USDA
United States Department of Agriculture

Plant Protection and Quarantine:

Helping U.S. Agriculture Thrive—

Across the Country and Around the World

Animal and Plant Health Inspection Service

2016
Annual Report

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2016 At-a-Glance

In 2016, PPQ kept potentially damaging pests and diseases out of the country.

Inspected and cleared nearly **62 million** boxes of fruit from 19 countries before it shipped to the United States

Released more than 1 billion sterile flies a week in Mexico, Guatemala, and Belize, creating a barrier that prevents movement of medfly northward into our country

Inspected more than **80,000** shipments of agricultural commodities in Hawaii and Puerto Rico before they left for the U.S. mainland; conducted more than **7,800** treatments

Inspected more than **16,000** shipments of live plants and seeds, intercepting 690 quarantine pests

Processed and identified 162,000 pests (of which **73,700** were quarantine significant) found in imported shipments, allowing PPQ and U.S. Customs and Border Protection to take quick action to prevent pest entry

Inspected **11.9 million** passengers' bags in Hawaii and Puerto Rico before they left for the U.S. mainland, intercepting more than **290,000** agricultural products and 5,700 quarantine pests

Reduced by 98% the number of ships coming to the United States from Asia with Asian gypsy moth egg masses through offshore inspection of commercial ships, protecting North America's natural and urban forests

Cleared through post-entry quarantine **590** normally prohibited high-risk plant cultivars and germplasm from 10 different plant species, making safe new plant varieties available to U.S. importers and producers

Seized more than **102,000** pounds of plants, plant products, meats, and meat products that entered the country illegally

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

Eradicated 10 fruit fly outbreaks: **3** in Texas, **1** in Florida, and **6** in California.

Achieved 4 years of zero pink bollworm finds

Significantly reduced Asian longhorned beetle populations, eradicating **85%** of the New York infestation, **34%** of the Massachusetts infestation, and **15%** of the Ohio infestation

Kept **99.5%** of U.S. cotton free of boll weevil

Eradicated the European grapevine moth from the United States, protecting California's **$4 billion** grape crop and its $57 billion economic impact statewide

Prevented spread of witchweed, helping to protect 88 million acres of corn valued at **$49 billion** in 2015

Protected $6.3 billion in U.S. corn exports from trade disruption when a new corn disease—bacterial leaf streak—was detected in the central United States

Kept Karnal bunt contained to one State, protecting **$10.2 billion** of wheat production and $5.6 billion of wheat exports

Released 12 million wasps in U.S. citrus-producing States to kill disease-spreading Asian citrus psyllids, reducing their populations around some release sites by as much as 99%

Conducted 349 surveys in 50 States and 3 Territories targeting 330 high-risk pests; detected 16 new species, finding **94%** before they spread from area of original infestation

Protected more than **$20 billion** in U.S. specialty crop production (fruits, vegetables, tree nuts, horticulture, nursery crops) by preventing the spread of exotic fruit flies, citrus pests and diseases, glassy winged sharpshooter, pale cyst nematode, plum pox virus, *P. ramorum*, and light brown apple moth

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

Resolved plant health trade barriers to reopen markets or release held shipments valued at more than **$65 million**

Conducted 19 bilateral meetings with **16** countries to negotiate phytosanitary requirements for the safe trade of live plants and fresh fruits and vegetables

Issued more than **650,000** plant health certificates, facilitating the export of U.S. commodities valued at $134.8 billion

Retained and expanded U.S. access for table grapes, citrus, apples, cherries, plums, and alfalfa hay to key markets valued at more than **$4 billion**

Opened new markets for U.S producers valued at **$350 million**, including strawberries to China and apricots and plums to Australia

Worked with 182 International Plant Protection Convention member countries to adopt 11 new standards that contribute to global harmonization and a safe trade system

Processed approximately 450,000 Lacey Act declarations, helping to reduce illegal harvest and trade of protected plant species

Message From the Deputy Administrator

For Plant Protection and Quarantine (PPQ) and our partners, 2016 was a year of remarkable successes. Not only did we eradicate 10 fruit fly outbreaks, but we also achieved 4 years with zero detections of pink bollworm, moving us one step closer to eradicating this pest from all commercial cotton-growing areas of the continental United States. And when the U.S. corn industry faced the first-ever detection of bacterial leaf streak *(Xanthomonas vasicular pv vasculorum),* we devised a practical and scientific approach to manage the disease and protect valuable export markets. Our most significant domestic accomplishment this year, however, was achieving one of our agency's top 10 goals: eliminating the European grapevine moth (EGVM) from the United States. EGVM made that list because it threatened California's $4 billion grape crop and jeopardized valuable export markets for U.S. grapes as well as stone fruit, another EGVM host.

On the world stage, PPQ helped U.S. agriculture thrive in the global marketplace. 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 reached critical plant health agreements and resolved plant health barriers to trade, which sustained and expanded U.S. export markets valued at more than $4 billion. And, we helped U.S. producers meet foreign market access requirements and certified the health of more than 650,000 exports, securing economic opportunities for U.S. products abroad. These successes underscore how PPQ is working every day to keep U.S. agriculture healthy and profitable.

Two years ago, we published our Strategic Plan. It established three goals for the next 5 years:

1. Strengthen PPQ's pest exclusion system;
2. Optimize domestic pest management and eradication programs; and
3. Increase the safety of agricultural trade to expand economic opportunities in the global marketplace.

To meet these goals in 2016, we took steps to improve our data quality, collection, and management and to increase our use of analytics and risk modeling, giving us and our partners an enhanced, data-driven view of the pest risks and threats we are facing. This information is influencing how we regulate pest risk and respond to plant health issues based on evidence of risk, not just perception of risk. We also adopted, adapted, and applied modern technologies to improve program effectiveness and enhance program delivery. From unmanned aircraft systems and molecular diagnostics to tablet computers, technology is putting us on the cutting edge in the fight against invasive pests.

We also made wiser use of our regulatory authorities and used alternatives to rulemaking when a traditional regulatory response would not be feasible or effective. We explored flexibilities in our regulations that have not been previously exercised and continued to streamline regulations to make sure we are successfully mitigating risk in the least restrictive and most cost-effective manner. And, we engaged with domestic and international partners to leverage, share, and focus resources for maximum impact and mutual benefit.

As you will see in the coming pages, these efforts yielded many tangible results.

I am grateful to the talented men and women of 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 and facilitate the safe trade of agricultural products.

Sincerely,

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

At the core of PPQ's safeguarding mission is its pest exclusion system—also known as Agriculture Quarantine Inspection (AQI). AQI is a continuum of pest exclusion strategies and activities that work together to minimize the plant health risks that come with agricultural imports, international travel, and the smuggling of prohibited agricultural products. This system of overlapping safeguards begins offshore, continues through U.S. ports of entry, and extends across the Nation.

In our 2015 Strategic Plan, we established two objectives for strengthening pest exclusion. 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 pest exclusion continuum to target and reduce threats to U.S. agricultural and natural resources.

Eliminating Pest Risk at the Point of Origin

One of the most effective ways to facilitate the safe movement of commodities into the United States is to address pest threats where they originate. By intercepting or eliminating pests in imported commodities before they reach our shores, we reduce pressure on our domestic safeguarding system and increase our ability to protect the health and marketability of our Nation's agricultural and natural resources. Our offshore work also benefits importers whose inspected, pre-cleared, and certified products may pass through U.S. ports of entry without delay.

Improving Offshore Inspections

In 2016, PPQ completed a 2-year initiative to improve its offshore commodity preclearance program. The effort produced more consistent and effective commodity inspections across all participating countries, increasing our ability to detect and exclude pests before commodities are exported to the United States. PPQ also continued to work with the U.S. Department of Defense (DoD) to inspect military equipment returning to the United States, helping prevent the unintentional movement of foreign plant and animal pests and diseases. In total, we trained more than 2,300 DoD personnel in agricultural regulations and recertified 91military inspection programs.

Expanding Overseas Certification

PPQ expanded its certification of overseas treatment and production facilities to include 3 niger seed and 14 *Pelargonium* facilities in 2016. Niger seed is mainly used for bird seed and may be contaminated with noxious weed seeds; the genus *Pelargonium* includes popular geranium plants that can carry serious plant diseases. PPQ's certifications verify that the facilities and their operations meet our standards and regulatory requirements. This helps protect U.S. plant health from pests that could move into our country with high-demand, large-volume commodity imports.

In addition, we began developing a program to certify offshore facilities that produce ornamental plant cuttings for export to the United States. Our efforts here were prompted by the 2015 detection of *Ralstonia solanacearum*—a bacteria that can attack almost 200 plant species in 33 different plant families. In 2016,

In 2016, PPQ inspected and cleared nearly 62 million boxes of fruits and vegetables before they were exported to the United States. In total, 19 countries, including Chile, Mexico, India, and Thailand, participate in PPQ's preclearance program. Through the program, PPQ is able to prevent the movement of potentially harmful pests to the United States. Importers also benefit because precleared commodities may pass through U.S. ports without delay.

PPQ trains military personnel and DoD contractors on how to inspect military items—as well as household goods and privately owned vehicles—and confirm they are free of pests and other contaminants before they are shipped back to the United States. As a result, DoD is able to move its equipment, vehicles, and personnel's property as needed, while avoiding inspection expenses and saving delivery time at the port of entry. At the same time, PPQ can effectively safeguard against foreign animal and plant pests and diseases before they can reach our shores.

we worked with U.S. industry to frame our concept for a program that would establish standard plant pest exclusion procedures and sanitation and traceability protocols for cuttings produced offshore. The program will encourage voluntary participation from industry by offering an incentive, which may include reduced port-of-entry inspections. We will pilot the program in 2017. Once in place, this certification program will further safeguard our country against the entry of plant pests and pathogens on imported plant cuttings.

In other efforts, we completed the second year of a 3-year pilot program with Australia to evaluate if, and under what conditions, an exporting country's national plant protection organization could oversee and operate an irradiation program. If successful, this approach would facilitate the safe trade of agricultural commodities by reducing regulatory burdens and costs for importers while continuing to safeguard U.S. agricultural and natural resources.

Strengthening Regional Cooperation

Closer to home, the Caribbean region—including Florida, Puerto Rico, and the U.S. Virgin Islands—enjoys the benefits of high-volume agricultural trade and international travel. It also faces the accompanying challenge of increased pest pressures. In 2016, PPQ continued to work with countries throughout the Caribbean to prevent the introduction and spread of high-risk plant pests. Our efforts included sharing critical information, harmonizing quarantines, and cooperating on pest management activities with our Caribbean partners to create a perimeter defense against the movement of pests through regional trade and travel.

PPQ helped University of West Indies professors and APHIS International Services staff present a 12-day regional training course on plant quarantine principles and procedures. Twenty-three plant health inspectors from 18 Caribbean nations enrolled in this year's class. During the 6 years this training has been offered, about 125 inspectors from across the Caribbean have benefited from it. The training helps safeguard the entire Caribbean Region, including Florida, Puerto Rico, and the U.S. Virgin Islands, from the entry and establishment of exotic plant pests.

In 2016, PPQ gave its regional partners plant quarantine training, shared scientific and technical expertise, supported pest surveys, and offered help with emergency response planning. We also 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 pest threats in this high-risk pathway. Together, these efforts protect the region from mutual pest threats and facilitate regional economic growth.

PPQ also continued working with Mexico, Guatemala, and Belize to maintain a geographic barrier against medfly to ensure this devastating pest stays well south of our border. Through a cooperative program, we produced more than 1 billion sterile medflies in Guatemala each week in 2016. The sterile flies are used to prevent wild medfly infestations in high-risk areas in those three countries as well as in Florida and California. In fiscal year (FY) 2016, El Niño weather patterns led to a spike in medfly outbreaks, including detections in the previously medfly-free areas of Mexico and Guatemala, which rose from 31 in FY 2015 to 335 in FY 2016. In response, the cooperative program successfully carried out eradication protocols and even slightly expanded the medfly-free area in Mexico, Guatemala, and Belize.

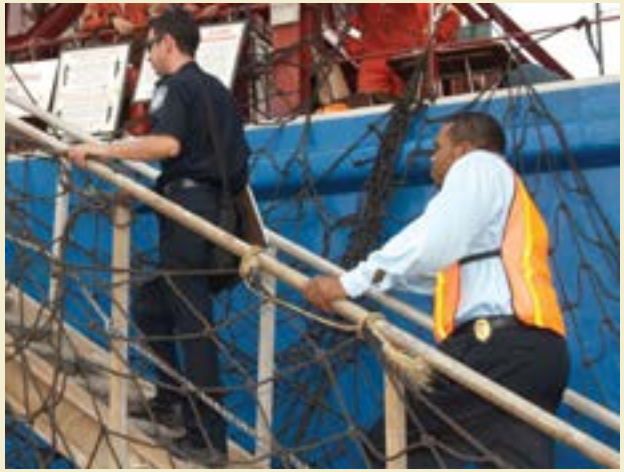
Stopping Pests at Our Borders

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 mitigate 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.

Zeroing In on Higher Risk Shipments

In 2016, PPQ used a statistically driven sampling protocol to support targeted inspections at our plant inspection stations, helping to zero in on incoming shipments of live plants, cuttings, and seeds that were likely to present the greatest risk. Not only does this approach keep harmful pests out of our country, but it also allows for better use of resources and offers opportunities to improve communications with countries that have patterns of noncompliance. We are now working with CBP to carry out risk-based sampling strategies for cargo entering the United States.

PPQ also coordinated with CBP's Commercial Targeting and Analysis Center (CTAC) to identify and flag high-risk cargo shipments for intensive inspection by CBP agriculture specialists. Using CTAC data, PPQ analysts generate solid intelligence that helps focus port inspections on potentially noncompliant shipments, leading to higher rates of interception for prohibited and restricted products.



Inspectors from PPQ *(right)* and CBP *(left)* board a vessel to carry out agriculture quarantine inspections. These inspections are more than our last chance to stop harmful pests from entering the country. They also provide valuable data that PPQ is using to influence and improve pest exclusion activities both offshore and at U.S. ports.

In addition, PPQ's Smuggling Interdiction and Trade Compliance's (SITC) Internet Team constantly monitored the World Wide Web to find and close potential invasive pest pathways into the United States. The two-position team, established in 2009, monitors sites and forums to learn what products are being bought, sold, and discussed; the team responds appropriately with user outreach, traces, and SITC officer visits. They also use a "webcrawler," which is a Web-based software application, to continuously seek out key terms related to illegal products. And when CBP intercepts illegally imported products at U.S. mail facilities, the Internet Team determines the seller and works with the company to bring them into compliance through outreach, warnings, and the removal of all relevant online listings for the product. They also trace and seize any product shipped to U.S. residents. In 2016, the Internet Team conducted 1,570 traces and seized nearly 2,500 pounds of products.

Tips and data from PPQ Smuggling Interdiction and Trade Compliance officers like this one conducting a marketplace survey help to inform PPQ's data analysis, which can lead to port interceptions of prohibited or restricted products.

Streamlining the Clearance of Live Plant Imports

PPQ deployed the Agricultural Risk Management (ARM) system in all of its plant inspection stations in 2016. The system tracks and analyzes in real time shipments that contain live plants, cuttings, and seeds, giving users quick access to pest risk trends. ARM also incorporates previously separated but closely related processes and workflows, such as pest quarantine decisions, treatment schedule recommendations, and remote pest identification using digital imaging, which helps to speed cargo processing and release. We are working to integrate ARM with CBP's Automated Commercial Environment (also known as the "Single Window"), which will allow for seamless exchange of data on imported commodities, pest interceptions, and emergency action notifications. This integration will streamline data collection and improve communication between PPQ, CBP, and the trade community about the status of imports.

Identifying Intercepted Pests With Greater Speed and Accuracy

To enhance standard pest identification methods and expedite quarantine decisionmaking, PPQ continues to test and evaluate the use of molecular diagnostics at U.S. ports of entry. 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 resources on the highest import risks. Molecular diagnostics can also be used to determine a pest or disease's origin, helping us find and close a serious pest pathway, alert U.S. ports of entry about high-risk commodities from that source, and better focus offshore inspection resources in infested countries.

In 2016, PPQ Geneticist Raul Ruiz-Arce compared the genetics of intercepted Mediterranean fruit flies (medflies) against information in a global pest genetic database, helping him determine the medflies' geographic origin. Determining an infestation's source can help PPQ find and close a serious pest pathway, alert U.S. ports of entry about high-risk commodities from that source, and better focus offshore clearance resources in infested countries.

Case Study:

How Data and Analysis Strengthen Safeguarding at Our Borders

Imported plants, plant cuttings, seeds, and other plant propagative material generally pose the highest risk for introducing foreign plant pests and diseases into the United States. For that reason, most of these commodities move forward to one of PPQ's 16 plant inspection stations upon arrival at a U.S. port of entry. Each station's staff of scientists, plant health safeguarding specialists, and support personnel ensure that imported shipments are properly described and documented, detect and identify pests during cargo and plant material inspections, and take appropriate risk mitigation actions for noncompliance, including pest treatments. In FY 2016, PPQ cleared 16,683 imported shipments containing over 1.54 billion plant units (cuttings, whole plants, other propagative materials) and nearly 1,400 tons of seeds. We also intercepted 690 quarantine pests.

While this work is crucial, PPQ simply cannot inspect 100 percent of each commodity entering our plant inspection stations, and trade continues to increase in volume, frequency, and diversity each year. In response, PPQ developed a new protocol—called risk-based sampling (RBS)—that helps us apply more resources to higher risk commodities by freeing up resources that had been focused on lower risk commodities.

RBS is a sampling strategy that yields a constant detection rate and better data that are statistically sound and relevant for risk targeting. In the past, inspectors sampled 2 percent of every shipment, which meant that the detection rate changed with shipment size. Today, inspectors use a PPQ-developed online sampling tool that calculates the number of samples to inspect for each shipment. The goal is for an inspector operating with 80-percent efficiency to detect a 5-percent infestation level with 95-percent confidence.

We are continuing to enhance RBS and maximize inspection effectiveness by incorporating more data-driven sampling strategies, including ratings-based inspection reductions and continuous sampling plans. Ratings-based reductions will allow PPQ to reduce inspection frequencies on low-risk commodities based on the species, the propagative material type, and either the producer or the importer, as appropriate. Continuous sampling plans will let previous inspection results determine the frequency of future inspections. Together, these approaches will provide further incentives to producers and shippers for sending pest-free products.

The recent deployment of our Agricultural Risk Management (ARM) system at every plant inspection station is making inspection data collection and analysis much more efficient. ARM streamlines the data processing required to clear shipments and enables PPQ to collect more detailed, nationally standardized data. That in turn facilitates reporting and analysis. Together, ARM and RBS create a constant data improvement cycle that strengthens our ability to assess commodity risk accurately. In 2017, CBP will begin transmitting manifest data electronically to ARM. This will allow us to further reduce entry wait times and more quickly focus inspection resources on shipments that need intensive sampling.

The result will be a win-win situation for importers and PPQ: low-risk shipments will clear faster, high-risk shipments will receive more intensive inspections, and America's agricultural and natural resources benefit from better overall risk management. PPQ is beginning discussions with our CBP partners about implementing RBS in 2017 in the cargo environment at U.S. ports of entry for fruit, vegetable, cut flower, and other regulated cargo inspections.

Risk-based sampling (RBS) is helping PPQ focus inspections on high-risk propagative commodities based on the analysis of statistically sound inspection data.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Optimizing Pest Management and Eradication

When foreign pests capable of damaging U.S. crop health, disrupting trade, or harming our Nation's forests 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 2016, we made great progress in eradicating a number of plant pests and diseases. We also continued to contain and suppress foreign pests and diseases to prevent their further spread and keep export markets open.

In our 2015 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. Underpinning both of these goals is our commitment to use the best available science, data, and technologies to strengthen our effectiveness and deliver results for the industries we serve.

Modernizing the Fight Against Harmful Pests and Diseases

To stay on the leading 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 helping PPQ and its partners modernize the fight against harmful plant pests and diseases.

Exploring the Promising Potential of Molecular Diagnostics, Unmanned Aircraft, and Detector Dogs

In 2016, PPQ announced three innovative initiatives to strengthen the efficiency and effectiveness of our pest management and eradication programs. The initiatives—molecular diagnostics, unmanned aircraft systems, and detector dogs—hold tremendous potential to enhance our safeguarding ability, and the results so far are impressive.

Molecular Diagnostics: In 2016, PPQ successfully used next-generation sequencing—a form of molecular diagnostics—to identify the exact strain of citrus canker detected in south Texas in 2015 and determined it targets only limes. PPQ and our partners are using this information to focus citrus canker surveys on lime trees, helping us find infected trees with greater accuracy and speed. Given the broad potential of this technology, PPQ continues to evaluate the scientific and policy impacts of molecular diagnostics and is developing a road map for integrating it into our operations.

Using Next Generation Sequencing—a form of molecular diagnostics—PPQ identified a unique strain of citrus canker detected in Texas last year and determined it targets only limes. Given the broad potential of this technology, PPQ is developing a road map for integrating molecular diagnostics into its operations.

Nathan Moses-Gonzales, M3 Consulting Group

PPQ is exploring how unmanned aircraft could take its pest management and eradication programs to new heights.

Unmanned Aircraft Systems: In 2016, we put into operation a small, fixed-wing unmanned aircraft that can safely release adult sterile pink bollworms. This technology will help us quickly eliminate small populations of pink bollworm—a pest we've nearly eradicated from the United States—if a new incursion is detected. Unmanned aircraft equipped with digital cameras are also showing promise as a powerful tool for pest detection and surveying.

Detector Dogs: For decades, the beloved PPQ-trained Beagle Brigade and other PPQ-trained canine teams have been inspecting passenger baggage, cargo, mail, and parcels for prohibited or restricted agricultural imports with impressive effectiveness. Thanks to recent pilot studies, we have learned that detector dogs can also be trained to find specific plant pests and diseases—from coconut rhinoceros beetle to Mediterranean fruit fly larvae and citrus greening—with remarkable accuracy. This discovery could transform how PPQ and its partners protect America's agricultural and natural resources by speeding PPQ's efforts to determine an infestation's boundaries or detect traces of insect larvae or plant disease in shipments. In 2016, we conducted further studies to refine field methods for canine detection of citrus greening, citrus canker, plum pox, and Asian longhorned beetle, and we coordinated with partners on the use of detector dogs for giant African snail and laurel wilt. Through this work, we demonstrated detection rates of more than 90 percent for a variety of pests.

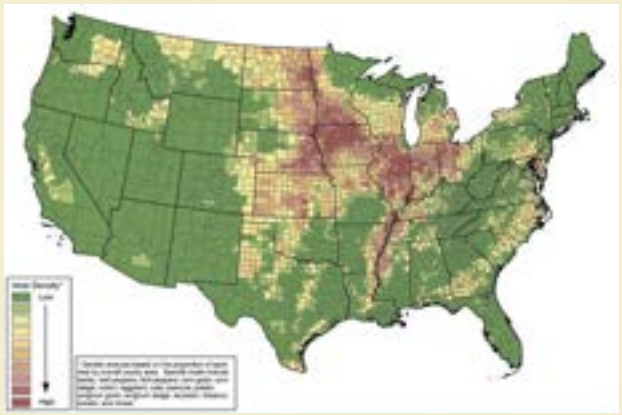
In field tests in Hawaii, canines were able to detect coconut rhinoceros beetle (CRB) larvae 2 to 10 inches deep in mulch 90 percent of the time. They were also able to confirm CRB-negative mulch piles in half the time it takes a four-person survey crew.

Using Data and Technology To More Accurately Predict Pest Risk

Accurate pest forecasting is essential to PPQ's decision-making and operations. To meet this critical need, PPQ is actively advancing its geospatial and predictive modeling methods. We also continue to incorporate historical climate and climate change data, helping to improve predictive models for plant pests. Our efforts delivered a number of new tools in 2016 to better focus pest trapping and survey activities, which increases our ability to detect new or emerging pest populations.

For example, PPQ unveiled a new mapping tool that gives us and our State partners a data-driven view of wood pest entry risks and helps to focus survey activities. The tool uses data from Emergency Action Notifications and other sources to identify the types of products imported on or in wood packaging material that have high wood-boring and bark beetle interception rates. It then merges that information with sales data to pinpoint the locations of more than 200,000 businesses that import, store, or sell those products. The result: national and State maps that show areas at risk—from low to high—for the entry of wood pests.

In addition, PPQ released updated emerald ash borer (EAB) and gypsy moth (GM) detection likelihood models. These models give a statistical probability of EAB and GM detection given landscape characteristics associated with prior detections. PPQ and its partners are using these tools to prioritize the next year's survey locations based on risk.



PPQ delivered a number of new geospatial and predictive modeling tools in 2016 to better focus pest trapping and survey activities, which helped increase our ability to detect new or emerging pest populations. These tools also help us pinpoint when to carry out certain pest management activities, like releasing biocontrols to reduce pest populations.

We also released new maps that use PPQ-developed computer code to pinpoint the calendar dates when adult EABs will emerge from ash trees. Previous EAB emergence maps depicted "degree days"—an indicator of EAB life-stage development—that must elapse before the EABs will emerge. Using those degree-day maps required the careful monitoring of temperatures over time to predict actual emergence dates. The new maps' date specificity helps PPQ better plan when to release into the wild certain parasitic wasps, the biological control organisms that attack the ash-killing beetles. We plan to expand the computer code's use to a larger suite of pests in the near future, ultimately automating its use for the Cooperative Agricultural Pest Survey (CAPS) program. The maps will eventually be posted online and accessible to PPQ employees and external cooperators.

In 2016, PPQ began developing a vast collection of pest risk maps called the Pest Risk Mapping Catalogue that will be a one-stop shop of mapping products for CAPS and the entire PPQ pest detection community. The catalogue focuses on host distribution and climate suitability maps, including CAPS-directed, pest-specific maps. Its goal is to support surveillance planning and resource allocation through a better understanding of how pest risk changes over time and space. The maps are based on newly developed data from two USDA agencies: National Agricultural Statistics Service data for agricultural host distributions, and Forest Service data for forest host distributions. To meet pest-specific needs, the catalogue will include maps showing the combined host density across the United States at a county scale. And, through a PPQ cooperative agreement with Oregon State University, seasonal forecasts of climate suitability and pest events will become available, allowing programs to plan survey activities months in advance.

Putting Powerful Data Collection Tools Into the Hands of Field Surveyors

PPQ field surveyors collect extensive pest-detection data as part of their daily work. PPQ uses these data to plan, conduct, and evaluate domestic programs; demonstrate the pest-free status of U.S. exports; enable the development of new science-based methods and models; and provide accountability to our stakeholders. This makes the demand for quality, error-free data even greater. To that end, PPQ has been evaluating its systems to enhance domestic pest survey program data collection and handling capabilities. In 2016, we began testing four mobile data collection applications that, when in use, will automate survey data collection and strengthen domestic program policy and operations.

HLB MAC-funded research produced two improved field insectary cage designs that are light, easy to transport, and simple to install over citrus trees. Using these cages, PPQ and its partners are able to produce an average of 12,000 ACP parasitoids per tree.

Advancing New Technologies To Support U.S. Citrus Production and Prevent Further Damage From Citrus Greening

The PPQ-led USDA *Huanglongbing* Multi-Agency Coordination (HLB MAC) Group continues to fund research and advance the development of new technologies to help the U.S. citrus industry fight back against citrus greening, one of the world's most devastating citrus diseases. Created in 2013, the HLB MAC is a unique public-private partnership led by PPQ that includes several Federal partner agencies, State departments of agriculture, and industry. Since its inception, the Group has invested more than $25 million and successfully delivered a number of promising tools—such as biological controls, anti-microbials, and thermotherapy—to help support citrus production, especially in areas hardest hit by the disease. Using HLB MAC funding in 2016, PPQ and cooperators increased by 31 percent the production of two parasitoid wasp species used to control Asian citrus psyllid (ACP), the vector for citrus greening disease. That tripled the total production of biological control agents across citrus-producing States to more than 12 million wasps per year. In Texas alone, these biological control efforts have reduced ACP populations by more than 91 percent since the first wasp release in 2011.

PPQ continues to develop sensitive early detection tools and promote the adoption of field-ready tools. We are also supporting rapid propagation projects to speed the delivery of HLB-resistant root stock into field testing and production.

Maximizing PPQ and Partner Actions To Deliver Results

Strategic partnerships are a critical part of our pest management and eradication success. Our most important domestic partner is the National Plant Board (NPB)—an organization of State 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.

PPQ and the National Plant Board agreed to set a new direction for the EAB program in 2016. The new approach will focus on increasing the development and use of parasitic wasps that attack EAB larvae and eggs as a primary strategy for controlling this invasive, tree-killing pest.

Determining When To Change, Scale Back, or End an Ongoing Pest Program

PPQ and NPB leaders considered a difficult question: if a pest program continues for decades, when does it make sense to stop devoting Federal and State resources to it? To help answer this question, PPQ and NPB developed a decision framework to assess a pest program and determine whether to change the approach, scale it back, or end it. They tested the framework on two long-running programs: emerald ash borer (EAB) and pine shoot beetle (PSB). After careful consideration and thorough evaluation, we agreed in 2016 to set a new direction for the EAB program and deregulate PSB.

Setting a New Direction for the EAB Program: The EAB Program has faced a number of challenges over the years. Annual funding has been reduced by 82 percent (from $37 million in 2011 to $7.1 million in 2016) and is expected to remain flat or decrease further. The regulated area has more than doubled in size from about 300,000 square miles in 15 States to over 650,000 square miles in 30 States during the same period. While decreased funding has necessitated reductions in the program's survey, regulatory, and outreach activities, we continue to invest in biological controls using small, stingless wasps that attack EAB larvae and eggs.

There is mounting evidence that these biocontrols offer a level of protection for ash seedlings, saplings, and sprouts against EAB. In 2016, we released 1 million parasitic wasps in 24 States. We are now assessing the impacts of these wasps on EAB populations and tree health at or near release sites. In 2017, we will release more wasps in all States that request them. APHIS will also continue regulatory enforcement at the leading edge of the infestation, conduct surveys in unregulated areas, continue outreach activities to help slow the spread, and coordinate with impacted States. This new approach applies the appropriate resources, given the realities of program funding and pest distribution, to help ensure that ash trees remain a visible part of the American landscape.

Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org

When potato black leg *(Dickeya dianthicola)* was confirmed in 11 States, PPQ worked with impacted States and university researchers to develop best management practices to effectively control the disease. This approach helped avoid the use of costly and burdensome quarantines.

Deregulating PSB: Since the PSB program began in 1992, this invasive bark beetle has spread west from Maine to Minnesota and south to Illinois and West Virginia. It has advanced at a slow rate and caused minimal damage to native pines, plantations, and the nursery trade. Given the PSB program's limited impact on the beetle's spread, PPQ and NPB reassessed its relevance and need. After conducting a cost-benefit analysis and consulting with stakeholders, PPQ and NPB determined that removing PSB quarantine areas would give flexibility to States, allowing them to determine the best approach for managing the pest within their boundaries, and let PPQ reallocate Federal resources to address higher risk pests.

Going Beyond Rulemaking To Solve Plant Health Problems

Even though PPQ is a regulatory unit, the most effective solution to a plant health problem is not always regulation. To accomplish our mission, we consider the full spectrum of options available to us. This means that we are using alternatives to rulemaking when a traditional regulatory response would not be feasible or effective, exploring flexibilities in our regulations that have not been used before, and streamlining regulations to make sure we are effectively mitigating risk in the least restrictive manner. And, we are engaging with domestic partners to leverage, share, and focus resources for maximum impact and mutual benefit. This approach has resulted in more timely actions, deeper and more substantial collaboration with our partners, and lower costs overall, while also enhancing our ability to safeguard plant health.

In 2016, PPQ implemented two novel regulatory approaches to facilitate the movement of fruit from fruit fly-quarantined areas. Specifically, we devised a systems approach—a series of safeguards applied across the fruit production continuum to effectively reduce pest risk—that allowed Texas citrus growers in quarantine core areas to harvest and move fresh citrus fruit without post-harvest fumigation. We developed a similar approach for California tomato growers that allowed them to harvest and move fresh tomatoes from quarantine core areas without first processing them. Both systems offered growers regulatory relief and harvest options while continuing to safeguard against the spread of fruit flies.

PPQ also worked with many domestic partners during 2016 to effectively address plant pests and diseases that threatened U.S. production and had the potential to disrupt U.S. access to valuable export markets. For example, when we confirmed the presence of potato black leg (*Dickeya dianthicola*) in 11 States in 2015 and 2016, we collaborated with the NPB, impacted States, and university researchers to determine our response. After thorough research and careful evaluation, we determined that the pathogen was likely established in the United States and that it would not be practical or cost effective to establish a traditional regulatory program. Instead, we developed best management practices for growers to effectively control the disease. We also developed and made available a diagnostic protocol that can identify all *Dickeya* species in plant, DNA, or culture samples. PPQ classified the pathogen as nonactionable and nonreportable, which alleviated the need for costly action if the pathogen is detected in foreign commodities arriving in the United States or found in other locations within our country.

A. Robertson, Iowa State University

When bacterial leaf streak—a disease that affects the leaves of corn plants—was confirmed in a number of States throughout the U.S. Corn Belt in 2016, we knew that regulating the disease would be neither practical nor possible. Instead, PPQ worked with its partners to identify best management practices to effectively control the disease. At the same time, PPQ gathered scientific evidence on this little-known pathogen to help build a strong case for the safety of U.S. corn, protecting $6.3 billion in U.S. corn exports from trade disruption.

Similarly, when PPQ confirmed the first-ever detection of bacterial leaf streak *(Xanthomonas vasicola pv vasculorum)* on a corn plant in July 2016, we worked with a number of key partners to determine the most appropriate response. Racing against the harvest clock, PPQ teamed up with State plant regulatory officials, Extension plant pathologists, and U.S. corn industry representatives to gather information about the disease's impact and distribution while corn was still in the field. With reports of disease symptoms coming in from States throughout the U.S. Corn Belt, it was clear that quarantining U.S. corn would prove costly and create undue burdens on corn producers.

Instead, PPQ and its partners devised a different strategy: develop best management practices to effectively control the disease and build a strong scientific case to demonstrate the safety of U.S. corn and protect export markets worth more than $6 billion annually. During the next 6 weeks of intense data-gathering, PPQ and its partners gave guidance to U.S. corn growers that would limit the disease's impact on corn yields and suppress future outbreaks. PPQ also presented a solid technical case to those countries that import U.S. corn, making clear that the disease presented no human or animal health risk, did not appear to impact corn yield or quality, and was not transmitted by processed corn. Thanks to quick action by PPQ and its partners, the United States avoided costly domestic and international trade disruptions.

Turning Innovation Into Action Through Farm Bill Section 10007

In 2016, PPQ funded 434 projects across the United States through Section 10007 of the 2014 Farm Bill, giving cooperators the funds they need to put their innovative safeguarding ideas into action. These projects make it possible for us to quickly detect and rapidly respond to invasive pests. They also help our country maintain the infrastructure necessary for making sure that disease-free, certified planting materials are available to U.S. specialty crop producers.

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 2016, funded projects supported old world bollworm surveys in Puerto Rico and Florida, polyphagous shot hole borer early detection activities in California, ongoing giant African snail eradication in Florida, spotted lanternfly eradication in Pennsylvania, and honey bee health surveys and studies, to name a few. In addition, we continued to support 23 National Clean Plant Network centers in 17 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.

PPQ has developed strong relationships with Native American tribes through ongoing communication and cooperative program work.

Partnering With Native American Tribes To Protect Natural Resources

More than 560 federally recognized tribes live on sovereign lands within the borders of the United States. Through partnerships, cooperative programs, training, and other means, PPQ offers technical advice and assistance to help tribes protect valuable natural resources from damaging invasive pests and diseases. In 2016, PPQ carried out a number of cooperative programs with tribes to suppress outbreaks of rangeland grasshoppers and Mormon crickets in Arizona and North and South Dakota; combat emerald ash borer infestations in Wisconsin, New York, and Maine; eradicate plum pox virus from New York; and fight invasive rangeland weeds with biological controls in Montana. PPQ continues to work closely with the San Carlos Apache Reservation in Arizona to study impacts of grasshopper control methods on nontarget pollinators, predators, and parasites. Information from this study will help PPQ evaluate biodiversity on the reservation and offer more data for a new environmental assessment on grasshopper and Mormon cricket controls.

Case Study:

PPQ and Partners Eradicate Destructive Pests From the United States

Although invasive pest and disease eradication is not always feasible, in the world of plant protection, it remains the gold standard for success. In 2016, PPQ saw many such successes across the country as we employed well-developed strategies and tactics. The result: working closely with our partners, we eradicated a potentially devastating grape pest from the United States, lifted 10 exotic fruit fly quarantines, and closed in on eradicating the pink bollworm (PBW) from all commercial cotton-producing areas within the United States. Some of the most effective strategies behind these successes include early detection, rapid response, strong partnerships, and the use of the best science and data available to combat the pests.

European Grapevine Moth (EGVM): Eradicating EGVM from the United States protected California's $4 billion grape crop, which in turn delivers an economic impact to the State worth over $57 billion annually. This destructive moth was first detected in Napa County, CA, in 2009, and subsequent surveys detected it in 11 California counties. PPQ quickly established the EGVM Technical Working Group to apply the best science and technology to the response. The cooperative eradication plan called for growers to carry out pest treatments, while State and county partners set traps and lures for detection purposes, reported findings, and implemented regulatory actions to keep the pest from moving beyond its detected areas. The key to this success was the close coordination of PPQ, the California Department of Food and Agriculture, county agricultural officials, university Extension, industry, and the surrounding community.

Exotic Fruit Flies: These pests pose the most serious threat to U.S. specialty crop growers because they can damage hundreds of kinds of fruit and vegetables. In 2016, PPQ eradicated 10 exotic fruit fly infestations in Florida, Texas, and California. PPQ and our partners maintain a detection network of about 150,000 traps in these States as well as Puerto Rico, allowing us to detect outbreaks quickly and carry out emergency responses immediately to eradicate them. Response actions include determining the infestation's boundaries, establishing quarantine areas, and, depending on the circumstances, applying leaf and soil treatments, removing potentially larvae-infested fruit, and releasing sterile male flies of the same species to reduce reproduction. During FY 2016, PPQ and our cooperators managed quarantines covering 2,411 square miles. That area shrank to 797 square miles by the fiscal year's end, and those areas will be released in FY 2017—demonstrating a response game plan that works.

Pink Bollworm (PBW): In 1967, PPQ began battling the PBW, one of the world's most damaging cotton pests. The U.S. cotton industry has a lot at stake; in the 2016 season it produced about 9.8 million cotton bales worth approximately $3.8 billion. Fortunately, we have not detected wild PBWs in any commercial cotton-growing areas of the continental United States since 2012. PPQ has contributed to this success by providing national coordination, operational oversight, and technology development (such as sterile moth production for PBW eradication), while program partners have supplied most of the PBW operational funds. We have also given Mexico technical advice on trapping and treatment protocols for its eradication efforts just over the border. Our collective work has paid off: PPQ anticipates that PBW eradication can be declared within all commercial cotton-growing areas of the continental United States by the end of 2017.

Eradicating a pest does not end our safeguarding work. PPQ remains vigilant against any possible reintroductions through robust surveying and promoting the best plant protection practices available today.

In 2016, PPQ and its partners eradicated European grapevine moth from the United States. We also eradicated 10 fruit fly outbreaks and achieved 4 years with no pink bollworm detections, moving that program closer to eradication.

European grapevine moth photo *(left)* courtesy of Jack Kelly Clark, University of California Statewide IPM Program. Pink bollworm photo *(center)* courtesy of Mississippi State University, Bugwood.org.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Making Agricultural Trade Safe and Supporting U.S. Exports

International trade in agricultural products feeds the world and supports nearly 1 million American jobs. 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 2015, 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.

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, we build important regional and international relationships that help us advance plant health protection standards and harmonized regulatory approaches that are necessary for the safe expansion of global agricultural trade. These relationships create a stronger basis for effectively addressing trade-related pest and disease threats, resolving emergency trade problems, and establishing harmonized science-based standards.

Making the Rules of the Road, Sea, and Air

Plant health standards are the rules of the road, sea, and air for safe, predictable, and fair trade. In 2016, PPQ successfully worked with the IPPC's other 181 member countries to adopt 11 new international plant health standards—the most adopted to date in a single year by the IPPC's Commission on Phytosanitary Measures (CPM), of which PPQ is an active member. The newly adopted standards strengthen today's trade system. For example, they provide guidance on determining the fruit fly host status of fruit and the effective use of vapor heat and irradiation treatments for certain key pests. They also include an updated glossary of phytosanitary terms and diagnostic protocols for several high-consequence pests. Together, these standards promote international harmonization of plant health concepts and practices, helping to create a safe and smooth-functioning trade system.

PPQ participated in the 11th annual session of the IPPC's Commission on Phytosanitary Measures held in Rome in 2016. At this meeting, PPQ successfully worked with the IPPC's other 181 member countries to adopt 11 new standards, helping to strengthen the global trade system.

Advancing Global Plant Health Protection Through Effective Collaboration

Strategic relationships are increasingly important as global trade continues to grow and expand. As new trade agreements promise to bring economic opportunity, they also underscore the value and need for plant protection organizations to engage in international and regional forums and to be more strategic about standards-setting and implementation. Through its collaborative efforts, PPQ is helping to build strong support around the world on critical topics such as electronic phytosanitary certification (ePhyto), worldwide implementation of standards, seed and wood packaging as pest and disease pathways, and priority pests.

For example, over the past 7 years, PPQ has formed an influential coalition with the chief plant protection officers of Australia, Canada, and New Zealand. This group, known as the "Quads," has helped direct and support the IPPC's work in a constructive way, steering the world towards a safe, fair, and predictable trade system. The Quads also share scientific and technological information in an effort to increase the availability of fast, cost-effective, and harmonized pest management tools.

During their annual meeting in 2016, the Quads agreed to continue coordinating and supporting the development of a global ePhyto system that will make phytosanitary certification cheaper, faster, and more fraud-resistant. They also committed to increasing IPPC activities that improve global compliance with established standards. This includes working with NAPPO, of which PPQ is a member, to hold a workshop to promote the worldwide use of risk-based sampling—a technique developed by PPQ to focus inspection resources on higher risk shipments. In addition, the Quads successfully encouraged other IPPC member countries in 2016 to support the proclamation of an International Year of Plant Health in 2020. This initiative, if adopted by the United Nations, will raise the global profile and importance of plant health, helping to secure future public support for plant protection services worldwide.

PPQ and our counterparts in Canada and Mexico finalized and adopted a new 5-year North American Plant Protection Organization strategic plan. The plan reflects both U.S. and regional priorities, including strengthening the North American perimeter against foreign pests and developing priority regional trade standards for various industry sectors.

Closer to home, PPQ and our counterparts in Canada and Mexico finalized and adopted a new 5-year NAPPO strategic plan. The plan reflects both U.S. and regional priorities, including strengthening the North American perimeter against foreign pests and developing priority regional trade standards for various industry sectors. For example, PPQ worked with the U.S. grain industry in 2016 to guide, direct, and support the development of an IPPC standard for the international movement of grain that is consistent with North America grain trade objectives. We also worked with our NAPPO partners to hold an international symposium on nonregulatory approaches in 2016. These approaches do not rely on regulations, but instead use industry best practices to achieve plant health safety objectives at a lower cost to industry. The symposium explored opportunities for integrating industry capacities and systems and accrediting or certifying third parties to conduct inspections, treatments, and testing.

In addition, PPQ has been leading regional efforts to strengthen relations between the European Plant Protection Organization (EPPO) and NAPPO. In 2016, PPQ participated in policy-level discussions between the two organizations to help identify areas of common interest. The result: EPPO and NAPPO agreed to work together on key global plant protection issues within the IPPC, helping to further advance strategic priorities that reflect U.S. interests for a fair, safe, and predictable trade system.

Case Study:

Building a Global Electronic Phytosanitary Certificate Exchange System

Safe agricultural trade relies on each country's national plant protection organization—PPQ in the case of the United States—to inspect and certify commodities before they are exported. This process ensures those commodities meet the plant health (phytosanitary) requirements of the importing country. Historically, phytosanitary certificates were always issued on paper. But in today's digital world, paper processes are expensive, time-consuming, delay-prone, and more susceptible to fraud than electronic alternatives.

To modernize phytosanitary certification, PPQ is contributing to a visionary project that will transform international agricultural trade: a paperless, electronic exchange system called the ePhyto hub. Once it becomes available to all countries, paper certificates will become digital worldwide. Most of the world will then be using a common set of information technology protocols and arrangements to exchange certificates electronically, which is one of the ePhyto hub's biggest benefits. Today, PPQ would need to engage in more than 100 separate bilateral negotiations to connect countries to its existing electronic certification system, an effort that would cost considerable time and money.

To help develop the ePhyto hub, PPQ is providing direct and active leadership on the IPPC Steering Group for Electronic Certification. PPQ is supporting it with funds and technical expertise to:

- create the global hub and generic national ePhyto systems for developing countries,
- harmonize the international codes and protocols used in the hub,
- engage and inform industry,
- develop electronic documentation, and
- ensure sustainability after initial deployment by exploring user fees to cover costs.

Ultimately, a global ePhyto system will harmonize communication between trading countries and increase the efficiency and savings for these countries. It will also reduce or eliminate fraudulent certificates, simplify the development and reduce the startup costs of national ePhyto systems, and allow developing countries to participate in the global system with minimal cost. After IPPC completes an ePhyto pilot study in 2017, the IPPC Steering Group will determine how to take the project to the next level.

PPQ is working with countries around the world to build a global electronic phytosanitary certificate exchange system. This visionary project will transform agricultural trade by making certificate exchange fast, efficient, and fraud-resistant.

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PPQ continues working with countries around the world to further reduce the threat of wood pests in trade. In 2016, PPQ placed key experts on international committees to better support and advance U.S. priorities associated with safeguarding forest health, facilitating the safe trade of wood commodities, and promoting global compliance with the IPPC's wood packaging standard.

Further Reducing Forest Pest Threats in Global Trade

Wood packaging is an integral part of the global supply chain and essential to the smooth movement of goods around the world. According to the National Wooden Pallet and Container Association, there are more than 1.7 billion wood pallets in service each day in the United States alone, and over $400 billion worth of American trade is exported annually on wood pallets and containers worldwide.

Wood packaging is also a well-documented pathway for invasive wood and forest pests. PPQ continues collaborating with entities around the world to develop and promote international standards that help reduce pest risks associated with wood packaging material. For example, we supported a second NAPPO Regional Workshop in 2016 to help increase global compliance with the international standard for wood packaging (ISPM 15) and further reduce the threat of timber pests in trade. The workshop identified legal, technical, and operational issues to further improve compliance.

Asian gypsy moth (AGM) is a devastating forest pest with a wide host range. Experts estimate that if AGM were to become established in the United States, it 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, we have reduced by 98 percent the number of ships coming to the United States from Asia with AGM egg masses. Since 2010, this collaborative effort has yielded a near 600-percent increase in program compliance among maritime vessels arriving at U.S. ports of entry. In 2016, PPQ continued to strengthen this successful program by conducting trilateral meetings with the governments and maritime authorities and industries of Canada, Chile, China, Japan, Russia, and South Korea. During these meetings, we gained valuable technical knowledge that each country will use to further develop its AGM monitoring and vessel certification programs.

PPQ's Offshore Vessel Inspection Program prevents Asian gypsy moth (AGM) egg masses, like the ones lining the wall of this vessel docked in the Far East, from traveling to the United States. Since 2014, this program has reduced by 98 percent the number of ships coming to the United States from Asia with AGM egg masses.

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In 2016, PPQ initiated a collaborative relationship with the shipping and sea container industry to address pest risks associated with the movement of sea containers. The goal: to develop container cleaning guidelines that can be implemented on a global scale.

Helping the World Address Critical Plant Health Protection Issues

This year, PPQ experts delivered presentations at the 11th annual session of the CPM in April 2016 that helped more than 120 country delegations examine two distinct and important plant protection issues. The first is growing concerns over pest risks associated with sea containers moving globally—a known pathway for the spread of invasive pests. The second is the use of new diagnostic technologies, like mobile apps, to supplement and enhance pest identification capabilities, a crucial need as global taxonomic expertise is waning.

Sea Containers: PPQ helped CPM participants understand the complexity of regulating sea containers and advanced a practical solution to address known risks. With millions of containers moving in commerce annually, combined with their widespread distribution, it would be difficult to develop an effective standard at this time. Instead, PPQ urged the IPPC to collaborate with the shipping and maritime industry and encourage them to pursue an industry-led effort to promote clean containers. PPQ, together with Canada, has initiated a relationship with the shipping and sea container industry and started work to develop sea container cleaning guidelines.

Digital Pest Screening Tools: PPQ experts showcased digital pest identification tools they have developed to expedite screening for plant pests of concern. These tools are available online and can be used by most anyone—regardless of taxonomic expertise—to screen potential plant pests. The IPPC Secretariat, impressed by the quality, quantity, and accessibility of these digital screening aids, has asked PPQ to help other countries develop similar tools.

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 $911.4 billion between fiscal years 2009 and 2015, energizing our rural economies and strengthening our trade balance. And, this global market has plenty of room to grow considering that 95 percent of consumers worldwide live outside the United States.

PPQ is instrumental in helping U.S. exporters sustain, expand, or gain access to overseas markets. We use science, data, and international guidelines to strike down plant health-related barriers to American products that can't be justified by legitimate plant health issues. 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.

PPQ's digital pest identification tools help plant pest and disease identifiers at U.S. ports of entry quickly and accurately identify intercepted specimens. The tools also provide a rich resource for scientists and even nontechnical members of the public who want to identify a potential pest.

Sustaining and Expanding Key Export Markets

Each year, we meet with representatives from a wide range of commodity sectors. Not surprisingly, the one thing they all say is that exports are vital to their industry. In 2016, PPQ sought market access for a number of commodities to key foreign markets, including U.S. blueberries to parts of Southeast Asia, milled rice to China, and various cut flower species to Mexico, to name a few. We opened new markets valued at more than $350 million, including sugar beet pulp pellets and California fresh strawberries to China, California fresh apricots and plums to Australia, and potatoes to Costa Rica. We expanded market access for all U.S. apple varieties to China, currently valued at $35 million, and chipping potatoes to Japan, worth an estimated $7 million. And, we retained access to key markets for U.S table grapes, citrus, apples, cherries, plums, and alfalfa hay valued at more than $4 billion. In addition, PPQ resolved plant health trade barriers to reopen markets, including the Japanese market for California nectarines that had been closed for more than 10 years. In 2016, California exported more than 14,000 cartons of nectarines, valued at nearly $385,000.

Another one of PPQ's critical tasks is helping U.S. exporters secure the urgent release of their shipments held at foreign ports of entry, in some cases due to paperwork errors or other nontechnical reasons. In 2016, we successfully negotiated the release of 319 held shipments valued at more than $65 million.

Negotiating New Treatment Options for Exports

In 2015, PPQ created a historic moment when the first commercial shipment of irradiated fresh produce, nearly 38,000 pounds of South Carolina peaches, was exported to Mexico. The peaches were irradiated in Gulfport, MS, in line with the March 2015 bilateral agreement between the United States and Mexico, a success that took PPQ 4 years to achieve. In 2016, the irradiation options increased when PPQ and Mexico established a protocol allowing South Carolina and Georgia peaches to be irradiated upon arrival in Mexico. In June 2016, the first commercial shipment was successfully irradiated at a facility in Mexico, marking the first time that U.S.-exported fresh produce was irradiated on arrival in a foreign country. Both options are available for peaches exported from South Carolina and Georgia, opening an export market worth $250,000. Irradiation is an alternative to methyl bromide fumigation. As more and more people are looking for methyl bromide alternatives, this landmark arrangement marked a major and groundbreaking step forward in U.S. trade.

South Carolina Peach Council

PPQ is helping U.S. producers expand their exports by negotiating new treatment options, like irradiation, with importing countries. In this photo, South Carolina peaches go through the irradiation process before being boxed and exported to Mexico.

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 clean products that meet the importing countries' requirements. Thanks to PPQ's electronic certification system, a previously time-intensive, manual process is now fast, efficient, and fraud-resistant. The system gives consistent data that are valuable for decisionmaking and negotiations. 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 650,000 certificates in 2016 alone.

PPQ maintains a nationwide team of Export Certification Specialists who inspect and certify plants and plant products being shipped to markets overseas, making sure U.S. exports meet the importing country's requirements. In 2016, PPQ and its partners issued more than 650,000 export certificates.

Case Study:

PPQ Helps U.S. Exporters Reach Top-Priority Markets Through Bilateral Negotiations

PPQ plays a central role in expanding and retaining export markets for U.S. growers. One of the ways we accomplish this is through bilateral technical trade negotiations. PPQ's 2016 negotiations to export U.S. apples from Michigan, Pennsylvania, and New York to Israel are a classic example how these bilateral talks typically unfold. Apple producers in these three States reached out to PPQ for assistance in gaining access to the Israeli market. But they needed Israel to accept an alternative cold treatment process that is shorter than the one that allows U.S Pacific Northwest apples to be shipped to that country. Growers from these three States do not store their apples for as long as their Pacific Northwestern counterparts, and the shipping distance from their States to Israel is considerably shorter, reducing the time available for in-transit cold treatment options. PPQ learned from the growers what financial burdens and production process changes they were willing to accept for gaining this market access.

PPQ began to build a scientific case for the shorter alternative cold treatment process. Information supporting bilateral negotiations can come from many sources. PPQ often cites internationally recognized, science-based IPPC guidelines for safe agricultural trade. Data from our Cooperative Agricultural Pest Survey program show what pests we monitor for and the areas where they are not found. PPQ scientists thoroughly review relevant literature and develop pest lists and risk analyses for the commodity to be exported. Outside universities may conduct research on the issues involved. In the case of the apple exports to Israel, USDA's Foreign Agricultural Service funded a Cornell University study on the efficacy of a shorter, alternative cold treatment protocol, demonstrating its effectiveness.

Prepared with a solid scientific basis for negotiations, PPQ reached out to our Israeli counterparts to begin the negotiation process. We learned of Israel's pest concerns—mainly the apple maggot—and explained how the proposed treatment protocol would successfully mitigate the risks. Although it was not necessary in this case, PPQ may host site visits for the potential importing country, allowing its agricultural officials to observe production and processing practices firsthand. In the end, if the negotiations are successful, PPQ and the importing country's national plant protection organization sign a work plan that specifies the conditions the exported commodity must meet. As a result of the efforts of all those involved, Israel agreed to accept the shorter cold treatment schedule for apple shipments arriving in Israel on or after January 7, 2017.

Through such bilateral negotiations, PPQ has opened numerous foreign markets to U.S. agricultural commodities in 2016, including, among many others:

- U.S. sugar beet pulp pellets to China (anticipated $100 million market value annually),
- California fresh strawberries to China (anticipated $50 million market value over the first 3 years),
- California fresh apricots and plums to Australia (2015 exports of CA stone fruit had a $10 million approximate market value), and
- U.S. potatoes to Costa Rica (anticipated $2 million market value annually).

PPQ has also expanded market access in 2016 via bilateral negotiations, such as:

- all U.S. apple varieties to China ($35 million current market value, anticipated growth to $100 million annually), and
- chipping potatoes to Japan (anticipated $7 million market value).

PPQ works with U.S. agricultural industries to build strong scientific cases to present to importing countries, helping establish technically justifiable plant health requirements for U.S. commodities. PPQ's 2016 negotiations with Israel resulted in new market access for U.S. apples using a shorter alternative cold treatment process.


Phase One Consulting Group

Strengthening Our Organization

Making PPQ a Best Place To Work

PPQ is a global leader in plant health safeguarding because of the nearly 3,200 men and women who, every day, bring unique talents and skills that are crucial to accomplishing our mission. In 2016, we set a goal of making PPQ a "best place to work" for our employees. For us, that meant increasing employee engagement across all levels of the organization; investing in our supervisors and managers to help them better support their employees; nurturing a more inclusive environment; and more fully harnessing our data power to help us make smarter, more impactful decisions—for ourselves and our stakeholders. While there's always room for improvement, we made great strides this year toward achieving our goal.

Structuring PPQ for Success

In 2016, the PPQ Management Team tackled one of the biggest challenges facing PPQ at the time: adequate supervisor-to-employee ratios, also known as "span of control." These ratios varied across our organization, and in some cases far exceeded what was reasonable or recommended. While there were instances of this across our entire organization, it's not surprising that the highest concentration was in Field Operations—our largest core functional area. To ensure that field employees were getting the support and attention they needed and deserved, the Management Team made several adjustments to realign and strengthen PPQ's field structure. These changes established more reasonable supervisor-to-employee ratios, enhanced vertical and horizontal communication, and increased operational and administrative consistency. The result has been improved accountability, more clarity about roles and responsibilities, and increased opportunities for employee growth.

In 2016, 275 of PPQ's 330 supervisors participated in PPQ's Supervisor Workshops. The training focused on building trust; understanding communication styles; improving coaching skills and developing others; and increasing knowledge of civil rights, Equal Employment Opportunity, and human resources.

In addition, PPQ leadership worked to stabilize the workforce by hiring people into pivotal positions that have been vacant for far too long and by investing in our employees' professional growth and development. For example, PPQ's Professional Development Center (PDC) launched a series of Supervisor Workshops in 2016 designed to develop and support this essential position. PDC carefully developed these workshops—with the help of internal and external experts—to provide the knowledge, tools, and support structures PPQ's supervisors need for success. Through the training, supervisors developed and refined their leadership skills as they learned techniques covering communication, trust and rapport building, employee development, and employee engagement. Participants also gained a better understanding of employee relations, labor relations practices and procedures, and human resources practices. This training is helping to improve supervisor-employee engagement by making sure every supervisor and manager has the skills to better support their teams.

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In 2016, PPQ took labor and employee relations services to the next level by adding a new Ombudsman unit. PPQ's ombudsmen help employees resolve workplace conflict in a way that encourages, promotes, and sustains healthy working relationships.

CARE-ing for PPQ's Employees

Conflict is a normal part of any organization. Healthy organizations provide their employees resources to help them confront and resolve conflict in a way that encourages, promotes, and sustains healthy working relationships. That's what PPQ management did in 2016 when it created the Center for Advisory Resources for Employees (CARE). The CARE unit is taking PPQ's labor and employee relations services to the next level by adding a new Ombudsman Office. The sole job of PPQ's ombudsmen is to help employees at every level—management, non-management, union, and non-union—resolve situations that occur at work. These could include telework, working relationships, personnel policies, or other sensitive issues.

The ombudsmen serve as neutral, independent, and confidential resources for PPQ's employees. They can provide counseling and coaching services to help employees navigate a wide range of difficult situational problems. And, over time, they may identify systemic conflicts brought about by certain practices, norms, or policies and make suggestions for addressing them, helping PPQ as a whole take the steps needed to improve our work environment across multiple layers of the organization.

Strengthening PPQ With Diversity

Diversity is a critical element of PPQ's success, and that's why we're taking a multipronged approach to strengthening it. In 2016, we focused our efforts in two important areas: conducting programs that advance awareness and appreciation of diversity, and recruiting from currently underrepresented groups. For example, PPQ's revamped Civil Rights and Diversity Advisory Committee (CRDAC) charted a new course in 2016 for achieving a more inclusive and diverse work environment within PPQ. This year, CRDAC strengthened the Lesbian, Gay, Bisexual, and Transgender (LGBT) program area through networking, leveraging resources, Webinar trainings, and creating "safe spaces" for LGBT employees. The committee also continued to coordinate and promote special emphasis events throughout the year, helping to broaden employee knowledge and understanding of the heritage, contributions, and achievements of all Americans to our Nation's culture and progress.

On the recruitment side, PPQ participated in a number of onsite hiring events at universities and conferences

PPQ participates in numerous recruitment and hiring programs aimed at increasing our organization's diversity. This includes youth outreach programs such as AgDiscovery, where middle and high school students enjoy hands-on educational experiences that introduce them to exciting career possibilities in PPQ.

aimed at recruiting minorities. This included partnering with Minorities in Agriculture, Natural Resources, and Related Sciences (MANRRS, pronounced "manners"). MANRRS is a national, nonprofit organization that promotes the academic and professional advancement of minorities in agriculture, natural resources, and related science career fields. The organization helps its members—students ranging from junior high school to doctoral programs—obtain the skills and contacts they need to secure a successful career in agriculture. PPQ also made use of the Department of Veterans Affairs Non-Paid Work Experience (NPWE) program again this year, bringing in qualified veterans to fill vacancies.

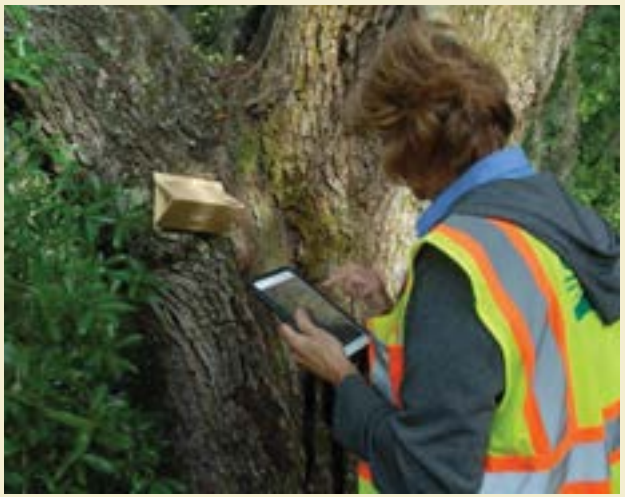
During the summer, PPQ conducted outreach to middle and high school students attending APHIS' AgDiscovery programs, helping them to envision a career safeguarding American agriculture and the environment. In 2016, 296 students attended AgDiscovery programs held at 20 campuses, including new offerings at Texas A&M, Prairie View A&M, and the University of the Virgin Islands. AgDiscovery plays a critical role in PPQ's long-term recruitment efforts because it develops an awareness in young students about PPQ's important mission and the diverse career paths available to them in agriculture.

In addition, PPQ field experts reached out to tribal and other youth this summer through the agency's Safeguarding Natural Heritage (SNH) program. Since 2007, APHIS has partnered with tribal colleges and universities (TCUs) and historically American Indian institutions (HAIs) to deliver the 2-week program, which is similar in many ways to APHIS' AgDiscovery program. Through SNH, teenagers aged 14 to 17 explore careers in plant and animal science, wildlife management, and agribusiness and engage in activities that stress preservation of Native American natural heritage.

Making Smarter, Data-Driven Decisions

Data are critical to decisionmaking, and since 2013, PPQ has been working to maximize and expand its data analytic capability by better coordinating PPQ's analytical resources and information management. This includes developing and administering an analytics request system and implementing a data governance program to ensure all PPQ data are managed, standardized, and trusted. We've also taken steps to maximize our data power by bringing together analysts from across PPQ into a virtual team, leveraging their expertise and delivering more effective analytic products. By the end of 2016, PPQ's Analysis and Information Management unit had coordinated and processed 314 analytics requests, supporting better, data-driven decisionmaking.

In addition, PPQ's Information Technology (IT) units completed an intensive internal audit in 2016. The audit helped us take stock of our IT systems, resources, and skills and pointed out gaps that needed to be addressed. As a result, PPQ realigned its IT organizational responsibilities to use available staff and resources more efficiently and effectively. We also fundamentally changed the way we approach IT by centralizing the design/build function and increased customer engagement to make sure PPQ as a whole has the systems and data it needs. The outcome: better data and better IT tools.



In 2016, PPQ harnessed its data power through an organizational realignment and enhanced analytic service offerings. These changes are putting better data and better data collection tools in the hands of PPQ's employees.

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 2016.

Five PPQ Employees Receive USDA's Highest Honor

The Abraham Lincoln Honor Awards (formerly known as the Secretary's Honor Awards) recognize exceptional leadership, contributions, or public service by individuals or groups who support USDA's overall mission and goals. Five PPQ employees, along with five of their APHIS Veterinary Services (VS) colleagues, received these awards in the "Increasing Global Food Security" category for their work on the Sister Agrosecurity Networks team.

The sister networks are the National Plant Diagnostic Network (NPDN) and National Animal Health Laboratory Network (NAHLN). They are complementary State-Federal diagnostic networks. Since their inception in 2002, they have proven critical in helping to control outbreaks of animal diseases such as highly pathogenic avian influenza and high-impact plant diseases such as sudden oak death *(Phytophthora ramorum)*, plum pox virus, and *Huanglongbing* (citrus greening). While these outbreaks caused significant losses, they could have been even more devastating without the rapid, accurate, and effective diagnostic services of NPDN and NAHLN.

The team's accomplishments were so impactful that another USDA agency—the National Institute of Food and Agriculture (NIFA), which provides base funding to those networks and partners with land-grant university personnel—nominated the team. The award recognizes the team for standing up these high-performing agrodefense networks, and it also reflects the hard work and talent of many other APHIS and NIFA employees who make the networks a success. Leadership at the highest levels of the Department, agency, and PPQ deeply value such partnerships and commend the APHIS representatives serving on these important collaborative efforts. The team includes:

PPQ: *Philip Berger, Vessela Mavrodieva, Mark Nakhla, Megan Romberg,* and *Patrick Shiel.*

VS: *Beth Harris, Elizabeth Lautner, Christina Loiacono, Beverly Schmitt,* and *Sarah Tomlinson.*

Left to right: Megan Romberg, PPQ (NPDN); Danielle Tack, NIFA; Vessela Mavrodieva, PPQ (NPDN), Sarah Tomlinson, VS (NAHLN); Acting Deputy Secretary Michael Scuse; Phil Berger, PPQ (NPDN); Gary Sherman, NIFA; Pat Shiel, PPQ (NPDN); Mark Nakhla, PPQ (NPDN); Marty Draper (formerly NIFA, now with Kansas State University)

12 PPQ Employees Receive APHIS Administrator's Awards

The APHIS Administrator's Awards recognize collaboration, creativity, and outstanding contributions to the APHIS mission. This year, APHIS Administrator Kevin Shea recognized 12 PPQ employees when he presented this award to two PPQ teams.

Agriculture Quarantine Inspection Risk-Based Sampling Team

This team earned its APHIS Administrator's Award by creating a statistically driven sampling program to support targeted inspections at plant inspection stations.

The team designed, coordinated, and implemented a "risk-driven inspection program" to provide the data needed for targeting those country and commodity combinations most likely to present greater risk.

This approach allows for better use of resources and opportunities to improve communications with countries that have patterns of noncompliance. Because of this team's tenacity, and the success of its program, PPQ is working with U.S. Customs and Border Protection to create similar risk-based sampling strategies for other cargo entering the United States.

Left to right: PPQ Deputy Administrator Osama El-Lissy, Marla Cazier-Mosley, APHIS Administrator Kevin Shea, Robert Griffin, Cathy Sue Katsar, and Dave Farmer

Team members include: *Robert Griffin*, co-team lead; *Calvin Shuler*, co-team lead; *Marla Cazier-Mosley; Dave Farmer*; and *Cathy Sue Katsar*.

Irradiation of Peaches to Mexico Team

APHIS Administrator Kevin Shea recognized the Irradiation of Peaches to Mexico Team for the significance of its work to increase global food security. Thanks to the team's efforts, APHIS created a historic moment in August 2015: the first commercial shipment of irradiated fresh produce ever exported from the United States, nearly 38,000 pounds of South Carolina peaches bound for Mexico. The peaches were irradiated at Gateway America in Gulfport, MS, in accordance with the March 2015 bilateral agreement between the United States and Mexico. The team had been working since 2011 to lay the groundwork for this success.

In April 2016, the irradiation options increased when PPQ and Mexico established a protocol allowing South Carolina and Georgia peaches to be irradiated upon arrival in Mexico. In June, the first commercial shipment was successfully irradiated at the Benebion facility in San Luis Potosi, Mexico, marking the first time that U.S. exported fresh produce was irradiated on arrival in a foreign country. Both options are available for peaches exported from South Carolina and Georgia, opening an export market worth $250,000.

Irradiation is an alternative to methyl bromide fumigation. As more and more people are looking for methyl bromide alternatives, this shipment marked a major and groundbreaking step forward in U.S. trade.

The team members include: *Marjorie Bestwick, Laney Campbell, Susan Kostelecky, Evangeline Long, Marie Martin, Maggie Smither*, and *Terrance Wells*.

Front row left to right: PPQ Deputy Administrator Osama El-Lissy, APHIS Administrator Kevin Shea, Marie Martin, and Maggie Smithers

Back row left to right: Laney Campbell and Terrance Wells

PPQ Deputy Administrator Presents Safeguarding Award to 2015 Multi-Agency Response to Fruit Flies in Puerto Rico

PPQ's response to the 2015 exotic fruit fly outbreak in Puerto Rico exemplifies the value of emergency response preparation, teamwork, and efficiency. In recognition of its achievements, PPQ Deputy Administrator Osama El-Lissy chose the entire emergency response team to receive the Deputy Administrator's Safeguarding Award.

The incident response established Puerto Rico's first Federal plant pest quarantine and eradicated two species of exotic fruit flies—Mediterranean (medfly) and Carambola—in three separate locations across the island.

The response succeeded on many fronts. Two well-established initiatives—PPQ's National Incident Management Teams (NIMTs) and the Emergency Response Training and Exercise Program—demonstrated their value, as team members and local resources benefited from previous experience and training to manage the incident. To support local PPQ efforts, members from all four of PPQ's NIMTs deployed to the incident, including several members on their first response. Subject-matter experts from across PPQ and the Puerto Rico Department of Agriculture (PRDA) provided technical guidance.

PPQ and PRDA employed the Incident Command System (ICS), a flexible organizational structure that enables multiple jurisdictions to effectively coordinate an emergency response. Under the ICS, PPQ and PRDA created a Unified Command and worked closely with local cooperators. Using PPQ's Emergency Medfly Action Plan, the response team engaged in delimiting surveys for the three different sites and established regulatory actions, control treatments, and quarantine establishment for the Cabo Rojo medfly outbreak. Its outreach activities also leveraged local cooperators and media outlets to communicate essential information to the public.

Over the 15-week response, Unified Commanders created a response infrastructure for long-term incident management, eventually transitioning the response to local responders who completed the operation. PPQ lifted the medfly quarantine on June 29, 2015, after four life stages passed without new detections. Not only did the response safeguard Puerto Rico's fruit and vegetable industries, but it also protected the U.S. mainland from some of the most serious agricultural pests known.

Left to right: Reduce Risks from Invasive Species Coalition President Scott Cameron presents the "Outstanding Achievement by a Federal Employee in Protecting America's Environment and Economy" award to PPQ's Tony Koop, who is joined by PPQ Deputy Administrator Osama El-Lissy.

Tony Koop Recognized for Weed Risk Assessment Model

The Reduce Risks from Invasive Species Coalition (RRISC) honored Tony Koop, head of PPQ's Plant Epidemiology and Risk Analysis Laboratory's (PERAL) Weed Risk Assessment (WRA) Team, with an "Outstanding Achievement by a Federal Employee in Protecting America's Environment and Economy" award at RRISC's 2016 Congressional Reception. Under Koop's leadership, his team developed a robust WRA model that PPQ adopted in 2010 and has used since.

The model's core includes a series of 60 yes/no and multiple choice questions focused on biological aspects of a plant species, with each potential response given a weighted score. Based on the total score, the model categorizes a plant species as low risk, moderate risk (requiring further evaluation), or high risk for establishing, spreading, and causing harm in the United States. Koop's team demonstrated the model has a 94-percent accuracy in identifying highly invasive weeds and a 97-percent accuracy in identifying non-invasive species.

The team has trained more than 100 people on how to use its WRA process. Two States formally adopted the WRA model into their regulatory process, more States are considering doing so, and a number of other groups use the WRA to support State or local decisions on noxious weeds. Plant health officials conduct a WRA to determine the threat level posed by a newly detected weed, evaluate a commodity import request, and respond to a stakeholder petition to list a plant as a noxious weed.

Five PPQ Employees Receive 2016 CAPS Recognition Group Award

On May 9, APHIS and the Cooperative Agricultural Pest Survey (CAPS) announced the recipients of a Group Award for 2016 CAPS Recognition. CAPS Recognition acknowledges the outstanding activities and achievements of CAPS community members in supporting the pest detection mission. The group of eight individuals—including five from PPQ—planned and delivered the Cerambycidae and Buprestidae Survey and Identification Workshops held at Purdue University and the University of Massachusetts in July and August 2015, respectively.

The goal of the workshops was to increase the knowledge, skills, and abilities of survey professionals to effectively, efficiently, and independently conduct surveys for non-native wood-boring beetles in these families. Instructors focused on increasing the participants' awareness of available survey methods, understanding of target pest biology, and ability to screen insect specimens collected.

The 2016 CAPS Recognition Group Award went to:

Scott Blackwood, PPQ Pest Survey Specialist, Des Plaines, IL;

Bobby Brown, PPQ Entomology Domestic Identifier, West Lafayette, IN;

Nichole Carrier, PPQ Pest Survey Specialist, Wallingford, CT;

Carrie Croy-Owen, PPQ Field Operations Travel Management Specialist, Raleigh, NC;

Christopher Pierce, PPQ Pest Survey Specialist, Jefferson City, MO;

Sarah Grubin, State Survey Coordinator, Massachusetts Department of Agricultural Resources, Amherst, MA;

Nathan Lord, Post-Doctoral Fellow, Brigham Young University, Provo, UT; and

Gino Nearns, Collections Manager, Purdue Entomological Research Collection, West Lafayette, IN.

From Chile to "Philly": PPQ Receives Award for Facilitating Safe Trade

Moving millions of cases of fresh produce from Chile to the United States—without moving invasive pests that could harm U.S. agriculture—is no small feat. But that's just what PPQ has been doing, year after year.

To accomplish this, PPQ has worked diligently to understand the pest risks and apply safeguards—from the point of origin to the point of entry—that ensure Chile's products don't bring unwanted invasive pests or diseases along for the ride. The Chilean & American Chamber of Commerce of Greater Philadelphia celebrated this outstanding work on April 27, 2016, at the 11th Annual Experience the Taste of Chile wine tasting and dinner.

During the event, Deputy Administrator Osama El-Lissy accepted the Chamber's 2016 Visionary Award on behalf of the men and women of PPQ. He noted that PPQ and the Chileans both saw the potential and the mutual benefit of working together. The result: year-round availability of fresh produce for U.S. consumers and—especially in the Philadelphia region, where nearly 50 percent of all Chilean imports enter the United States—job creation and economic activity.

Chilean and American Chamber of Commerce of Greater Philadelphia

Deputy Administrator Osama El-Lissy *(third from left),* accompanied by several PPQ colleagues, accepts the Chilean & American Chamber of Commerce's 2016 Visionary Award on behalf of the men and women of PPQ. PPQ attendees included *(left to right)* Plant Health Safeguarding Specialist Darryl Moore; Preclearance and Offshore Program Director Andrea Simao; Deputy Administrator El-Lissy; Delaware State Plant Health Director Colleen Kitzmiller; Quarantine Policy, Analysis and Support Director Terry Morris; and Senior Treatment Analyst Scott Wood.

PPQ began working with Chile more than 40 years ago in the mid-1970s, starting with a preclearance program to fumigate table grapes. Today, the program is second only to Mexico's in size and covers 155 different fresh fruit, vegetable, and cut flower commodities. During the 2014 to 2015 season, Chile exported more than 97 million cases of fresh produce, worth $1.3 billion, to the United States.

PPQ Scientists Receive Awards From Important Cooperator

During its annual meeting in March 2016, the National Plant Diagnostic Network (NPDN) presented awards to a number of PPQ scientists for their valuable contributions to the network, one of PPQ's closest partners in plant health protection. The NPDN is a cohesive yet distributed system of diagnostic laboratories focusing on the early detection, accurate diagnosis, and rapid communications needed to help reduce the impact of invasive plant pests and diseases to U.S. agriculture and natural resources. Over the years, PPQ and the NPDN have developed a close and productive relationship. The network stands ready to provide the diagnostics capacity PPQ would need in any large-scale plant health emergency.

NPDN Outstanding Service Awards

NPDN officials presented current and past scientists at PPQ's Beltsville, MD, laboratory with the "The NPDN Outstanding Team Service Award" for hosting numerous hands-on, Farm Bill-funded diagnostic training workshops for NPDN members. Over the last 12 years, PPQ scientists provided 63 workshops with 436 NPDN and other collaborating diagnosticians attending.

The reward recipients include: Mark Nakhla, Vessela Mavrodieva, Gang Wei, Stefano Costanzo, Kurt Zeller, John Bienapfl, John Rascoe, Gloria Abad, Laurene Levy, Wenbin Li, Renee DeVries, and Zhaowei Liu.

In addition, Kathy Burch and Pat Shiel received Outstanding Service Awards for their contributions to NPDN's System for Timely, Accurate, and Reliable Diagnostics (or STAR-D) quality management initiative by providing training and Farm Bill funds for this effort. The STAR-D system complements PPQ's National Plant Protection Laboratory Accreditation Program (NPPLAP) and helps demonstrate the NPDN's expertise in diagnostics to stakeholders.

Dawn Dailey O'Brien and Karen Snover-Clift also each received an Outstanding Service Award for their extensive work with Burch and Shiel on the STAR-D system. Cooperator Elizabeth Bush of Virginia Polytechnic Institute and State University also received this award in recognition of her work with PPQ's Geoffrey Dennis to successfully adapt the *Phytophthora ramorum* USDA diagnostic Work Instruction so that regulatory testing can be done with newly available diagnostic instruments.

Recognition for STAR-D System Auditors

Finally, NPDN recognized Kathy Burch, Geoffrey Dennis, and Pat Shiel, along with several NPDN diagnosticians, as fully trained auditors for the STAR-D system.

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