hands-on activities where learners apply knowledge gained from the Food Safety Learning Module into real-world scenarios. A facilitator and participant workbook was developed along with PowerPoint presentations that align with each activity. The final module was uploaded to SPSCourses.com for use by the USDA team mid-October 2021.

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7

Translate Animal Health Module into Spanish.

After the public release of the Animal Health Module on March 31, 2021, Texas A&M worked with their third-party translation vendor Blend to translate the existing Animal Health Module into Spanish. With assistance from a local translator, Texas A&M released the Animal Health Module in Spanish to the public in May 2021.

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8

Development of a workshop on Animal Health.

After the public release of the Animal Health Module on March 11, 2021, Texas A&M continued their collaboration with Robyn Corcoran, Lisa Rochette, and Rebecca Gordon to develop a complementary workshop on Animal Health. The workshop includes 10 separate hands-on activities where learners apply knowledge gained from the Animal Health Learning Module into real-world scenarios. A facilitator and participant workbook was developed along with PowerPoint presentations that align with each activity. The final module was uploaded to SPSCourses.com for use by the USDA team in June 2021.

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9

Translation of two original SPS workshops into Spanish.

After the public release of the Animal Health Module on March 31, 2021, Texas A&M worked with their third-party translation vendor Blend to translate the existing Animal Health Module into Spanish. With assistance from a local translator, Texas A&M released the Animal Health Module in Spanish to the public in May 2021.

a. Inspections Workshop

After receiving multiple requests for its translation into Spanish, Texas A&M worked with their third-party translation vendor Blend to translate the existing Inspections Workshop in September 2019. With assistance from a local translator serving as editor, Texas A&M released the Inspections Workshop in Spanish to SPSCourses.com in January 2019.

b. Pest Risk Analysis Workshop

After receiving multiple requests for its translation into Spanish, Texas A&M worked with their third-party translation vendor Blend to translate the existing Pest Risk Assessment Workshop in September 2019. However, after review of the files, Texas A&M noticed that some activity files and the PowerPoints that accompany them were missing from the archives. Texas A&M worked with USDA to track down the original files but were unable to recover them. As a result, Texas A&M worked with USDA-APHIS team members Scott Goldman and Lisa Kohl to develop two new activities for the workshop. These activities were replaced in the original workshop in English. The new workshop file was then translated by Blend into Spanish. With assistance from a local translator serving as editor, Texas A&M released the updated Pest Risk Analysis Workshop in Spanish to SPSCourses.com in April 2020.

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10

Transform the Post-Harvest Handling Manual in Spanish into a SCORM 2004-compliant online course suitable for deployment on the SPSCourses.com platform.

The digitization of the post-harvest handling guidance for Food Safety Modernization Act (FSMA), enables our partners at the Universidad del Valle de Guatemala (UVG) to deliver their training in a similar capacity to that of the successful SPS Distance Learning program. The Texas A&M team was provided with a PDF copy of a Post Harvest Handling Manual, developed by UVG that they wanted to transform into a series of self-paced online learning modules. Each of the 10 chapters of the manual were rebuilt and a course site created for these modules within SPSCourses.com. Within this course, learners can earn a certificate of completion for each chapter upon achieving a passing score of the module post-assessment and completion of a short feedback survey. This training is currently available on SPSCourses.com and is being pilot tested within the LAC region to determine additional revisions or changes needed prior to its public launch.

From September 2020 to April 2022, the Texas A&M worked closely with the Food Safety Network team to establish a workflow to strategically deliver new and engaging content on a regular basis across different mediums and resulting in the delivered content outlined below:

- a. **Blogs and Success Stories:** 24 blogs were written and released to the public on targeted topics of interest. An abbreviated list of blogs developed for this project can be found directly below:

- ▶ (2021, June 8). The Core Guiding Principles of a Modern Food Safety Control System: An Eight-Part Blog Series. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-modern-food-safety-control-system-eight-part-blog-series>
- ▶ (2021, June 14). How Modern Food Safety Systems Support Economic Growth, Public Health and Trade. [Blog post]. <https://agrilinks.org/post/how-modern-food-safety-systems-support-economic-growth-public-health-and-trade>
- ▶ (2021, June 21). Core Guiding Principles of a Food Control System: Part 1. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-food-control-system-part-1>
- ▶ (2021, June 28). Core Guiding Principles of a Food Control System: Part 2. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-food-control-system-part-2>
- ▶ (2021, July 6). Core Guiding Principles of a Food Control System: Part 3. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-food-control-system-part-3>
- ▶ (2021, July 13). Core Guiding Principles of a Food Control System: Part 4. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-food-control-system-series-part-4>
- ▶ (2021, July 20). Core Guiding Principles of a Food Control System: Part 5. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-food-control-system-series-part-5>
- ▶ (2021, July 29). Core Guiding Principles of a Food Control System: Part 6. [Blog post]. <https://agrilinks.org/post/core-guiding-principles-food-control-system-series-part-6>
- ▶ (2021, August 5). Leveraging the Core Guiding Principles to Modernize One's Food Safety Control System. [Blog post]. <https://agrilinks.org/post/leveraging-core-guiding-principles-modernize-ones-food-safety-control-system>
- ▶ (2021, August 16). Disease Surveillance Systems in Animal Health. [Blog post]. <https://agrilinks.org/post/disease-surveillance-systems-animal-health>
- ▶ (2021, August 24). International Trade and Animal Health. [Blog post]. <https://agrilinks.org/post/international-trade-and-animal-health>
- ▶ (2021, August 31). The Importance of Import Risk Analysis in Protecting Animal Health. [Blog post]. <https://agrilinks.org/post/importance-import-risk-analysis-protecting-animal-health>

- ▶ (2021, September 01). Risk Communication to Safeguard Animal Health. [Blog post]. <https://agrilinks.org/post/risk-communication-safeguard-animal-health>
- ▶ (2021, September 07). Risk Management in Animal Health. [Blog post]. <https://agrilinks.org/post/risk-management-animal-health>
- ▶ (2021, September 13). Disease Surveillance Systems in Animal Health: A Six-Part Blog Series. [Blog post]. <https://agrilinks.org/post/disease-surveillance-systems-animal-health-six-part-blog-series>
- ▶ (2021, September 21). Emergency Preparedness and Response in Animal Health [Blog post]. <https://agrilinks.org/post/emergency-preparedness-and-response-animal-health>
- ▶ (Pub. Date TBD). Safety During Post-Harvest. [Blog post].
- ▶ (Pub. Date TBD). Personal Health and Equipment Use During Post-Harvest. [Blog post].
- ▶ (Pub. Date TBD). Agrochemicals Use During Post-Harvest. [Blog post].
- ▶ (Pub. Date TBD). Best Practices During Harvest. [Blog post].
- ▶ (Pub. Date TBD). The Value of Product Traceability. [Blog post].

b. Webinars: Five webinars were conducted and hosted throughout the years to promote developed content.

- ▶ Improving Food Safety Capacity from Afar - How SPS Distance Learning Modules Can Help Advance FTF Objectives (08/26/20)
- ▶ Improving Ag Trade Capacity from Afar - APHIS (09/29/20)
- ▶ Animal Health Module Launch (03/11/21)
- ▶ Food Safety Module Launch (03/31/21)
- ▶ Improved SPS Capacity through Distance Learning (07/15/21)

c. Visual Services: Four videos were created and filmed to promote content being hosted on SPSCourses.com.

- ▶ SPS Online Training Courses Promo (07/14/21): <https://vimeo.com/574127032/545b274063>
- ▶ Food Safety Promo Video (06/30/21): <https://vimeo.com/557366241>
- ▶ Animal Health Promo Video (09/01/2021): <https://vimeo.com/601212514>
- ▶ Post-Harvest Handling (Publish Date TBD): <https://vimeo.com/659773699/8832982793>



d. Knowledge Management Event #1

The USDA FSN Team and FDA in partnership with Texas A&M hosted the Asia-Pacific Economic Cooperation Awareness Webinar Series in 2020. The AWARENESS WEBINAR SERIES: FSCF PTIN Whole Genome Sequencing— Laboratory Capacity Building of Environmental Testing for Foodborne Pathogens event was the first Phase of a multi-year APEC FSCF PTIN project to introduce WGS technologies and the resultant data analysis and data sharing to enhance and optimize pathogen detection techniques that can improve traceback and overall food safety management. A primary component of the project focused on strengthening capacity of APEC region laboratories' environmental sampling methods. Hosted over 3 days, the series targeted groups across Government, Academia, and Industry. The recordings from this series can be accessed at SPSCourses.com.

e. Other Products

Throughout the year, Texas A&M supported the FSN team in developing templates that would streamline the creation of marketing materials and formal reports. The following templates and materials were created as part of this deliverable:

One-Pager Template

Online Module One-Pager

Webinar Flyer Template

SPSCourses One-Pager

a. The train-the-trainer toolboxes support efforts across regions to offer the FSN's plant, animal and food safety workshops via webinar.

This toolbox provides instructions and all of the resources necessary for USDA affiliates around the world to host webinar workshops for their region. This solution will reduce the challenges associated with delivering workshops in-country due to travel restrictions and social distancing guidelines. Texas A&M digitized three SPS workshops for in-country partners to host and deliver SPS workshops in an online setting. Two toolboxes were replaced with hosting the Post-Harvest Handling module and a second knowledge management event described further below. Texas A&M developed digital guidebooks for each workshop and a digital resource library for in-country partners to host these workshops online. The train-the-trainer guidebooks are created such that learners can type directly into the guidebook and save it to their device. The digital resource library will include all workshop materials, trainer presentations, certificates, and workshop assessments. This solution has reduced the challenges associated with delivering workshops in-country due to travel restrictions and social distancing guidelines.

The following workshops were digitized:

- ▶ Food Safety
- ▶ Animal Health
- ▶ Market Access Process

b. Knowledge Management Event #2

The USDA FSN Team and FDA in partnership with Texas A&M hosted the Asia-Pacific Economic Cooperation Awareness Webinar Series Phase II in 2021. The AWARENESS WEBINAR SERIES: APEC FSCF PTIN Workshop for Food Safety Experts and Policymakers -- How Whole Genome Sequencing (WGS) Has Revolutionized Food Safety: From Environmental Sampling to Foodborne Disease Prevention, Response, and Mitigation event was the second Phase of an ongoing WGS workstream being executed under that auspices of the APEC FSCF PTIN will introduce WGS sequencing technology and data analysis methodologies (and the science behind them), and will discuss resource implications, cost, personnel requirements. The event provided an overview of current guidelines for implementing and using WGS (GenomeTrakr Network, etc). Event content delved into the application of WGS for food safety environmental sampling to better understand the natural variation of foodborne organisms in the environment. A primary focus of the workshop stressed the importance of incorporating new technologies intelligently and efficiently, and emphasis was placed on identifying current projects, networks, and informational resources in and/or available to APEC economies. The event was hosted over two days and recordings from this series can be accessed at SPSCourses.com.



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