



United States Department of Agriculture

Plant Protection and Quarantine: Helping U.S. Agriculture Thrive— Across the Country and Around the World



2018
Annual Report

Animal and Plant Health Inspection Service
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Plant Protection and Quarantine:
Helping U.S. Agriculture Thrive—
Across the Country and Around the World

2018

At-a-Glance



In 2018, PPQ kept potentially damaging pests and diseases out of the country.

Cleared 1.78 billion pounds of fresh fruits and vegetables and more than **1.1** billion plants and bulbs from 22 countries before they were shipped to the United States

Worked with the U.S. Department of Defense to inspect **15,697** household goods shipments; **7,989** unaccompanied baggage shipments; **10,758** vehicles; and **292,056** pieces of military cargo before they returned stateside

Cleared more than **18,502** shipments containing over **1.7** billion plant units and approximately **632,122** kilograms of seeds, intercepting **1,173** quarantine pests

Identified 140,822 pests—nearly half of which were quarantine significant—found in imported shipments, allowing PPQ and U.S. Customs and Border Protection to take quick action to prevent pest entry

Oversaw approximately **35,000** in-transit and port-of-entry treatments on imported commodities to mitigate pest risks

Inspected 12.7 million passengers' bags in Hawaii and Puerto Rico before they left for the U.S. mainland, intercepting **299,698** prohibited agricultural products and **1,688** quarantine pests

Conducted 98,608 inspections of agricultural commodities before they left Hawaii and Puerto Rico for the U.S. mainland; conducted **5,054** treatments to mitigate pest risks

Issued more than **21,000** permits and responded to over **22,000** import and permit-related questions, ensuring the safe movement of plants, plant products, living organisms, and soil

Cleared through post-entry quarantine **425** normally prohibited high-risk cultivars and germplasm from **12** different plant species, making safe new plant varieties available to U.S. importers and producers

Seized 3,222 prohibited agricultural items valued at over **\$2.6 million** from retail stores, internet sales, and during express shipment courier inspections, preventing them from entering U.S. commerce



We fought back against the spread of invasive pests and diseases that threatened our Nation's crops and forests.

Eradicated pink bollworm from commercial U.S. cotton, ending a 101-year-old battle with one of the world's most damaging cotton pests

Released more than **15.7 billion** sterile fruit flies over approximately **3,000** square miles in California, Texas, and Florida, helping to eradicate **9 of 13 fruit fly outbreaks** that started in 2017 and 2018

Conducted 466 surveys with partners in **50 States and 3 Territories** targeting **386** high-risk and priority pests; detected **12** new or re-introduced species, finding all before they caused significant damage

Eradicated Asian longhorned beetle from three Ohio townships

Declared all areas in Oklahoma, Georgia, and South Carolina free of Asian gypsy moth

Protected specialty crop production nationwide worth more than **\$21** billion by preventing the spread of damaging pests to new areas

Protected more than **661 million acres** of rangeland and forage crops worth over **\$8.7 billion** from damage caused by grasshoppers and Mormon crickets

Allocated \$63.5 million to support **494** projects in **49** States and **2** Territories to prevent the introduction or spread of invasive plant pests and diseases

Provided \$6 million to support **22** clean plant centers in **15** States and Territories that diagnose, clean, and distribute disease-free stock of fruit trees, grapes, hops, berries, citrus, sweet potato, and roses to growers

Released more than **1 million** stingless wasps to help control emerald ash borer beetle populations and protect U.S. ash trees



We helped U.S. agriculture thrive in the global marketplace.

Negotiated plant health requirements and resolved plant health trade barriers to help open, expand, and retain U.S. access to foreign markets worth nearly **\$23 billion**

Secured release of **169** U.S. commodity shipments valued at more than **\$21 million** that were held at foreign ports

Issued more than **699,900** phytosanitary certificates, helping to facilitate the export of U.S. commodities valued at **\$143.4 billion** in 2018

Worked with **182** International Plant Protection Convention members to adopt **10** new international standards that facilitate safe agricultural trade

Worked through the North American Plant Protection Organization to introduce precise, **risk-based approaches** for inspecting and regulating agricultural shipments, helping make global trade safer and more efficient

Placed more than **30 U.S. experts** on international working groups to advance key standard-setting initiatives on seeds, plants for planting, accreditation, and forestry, among others

Helped test and launch a new global **electronic export certification** system that will reduce costs and prevent fraud in the certification of agricultural exports

Worked with international organizations and North American maritime and shipping industries to promote voluntary **sea container cleaning** guidelines that will help prevent the spread of damaging pests

Processed 825,000 Lacey Act declarations, helping to combat illegal trade of protected plant species

Message From the Deputy Administrator



Safeguarding our Nation's agriculture and natural resources against harmful plant pests is an awesome responsibility, one we take very seriously. Thanks to our employees, cooperators, and partners, the United States has one of the most robust plant health safeguarding systems in the world. That is because we continuously take steps to enhance our ability

to exclude, control, and eradicate pests and increase the safety of agricultural trade. This year, I introduced 10 strategic initiatives for 2018 and beyond that will further advance every aspect of our mission. You will learn more about them and our progress in the coming pages.

You will also learn more about our many successes and accomplishments in 2018. For example, we continued to push the U.S. line of defense against invasive pests and diseases farther offshore, allowing us to take action against pests hitchhiking on or in imported goods before they reached our borders. At ports of entry, we advanced the use of data-driven sampling strategies and cutting-edge technologies to better focus inspections on the riskiest shipments and more quickly and accurately detect pests that physical inspection alone would miss. The need for these critical technologies has never been greater, given the fact that we cleared a record-breaking 1 billion plants through our Miami inspection station alone in 2018.

Across the country, we worked with the States and other partners to detect, contain, and when possible, eradicate invading pests. I am proud of the many successes we had this year, including declaring the Asian longhorned beetle eradicated from three Ohio townships and eradicating exotic fruit flies from five quarantine areas in California and four in Texas. Our crowning achievement came in October when we declared all cotton-producing areas of the continental United States free of pink bollworm, marking the end of a 101-year-old battle with one of the world's most damaging cotton pests.

On the world stage, we worked closely with our international trading partners to develop and promote science-based standards, helping to create a safe, fair, and predictable agricultural trade system that minimizes the spread of invasive plant pests and diseases. We also reached critical plant health agreements and resolved plant health barriers to trade to open, expand, and retain U.S. export markets valued at nearly \$23 billion. And, we issued 699,900 phytosanitary certificates, helping U.S. producers meet foreign market access requirements and secure economic opportunities for U.S. products abroad.

These successes, and the many achievements captured in the coming pages, underscore how PPQ is working every day to keep U.S. agriculture healthy and profitable.

I am grateful to the talented men and women of Plant Protection and Quarantine (PPQ) and their deep commitment to our mission. I am also thankful for our partners, without whom none of this would be possible. We look forward to working with each of you in the years ahead as we continue to safeguard American agriculture against invasive pests and facilitate the safe trade of agricultural products.

Sincerely,

A handwritten signature in blue ink, appearing to read "Osama El-Lissy". The signature is written in a cursive style.

Osama El-Lissy
Deputy Administrator
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture

We safeguard U.S. agriculture and natural resources against the entry, establishment, and spread of economically and environmentally significant pests and facilitate the safe trade of agricultural products.

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Strengthening Pest Exclusion

To protect American farms and forests from harmful plant pests and foreign animal diseases, PPQ has created a system of safeguards that begins overseas in other countries, continues through U.S. ports of entry, and extends across the Nation. It's called the Safeguarding Continuum. All along the continuum, PPQ experts assess risks associated with pests that hitchhike on and in the agricultural products we import and take action to protect U.S. agriculture and natural resources while keeping international trade and travel moving.

In our Strategic Plan, we established two objectives for strengthening safeguarding along this continuum. The first: To address risks at the first opportunity—when the likelihood of pest exclusion is greatest. The second: To make better use of the information we collect at each point along the continuum to target and reduce threats to U.S. agricultural and natural resources.

This year, we also introduced three strategic initiatives that are helping us use available resources in a way that maximizes risk management all along the Safeguarding Continuum. They include developing an offshore greenhouse certification program to minimize the risks associated with the high volumes of plant cuttings that enter our country every day, implementing risk-based sampling to maximize the effectiveness of our port-of-entry inspections, and expanding our use of molecular diagnostics to detect high-risk pests that physical inspection would miss.

Taking the Fight Offshore

One of the most effective ways to ensure the safe movement of commodities and other products into the United States is to address pest threats where they originate. When we take action to prevent or deal with pests in imported goods before they reach our shores, we significantly increase our ability to protect the health and marketability of our Nation's agricultural and natural resources.

Pre-Clearing Commodity and Military Shipments

In 2018, our commodity preclearance program spanned 22 countries and covered 72 different types of commodities. Through this program, we inspected and pre-cleared 1.78 billion pounds of fresh fruits and vegetables and more than 1.1 billion plants and bulbs. This work not only ensures the safety of imported commodities, but also benefits importers whose inspected, pre-cleared, and certified products may pass through U.S. ports of entry without delay.

To help the U.S. military prevent the spread of foreign animal diseases and plant pests, we worked with the U.S. Department of Defense to inspect military equipment, cargo, and household goods returning stateside. This included recertifying 108 military preclearance programs located in 15 countries in Europe and Africa and training close to 600 military inspectors. In total, these programs cleared 15,697 household goods shipments; 7,989 unaccompanied baggage shipments; 10,758 vehicles; and 292,056 pieces of military cargo before they returned stateside, facilitating military readiness by speeding the safe entry of these items into the United States.



In 2018, we inspected and pre-cleared 1.78 billion pounds of fresh vegetables and fruits before they were shipped to the United States, helping to keep potentially harmful plant pests out of our country.



PPQ officers inspected 12.7 million passengers' bags before they left Hawaii and Puerto Rico in 2018, intercepting nearly 300,000 prohibited agricultural products and more than 1,600 quarantine pests.

Facilitating Safe Trade and Travel Between Hawaii, Puerto Rico, and the Mainland

Hawaii and Puerto Rico, while part of the United States, have plant pests that are not established on the mainland. These pests, including certain fruit flies, scale insects, beetles, and mealybugs, are a threat to mainland agriculture. To prevent their spread, PPQ inspected 12.7 million passengers' bags before they left Hawaii and Puerto Rico in 2018, intercepting 299,698 prohibited agricultural products and

1,688 quarantine pests. We also conducted 98,608 inspections and 5,054 treatments of agricultural commodities that shipped from Hawaii and Puerto Rico to the mainland. This work safeguards mainland agriculture while facilitating interstate trade and travel.

Expanding Offshore Certification

PPQ certifies overseas treatment and production facilities that ship high-demand, large volume commodities to the United States, such as orchids, geraniums, *Dracaena*, tomato plantlets, and niger seed, a common ingredient in bird seed. These certifications verify that the facilities and their operations meet our standards and regulatory requirements, helping to protect U.S. plant health from harmful invasive pests and serious plant diseases.

In 2018, PPQ completed a 6-month offshore greenhouse certification pilot for facilities that export generally admissible, unrooted plant cuttings to the United States. Given the high volume of these shipments—more than 1 billion plant cuttings a year—and their associated pest risks, PPQ and the U.S. nursery industry wanted to test the idea that requiring offshore facilities to adhere to minimum production and sanitation standards and traceability protocols would significantly reduce pest risks.

During the pilot, PPQ personnel at the Miami and Atlanta plant inspection stations processed 3,554 shipments containing 717 million cuttings from certified and non-certified facilities to compare pest action rates. Although the results of the pilot did not demonstrate a statistically significant difference, we did observe trends toward reduced pest action rates from certification. PPQ and the U.S. nursery industry agreed to repeat the pilot during the 2018–2019 shipping season and refine the certification program



In 2018, our Miami Plant Inspection Station alone cleared a record-breaking 1 billion plant units. In total, PPQ inspectors at all 16 stations cleared 18,502 shipments containing nearly 1.7 billion plant units and 632,122 kilograms of seeds, intercepting 1,173 quarantine pests.

based on lessons learned. A successful voluntary certification program will help reduce pest pressure on the United States while providing incentives for importers to send pest-free cuttings.

Teaming Up With Other Countries To Prevent Pest Spread

In 2018, we continued to work with countries around the world to stop the spread of damaging plant pests, including Asian gypsy moth (AGM) and exotic fruit flies. AGM is a devastating forest pest with a wide host range. Experts estimate that if it were to become established in the United States, AGM could cause billions of dollars in losses and control costs. To keep this pest out of our country, PPQ leads a multinational AGM vessel certification program. As a result of our technical coordination with the governments of Canada, Russia, Japan, China, and Korea, more than 98 percent of inspected vessels entering U.S. ports from Asia were free of AGM in 2018. We also improved the vessel certification compliance rate through continued engagement with affected commercial maritime shippers. In 2018, the compliance rate hit an all-time high of 92 percent, a 10-percent increase over the previous year's rate.

Closer to home, PPQ continued to work with regional organizations and countries throughout the Caribbean to prevent the introduction and spread of high-risk plant pests, especially exotic fruit flies. We supported plant quarantine training, shared scientific and technical expertise, supported pest surveys, offered help with emergency response, and cooperated on pest management activities to create a perimeter defense against the movement of pests. In 2018, PPQ and cooperating countries increased surveillance for exotic fruit flies, especially Mediterranean fruit fly. This activity provides an early warning system should there be an outbreak close to U.S. shores, helping to protect U.S. citrus, stone fruits, vegetables, and other specialty crops. In addition, we expanded outreach to travelers

moving between the United States and the Caribbean to raise awareness about the importance of declaring agricultural items when they arrive in the United States, helping to reduce the threat of fruit flies and other pests in this high-risk pathway. Together, these efforts protect the Caribbean and the United States from pest threats and facilitate regional economic growth.

Zeroing In on Higher Risk Shipments at U.S. Ports of Entry

PPQ continually evaluates, tests, and applies cutting-edge tools and technologies that allow us and our U.S. Customs and Border Protection (CBP) partners to more effectively detect and address plant pests and diseases arriving in foreign shipments and passenger bags. We are also refining our ability to use the pest interception data we collect during port-of-entry inspections to better predict and reduce pest threats approaching our shores. Together these advances are strengthening our ability to exclude pests, focus resources on the highest risks, and safeguard our Nation's agricultural security, all at the speed of commerce.

Risk-Based Sampling

For the last few years, PPQ has been developing a new and more effective way to sample imported commodities for inspection at U.S. ports of entry. The method is called risk-based sampling (RBS). Its objective is to reduce inspections on low-risk items, increase inspections on higher risk items, and give importers incentives to bring in pest-free products.

PPQ took its first steps toward implementing RBS about 3 years ago when we stopped sampling incoming shipments of plants for planting at a flat rate (usually 2 percent) and started calculating the



PPQ inspectors calculate exactly how many samples to pull from an incoming shipment based on the risk associated with the type of plants it contains and their country of origin. This approach, called risk-based sampling, is helping us intensify inspections of higher risk items, which will lead to better safeguarding overall.

number of boxes to inspect based on a shipment's size and the number of sample units and plant taxa it contains. This process, called hypergeometric sampling, made it possible for our inspectors to detect pests more consistently and efficiently because they knew exactly how many boxes they needed to look at to confidently determine if there was a pest in an incoming shipment.

Over the last 2 years, PPQ has been carefully analyzing the data generated by hypergeometric sampling to improve port inspections. In 2018, we introduced an updated risk-based sampling calculator into our plant inspection stations. The calculator computes exactly how many samples an inspector should pull from an incoming shipment based on the risk associated with the type of plants it contains and their country of origin. This tool is helping us intensify sampling of higher risk items, which will lead to better safeguarding in this pathway overall.

We also began piloting risk-based sampling with CBP at four Texas border ports. The 6-month pilot focuses on two commodities for which we have sufficient pest interception data and that have consistent import volumes throughout the year. Under the pilot program, sampling rates are driven by pest finds. For example, if CBP agriculture specialists don't find any pests on the commodity, they reduce inspections and instead spend that time on higher risk commodities. If they find pests, they increase inspections accordingly, giving importers an incentive for bringing in clean products.

Identifying Intercepted Pests With Greater Speed and Accuracy

PPQ continues to test and evaluate the use of molecular diagnostics at U.S. ports of entry to enhance standard pest identification methods and expedite quarantine decision making. This technology rapidly and accurately identifies intercepted pests and diseases to the species level, helping to speed the clearance of low-risk cargo and better focus our port inspection resources on the highest import risks. It also has the potential to alert us to new or undisclosed

infestations in other countries. For example, in 2018, PPQ scientists used next-generation sequencing to unlock genetic information for four *Monilinia* fungus species. This allowed us to develop rapid diagnostic tools that will accurately detect and identify these pathogens, ensuring we won't mistake a serious, non-native disease for one that is commonplace. Now, our scientists are using this cutting-edge technology to sequence genomic regions never explored before and develop specific diagnostic tools for a number of pathogens of regulatory significance.

Safeguarding Beyond the Border

We work across the country to detect prohibited products and foreign pests and diseases that may have evaded other safeguarding measures or entered the United States through illegal means.

Finding Pests Before They Cause Harm

PPQ officers scour markets and retail stores while analysts monitor internet sales looking for prohibited or restricted agricultural products that may have been smuggled into the country or that entered illegally. These products may harbor invasive plant pests or foreign animal diseases that could harm our Nation's crops, livestock, or forests. In 2018, PPQ seized 3,222 prohibited agricultural items valued at over \$2.6 million from retail stores, internet sales, and during express courier package inspections. We also conducted 28 national recalls to remove high-risk products from commerce and eliminate dangerous and costly invasive pests that pose a threat to U.S. agriculture. PPQ continues to focus on closing illegal pathways for high-risk agricultural goods in order to safeguard high-value agriculture industries and the more than 2 million farms operating in the United States.



Molly Giesbrecht, Texas A&M AgriLife Extension Service, Bugwood.org

In 2018, PPQ scientists used next-generation sequencing to unlock genetic information of four *Monilinia* fungus species that cause brown rot in stone and pome fruits. Using that information, they developed rapid diagnostic tools that accurately detect and identify these pathogens.

PPQ and its partners also continuously scan agricultural production areas and the environment looking for signs of pests that may have slipped into the United States. Our goal: Detect new or re-introduced pests and diseases early and respond rapidly to prevent large-scale agricultural, environmental, and economic losses. Together, we conducted 466 surveys in 50 States and 3 Territories that targeted 386 high-risk and priority pests in 2018. We detected and responded to 12 new or re-introduced species. None were of national concern, demonstrating our country's freedom from high-risk pests.

Case Study:

Collaborating With Industry To Close a High-Risk Pathway

In fiscal year 2017, PPQ learned that a major aerospace company's Utah facility had detected snails in five containers of aircraft parts imported from Italy. These detections revealed a high-risk pest pathway with long-term, far-reaching implications given the company's ongoing production needs for imported parts. Without resolution, this pest and pathway could have severely harmed the environment and impacted the operations of PPQ, CBP, and the company for years to come. In response, PPQ, CBP, and the company established a government-industry team.

Over the course of 2017, the team worked to find a solution. The group defined and implemented a systems approach consisting of safeguarding, inspection, and cold treating infested containers; explored pest mitigation alternatives when cold treatment facilities were unavailable; and continually evaluated and refined the safeguarding measures at the port where the Utah-bound parts first arrive. The team negotiated the relocation of inspection and storage areas to an indoor facility to prevent weather-related pest dispersal during the summer rainy season and Hurricane Irma threat. These proactive measures mitigated snail detections at the port and allowed the imports to continue with minimal interruption to the company's manufacturing process.

Efforts to address the infestation's source in Italy reduced the number of interceptions, but detections at the arrival port continued. That prompted PPQ's National Malacologist, David Robinson, to travel to Italy, where he assessed the suspected infestation site. Based on his recommendations, the company and its business partner in Italy implemented a long-term set of safeguarding measures. They added steps to keep the containers clean during loading, and they cleaned and treated the adjacent site, which was the source of the snails.

After these measures were in place, containers leaving the source began arriving with minimal pests. During the first quarter of fiscal year 2018, over 30 containers arrived mollusk-free. Follow-up pest detection surveys yielded no snails in the U.S. port environs, validating the safeguarding measures.

This tiny invasive snail (top) from Italy threatens America's natural resources. As a hitchhiking pest, it impacts the entry status of various kinds of cargo. Large containers (center) carrying aircraft parts are wrapped in plastic tarps to prevent snail dispersal during movement to a warehouse. Moving the containers indoors (bottom) enhanced safeguarding because heavy rains would wash away salt barriers used to contain the snails. (Bottom) Once indoors, the rain-protected salt barrier safeguards against the snails' spread.





Optimizing Pest Management and Eradication

When foreign pests capable of harming our Nation's forests, damaging U.S. crops, or disrupting trade become established in the United States, PPQ works closely with Federal, State, Tribal, and industry partners to control and, when possible, eliminate them from our country. In 2018, we eradicated a number of plant pests and contained and suppressed others to prevent their spread and keep export markets open.

In our Strategic Plan, we established two objectives for optimizing pest management and eradication. The first: To more fully coordinate with and engage our partners to determine where we can and should focus our resources to yield the greatest results. The second: To explore how we might integrate and wisely use the unique capacities of all partners to strengthen and extend PPQ's domestic programs.

This year, we introduced three strategic initiatives that make use of the latest technologies to strengthen our effectiveness and deliver more results for the industries we serve. They include improving data-driven decision making in our domestic pest programs, exploring the use of unmanned aircraft in field operations, and expanding the use of canines for surveys and other pest detection activities.

On the Cutting Edge of Plant Health Protection

PPQ continuously evaluates, adapts, and adopts the best available science, tools, and technologies to improve its plant protection methods. From the use of mobile data collection tools to unmanned aircraft,

these advances are keeping PPQ and its partners on the cutting edge in the fight against harmful plant pests and diseases.

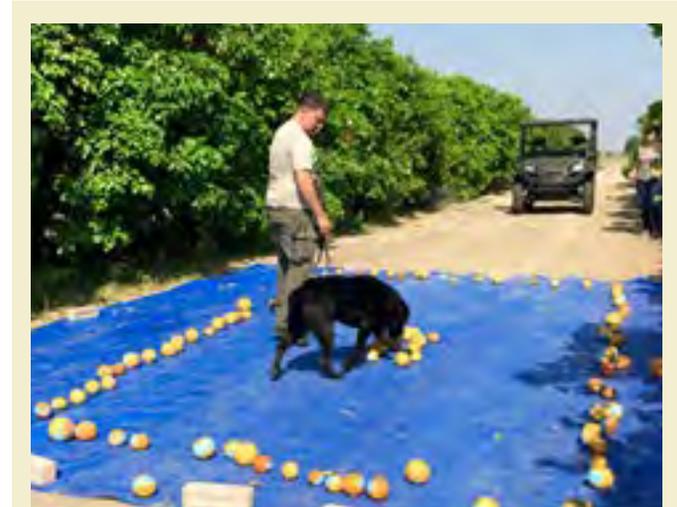
Expanding the Use of Canines and Unmanned Aircraft

PPQ has been working on a number of initiatives to make our pest management and eradication programs more efficient and effective. Over the last few years, we've been challenging our dog teams to detect a wide range of plant pests and diseases, including Mexican fruit fly (Mexfly), coconut rhinoceros beetle, and citrus greening. In 2018, we moved the Mexfly trials into the field and have started testing canine teams in residential and orchard environments. By expanding the use of canines to support pest detection surveys, we expect significant gains in survey efficiency and cost reductions over traditional pest detection tactics.

In 2018, we also continued to explore how we could use unmanned aircraft systems to improve our operations. This included evaluating the technology's utility for releasing sterile insects in various pest eradication programs and monitoring rangeland health. In addition, we began investigating the use of unmanned aircraft equipped with digital cameras as an additional survey tool. If successful, we could use unmanned aircraft to examine trees too risky to climb or survey trees in areas otherwise difficult to access, improving safety for program personnel and lowering the cost to survey these types of trees.

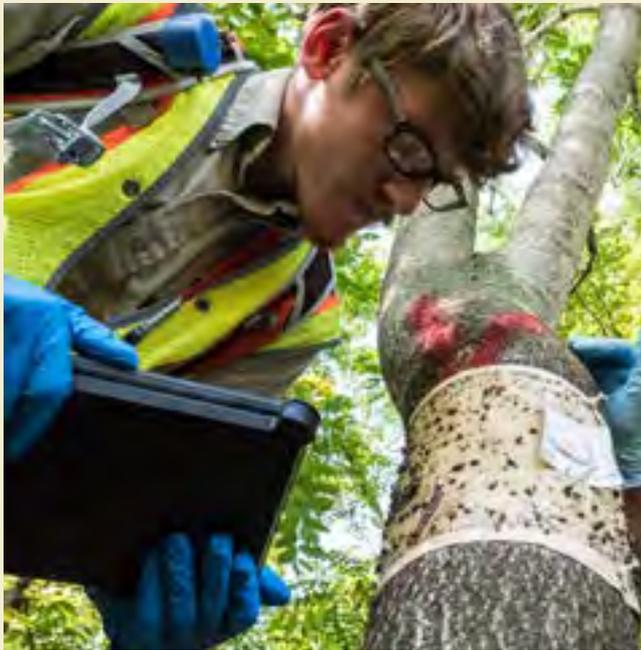
Making Better Data-Driven Decisions

For the last 3 years, PPQ experts have been identifying, adapting, and delivering cutting-edge mobile data



In 2018, PPQ started testing canine teams in residential and orchard environments to evaluate their ability to detect specific pests, such as Mexican fruit flies, in the field.

collection, geographical information system (GIS), and geospatial analytics tools for use in our domestic pest programs. These tools are giving program managers and field personnel a robust, data-driven view of operations at the local, regional, and national levels. For example, PPQ has been using geospatial analytics to zero in on locations where *Huanglongbing*, also known as citrus greening disease, is likely to be found. The process pinpoints on a map where pest surveyors collected Asian citrus psyllid samples that tested positive or were inconclusive for citrus greening disease-causing bacteria, identifying potential hot



By using GIS and mobile data collection tools in our pest programs, PPQ managers now have a more robust, data-driven view of operations at the local, regional, and national levels, helping them to better manage operations and direct field assignments.

spots where we might find diseased citrus trees. This tool is helping us focus survey activities, which is leading to detections of infected areas faster than ever before.

In our gypsy moth program, GIS tools are providing an interactive data sharing and decision making experience. Each year, PPQ develops a pest risk model to help the program place survey traps in areas at highest risk for gypsy moths. PPQ bases

the model on field data, human activity that spreads the moths, climate, and food sources. The program uses this information, along with local knowledge, to strategically plan for the next survey. Managers can access maps of the risk model and the surveillance data and track trap status across the country, helping us realize a higher return on investment because our surveillance is data-driven, targeted, and adaptive to risk.

This year, PPQ's spotted lanternfly emergency program used GIS and mobile data collection tools to perform three critical functions—pest detection surveys, treatment assessments, and trap inspections. Using a specially adapted app, surveyors gathered and recorded data about pest and host tree presence. They also used the app to complete survey-related forms and upload data to the program's database. These tools gave our managers a more robust and dynamic picture of pest populations and host density within the quarantine area, helping them to better manage operations and direct field assignments.

Turning Innovation Into Action

The Agricultural Act of 2014 authorized permanent funding for the National Clean Plant Network and the Plant Pest and Disease Management and Disaster Program. PPQ is charged with allocating this funding to strengthen the Nation's infrastructure for pest detection and surveillance, identification, and threat mitigation, while working to safeguard the nursery production system. In 2018, PPQ funded 519 projects in 49 States, Guam, and Puerto Rico, giving cooperators the funds they need to put their innovative ideas into action and ensure effective program delivery.

Projects were selected during an intensive, criteria-driven process to make sure we are wisely investing our resources, and those of our cooperators, to support

priority initiatives and respond to high-risk pest threats that threaten U.S. specialty crop production. In 2018, funded projects supported invasive pest and weed control on Tribal lands; agriculture detector dog teams in California and Florida to enhance inspections of mailed or shipped packages; survey, diagnostic tools, and rapid response for viruses related to citrus leprosis; and forest pest outreach, education, and emergency preparedness, to name a few. In addition, we continued to support 22 National Clean Plant Network projects in 15 States that provide high-quality propagated plant material for fruit trees, grapes, hops, berries, citrus, roses, and sweet potatoes free of targeted plant pathogens and pests.

Maximizing PPQ and Partner Actions To Deliver Results

Strategic partnerships are a critical part of our pest management and eradication success. We work with numerous groups to fight back against invasive plant pests. This includes grower and industry associations, State and local officials, academia, other Federal agencies, and foreign governments.

Our most important domestic partner is the National Plant Board (NPB)—an organization of plant regulatory officials from State departments of agriculture. Not only do we work together to effectively address plant pests and diseases that may threaten U.S. production and disrupt U.S. access to valuable export markets, but we also collaborate with the NPB to determine when, where, and how we take action to yield the greatest results.

An example of this is the Federally Recognized State Managed Phytosanitary (FRSMP) Program. Through this program, we collaborate with the NPB

to support States' efforts to exclude pests that are no longer federally regulated. To be covered under the FRSM Program, a pest must pose an economic or environmental risk to a State, and the State must have a program in place to eradicate, exclude or contain it. In those cases, a State may petition PPQ to reject, redirect, or treat shipments destined for the participating State when the pest is intercepted in an imported commodity. In 2018, PPQ approved California's request to add allium leaf miner to the program, helping to protect that State from this potentially damaging pest.

The program also provides a process for PPQ and NPB to change the regulatory status of a pest when it is already established in the United States and unlikely to cause harm. That means PPQ will no longer require action when that pest is detected in arriving shipments. In 2018, PPQ and NPB changed the regulatory status of 5 pests (bringing the total up to 105 pests), helping to facilitate trade.

Eradicating Cotton Pests

For decades, PPQ has been working with growers, the cotton industry, affected States, and Mexico to eradicate two of the most destructive cotton pests—boll weevil and pink bollworm—from all commercial cotton-producing areas in the United States. As a result of our coordinated efforts, PPQ and cooperators have eliminated boll weevil from 99.5 percent of the United States' 11 million cotton acres. The Lower Rio Grande Valley is the last zone within the United States where boll weevil persists. To accelerate progress toward eradicating the pest from this area, we continue to work with the Mexican and U.S. cotton industries to eradicate boll weevil from Tamaulipas, a source of constant pest pressure along the U.S.-Mexico border.



*Lawrence Barringer, Pennsylvania
Department of Agriculture, Bugwood.org*

Through the Federally Recognized State Managed Phytosanitary Program, PPQ and the National Plant Board collaborate to exclude pests that pose a risk to a State but are no longer federally regulated, like the allium leaf miner (shown).

In 2018, we entered into the third year of a cooperative agreement with the North American Plant Protection Organization to help fund boll weevil treatments in northern Mexico. We also began meeting regularly with Mexico's National Service for Agrifood Health, Safety, and Quality. As a result, this government agency has developed an organized program and will provide operational oversight to further reduce boll weevil populations in northern Mexico and move us closer to eradication in both countries.

On October 19, 2018, USDA Secretary Sonny Perdue officially announced the successful eradication of pink bollworm from all commercial cotton-producing areas

in the continental United States. This announcement marked the end of a century-long battle against this devastating pest that caused cotton losses of 20 percent or more in affected areas. PPQ is now carrying out its post-eradication plan, which includes maintaining a sterile pink bollworm colony in an Arizona containment facility and ongoing monitoring and rapid response to small-scale outbreaks if they occur in the future. By controlling and eradicating these pests, PPQ protects U.S. cotton production worth \$27 billion annually, significantly lowers production costs, and helps maintain strong export markets abroad.

Protecting Field Crops and Rangeland

PPQ cooperates with Federal, State, Tribal, and local agencies to protect U.S. field crops and rangelands from harmful pests, including grasshoppers and Mormon crickets, imported fire ant, Karnal bunt, and witchweed. This work helps protect important natural and agricultural resources that rural communities depend on for income.

Grasshoppers and Mormon Crickets: Each year, PPQ tracks and monitors grasshopper and Mormon cricket populations on rangeland in 17 Western States. If left uncontrolled, detrimental grasshopper species and Mormon crickets could devastate crops such as alfalfa, wheat, barley, and corn. They could also significantly reduce rangeland animal food supplies, causing significant economic losses for U.S. livestock producers. Based on survey results and the needs of land managers, PPQ treated approximately 5,260 acres of rangeland in 2018, helping to protect 19,402 acres of rangeland forage and wildlife habitat. In 2018, we also published an updated environmental impact statement per the National Environmental Policy Act. This document assesses the effect of various grasshopper



PPQ coordinates area-wide grasshopper and Mormon cricket treatments, when conditions warrant, with Tribes, government agencies, and private landowners, helping to protect more than 661 million acres of rangeland and forage crops worth over \$8.7 billion.

and Mormon cricket treatments on the environment to ensure actions do not impact wildlife habitat, wetlands, and beneficial insect species. By providing ongoing information and advice to land managers and conducting control treatments where needed, the program protects 661 million acres of rangeland and resources valued at nearly \$8.7 billion.

Imported Fire Ant: Imported fire ant (IFA) infests more than 336 million acres in 14 States and Puerto Rico. This invasive pest eats crops, inflicts painful stings, and builds large nests that can damage farm equipment. Working with cooperators, PPQ keeps IFA from spreading to other areas by regulating the interstate movement of baled hay and other

products that could harbor the pest, using biological controls to reduce IFA populations in impacted areas, and developing cutting-edge tools to support safe interstate movement of agricultural products. For example, PPQ and cooperators from USDA's Agricultural Research Service worked with a private firm to develop a rapid identification test kit for IFA. The test kit identifies IFA and hybrids in as little as 5 minutes, helping to facilitate the interstate shipments that would otherwise have been held at agricultural checkpoints for 12–24 hours pending an identification. In 2018, PPQ provided test kits to State departments of agriculture for field testing. In 2019, States will be able to purchase the kits.

This year, PPQ updated its interactive IFA quarantine map to display quarantine boundaries, helping nursery owners and others see if they are located in a quarantine area. During the 2018 wildfire season, when wildfires impacted pasture for livestock in many States, the map allowed hay shippers to determine whether they had to meet IFA quarantine shipping requirements and prevent the spread of IFA to new areas.

Karnal Bunt: Karnal bunt is a fungal disease of wheat that was first detected in the United States in 1996. Working with State departments of agriculture and the U.S. wheat industry, PPQ has contained this disease to portions of one State. This cooperative effort protects U.S. wheat production worth more than \$8 billion and wheat exports valued at more than \$6.1 billion in 2017. To help expand market opportunities for wheat grown in Karnal bunt-regulated areas, we evaluated wheat, durum wheat, and triticale harvested for silage in 2017. We also evaluated wheat, durum wheat, and triticale straw harvested from bunted kernel-positive

fields. The analyses found that silage crops posed a negligible risk of spreading the disease and that straw, if moved under a limited permit followed by processing capable of killing the pathogen, would not spread the disease. As a result, producers were able to move these products to market in 2018 while preventing the spread of Karnal bunt to new areas.

Supporting Specialty Crops

PPQ works with State, Tribal, university, and industry partners to develop and carry out policies and regulations to protect U.S. fruits and vegetables, tree nuts, and nursery crops from damage and trade disruptions due to invasive pests. In 2018, our efforts directly protected U.S. specialty crop production valued at \$9.4 billion. In total, the program protects specialty crop production nationwide worth more than \$21 billion and export markets valued at \$8.9 billion.

Citrus Diseases: PPQ continues to stand shoulder to shoulder with citrus growers to combat citrus canker, *Huanglongbing* (HLB or citrus greening), sweet orange scab, and citrus black spot. Specifically, our Citrus Health Response Program supports the U.S. citrus industry's continued ability to produce, harvest, process, and ship citrus fruits and nursery stock despite the presence of these diseases. For example, PPQ's flexible regulatory protocols allow growers to move citrus out of quarantined areas to packinghouses if they follow mitigation procedures to prevent the disease or its insect vector from spreading. As a result, nearly 16,000 businesses moved regulated host materials such as citrus fruit and nursery stock under compliance agreements in 2018.



PPQ's Citrus Health Response Program continued to produce and release the *Tamarixia* parasitoid wasp in 2018. The wasps have reduced ACP populations in Texas by more than 50 percent and by as much as 99 percent around California release sites.

Through the Citrus Health Response Program, we also continued to support the production and release of the *Tamarixia* parasitoid wasp in 2018. This wasp kills the Asian citrus psyllid (ACP)—the gnat-sized insect that spreads HLB. The wasps have reduced ACP populations in Texas by more than 50 percent and by as much as 99 percent around California release sites.

Research remains a critical priority if we're going to ensure the U.S. citrus industry survives and thrives long term. For the last 5 years, we have invested more than \$25 million through a PPQ-led multiagency group to speed the development of new technologies that could help the U.S. citrus industry fight back against citrus greening. These projects have focused on strategies for controlling Asian citrus psyllid, therapies

for infected trees, sustainability of new plantings, early detection technologies, best management practices for citrus groves, and support for the development of HLB-resistant citrus varieties. In 2018, cooperators conducted field trials of several promising citrus varieties, evaluated chemicals that have shown promise in lab settings against HLB, and tested sprayer technologies for applying antimicrobials and pesticides to combat HLB and ACP, to name a few.

Exotic Fruit Flies: PPQ takes the threat of exotic fruit fly outbreaks very seriously. Working with State partners, our goal is to detect an outbreak early and respond rapidly. Our swift and effective action protects crops and the industries that depend on them, as well as valuable foreign export markets. This year, we successfully eradicated 9 of 13 fruit fly outbreaks that started in 2017 and 2018.

Releasing sterile fruit flies has proven to be crucial in preventing and eradicating outbreaks. The sterile males mate with wild female flies, preventing reproduction. In 2018, PPQ released between 100 and 150 million sterile Mexflies per week in southern Texas to maintain a 25-mile-wide sterile fly barrier along the Mexican border, helping to reduce incursions of wild Mexflies. In addition, we opened a new sterile fruit fly rearing facility in Florida capable of doubling sterile fly production in as little as 10 days in the event of an outbreak. We expect to start construction on a similar facility in Texas in 2019 and are developing plans for another facility in California. Together, these facilities will provide complete frontline protection in the fight against exotic fruit flies in the United States.

In 2017, PPQ detected the European cherry fruit fly (ECFF) for the first time in the United States in traps placed in parks and on public lands along the Niagara River in Niagara County, NY. ECFF is a serious pest



PPQ detected European cherry fruit fly for the first time in the United States in 2017 in traps placed in parks and on public lands along the Niagara River in Niagara County, NY. We are working closely with the New York State Department of Agriculture and Markets and the Canadian government to control and, if possible, eradicate this pest from the United States.



PPQ employees survey an Idaho potato field for the pale cyst nematode, a major potato pest. These surveys are necessary to delimit the pest and protect U.S. access to valuable export markets.

of cherries that damages ripening fruit, causing it to rot and fall off the tree. In heavily infested areas, the fly can destroy up to 100 percent of ripening cherries. If this pest were to become established in New York, it could threaten U.S. commercial cherry production valued at more than \$850 million. PPQ is working closely with the New York State Department of Agriculture and Markets and the Canadian government to control and, if possible, eradicate this pest from the United States.

Grape Pests: PPQ works with a number of cooperators to protect U.S. grape production from devastating pests and diseases, including glassy-winged sharpshooter

and European grapevine moth (EGVM). PPQ and partners eradicated EGVM from the United States in 2016 and continue monitoring for the pest in all grape-growing areas of California, with zero detections in 2018. This monitoring will continue through 2019 to ensure that any new EGVM introductions would be detected quickly. PPQ and cooperators also continued their efforts to control glassy-winged sharpshooter populations and prevent the pest's spread in California. In total, we conducted surveys in 49 counties, treated more than 37,000 acres, and inspected over 34,000 nursery stock shipments from infested areas, protecting 829,000 acres of grape production worth more than \$5.7 billion in 2017.

Potato Pests: Working with State departments of agriculture and the potato industry, PPQ is fighting back against two major potato pests, pale cyst nematode in Idaho and golden nematode in New York. In Idaho, PPQ and partners have reduced pale cyst nematode populations by 99 percent since the pest was first detected in 2006. In 2018, we released another 1,113 acres from regulation, bringing the total regulated area down to just over 8,000 acres. We also continued developing alternatives to methyl bromide fumigation treatments for infested fields. This includes the use of trap crops that are similar to potatoes. The trap crop stimulates nematode cysts to hatch, but will not allow the pest to complete its life cycle. In 2018, we planted trap crops on 71 acres in Idaho.

Several years ago, we adopted strategies already used in the Idaho program and began focusing regulatory activities in New York on infested and associated fields rather than along geographic boundaries. As a result, we have reduced the regulated area by 85 percent, allowing farmers to grow crops without restrictions. In 2018, we were able to deregulate another 193,730

acres after completing necessary evaluations. Together, the Idaho and New York programs protect 1 million acres of potato production nationwide and export markets worth more than \$229 million in 2018.

Plum Pox Virus: Plum pox virus is one of the most devastating viral diseases of stone fruit worldwide. It can cause significant yield losses and reduce the marketability of fruit and nursery stock. Since the disease was first detected in the United States in 1999, PPQ and its State, Tribal, university, and industry partners have worked to eliminate it. In 2018, we achieved 3 years of negative survey results in the last regulated area in New York, confirming the disease is no longer present in orchards or on residential properties. As a result, PPQ plans to declare eradication in the near future.

Combating Tree Pests

PPQ continues its battle against two destructive, wood-boring beetles: the Asian longhorned beetle (ALB) and the emerald ash borer (EAB). ALB is an invasive insect that feeds on a wide variety of trees in the United States, eventually killing them. If it were to become established here, this beetle could become one of the most destructive and costly species ever to enter the country. The beetle threatens urban and suburban shade trees, recreational resources such as parks, and forest resources and wildlife. It could also harm industries such as maple syrup production, hardwood lumber processing, nurseries, and tourism.

The Asian longhorned beetle most likely came to the United States inside wood packaging material from Asia. Since 1996, the beetle has been found in five States: New York (1996), Illinois (1998), New Jersey (2002), Massachusetts (2008), and Ohio (2011). We

have eradicated infestations in Illinois, New Jersey, and parts of New York, Massachusetts, and Ohio. In 2018, we declared eradication in three Ohio townships. Eradication efforts continue in Brooklyn and Queens, NY; on central Long Island, NY; in Worcester County, MA; and in the Tate Township area of Clermont County, OH.

Progress against EAB has been more elusive. Despite best efforts, the domestic quarantine hasn't stopped this pest from spreading. It is now found in 35 States and the District of Columbia, and it has killed more than 100 million ash trees. In 2018, we published a proposed rule to end our domestic regulatory activities, which includes actions such as issuing permits, certificates and compliance agreements; making site visits; and conducting investigations of suspected violations. If we move forward with lifting the domestic quarantine, we would instead focus available resources on further developing and releasing biological controls to manage the pest.

For several years, PPQ has been using EAB's natural enemies—tiny stingless wasps—as biocontrol agents. So far, we have released these wasps in 25 States and recovered their offspring in 17 States. That means the wasps are establishing, reproducing, and more importantly, attacking and killing EAB. In a number of States, these wasps are already showing great promise especially in terms of protecting young saplings from EAB.

Spotted Lanternfly

The spotted lanternfly (SLF) is an invasive insect that the Pennsylvania Department of Agriculture first detected in 2014. This pest poses a significant threat to tree fruit, hardwood, and nursery industries, which contribute nearly \$18 billion to the State's economy.

Together with the Pennsylvania Department of Agriculture, we deployed an area-wide management strategy in 2018 to contain and suppress this pest. Specifically, PPQ is working along the leading edge of the infestation to stop this pest from spreading further. And, the State department of agriculture is battling the pest within the core-infested area, helping to minimize this pest's impact on agricultural areas, the hardwood industry, community landscapes, and residential properties.

In 2018, PPQ and State officials conducted surveys to monitor pest populations and detect new outbreaks outside known infested areas. We also used insecticides to reduce pest populations and herbicides to remove SLF's preferred host, the invasive tree of heaven. In addition, we conducted significant outreach to agricultural producers, residents, and businesses both inside and outside the impacted area. Outside Pennsylvania, we worked with the State departments of agriculture in Virginia, New Jersey, and Delaware to respond to isolated detections in those States.



In 2018, PPQ released more than 1 million stingless wasps, like this *Spathius galinae* wasp (shown), in 25 States to control emerald ash borer populations and protect U.S. ash trees.

Case Study:

PPQ Eradicates the Pink Bollworm, a Major Cotton Pest

On October 19, 2018, PPQ scored a victory for American agriculture so significant that our Secretary announced it to the world. At an event in Washington, DC, he declared, “I, Sonny Perdue, Secretary of Agriculture, do hereby proclaim that the pink bollworm is officially eradicated from cotton-producing areas of the continental United States, and all remaining restrictions on the movement of cotton [are removed].”

This eradication protects a powerhouse industry. U.S. production accounts for about 30 percent of the global trade in raw cotton; \$27 billion in products and services; and hundreds of thousands of jobs, from the farm gate to the textile mill.

The pest first appeared in North America in Mexico in 1911 and was detected in Texas in 1917. Over the years, several efforts failed to eradicate it. Farmers said they paid \$40–\$100 per acre for traditional treatments. Ultimately, the pink bollworm cost the industry \$32 million annually in control expenses and yield losses. But those days are now over.

The Keys to Our Success

Partnerships

“This eradication is a case study in what partnerships can accomplish,” said Karen Maguylo, National Cotton Pests Coordinator. “We could not have succeeded without the close collaboration among so many Federal and State agencies, industry organizations, researchers, and growers.”

Here’s a breakdown of each partner’s crucial contributions:

PPQ: PPQ provided Federal leadership to coordinate nationwide efforts. For more than 60 years, we had maintained and enforced the pink bollworm quarantine regulations to prevent the moth’s further spread. To suppress pest populations, we reared and sterilized pink bollworm moths and released them from aircraft over infested cotton fields. The sterile moths mated with wild moths, producing no offspring.

USDA’s Agricultural Research Service (ARS): Over many years, ARS scientists provided key research into pink bollworm pheromones, trapping, cultural control, insect sterilization, and many other topics that helped lead to an area-wide eradication program.

State Departments of Agriculture: Arizona, California, New Mexico, and Texas State departments of agriculture encouraged local industry collaboration and enforced post-harvest plowdown to destroy the plants. Plowdown deprives the pest of its host plant during non-production times of the year, disrupting its life cycle.

Industry and Growers: Industry groups in each infested State were the critical boots on the ground. They mapped fields, placed traps and pheromone-containing rope, collected data on program activities, identified sterile moth release areas, ensured producer compliance with program activities, and coordinated the aerial release of sterile moths.

Cotton growers shouldered most of the financial burden, paying assessments that covered 80 percent of the eradication program’s cost. California’s cotton producers funded the construction of the Phoenix, AZ, sterile moth rearing facility, which the California Department of Food and Agriculture owns.

The National Cotton Council organized and managed the scientist-staffed Pink Bollworm Technical Advisory Committee and the grower-led Pink Bollworm Action Committee. These groups collaborated to create science-based actions that were feasible in the field.

Effective Tools

“An impressive part of the eradication program is how successful it was without increasing pesticide use,” Maguylo said. “The program was built on mapping, detection, and control. Because these tools were so effective, cotton producers were able to significantly reduce and in some cases eliminate pesticide applications. That made this program very green, environmentally.”

Those tools included:

Transgenic Bt Cotton: Technical experts and industry leadership highly encouraged cotton producers to plant Bt cotton. This genetically engineered (GE) variety produces a pesticide inside the plant that kills pink bollworms. Not all cotton varieties have this GE option, however.

Pheromone Application: Growers placed ropes containing pink bollworm pheromones on plants

throughout their fields. With so many pheromones in the field, male moths had difficulty finding females for mating, which reduced moth populations.

Sterile Moth Release: Years of research and field trials showed that sterile moth releases effectively suppress moth populations. PPQ released up to 31 million sterile pink bollworm moths daily over infested areas.

Extensive Surveys: Through pest surveys, the program constantly monitored the moth's distribution by mapping cotton fields and placing traps to detect the pest. The surveys also helped verify control measure effectiveness and eradication progress.

What's Next

PPQ and our partners want to ensure that pink bollworm never shows its face again. "The previously regulated States are focusing on post-eradication surveying now," said Texas State Plant Health Director Stuart Kuehn. "If the pink bollworm somehow returns, we want to know as soon as possible so we can deliver a quick knockout punch to eliminate the pest."

Inspired by the pink bollworm program's success, California's pistachio industry is funding a pilot project to rear sterile navel orangeworm moths in the Phoenix facility for release over infested California orchards. This pest continues to damage—at rising levels—California's \$6 billion pistachio and almond crops.

PPQ's pink bollworm colony remains on standby in a nearby containment facility in case we need to battle a new incursion.



Above: USDA Secretary Sonny Perdue (left), joined by National Cotton Council CEO Gary Adams (center) and USDA Marketing and Regulatory Programs Under Secretary Greg Ibach (right), signs the "death certificate" for one of the world's most damaging cotton pests. Below: The sterile pink bollworm rearing facility in Phoenix (left) supplied up to 31 million sterile moths daily to the eradication program. Workers load the moths into release devices (center), which fit into specially modified airplanes for moth dispersion over cotton fields (right).



Making Agricultural Trade Safe and Supporting U.S. Exports

While global trade brings tremendous benefit, it also brings risk. Potentially harmful plant and animal pests and diseases can hitchhike on or in the plants, fruit, vegetables, and other products we trade. To help the world move billions of dollars in commodities without spreading invasive pests and diseases, PPQ works with countries around the globe to promote a safe, fair, and predictable trade system. This system, built on internationally and regionally harmonized, science-based plant health measures, not only reduces pest risks but also helps to create a level playing field for U.S. products abroad.

In our Strategic Plan, we set a goal of increasing the safety of agricultural trade and expanding economic opportunities for U.S. products in the global marketplace by promoting widespread use of science-based standards, resolving plant health barriers to trade, and helping U.S. producers meet foreign market access requirements.

This year, we introduced four strategic initiatives that promise to make agricultural trade more predictable, fair, and safe. They include achieving the electronic exchange of phytosanitary certificates through a global ePhyto system, developing a regulatory framework to manage pest risks linked with the international movement of seed, developing strategies to address pest risks from electronic commerce, and promoting the use of voluntary guidelines to reduce pest risks associated with the global movement of sea containers.

Creating a Safe, Smooth-Functioning Trade System

PPQ sits at the negotiating tables of two of the world's renowned plant health standard-setting organizations: the International Plant Protection Convention (IPPC) and the North American Plant Protection Organization (NAPPO). Through these forums, PPQ is building important international and regional relationships that help the United States advance plant health protection standards and harmonized regulatory approaches that are necessary for the safe expansion of global agricultural trade.

Promoting Safe Trade Through Effective International Collaboration

Strategic international relationships are critical to achieve a safe, fair, and predictable trade system. These relationships create a stronger basis for addressing trade-related pest and disease threats, resolving plant-health trade problems, establishing science-based trade standards, and advancing mutually beneficial trade goals. For example, PPQ worked with the IPPC's other 182 member countries to adopt 10 new international standards in 2018 that will facilitate the safe movement of a number of globally traded commodities. The newly adopted standards address pest surveying, wood packaging material treatments, and the application of temperature treatments. We also adopted new phytosanitary treatment and diagnostic protocols, which will help ensure that all countries apply pest identification and treatment requirements in a technically justified, consistent, and fair manner.



PPQ Deputy Administrator Osama El-Lissy presents strategic U.S. plant health priorities to the International Plant Protection Convention's Commission on Phytosanitary Measures, advocating for a safe, fair, and rules-based global agricultural trade system.

For several years, PPQ has been an active participant and contributor to the IPPC's International Year of Plant Health Steering Committee. This group has been working to raise awareness of plant health issues and strengthen global efforts in the face of increased trade and climate change. As a result of the committee's work, 90 countries, including the United States, co-sponsored a resolution to proclaim 2020 as the International Year of Plant Health. The United Nations General Assembly adopted the resolution on December 16, 2018. PPQ, NAPPO, and the IPPC are



During the North American Plant Protection Organization annual meeting in October 2018, PPQ Field Operations Director Wendy Beltz (standing) and the members of the North American Sea Container Initiative (seated) presented their work to prevent the spread of invasive pests in commerce by promoting voluntary guidance for cleaning sea containers.

jointly planning a wide variety of 2020 events and activities not only to raise global awareness about the importance of protecting plant health but also to drive concrete action across all sectors of society to stop the spread of devastating pests and diseases.

At the regional level, PPQ worked with Canada and Mexico through NAPPO to advance key U.S. standard-setting initiatives on seeds, plants for planting, accreditation, and forestry and to facilitate safe trade in these commodities. This includes adopting

a new standard for using systems approaches to manage pest risks associated with the movement of forest products. We've also been working through NAPPO to drive critical global conversations about the importance of using risk-based approaches in port-of-entry inspections and developing precision safeguarding strategies that use cutting-edge science and technology to maximize risk management.

Outside of the IPPC and NAPPO, PPQ continues building influential relationships with key foreign counterparts to advance shared goals. This includes forming an international coalition with the chief plant protection officers of Australia, Canada, and New Zealand. Since 2009, this group, known as the "Quads," has advanced the development and adoption of strategically important international standards for diagnostics, treatments, and the movement of high-value commodities like grain. The group has also been instrumental in urging global action on emerging plant health issues, such as reducing pest risks from sea containers and e-commerce.

Advancing the Global Use of Modern Technologies

Internationally, PPQ has been instrumental in building the world's first global electronic phytosanitary (ePhyto) system, which went live in 2018. Phytosanitary certificates are critical documents attesting that a country's plant or plant product exports meet the importing country's plant health requirements. The ePhyto system makes certificate exchange fast, efficient, and fraud-resistant. Four countries, including the United States, now use it, and 10 more are about to start. The IPPC began piloting the Generic ePhyto National System (GeNS) in late 2018. GeNS will allow interested countries, especially

developing and least developed countries, to connect to the ePhyto Hub and exchange certificates with little to no cost.

Helping the World Address Critical High-Risk Pest Pathways

PPQ continues to help the global community tackle high-risk pest pathways such as sea containers, international seed trade, and internet-based trade. In 2018, PPQ continued its work with the Canadian Food Inspection Agency, U.S. and Canadian border protection agencies, North American shippers, and global shipping companies to promote the use of practical, voluntary guidance for cleaning and inspecting sea containers. The group also began establishing mechanisms for collecting data to create a baseline of pest interception rates associated with containers. Long term, we plan to use the data to measure the impact of the voluntary program and develop targeted, risk-based pest mitigation strategies. In addition, PPQ experts participated in the IPPC Sea Container Task Force, which is tasked with developing additional short- and long-term strategies for reducing the risk of pests hitchhiking in or on containers.

We also continued developing a holistic systems approach to reduce risks associated with seed trade. This new approach is called the Regulatory Framework for Seed Health (or RePreSH). RePreSH is based on the internationally recognized system for reducing the risk of food safety hazards. It leverages industry best practices for managing pest risk, making international seed movement safer. In 2017, PPQ officials visited seed production facilities to gather information about production practices, pest risks, and control

points. This year, we began developing a detailed ReFrESH systems approach, including identifying key mitigation points in the seed production process. We also drafted an accreditation manual for the program. Internationally, we continued to work with our NAPPO counterparts in Canada and Mexico, as well as other countries to promote the adoption of standard, harmonized requirements for international seed movement.

For nearly a decade, PPQ has been monitoring online trade of plants, plant and animal products, and live plant pests, and we have started developing strategies to effectively address risks associated with these imports. In 2018, we worked with the IPPC to develop a project work plan and budget related to pest risks in internet trade (e-commerce) that will be presented to the Commission for Phytosanitary Measures in 2019. The goal is to promote information sharing among countries that are also tackling this issue so that we can identify best practices and develop effective tactics for finding and closing internet-based high-risk pathways.

We also started working with a major e-commerce company and our counterparts in Australia, Canada, and New Zealand to evaluate tools that could restrict online purchasing of prohibited products in our countries. In addition, we have been working with these three countries and e-commerce companies to develop educational resources and best practices for customers and sellers to help them understand why certain products are regulated and may be restricted or prohibited.

Securing Economic Opportunities Abroad for U.S. Products

U.S. agricultural exports bring significant value to our economy. Consider this: International sales of U.S. farm and food products totaled \$143.4 billion in fiscal year 2018. These exports created a trade surplus of more than \$15.8 billion, helping to energize our economy and support more than 1 million American jobs. PPQ's pursuit of new and expanded trade is essential to helping America's farmers reach new customers, removing trade barriers, and ensuring that U.S. products and producers are treated fairly.

Sustaining and Expanding Key Export Markets

Each year, PPQ conducts technical negotiations with countries around the world to open, expand, or maintain export markets for U.S. commodities. We use science, data, and international guidelines to remove plant health-related barriers to American products. In addition, we provide technical expertise to the Office of the U.S. Trade Representative and USDA's Foreign Agricultural Service as they pursue other diplomatic channels, such as the World Trade Organization, to help resolve trade barriers for U.S. exporters.

In 2018, we completed 19 bilateral meetings with 17 countries and 13 technical meetings with 11 countries to establish practical, science-based phytosanitary requirements for the safe trade of live plants and fresh fruits and vegetables. Through these meetings, we helped the United States realize significant trade opportunities, including securing access for U.S. corn to Myanmar, valued at \$6 million; expanding access for U.S. rice to Colombia, valued at \$58 million; and retaining access for U.S. soybeans to China, valued at \$12 billion.



In 2018, PPQ negotiated plant health requirements and resolved plant health trade barriers to help open, expand, and retain U.S. access to foreign markets worth nearly \$23 billion, including securing access for U.S. corn to Myanmar, expanding access for U.S. rice to Colombia, and retaining access for U.S. soybeans to China.

Certifying the Health of U.S. Exports

U.S. exporters rely on PPQ and its State and county partners to inspect and certify plants and plant products being shipped to markets overseas. These export certificates attest that the United States is presenting products that meet the importing countries' requirements. Thanks to PPQ's electronic certification system, the once time-intensive, manual process of issuing phytosanitary certificates is now fast, efficient, and fraud-resistant. PPQ also maintains a database of foreign countries' plant and plant product import requirements. With these tools, our nationwide team of Export Certification Specialists and their cooperators issued more than 699,900 certificates in 2018.

Case Study:

PPQ Helps Maintain \$12.4 Billion Soybean Export Market

The news in 2018 was dominated by headlines about the costly tariffs that impacted trade, including soybean trade, between the United States and China. But there was also a plant health concern that could further limit U.S. access to China's soybean markets if not addressed: weed seeds. "Many countries—including China—are taking increasingly stringent action when they detect weed seeds in imported commodities," said PPQ Trade Director for Grains George Galasso. "Actions include additional inspections, treatment, or other measures to reduce pest risk. In the worst case, a country could close market access entirely."

To help our soybean producers overcome this potential trade barrier, PPQ, other USDA agencies, industry, and academia developed a systems approach designed to reduce weed seeds in our exports. Specifically, this systems approach is a series of farm-to-export best practices for reducing foreign material, including weed seeds, in soybeans. The approach includes recommendations for integrated weed management, harvesting, and handling. It also includes USDA and industry monitoring of foreign material and weed seed content in soybeans at grain and export elevators.

The Science Behind the System

When China notified USDA about increased detections of weed seeds in U.S. soybean imports, PPQ moved quickly to address their concerns. One of the first steps was to convene a technical working group. It included

experts from across USDA, including the Agricultural Research Service, National Institute of Food and Agriculture, and PPQ, as well as industry experts on soybean production and weed control.

Working at a break-neck pace, the group scoured scientific literature; reviewed available tools, practices, and strategies for minimizing weed seeds in soybean grain; and examined options for controlling and limiting the spread of herbicide-resistant weeds. In less than 6 weeks, they identified key best practices that U.S. growers, handlers, and transporters could use to reduce weed seed contamination across the supply chain.

Implementing the Systems Approach

To implement the systems approach, PPQ formed the U.S. Grain and Oilseeds Task Force in January 2018. The Task Force includes five government-industry work groups responsible for carrying out various components of the systems approach. In short order, the groups began creating broad awareness about best practices for reducing weed seed contamination, developing plans for a national survey that would monitor weed seed and foreign material levels as beans move across the supply chain, and providing trade support to help maintain the flow of U.S. soybeans by quickly addressing any technical issues associated with exported shipments.

Starting with the 2018 harvest, PPQ and State officials began contacting grain elevators in 19 soy-producing States to request their voluntary participation in the

national survey. The survey ran from October 2018 through February 2019. The goal is to sample soybeans as they move from the farm to local, regional, and export grain elevators to establish a baseline for weed seed levels. PPQ will repeat the survey with the 2019 and 2020 crops to determine where along the supply chain weed seed contamination is occurring and how we might adjust the systems approach to deliver the best results.

Collaboration: The Key To Retaining Markets

Ever since China voiced its concerns over weed seeds in U.S. soybean, the response has been an impressive level of collaboration among USDA, industry, and States. As a result, the United States shipped more than 9 million metric tons of soybeans to China in 2018 without interruption.

"We believe the systems approach and survey data could play an important role in facilitating safe trade globally," said Galasso. "Should the International Plant Protection Convention develop a standard on grain shipments, our survey data and experience will be valuable input in designing an effective and technically sound standard. It might also help the Convention members to deal with these phytosanitary issues in the least restrictive, technically appropriate way."

For more information on the systems approach, visit www.aphis.usda.gov/soybean-systems-approach.



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Strengthening Our Organization

Our Most Valuable Resource: PPQ Employees

Every accomplishment in this report reflects the hard work of PPQ's diverse and dedicated workforce of nearly 2,900 people. Every day, they apply their unique talents and skills to achieve PPQ's mission and provide global plant protection leadership. The PPQ Management Team has been working to equip and empower our employees for continued success. This includes increasing employee engagement across all levels of the organization, investing in our supervisors and managers to help them better support their employees, and nurturing a more inclusive environment. While we are proud of our improvements in all of these areas, we recognize that improving any organization is a never-ending process and there is still more to do.

Preparing PPQ for the Future

In 2018, we completed two significant initiatives to strengthen our organization and ensure that PPQ remains effective well into the future: The Training Needs Assessment and the Human Capital Plan. The Training Needs Assessment has led to a better understanding of employee training needs across the organization. Our Professional Development Center (PDC) has used it to create a training plan that includes PPQ 101 and Mission Critical Training. These offerings will be available in late 2019. The Human Capital Plan will help us attract and retain high-performing employees, continuously develop employee skills to better achieve our mission, and better align people and skills across the organization to more efficiently

respond to future mission demands. It includes action plans for employee development, knowledge management, recruitment, and retention.

We also took several steps in 2018 to make sure PPQ has the right employees in the right places at the right times. For example, we established a position management committee to support a more transparent hiring process and prioritize vacancies and hiring actions to meet mission critical, public safety, and customer service needs. We also created career ladder positions for scientific staff to better recruit and retain highly qualified employees and ensure long-term stability of PPQ's science-based operations.

Supporting Employees

In 2017, we established the Center for Advisory Resources for Employees (CARE) that includes our Employee and Labor Management Relations team and a new ombudsman unit. Our ombudsmen are helping employees at every level—management, non-management, union, and non-union—resolve difficult workplace situations and manage conflict in a way that promotes healthy working relationships.

The CARE team has also been traveling to work sites that are experiencing a variety of challenges. The team assesses the situation and creates specific action plans—with accountability—to help supervisors create a more productive, healthy, and safe work environment. The team also focuses on what PPQ does right. For example, they visited the Asian longhorned beetle program in Worcester, MA, to learn what makes that work unit such a powerhouse of positive energy and high morale. Through extensive employee surveys,



PPQ's Center for Advisory Resources for Employees (CARE) helps employees at every level resolve difficult workplace situations.



Oklahoma State University intern TK Wallace sets up Mormon cricket field trials to test alternative suppression techniques in Idaho's rangeland.

they identified the program's best practices. Now they're working to roll them out PPQ-wide so the entire organization can benefit from them.

Strengthening PPQ With Diversity

PPQ's workplace diversity is a key element of our mission success. This diversity enriches our workforce and makes us a more innovative and productive team. It also helps us to reflect the many stakeholders we serve—from consumers and farmers, to importers and academicians, just to name a few—strengthening our effectiveness and credibility. To promote diversity and inclusion at PPQ, we have Civil Rights and Diversity Advisory Committees at the national and local levels. They deliver robust diversity and inclusion programs that celebrate the accomplishments of Americans in underrepresented groups, including women; African Americans; American Indian and Alaska Natives; Caribbean Americans; Hispanics; Lesbian, Gay, Bisexual, and Transgender Americans; and veterans.

The National Committee also works with the PPQ Management Team to address equal employment opportunity (EEO) issues and establish strategies to achieve PPQ's EEO goals and objectives.

This year, PPQ's Diversity and Inclusion Work Group—a strategic planning group that complements the efforts of PPQ's National Civil Rights and Diversity Advisory Committee—began work on a "living" Diversity and Inclusion Plan. The plan will offer numerous recommendations to expand diversity and broaden PPQ employee understanding of its importance. Recommendations will cover the hiring and retention of employees, training, development, and outreach.

To help our country's youth realize a career safeguarding American agriculture and the environment, PPQ partnered with several

minority-serving institutions in 2018 to offer career workshops and internships. These opportunities not only help increase the competitiveness of prospective applicants, but also give students a chance to experience what PPQ does on a daily basis. For example, PPQ hosted Native American students from Oklahoma State University for an 8-week summer internship in 2018. The interns jumped in with both feet, honing their survey and pest identification skills, deploying bark beetle traps and screening samples, and sweep-netting and releasing flea beetles to help control rangeland weeds. Through the Thurgood Marshall College Fund, PPQ gave students from Historically Black Colleges and Universities and Predominantly Black Institutions real-world work opportunities, helping them gain valuable experience while delivering products that support PPQ's ability to achieve its mission.

PPQ also tapped a diverse and qualified talent pool through our partnership with Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS). In 2018, we attended MANRRS' Annual Career Fair and Training Conference to share our story and promote career opportunities with college students from across the country. We also participated in APHIS' Office of the National Tribal Liaison's first Pathways Program training event on Tribal lands. More than 100 students from Diné College, Navajo Technical University, and Southwestern Polytechnic Indian Institute participated in workshops that included sessions on Federal résumé writing, interviewing techniques, and navigating USAJOBS.gov. During the event, many students submitted résumés and applications for student trainee positions in PPQ.





Recognizing PPQ's Employees

Every day, PPQ employees give their all to deliver extraordinary results for our organization and our stakeholders. This section highlights some of this exemplary work that was recognized in 2018.

APHIS Leaders Honor PPQ-Led Government-Industry Mollusk Team

When PPQ learned that a major aerospace company's Utah facility had detected snails in five containers of aircraft parts imported from Italy, they worked closely with the company and U.S. Customs and Border Protection to effectively address this potentially high-risk pathway. Together, they developed proactive measures to mitigate snail detections at the port where the company's parts first arrive and allow the imports to continue with minimal interruption. Their efforts demonstrated outstanding leadership and collaboration across agencies and sectors, earning them the 2018 APHIS Administrator's Award and the 2017 Safeguarding Award.



National Operations Manager Marla Cazier-Mosley (left center) and National Malacologist David Robinson (right center) accept the award on behalf of the Mollusk Team from APHIS Administrator Kevin Shea (left) and Under Secretary for Marketing and Regulatory Programs Greg Ibach (right).



PPQ's National Trade Director for Grain George Galasso (left center) and Export Services Director Christian Dellis (right center) accept the award on behalf of the U.S. Grain and Oilseed Systems Approach work group.

USDA Under Secretary for Marketing and Regulatory Programs Recognizes PPQ-Led U.S. Grain and Oilseed Systems Approach Work Group

When China notified USDA about increased detections of weed seeds in U.S. soybean shipments in 2017, PPQ moved quickly to address their concerns. Working closely with the soybean industry, other USDA agencies, the National Plant Board, and academia, PPQ identified best practices that participants along the soybean supply chain—from farm to export—could use to reduce weed seeds in soybean exports. As a result, our country was able to ship more than 8.2 million metric tons of soybeans from January 1 to May 31, 2018. The systems approach now serves as a model for other grain exports. This accomplishment earned the Work Group the USDA Under Secretary's Award for their efforts to overcome a significant trade barrier and maintain the \$12 billion market for U.S. soybeans to China.

Cooperative Agricultural Pest Survey Program Recognizes PPQ Employees for Outstanding Work

PPQ employees and numerous State cooperators survey for high-risk pests through the Cooperative Agricultural Pest Survey program, also known as CAPS. CAPS supports a strong domestic pest detection system and annually recognizes the exceptional work of its members. The CAPS award is given for individual and team accomplishments, and this year CAPS selected PPQ's Risk Analyst Heather Moylett and Biological Science Technician Dan Mackesy for its team award.

During a period of transition for the CAPS program, Moylett and Mackesy took on leadership roles. After their 120-day temporary assignments ended, the duo returned to their original positions, but continued to provide leadership and scientific support for the CAPS program, without additional compensation.



Heather Moylett (left) and Dan Mackesy (right) provided critical support to the Cooperative Agricultural Pest Survey program and our State cooperators during a time of transition.

Two Plant Board Presidents Present PPQ Employees With Awards

During the National Plant Board (NPB) annual meeting in August 2018, two PPQ employees received prestigious awards. These awards recognize their significant contributions to strengthening PPQ's partnership with the State departments of agriculture and advancing our shared plant protection mission.



Area Executive Director Katie Hough received the NPB President's Award from NPB President Ann Gibbs, who is also Director of the Maine Department of Agriculture's Division of Animal and Plant Health. NPB presidents give this award each year at their

discretion, and in 2018, Gibbs focused on individuals who have gone above and beyond to help the NPB organization as a whole.

Hough received the award for her dedication to building relationships between Federal and State plant health officials. Recently, Hough has been instrumental in promoting and organizing new State Plant Health Director training. Although the training is for PPQ employees, Hough invited NPB members to participate and provide a State perspective. Thanks to this well-received approach, PPQ has included NPB's perspective at other PPQ employee trainings.



National Policy Manager for Pest Detection John Bowers received the Central Plant Board (CPB) President's Award from CPB President Collin Wamsley, who also serves as Missouri's State Plant Regulatory Official.

This award, given at the CPB

President's discretion, recognizes a person or group that had a significant, positive impact on the 12 CPB States.

Bowers received the award for providing outstanding leadership as the National Cooperative Agricultural Pest Survey (CAPS) Program Manager and for promoting collaboration between State and Federal partners. Under his direction and guidance, CAPS has undergone tremendous improvements, from developing work plan and reporting templates to standardizing survey methodology.

PPQ Scientist Receives Prestigious Honor From International Society of Plant Pathology

The International Society of Plant Pathology (ISPP) honored Senior Plant Pathologist Gloria Abad during its 2018 International Congress of Plant Pathology. The society presented her with a Fellow Award for professional, lifetime achievements. Abad is the first APHIS scientist to receive this award, and she joins only 13 others in ISPP's 30-year history, making her recognition a rare and noteworthy accolade.

The award recognizes Abad's global leadership in the area of Oomycetes, a taxonomic class also known as water molds. She has a long history of leading



Gloria Abad (center) receives a Fellow Award from International Society of Plant Pathology (ISPP) President Greg Johnson and incoming President Jan Leach at ISPP's International Congress of Plant Pathology held in Boston, MA.

research and international collaborations in the field. Abad has served as the Chair of the ISPP Oomycetes Subject Matter Committee since 2016, and she has organized national and international workshops on *Phytophthora* species and related organisms since 2004.

Earlier this year, the IPPC Secretariat recognized Abad in Rome, Italy, for her related work on sudden oak death diagnostic protocols. Abad's outstanding collaboration with scientists from Canada and the United Kingdom resulted in the IPPC's adoption of new *P. ramorum* diagnostic protocols—one of only two that were adopted last year. Abad provided the most robust methods currently available for the molecular and morphological diagnostics and identification of *P. ramorum*.

2017 Safeguarding Award Honorable Mentions

PPQ Employees in Puerto Rico

PPQ employees in Puerto Rico responded quickly after their island was brushed by Hurricane Irma. Two weeks later, when the island took a direct hit from Hurricane Maria, their resolve was tested again. Under extremely difficult conditions and without hesitation, they returned to work, secured their damaged facilities, located and ensured missing co-workers were safe, and supported recovery efforts.

For many weeks, employees worked long hours at airports to clear passengers for departure and prevent the movement of pests or prohibited items to the U.S. mainland. They also surveyed for exotic fruit flies in urban areas and coordinated with the local government to provide logistical support for mission-critical activities.

The year 2017 was one of the worst years for hurricanes on record. Despite everything, PPQ employees worked diligently through the challenges and harsh conditions with a positive, unshakable attitude when most were living without basic life necessities.

Texas' Mexican Fruit Fly Ventral Receptacle Compression Technique Development Team

When PPQ's Fruit Fly Program in Texas detects a mated female Mexican fruit fly (MFF), it triggers a quarantine that restricts the movement of commercial and backyard host materials and requires treatments and fruit destruction. But the technique for identifying mated female flies is not reliable and could produce a false negative, leaving Texas vulnerable to the spread of this damaging pest.

Last year, the MFF Ventral Receptacle Compression Technique Development Team used cutting-edge technology and groundbreaking research to develop a technique that more accurately identifies mated female fruit flies. This new method significantly impacts fruit fly programs and regulatory decision making processes across the United States and internationally.

American Seed Trade Association Presents PPQ With 2018 Distinguished Service Award

The global flow of seeds in trade is incredibly complex and challenging, one that requires a global solution. In July 2018, the American Seed Trade Association (ASTA) recognized PPQ for its efforts to help establish a global model for the safe and efficient trade of seeds.

With ASTA's technical support, PPQ advocated for a science-based international standard through the International Plant Protection Convention (IPPC). The result—International Standards for Phytosanitary Measures (ISPM) 38: International Movement of Seeds—helps countries to identify, assess, and manage the pest risk associated with the global movement of seeds. Its guidance promotes consistency in how countries inspect, sample, test, and certify seeds for export and re-export.

PPQ is making ISPM 38 operational with its Regulatory Framework for Seed Health (ReFreSH). ReFreSH is a collaboration among the seed industry, State and Federal officials, academia, and others. One of its key features is that it incorporates industry's current best practices for managing pest risk to make international seed movement safer.



American Seed Trade Association

The American Seed Trade Association's outgoing Chair, Tracy Tally (right), presents the association's 2018 Distinguished Service Award to Deputy Administrator Osama El-Lissy for PPQ's efforts to make the international trade of seed safer and more efficient.

Regionally, the North American Plant Protection Organization (NAPPO), which includes the United States, Canada, and Mexico, plans to promote the standard's implementation throughout the Western Hemisphere by conducting a multi-nation workshop in 2019.

NAPPO Recognizes PPQ for Regional Plant Protection Work

Each year, NAPPO recognizes representatives from its three member countries—the United States, Canada, and Mexico—for their efforts to promote and implement regionally harmonized approaches to managing plant pest threats. In 2018, five PPQ employees received high praise and awards during the NAPPO annual meeting in October 2018.

NAPPO Lifetime Achievement Award

NAPPO presented Agricultural Quarantine Inspection Coordinator Bob Griffin with its Lifetime Achievement Award. This award recognizes the impactful strategic leadership that Griffin has provided at international and regional levels. Over the last few decades, Griffin has been involved in standard-setting and other harmonization initiatives in both NAPPO and the IPPC. Throughout his career, he has helped transform the phytosanitary community's thinking on many key issues, including risk analysis, risk management, and trade. Most recently, Griffin was instrumental in organizing NAPPO's first-ever "International Symposium on Risk-Based Sampling" in 2017.

NAPPO Honorary Award

NAPPO bases everything it does on the best science available. That's why the organization presented its Honorary Award to Philip Berger, the Executive Director of PPQ's Science and Technology program. For years, NAPPO has benefited from Berger's scientific leadership and support. In addition, Berger has generously provided subject-matter and technical experts from the program to serve in NAPPO expert groups on a wide range of key topics, including forestry, seeds, accreditation, plants for planting, and risk-based sampling, among others.

NAPPO Expert Group Chair Award

One of the essential functions of NAPPO member countries is the official reporting of new pest detections to the international community. NAPPO countries also use their alert system to facilitate awareness, detection, prevention, and management of exotic regulated pests within the North American region. In his role as Chair of the Phytosanitary Alert System Expert Group, Ignacio Baez has made significant contributions to keeping this alert system functioning effectively. His accomplishments in this area earned him the NAPPO Expert Group Chair Award.

NAPPO Outstanding Cooperator Award

NAPPO acknowledged and thanked PPQ Communications Manager Heather Curlett for her valuable support over the past 3 years. The many products and services she provides are crucial to ensuring that NAPPO's plant protection initiatives are better communicated, understood, and supported in the North America region.

Special APHIS PPQ Deputy Administrator's Award for NAPPO/IPPC Strategic Leadership

Deputy Administrator Osama El-Lissy presented a Special APHIS PPQ Deputy Administrator's Award to Assistant Deputy Administrator John Greifer. The award recognizes the significant strategic leadership Greifer has provided over the past few years at the international and regional levels through both NAPPO and the IPPC. El-Lissy also recognized his help in transforming NAPPO over the last 4 years into a priority-driven, project-based organization.



Agricultural Quarantine Inspection Coordinator Bob Griffin (center right) receives the North American Plant Protection Organization (NAPPO) Lifetime Achievement Award from PPQ Deputy Administrator Osama El-Lissy (center left) and NAPPO Secretariat Technical Director Alonso Suazo (far left). PPQ National Science Program Coordinator Christina Devorshak (far right) also spoke about Griffin's many accomplishments.



Staff Scientist Ignacio Baez (center) receives the NAPPO Expert Group Chair Award from PPQ Deputy Administrator Osama El-Lissy (left) and NAPPO Secretariat Technical Director Alonso Suazo (right).



Science and Technology Executive Director Philip Berger (center) receives the NAPPO Honorary Award from PPQ Deputy Administrator Osama El-Lissy (left) and NAPPO Secretariat Technical Director Alonso Suazo (right). This award recognizes Berger for his scientific leadership and support over the years.



John Greifer (right), PPQ Assistant Deputy Administrator for International Phytosanitary Standards, receives the Special APHIS PPQ Deputy Administrator's Award from Deputy Administrator Osama El-Lissy (left).

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