Food and Agriculture Sector Annual Report

Fiscal Year 2022

Food and Drug Administration

USDA

Homeland Security

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Overview of Food and Agriculture Sector Goals

The Food and Agriculture (FA) Sector's goals support the Joint National Priorities (JNP) developed in 2014 by the national council structures, as described in the *National Infrastructure Protection Plan 2013: Partnering for Critical Infrastructure Security and Resilience (NIPP 2013).* These goals guide and integrate the FA Sector's efforts to improve security and resilience and describe how the FA Sector contributes to national critical infrastructure security and resilience as set forth in Presidential Policy Directive (PPD) 21 – *Critical Infrastructure Security and Resilience*. This directive assigns the United States Department of Agriculture (USDA) and the Department of Health and Human Service's Food and Drug Administration (FDA) as the Sector Risk Management Agency (SRMA) to lead a collaborative process for critical infrastructure security within the FA sector.

In accordance with PPD-21, a sector-specific plan (SSP) was developed, detailing the application of NIPP concepts to the unique characteristics and conditions of the FA sector. The update of the SSP was postponed until the Department of Homeland Security (DHS) completes its update of the NIPP 2013. In September 2022, a draft of NIPP 2022 or the "National Plan" was circulated to stakeholders for review and comments. Until the NIPP 2022 is published, the FA sector will use the draft NIPP to inform activities but will not update the SSP. Once the National Plan is published, the FA sector will convene a working group to develop an SSP based on the revised version.

In the FA Sector, critical infrastructure protection is not the responsibility of one department or agency in government, but a partnership effort between all levels of government and private sector owners and operators. Since its establishment, the FA Sector has recognized the value and importance of its partnerships with various levels of government and the private sector. Without them, it would not be possible to increase security and resilience within the sector. Our public and private sectors have taken significant steps to reduce sector risk, improve coordination, and strengthen security and resilience capabilities that signal the sector's continued progress toward the 5 goals that guide FA Sector efforts.

Until a new SSP is finalized, the 2015-2019 FA Sector Goals that remain in place are as follows:

Goal 1	Promote the combined Federal; State, Local, Territorial, and Tribal (SLTT); and private sector capabilities to prevent, protect against, mitigate, respond to, and recover from manmade and natural disasters that threaten the national food and agriculture infrastructure
Goal 2	Improve sector situational awareness through enhanced intelligence communications and information sharing among all FA Sector partners
Goal 3	Assess all-hazards risks to the FA Sector, including cybersecurity
Goal 4	Support response and recovery at the FA Sector level
Goal 5	Improve analytical methods to bolster prevention and response efforts, as well as increase resilience in the FA Sector

Following are the important achievements and accomplishments for each goal, as reported by our sector partners. Due to the voluntary nature of the reporting, the lists may not reflect all the supporting activities carried out this year.

Goal 1: Promoting the Combined Federal; State, Local, Territorial, and Tribal (SLTT); and Private Sector Capabilities to Prevent, Protect against, Mitigate, Respond to, and Recover from Manmade and Natural Disasters that Threaten the National Food and Agriculture Infrastructure

This year saw the implementation of activities and programs by Federal partners to strengthen response and recovery capabilities, both within their agencies and in the SLTT and private sectors. There was a particular focus on efforts related to foodborne illness outbreak and animal disease outbreak prevention, detection, response, analysis, and recovery. Additionally, the sector conducted several tabletop exercises to test operability between federal and SLTT partners in response to food and agriculture threats and emergencies. With the release of the Bioeconomy Executive Order (EO), the sector was involved in shaping this policy and implementation plan.

American Veterinary Medical Association:

- Launched a Veterinary First Responder Certificate Program, the nation's first standardized training program for veterinary disaster and emergency planning and response. Over the course of FY 22, there were over 500 veterinarians who had registered for the certificate program and 35 who had completed the program. The certificate can be used by state and local veterinary response teams as one method to credential their veterinary team members.

U.S. Department of Agriculture/Animal and Plant Health Inspection Service (USDA/APHIS):

- Worked with government agencies in Puerto Rico and the U.S. Virgin Islands to remove feral and free-roaming swine in these Territories to reduce the risk of potentially contaminating food products that could transmit disease. This included conducting public outreach and education, deploying 68 staff members to the region, removing 2,607 feral swine, and sampling 1,735 feral swine to test for African Swine Fever (ASF) and Classical Swine Fever (CSF). All feral swine tested were negative.

- Identified counties within four States at very high risk of entry and spread of ASF in local feral swine populations and initiated surveillance for ASF and CSF by sampling and testing 1,246 feral swine for these diseases. All were negative. APHIS initiated efforts to expand surveillance in six additional States, testing for feral swine diseases.

- Strengthened ASF diagnostic capabilities with the approval of spleen, blood swabs, and blood cards as additional sample types and pooling of samples. The National Animal Health Laboratory Network (NAHLN) increased ASF testing capacity in the 49 NAHLN labs by over 86,000 polymerase chain reaction (PCR) and 430,500 animals tested per day.

- Supported State, academic, industry, and Federal partners in testing over 33,000 specimens from States and Territories for ASF and CSF. This has strengthened national detection and response capabilities for these foreign animal diseases and helped to maintain an internationally recognized ASF Protection Zone in Puerto Rico and the U.S. Virgin Islands.

APHIS approved two additional NAHLN laboratories for a total of 12 to perform ASF and CSF active surveillance, increasing the United States' ASF/CSF preparedness and response capabilities.

- Continued its partnership with the Puerto Rico Department of Agriculture Laboratory (PRDA) to provide laboratory personnel and supplies to support the satellite laboratory at PRDA's Dorado Veterinary Diagnostic Laboratory to conduct ongoing ASF surveillance testing in response to its detection in the Dominican Republic.

- Supported the Dominican Republic's Central Veterinary Laboratory with services, supplies, and equipment to build the country's testing program and bolster their ASF response.

- Developed a one-year ASF testing plan for Haiti, allowing the country to conduct diagnostic testing without significant upgrades to their current laboratory.

- Continued to strategically sample 6,000 feral swine for endemic diseases like brucellosis and pseudorabies, and foreign animal diseases like CSF, as part of early detection efforts to protect domestic livestock populations. The risk-based strategy considers factors related to disease introduction and the likelihood of disease transmission from feral to domestic animals.

- Updated its risk-based adaptive surveillance system for influenza A in wild waterfowl in FY22. The system uses observed influenza A prevalence, changes in seasonal waterfowl population density, and data analysis predicting movement of waterfowl among flyways to prioritize surveillance in those watersheds at greatest risk for influenza A transmission to poultry.

- Continues to lead the Tuberculosis (TB) Initiative, which ensures broad, multi-program participation in the Mycobacterium Bovis bacille Calmette-Guerin vaccine project, deer vaccination project, antemortem diagnostic testing, biosecurity and source attribution, whole genome sequencing (WGS), and increasing slaughter surveillance sampling for bovine TB. APHIS in conjunction with state and industry stake holders continue to modernize and change the bovine tuberculosis (bTB) eradication program paradigm, reducing bTB prevalence and transmission risk in livestock.

- Enhanced surveillance for SARS-CoV-2 through the American Rescue Plan Act (ARPA) and other initiatives in the following ways:

    - Provided over $484,000 through the Centers for Disease Control and Prevention (CDC)-Interagency Agreement to 12 NAHLN laboratories to support projects that will provide SARS-CoV-2 surveillance testing in companion, shelter, and zoo animals; mink; and small exotic animals.

    - Maintained further support at 30 NAHLN labs, including seven with the capability to test human samples.

    - Collected 72,500 samples from 100 different species, including wildlife and those housed at zoos, aquaria, and other facilities across 36 States, plus Washington, D.C., for

SARS-CoV-2 testing.

- Tested samples and made 490 high-quality diagnostic sequences available to the public; 161 resulted in variants that were first detected in humans before animals. Confirmed cases and variants of SARS-CoV-2 are available on a public-facing dashboard.

- Launched a voluntary cooperative Federal-State-industry effort to actively monitor for SARS-CoV-2 infection on mink farms and minimize the risk of virus among mink, humans, and other animals around mink farms. In FY22, the project collected samples from 18 herds for deferred testing in FY 2023.

- Provided the National List of Reportable Animal Diseases to serve as the framework for consistent animal disease reporting across the United States, to meet World Organization for Animal Health (WOAH) reporting requirements. The United States submitted four immediate notifications and 95 follow-up animal disease reports to WOAH for five separate disease events, including one rabies event, one rabbit hemorrhagic disease virus-2 event, one infectious salmon anemia virus event, one SARS-CoV-2 event, and one highly pathogenic avian influenza (HPAI) H5N1 event.

- Collaborated with the National Oceanic and Atmospheric Association (NOAA) and the U.S. Fish and Wildlife Service, as well as other Federal, State, and Tribal entities, to ensure the health of all aquatic animals in the United States.

- APHIS supported Farm Bill programs by awarding approximately $33 million to cooperators to prevent, prepare for, protect against, and respond to animal disease threats. This included:

  - $7.6 million to the National Animal Disease Preparedness and Response (NADPRP) program to support 36 new projects focused on supporting animal movement decisions, enhancing States' emergency vaccination plans, and outreach and education on animal disease prevention, preparedness, and response.

  - $4.4 million to support 21 new projects to enhance early detection of high-consequence animal diseases and improve emergency response capabilities at NAHLN veterinary diagnostic laboratories; and $4.3 million to support seven new projects awarded through the 2021 Joint NAHLN/NADPRP funding opportunity for projects to develop and evaluate point-of-care foreign animal disease diagnostic tests.

  - $2.5 million to support 47 non-competitive awards to NAHLN network laboratories for operational support and $13.8 million in new contracts or new orders on existing contracts to purchase additional foot-and-mouth disease (FMD) vaccine for the National Animal Vaccine and Veterinary Countermeasures Bank, with $500,000 in new contracts to purchase diagnostic test kits for high consequence diseases.

  - APHIS continued a pilot project in four NAHLN laboratories to gain experience with oral fluid samples as a potential additional sample type for swine disease surveillance.

  - APHIS implemented the Plant Protection Act Section 7721, allocating more than $70

million to support 372 projects (344 under the Plant Pest and Disease Management and Disaster Program and 28 under the National Clean Plant Network).

- These projects strengthen the Nation's infrastructure for pest detection and surveillance, identification, and threat mitigation to safeguard nurseries and respond to plant pest emergencies. Universities, States, Federal agencies, nongovernmental organizations, nonprofits, and Tribal organizations carried out selected projects in 49 States, Guam, and Puerto Rico, which maintained infrastructure to ensure that pathogen, disease, and pest-free certified planting materials are available for U.S. specialty crop producers who grow fruit trees, grapes, berries, hops, sweet potatoes, and roses.

- Of the $70 million, APHIS secured $15.5 million to rapidly respond to invasive pest emergencies, should a pest of high economic consequence be found in the United States. In the past, APHIS has used these funds to rapidly respond to pests such as the Asian giant hornet, spotted lanternfly, coconut rhinoceros beetle, exotic fruit flies, and box tree moth.

- Led the response to Emergency Support Function #11 activations for six incidents, including severe storms, flooding, wildland fires, and hurricanes. These efforts resulted in States, Territories, and Tribes receiving much needed assistance from USDA and the U.S. Department of the Interior during and after disasters. APHIS also participated with other Federal agencies and SLTT partners in 53 all-hazards exercises to increase preparedness by testing and validating plans, procedures, and capabilities.

- Participated in the Critical Infrastructure Partnership Advisory Council (CIPAC) and attended monthly Food and Agriculture Sector Joint Membership meetings.

- Participated in the Vermont One Health Working Group, a collaboration between Federal and State animal and public health officials and industries, attended quarterly meetings, and provided awareness of current domestic and foreign animal disease events.

USDA/Food Safety and Inspection Service (FSIS):

- USDA/Food Safety and Inspection Service (FSIS): Collaborated with the National Football League (NFL), Federal, State of California, Los Angeles County, the City of Inglewood, and food industry partners, to create and implement an effective and efficient food protection strategy to protect patrons and attendees at Super Bowl LVI against contamination of FSIS regulated products. This included testing 100 samples of regulated meat products (chicken, hot dogs, etc.) for different types of biological agents, pesticides, and other harmful compounds at Super Bowl LVI.

USDA/Office of Inspector General (OIG):

- Regularly participated in Emergency Support Function (ESF) #13 activities in furtherance of providing Federal public safety and security assistance to SLTT and Federal organizations overwhelmed by the results of an actual or anticipated natural/manmade disaster, or an act of terrorism. Six USDA OIG OI Special Agents provided ESF #13 assistance during Hurricane Ian in southwest Florida, where they performed emergency response activities.

FDA/Office of Regulatory Affairs/Office of Partnerships (ORA/OP)

- Rapid Response Teams (RRTs) are multi-state, multi-jurisdictional (i.e. epidemiology, human and animal food regulatory, laboratory) teams that operate using Incident Command System (ICS) principles within an integrated or coordinated response structure to respond to human and animal food emergencies. In FY 2022, FDA allocated $4,219,306 to support twenty-four (24) RRTs throughout the U.S. Twenty-one (21) are funded through an FDA Cooperative Agreement and 3 are voluntarily utilizing state funding. The RRT Cooperative Agreement program funding is used to develop, implement, exercise, and integrate an all-hazards food and food-borne illness response capability to rapidly react to potential food safety/food defense threats to our food supply. Additional RRT Program information can be found at Rapid Response Teams- Program Information.

FDA/Center for Food Safety and Applied Nutrition/Coordinated Outbreak Response and Evaluation (CORE) Network (CFSAN/CORE)

- Released several new publications to further outreach efforts, including the following examples:
  - A publication that describes how CORE coordinated the response efforts to a multistate outbreak of gastrointestinal illnesses caused by multiple *Salmonella* serovars, associated with consumption of kratom, a product harvested from a tropical tree native to Southeast Asia.
  - A publication that describes how CORE coordinated the response efforts to a multi-state outbreak of hepatitis A infections linked to fresh blackberries sourced from multiple suppliers in Michoacán, Mexico.
  - A publication that describes how CORE coordinated the response efforts to a multistate outbreak of *Burkholderia cepacia* complex infections linked to a no-rinse cleansing foam product, used for skin care of patients in healthcare settings.
  - An article that summarizes the challenges and lessons learned from outbreaks of *Cyclospora cayetanensis* infections and how these outbreaks underscore the need for a comprehensive understanding of how the pathogen contaminates water and produce.
- An annual report that analyzes, by calendar year, foodborne illness outbreak data collected by the Interagency Food Safety Analytics Collaboration (IFSAC). The report is part of ongoing efforts to understand the sources of foodborne illness in the United States.

FDA/CFSAN/Office of Analytics and Outreach/Food Defense and Emergency Coordination Staff (OAO/FDECS)

- Collaborated with the National Conference on Interstate Milk Shippers to establish a Food Defense Committee to identify potential mitigation strategies and training needs for dairy farms. The Committee was comprised of representatives from federal, state and local government agencies, as well as the private sector.

FDA/ORA/Office of Human and Animal Food Operations (ORA/OHAFO)

- Conducted 348 Food Defense Plan Quick Check visual inspections at human food facilities as part of the implementation of the Intentional Adulteration Rule. This includes both domestic and foreign human food facilities that manufacture, process, pack, or hold food for consumption in the US.

FDA/ORA/Office of Import Operations/Division of Food Defense Targeting (OIO/DFDT)

- FDA's Division of Food Defense Targeting (DFDT) incorporated the FBI Terrorist Watch list Service into the FDA database environment and developed processes to screen incoming prior notices (PN) of food shipments. The electronic screening assists in identifying food shipments which have associations with known terrorists, allowing DFDT to assess and intercept shipments of concern prior to entering US commerce.

- DFDT supported FDA infant formula investigation efforts by reviewing 100% of all prior notices for infant formula, expedited, priority review and clearance to shipments of large infant formula quantities that are part of Operation Fly Formula and maintained surveillance of importers/consignees thought to be involved in the commercial distribution of infant formula from European manufacturers known not to have registered with the FDA.

FDA/ORA/Office of Regulatory Science (ORA/ORS)

- The Laboratory Flexible Funding Model Cooperative Agreement (LFFM) provided state partner laboratories with $21.6 million dollars to help them achieve various laboratory goals in support of an integrated food safety system. These activities included surveillance of human and animal food, and whole genome sequencing (WGS) of pathogens isolated from food and environmental samples. This funding was for activities conducted from July 2021 through June 2022.

- Reviewed 94 data packages from state laboratories for potential FDA action with a concurrence rate of 94 percent in FY22 (Oct2021-Sep2022).

- Continued development of the FDA BSL2+ BSL3 Program by holding a LB313: Principles and Lab Practices of BSL-2+ and BSL-3 course, holding a LB501: Food Emergency Response Network (FERN) Methods for *Bacillus anthracis* and *Yersinia pestis* course, purchasing a Bruker Biotyper MALDI TOF, completing construction design on a new BSL-3 laboratory, and managing the BSL-2+/BSL-3 program workgroup that supports continued enhancements and proficiencies to the program.

- Continued to provide FERN member laboratories with free opportunities to demonstrate proficiency and competency in multiple methods and analytes for Federal, state, and local partners.

- FDA Radiochemists at Winchester Engineering and Analytical Center (WEAC) provided one exercise for the FERN Radiological Laboratories in the identification of gamma-emitting radionuclides in food products. Twenty-four laboratories participated including WEAC in April of 2022.

- FDA WEAC developed a new screening method for alpha and beta emitting radionuclides in food for use by the FERN, to be inclusive of all applicable instrumentation among the network labs to maximize capacity and capability for food testing during a nuclear event funded by a Chief Scientist Challenge Grant awarded to WEAC.

- FDA WEAC analysts continued to support and advise FERN member laboratories in instrument purchase, instrument troubleshooting, and method development activities involving the detection of radioactivity in food products. ORA/ORS analysts prepared and presented free webinars about elemental analysis of food in lieu of in person training due to pandemic related travel restrictions.

- FDA continued to promote the combined federal, state capabilities to prevent, protect against, mitigate, respond to, and recover from manmade and natural disasters that threaten the national food and agricultural infrastructure.

- In FY2022, in collaboration with FDA Seattle District Office and Alaska Department of Environmental Conservation (ADEC), WEAC performed radionuclide analysis of 23 fish samples collected in Alaska seafood harvesting areas per a partnership agreement between FDA and ADEC. The purpose of the partnership agreement is to enable Alaska state radioanalytical capability and provide continued monitoring of Alaska Coastal water fish products for radionuclides in response to the Fukushima nuclear reactor accident.

- In FY22 the FDA Private Laboratory Program reviewed 10,465 private lab packages with 73.3 percent of the packages being sufficient for concurrence. This program receives, tracks, reviews, and provides technical input on private laboratory worksheet packages of imported food or medical products that have been detained without physical examination due to evidence that the product violates FDA laws and regulations.

- FDA Expanded the presence of scientists and handheld or portable tools at points of entry to the U.S., including International Mail Facilities and Express Courier Hubs, by establishing satellite laboratories at selected locations in partnership with the U.S. Customs and Border Patrol (USCBP), along with the creation and provision of training sessions for OEIO Consumer Safety Officers and OCI Special Agents.

- FDA Supported the New Era of Smarter Food Safety initiative by continuing FDA support of novel approaches to recording and sharing of SLTT analytic data, the ORA Partners Portal (ORAPP) and National Food Safety Data exchange (NFSDX), and increasing access to laboratory data generated by Laboratory Flexible Funding Model (LFFM) participants and other external partners.

Food Protection and Defense Institute (FPDI):

- Conducted workforce development training (online/instructor-led), including 91 personnel who represented at least 30 companies. The training improved the awareness and ability of personnel to better prevent, protect against, mitigate, respond to, and/or recover from either food safety or food defense intentional adulteration incidents.

Environmental Protection Agency (EPA):

- The EPA Office of Chemical Safety and Pollution Prevention (OCSPP), along with all other EPA offices and regions, developed individualized climate adaptation plans. The OCSPP plan includes several agriculture-related topics, including considering improvements in risk assessment and risk management processes to account for climate adaptation, and ensuring the most recent data that could be climate sensitive are used in its processes. The OCSPP carried out the following activities related to managing disinfectant products:

- Developed strategies to address supply chain shortages with pesticide manufacturers.

- Renewed FIFRA Section 18 for use of chemicals to treat air in several states.

- Updated EPA List N to include over 600 products effective against SARS-CoV-2. https://www.epa.gov/coronavirus/about-list-n-disinfectants-coronavirus-covid-19-0

- Reviewed over 160 non-expedited List N submissions and added 71 products.

- Approved seven products for SARS-CoV-2 variants. The organisms tested were the alpha, beta, and delta variants.

- Responded to over 179 inquiries from the Efficacy mailbox specifically related to efficacy testing methods and claims for products intended to be effective against public health pathogens.

- Updated and modernized List M for the avian influenza outbreak. https://www.epa.gov/pesticide-registration/list-m-registered-antimicrobial-products-label-claims-avian-influenza

- Activated the Emerging Viral Pathogens policy for Monkeypox, which is only the third time the policy has ever been activated. As a result, *List Q: Products with Emerging Viral Pathogens Claims* was created. List Q currently has 442 products and has been updated monthly since its first publication in May 2022. https://www.epa.gov/pesticide-registration/disinfectants-emerging-viral-pathogens-evps-list-q

- Responded to over 150 Monkeypox and COVID-related questions received in the Disinfectants List mailbox.

- Collaborated with FDA on a Salmonella outbreak in a seafood facility, linked to the inappropriate use of a pesticide device to generate a food contact sanitizer. As part of this effort, developed a communications document that was distributed to EPA regional offices, FDA, and States.

- Completed several analyses to safely maintain the use of critical fumigant chemical use patterns. These chemicals are often used as mitigation tools (e.g., have previously been deployed to control for anthrax).

- Responded to critical pest situations through the FIFRA S18 Emergency Exemption process, exempting states or federal agencies from certain requirements under emergency situations. For example, completed renewals for an air treatment chemical to combat the covid-19 pandemic, for two herbicides to control resistant amaranth species in peanuts and sugar beets, and two fungicides to control coffee leaf rust, a devastating disease of coffee in Hawaii.

- Participated on the steering committee of the Agricultural Biotech Education and Outreach Initiative as subject matter experts in support of this effort. Completed phase three of this four-phase FDA-led $7 million initiative, developed through participation between FDA, USDA, and EPA, which provided consumer outreach and education through distribution of science-based information on the environmental, nutritional, food safety, economic, and humanitarian impacts of agricultural biotechnology. In phase three, additional education material on GMOs was released for consumers, health educators, and health care providers: FDA Releases New "Feed Your Mind" Education Materials on GMOs for Consumers, Health Educators, and Health Care Providers | FDA.

- Provided leadership on efforts to better align responsibilities between the FDA and EPA for genetically engineered animals, including insects, related to implementation of the National Strategy for Modernizing the Regulatory System for Biotechnology Products.

- Participated in and supported the Executive Order 13874 International Biotech Outreach Committee to develop strategies for effective communication on agricultural biotechnology at the international level. The goal was to develop a single voice across the U.S. government for addressing this issue.

- Provided input to NSC/EPA on Biomanufacturing and Biotechnology: Driving Innovation for a Sustainable, Safe, and Secure Bioeconomy.

Food and Agriculture Sector Coordinating Council (SCC) and Government Coordinating Council (GCC):

- Hosted bi-annual membership meetings, on April 26 – 27, 2022 and November 9 - 10, 2022, in support of goals one through five.

- Coordinated the following meetings series:
  - Monthly GCC Leadership (three in CY22)
  - Monthly GCC & SCC Leadership (eight in CY22)
  - Monthly GCC Membership meetings (four in CY22)

- Implemented a new email service for weekly communications that allows the GCC Leadership to monitor reach of the weekly email, and how often various articles are opened, to better guide article selection.

- Coordinated SCC and private sector participation in Cybersecurity and Infrastructure Security Agency's (CISA) development of cross-sector Cybersecurity Performance Goals (CPG), intended to establish fundamental cybersecurity practices to help organizations start or reinforce their cyber security efforts.

- Assisted in shaping the implementation of the Cyber Incident Reporting and Critical Infrastructure Act of 2022 (CIRCIA).

Southwest Border Food Protection and Emergency Preparedness Center:

- Responded to multiple natural disasters and continued to assist in the recovery process. The Center also conducted multiple tabletop exercises to enhance SLTT capabilities to respond to food and agriculture emergencies.

Iowa State University Center for Food and Security and Public Health (ISU CFSPH):

- The Iowa State University Center for Food Security and Public Health (ISU CFSPH) delivered the Transboundary and Emerging Disease of Animals and Initial Accreditation Class to 4,783 students at U.S. Colleges of Veterinary Medicine. Portions of this class are required for all new graduate veterinarians to become USDA Accredited. In addition, 527 graduate veterinarians took the course while working toward accreditation, and 193 individuals took the course for continuing education.

- Biosecurity in Livestock and Poultry Production: The ISU CFSPH delivered Basic and Advanced Courses to 615 participants, including 156 individuals from outside the U.S. The basic course introduces biosecurity concepts and provides an overview of biosecurity risk factors. It is designed for producers, extension personnel, and veterinary technicians. The advanced course is designed for veterinarians, covering the content from the basic course and providing information on assessing risk and developing, implementing, and evaluating biosecurity plans. These new courses were widely advertised and offered at no cost to the users.

- Animal Disease Emergencies: The ISU CFSPH delivered a self-paced web-based course for individuals unfamiliar with animal health emergency response to 24 individuals. The course covers the impact of animal diseases, the terminology used in a response, and a variety of actions for a coordinated response.

- Two courses covering zoonotic diseases: The ISU CFSPH delivered *Protecting People and Animals in Rural Communities* and *Protecting People and Their Pets* to 47 users.

- Overview of organic and alternative animal health and biosecurity practices for veterinarians, veterinary technicians, and extension personnel (two courses), delivered to 303 individuals.

- ISU CFSPH published Fact sheets for Transboundary Animal Diseases: 147 English fact sheets, which were downloaded 478,146 times; 138 Spanish fact sheets downloaded 736,365 times; and 44 Portuguese fact sheets downloaded 79,025 times.

Michigan Department of Agriculture and Rural Development (MDARD):

- From March to September 2022, MDARD planned and executed the 2022 Sample Team Exercise (STE) series. STE uses emergency scenarios to practice surge capacity and other emergency response concepts and to train its staff in the Incident Command System (ICS) and various sampling concepts and procedures. Scenarios included response to an invasive plant pest, widespread contamination of food and feed products, radiological emergency response, and Highly Pathogenic Avian Influenza. MDARD trained 382 individuals at 10 sessions held across the state. This included 33 participants from partner agencies across federal, state, and local government, providing an opportunity to educate partners on food and agriculture emergency response and the food and agriculture sector in general.

- On November 16-17, 2021, MDARD hosted the annual meeting of the Midwest States in the

Rapid Response Team (RRT) program. Participants included RRT member states, local health departments, epidemiologists from state health agencies, FDA, FBI, and the Association of Food and Drug Officials (AFDO). The meeting included a tabletop exercise that led primary and assisting agencies through the response to an intentional adulteration incident at a Midwest food processor. Outcomes included validation of current emergency response plans and further engagement of law enforcement and critical infrastructure partners across the Midwest.

National Agriculture Biosecurity Center (NABC):

- National Agricultural Biosecurity Center (NABC) partnered with the Kansas Department of Agriculture (KDA) to be embedded in its annual 'December' exercise. 2022's version was named Genesis and featured facets of the State's response plan to an incursion of Foot and Mouth Disease.

- NABC performed a Regional Tabletop Exercises for Counties. The project was designed to be a joint effort of NABC, KDA, and the Kansas Division of Emergency Management (KDEM). The project was underwritten by the USDA's NADPRP via a cooperative agreement.

Goal 2: Improving Sector Situational Awareness through Enhanced Intelligence Communications and Information Sharing among all Food and Agriculture Sector Partners

Sector members carried out several initiatives to improve sharing and awareness of information available to SLTT and private sector partners. APHIS kept a steady pace of activities that improved situational awareness on critical disease and pest issues within the sector. FDA also provided regular updates on the agency's foodborne illness outbreak investigations.

USDA/Animal and Plant Health Inspection Service (APHIS):

- Contributed to the Vermont Intelligence Center's 2022 Critical Infrastructure Threat Assessment by providing the agency with a summary of the threats to the Food and Agriculture Sector.

- Provided the intelligence community with an analysis of the impacts to the Food and Agriculture Sector caused by the USAHERDS data breach and potential exploitation of identified vulnerabilities.

- Collaborated with the FDA's Veterinary Laboratory Investigation and Response Network to publish a public-facing dashboard displaying antimicrobial sensitivity and corresponding resistance gene data for companion animals in conjunction with FDA's National Antimicrobial Resistance Monitoring System.

- Confirmed cases and variants of SARS-CoV-2 on a public-facing dashboard.

- Supported the SARS-CoV-2 response by providing informational presentations to stakeholders at the annual American Association of Veterinary Laboratory Diagnosticians meeting and the Biosafety Level 4 Zoonotic Laboratory Network symposium on SARS-CoV-2.

- Continued to support electronic messaging by NAHLN laboratories, resulting in 95 percent of NAHLN laboratories providing test results electronically.

- Partnered with USDA Agricultural Research Service (ARS) on the Research Alliance for Veterinary Science and Biodefense BSL-3 Network to collaborate with U.S. BSL-3 agriculture facilities to assist each other with the management, training, and operations of BSL-3 facilities for livestock pathogens.

- Developed and implemented a Laboratory Information Management System for use in the Dorado Laboratory in Puerto Rico, resulting in a paperless workflow, the ability to send order messages for cases, and allow for rapid release of test results. The laboratory tested 9,895 samples for ASF and CSF on both PCR and enzyme-linked immunoassay (ELISA).

- Participated in interagency working groups such as the Defense Against Agro-Terrorism Working Group and the Joint Committee on Biorisk Management, which include members of the Intelligence community and other Federal partners, to discuss challenges with intelligence and information sharing. APHIS co-led the Transboundary Animal Disease Threats Working Group, to review and update priorities for modeling, surveillance, countermeasure development, wildlife research, and depopulation related to transboundary and emerging diseases.

- APHIS improved national and State situational awareness by launching a new State-accessible dashboard for cooperative agreement-funded avian influenza surveillance. This dashboard allows States to track surveillance progress, identify anomalies or errors, and easily report surveillance status to other partners. At the national level, this has allowed for the rapid reporting of data to international trade partners, resulting in the elimination of trade restrictions.

- Provided subject matter expertise (SME) to the U.S. Department of Homeland Security's Countering Weapons of Mass Destruction National Biosurveillance Integration Center. The SME provides food and agricultural context for situational awareness and information sharing, providing USDA APHIS insight, intelligence, and expertise to Federal partners, especially related to the global and national spread of HPAI and ASF.

- Published 11 Federal Register Notices informing the public about importation of foreign agricultural commodities into the United States; issued 21 press releases informing the public of plant health news such as Asian long horned beetle eradication efforts, changes to regulated pest lists, protecting citrus, and invasive species; and distributed numerous stakeholder announcements with information related to APHIS' regulatory programs and operations.

- Coordinated and hosted eight monthly calls between its leadership and National Association of State Departments of Agriculture members to provide timely updates and discuss high priority topics related to plant and animal health, wildlife management, and animal welfare.

- Coordinated and hosted nine sector meetings (equine, sheep and goat, aquaculture, animal and animal products trade, apple, potato, nursery, forest, and seed) with APHIS leaders, industry

representatives, and State and Tribal partners to discuss diseases and pests of concern, emerging animal and plant health issues, industry challenges, and more.

USDA/Food Safety and Inspection Service (FSIS):

- During National Security Special Events and selected special events, such as Super Bowl LVI and the Indianapolis 500, FSIS partnered with internal and external stakeholders to sample and test food; collaborated with state and local public health officials to facilitate and execute targeted surveillance activities related to food defense; and provided food defense materials, including pamphlets and brochures, to vendors and suppliers. These partnerships increased situational awareness of food defense among those charged with protecting the events. FSIS's efforts also helped ensure that the public attending these events had safe and wholesome food for their consumption.

FDA/CFSAN/Coordinated Outbreak Response and Evaluation (CORE) Network (CFSAN/CORE

- Continued release of the *Coordinated Outbreak Response & Evaluation (CORE) Investigation Table*, which provides information on FDA foodborne illness outbreak investigations and responses and gives consumers an early awareness of developing multistate outbreaks occurring across the United States. The table is updated once a week and includes all outbreaks for which a CORE Response Team is involved in an active investigation.

- In FY 2022, CORE worked with the CFSAN Consumer Studies Branch to conduct a survey seeking feedback on the CIT from stakeholders and consumers. The CIT received high ratings from respondents. Most respondents found the CIT to be useful and informative, thought weekly updates were sufficient, and find the information in the table to be important.

FDA/Office of Regulatory Affairs/Office of Partnerships (ORA/OP)

- The RRT Program maintained communications and situational awareness with the 24 states in the program via sharing information in the RRT Program Workgroup on FoodSHIELD, monthly webinars with all grantees, annual meeting, and ad-hoc communications via email.
- Through outreach and education, FDA responded to stakeholder feedback to advance information sharing by developing a novel 20.88 agreement that allows further sharing within a state in times of recalls, outbreaks, and emergencies. In addition, FDA is conducting a proof of concept with several state and territorial partners to streamline and simplify information sharing using the Information Disclosure Portal, based on the FoodShield platform, that allows for more efficient control of information, tracking of requests and information shared, and ease of transmitting large files. FDA has also engaged with 2 key state partners (Virginia and Florida) to pilot an information sharing model for sharing FDA's non-contract inspection data.

FDA/ORA/Office of Import Operations/Division of Food Defense Targeting (FOIO/DFDT)

- DFDT established a collaborative relationship with DHS' National Biosurveillance Integration Center to secure communications/bulletins related to threats involving the U.S. food supply chain and other critical infrastructure.

- Obtained approval for the development of a Risk Analysis and Surveillance team that will provide FDA's Office of Import Operations (OIO) information needed for proactive risk-based targeting of FDA regulated commodities.

USDA/ Office of the Inspector General (OIG):

- USDA OIG Office of Investigations (OI) maintains constant lines of communication with regional fusion centers to further intelligence communications and information sharing among all FA Sector partners. Additionally, USDA OIG OI has personnel assigned to various regional Joint Terrorism Task Forces throughout the country and has one manager who serves as USDA's liaison to the National Joint Terrorism Task Force.

Michigan Department of Agriculture and Rural Development (MDARD):

- During the Spring 2022 Highly Pathogenic Avian Influenza outbreak, MDARD held weekly information sharing calls with three groups:
  - 1) industry partners;
  - 2) local/tribal emergency management and public health workers; and
  - 3) state and federal partners.

- The information sharing calls were highly effective, offering an opportunity to bring together lead and support agencies, brief partners on emergency response status and preparedness efforts, and create a venue to hear concerns, questions, and feedback from all levels of the private sector and government. Survey feedback was positive; for effectiveness, local partners rated them at 4.43/5 and state/federal partners rated them at 4.5/5. The calls were noted as a best practice in MDARD's 2022 Highly Pathogenic Avian Influenza report.

- From March to September 2022, MDARD planned and executed the 2022 Sample Team Exercise (STE) series. This included 33 participants from partner agencies across federal, state, and local government, providing an opportunity to educate partners on food and agriculture emergency response, and the food and agriculture sector in general. This activity inherently highlights cross-training and networking, risks across the food and agriculture sector, and the need to exercise rapid response with excellent communication and coordination across partner organizations.

- On November 16-17, 2021, MDARD hosted the annual meeting of the Midwest States in the Rapid Response Team (RRT) program. Participants included RRT member states, local health departments, epidemiologists from state health agencies, FDA, the Federal Bureau of Investigation (FBI), and the Association of Food and Drug Officials (AFDO). The meeting and tabletop exercise was an excellent opportunity for networking across the FA sector, especially with the FBI's Weapons of Mass Destruction (WMD) Working Group (FBI-WMD) and FDA Office of Criminal Investigation providing law enforcement considerations for response to an intentional contamination event. Approximately 40 participants from across the Midwest attended the virtual exercise.

National Agriculture Biosecurity Center (NABC):

- NABC continued groundwork sponsored by the Department of Homeland Security (DHS) at building a state-level, pilot Information Sharing and Analysis Center (ISAC) for FA topics.

- NABC assisted in a multi-college effort with the Colleges of Agriculture, Veterinary Medicine, and Professional/Multi-Disciplinary Studies, Olathe (Kansas City area) to build collaboration among USDA National Institute of Food and Agriculture (NIFA) elements centered at land-grant universities involved in research on crops, livestock, and food. The program is billed on the Tactical Sciences Network.

North American Meat Institute (NAMI):

- In FY22, the North American Meat Institute (NAMI) organized and conducted monthly meetings with its Cybersecurity Committee. The committee is comprised of approximately 30 individuals from meat packing and/or processing companies. The meetings allow for information sharing and best practice discussion.

- NAMI held three webinars to educate its members (meat packers and processors) on the current state of cyber threats, the role of cyber insurance, and baseline controls.

Goal 3: Assess All-Hazards Risks, including Cybersecurity, to the FA Sector

Federal partners in the FA sector were focused on better understanding and mitigating threats to America's supply chains. The community conducted risk and vulnerability assessments to identify gaps within the sector.

USDA/Agricultural Marketing Service (AMS):

- Led USDA's efforts to respond to the President's Executive Order 14017 on "America's Supply Chains," issued February 2021, which required USDA to submit, within one year, a report to the President that assesses the supply chains for agricultural commodities and food products. The final report was published in February 2022, outlining the risks and resilience of U.S. agri-food supply chains, and identifying potential solutions to address vulnerabilities. This assessment involved extensive input and review by USDA subject matter specialists, consultation with other Federal agencies, and recommendations obtained through a public comment process. The report outlined actions to:

    - Strengthen data and market intelligence to enhance USDA's understanding of supply chains and address disruptions early, reducing the impacts on individuals and communities.

    - Diversify critical supply chain infrastructure, expand local and regional programs, and enable more and better markets for producers and consumers.

    - Support a level playing field to enable competition.

    - Improve working conditions and overcome critical labor shortages in farm and affiliated agri-food industries.

    - Help farmers adapt to climate change.

    - Strengthen response preparedness to animal and crop pest and disease threats.

- Rebuild critical transportation infrastructure for moving bulk commodities and specialty products.

- Boost agricultural exports, which stimulates local economic activity, helps maintain our competitive edge globally, and supports producers' bottom lines.

- Embed equity principles throughout our actions to ensure that USDA programs, services, and decisions reflect the values of equity and inclusion.

USDA/Animal and Plant Health Inspection Service (APHIS):

- Referred 18 open-source threats to the Food and Agriculture Sector to appropriate entities.

- Participated in the FBI (Albany) WMD Working Group, serving as veterinary SMEs experts, attending quarterly meetings, and providing Food and Agriculture Sector threat analysis to the local FBI WMD coordinator.

- Collaborated with Central American countries to develop plans to characterize *M. bovis* from regional cattle, enhance laboratory capacity, and train officials on sample collection and skin testing. APHIS' National Veterinary Services Laboratories (NVSL) received a total of 115 samples in FY22. Over the course of this project, NVSL cultured and characterized 17 *M. bovis* isolates from Guatemala, 34 from Honduras, and 87 from Costa Rica. APHIS provided virtual training, on-site training at NVSL, and field training to representatives from each country.

- Collaborated with researchers in Taiwan, Greece, and Venezuela and discussed sharing sequences to improve the breadth of the World *M. bovis* project. The *M. bovis* whole genome library has been updated with these sequences, as well as other sequences downloaded from publicly shared online sources (i.e., sequences from China, Argentina, Korea, Algeria, human *M. bovis* from Europe).

- Collaborated with ARS, the Centers for Disease Control and Prevention, WOAH, universities, and State officials on several Leptospirosis projects, aiming to identify reservoir hosts (i.e., One Health projects looking at rodent populations in Puerto Rico following multiple hurricanes and rats as a source of leptospirosis in the homeless population in Boston); improve diagnosis, isolation, and characterization of leptospires; and improve diagnostic test methodology.

- Hosted the NAHLN laboratory portion of the Foreign Animal Disease Southern Agriculture Functional Exercise, which included 12 States, one U.S. Territory, one Tribal nation, and 13 NAHLN laboratories. This exercise allowed the participants to practice a response to the detection of FMD within the continental United States. NAHLN laboratories focused on communication, laboratory testing capacity, turn-around-times for results, and potential deviations to current processes.

- Hosted the annual Foreign Animal Disease Investigation in the Laboratory exercise. The annual exercise included participation from 44 of 59 NAHLN laboratories, and provided an opportunity for the laboratories to practice initiating a foreign animal disease investigation in

the laboratory based upon the history, clinical signs, and gross lesions of samples received for routine testing. The laboratories focused on communication with NVSL, the national reference laboratory for the United States; identifying correct samples for testing in NAHLN laboratories; and packaging and shipping samples for confirmatory testing at NVSL.

- Released two risk assessments for aquatic animal pathogens; one related to tilapia lake virus, the other to ostreid herpesvirus-1.

- Added 20 new pest distribution records, 15 new host records, 11 pest profiles, and two new pests to the Global Pest and Disease Database under the purview of PestLens. PestLens is an early-warning system that helps APHIS protect U.S. agriculture and natural resources from exotic plant pests. PestLens collects and distributes new information on exotic plant pests and provides a Web-based platform for documenting safeguarding decisions and resulting actions.

- APHIS continued to implement its internal cybersecurity improvement plan. Accomplishments include assembling an engineering branch, which implemented a suite of security scanning tools; creating new scanning services available to all IT development projects; remediating zero-day vulnerabilities; mitigating ongoing attacks; and improving the security posture of multiple high value assets.

- Released the Clean Desk Policy to aid in the protection of data related to the FA Sector. As part of its risk management and compliance activity, in FY22, APHIS brought the entire IT portfolio into full compliance with zero expired Authority to Operate memoranda. This ensures that the proper security controls are in place and tested, to reduce risks to an acceptable level.

- Implemented an internal cybersecurity monitoring and threat hunting system across the National Bio and Agro-Defense Facility's isolated building control systems networks. This system provides continuous monitoring and analysis of network traffic and system events, along with a platform for event and incident management. APHIS is maturing its processes and personnel capabilities to better secure and rapidly respond to threats within these critical control systems.

USDA/Food Safety and Inspection Service (FSIS):

- FSIS conducts their Vulnerability Assessment (VA) Framework to assess risks and threats to FSIS-regulated products on a two-year cycle using a survey process with subject matter experts across government, academia, and industry. The last survey was conducted in FY21, and responses received did not indicate the need for a new VA or VA update during FY22. The next VA will be conducted during FY23.

FDA/Office of Regulatory Affairs/Office of Partnerships (ORA/OP)

- RRTs conducted after action reviews (AARs) for RRT response activations. AARs identified strengths and areas for improvement that were noted in an improvement plan. Staff were assigned to make improvements on a timeline to ensure the team continues to improve and mitigate future risks.

Michigan Department of Agriculture and Rural Development (MDARD):

- From March to September 2022, MDARD planned and executed the 2022 Sample Team Exercise (STE) series. STE is used as a method to evaluate risk in the marketplace. For example, 2022 scenarios involved sampling of cheeses, mushrooms, melons, and pet foods and treats. These types of commodities have been linked to various outbreaks and recalls. All samples were analyzed for E. coli, Salmonella, and Listeria, expanding the data the integrated food safety system uses to investigate outbreaks of foodborne illnesses. Sampling teams collected a melon sample positive for Salmonella Newport, which may provide links in future outbreaks.

- On November 16-17, 2021, MDARD hosted the annual meeting of the Midwest States in the Rapid Response Team (RRT) program. The tabletop exercise focused on intentional contamination at a food processor through unauthorized manipulation of processor's technology systems, causing inadequate temperature controls and botulism growth. According to participants, the scenario was plausible and realistic and spurred critical conversations about cybersecurity in the FA sector and preventing, responding to, and recovering from a cybersecurity/intentional contamination event.

North American Meat Institute (NAMI):

- Distributed a survey to gauge the cyber maturity of its members to better target education and resources for 2023.

Southwest Border Food Protection and Emergency Preparedness Center (SWBFPEPC):

- The Southwest Border Food Protection and Emergency Preparedness Center (SWBFPEPC) assessed all-hazards risks facing the FA sector by working with CISA to develop a Cybersecurity in Agriculture Regional Resiliency Assessment Project, and continuing both formal and informal coordination with partners involved in animal health, food safety, biosecurity, and other risks.

Goal 4: Support Response and Recovery at the FA Sector Level

Federal sector members leveraged their available resources to participate in major ongoing response and recovery missions throughout the year, related to human and animal disease. At the same time, they worked to strengthen their ability to collaborate and respond to potential threats. Partners also carried out beneficial capacity-building efforts, meant to improve SLTT and private sector planning and response capabilities.

USDA/Animal and Plant Health Inspection Service (APHIS):

- APHIS personnel in Florida initiated a collaborative ASF/CSF prevention effort with U.S. Customs and Border Protection and numerous other Federal, State, and local agencies to improve coordination, communication, and planning related to migrant vessel landings. This effort helps prevent the risk of ASF/CSF introduction through unregulated international agricultural/food products, which are often present on the vessels.

- Participated in an NAHLN ASF exercise to improve lab surge capacity readiness and exercise communication and coordination during animal disease outbreaks.

- Launched new efforts to help prevent the introduction and spread of ASF in the United States

through an outreach and awareness campaign called "Protect Our Pigs." This campaign provides tools to commercial pork producers, veterinarians, and pig owners that support first line defense. These efforts appeared in individuals' social media postings over 38 million times and led to nearly 150,000 visits to the Protect Our Pigs web page.

- Provided SME and logistical support, as well as supplies, to the DR's ASF response. APHIS' NVSL tested over 10,000 samples from the Caribbean for ASF and continues to lead diagnostic testing.

- Provided diagnostic testing supplies to Puerto Rico to enhance ASF surveillance activities.

- Invested $14.3 million in FMD vaccine antigen concentrate and APHIS-approved FMD and ASF diagnostic test kits for the National Animal Vaccine and Veterinary Countermeasures Bank to establish a stockpile for use in the event of a high-impact foreign animal disease outbreak. The concentrate can be converted to vaccine if its use is deemed appropriate during an FMD outbreak. APHIS awarded contracts to private companies to supply the vaccine to the Bank. Additionally, APHIS has the flexibility to disburse the kits during an outbreak to provide an additional surge option to the current testing capabilities.

- Prepared, collaborated, and assisted southern States with a FY22 FMD multistate functional exercise (Foreign Animal Disease Southern Agriculture Functional Exercise, a NADPRP/Farm Bill funded project). This effort resulted in an enhanced readiness posture for all participants.

- Provided over 1,000 test kits to be used on farms to collect samples for testing in a National Animal Health Monitoring Systems swine study. Additionally, APHIS built and shipped 214 test kits to be used on farms to collect samples for testing in the bison study. Data on the health, productivity, and management of U.S. bison were also collected.

- Hosted four Exercises and Drills Working Group webinars enhancing the laboratory network's preparedness and response capabilities, including ASF Pathology, Foreign Animal Disease Investigation in the Laboratory, Increasing Laboratory Capacity Personnel Deployment During an Outbreak, and The NAHLN and Biosecurity from a Law Enforcement Perspective.

- Led the HPAI emergency response effort. HPAI was confirmed in 285 poultry premises and 203 non-poultry flocks across 40 States by the close of FY22. APHIS worked with State partners in a national response to quickly identify new cases of HPAI and stop the spread of the virus.

- As part of the HPAI response, APHIS developed numerous site-specific surveillances plans to meet both national and international requirements. These surveillance plans have been implemented in conjunction with other response activities resulting in successfully containing HPAI and maintaining international trade during the outbreak.

- APHIS worked with research partners to develop and implement new diagnostic assays to detect and confirm HPAI more rapidly. APHIS also deployed Federal personnel on recurring rotations, in response to the large multistate outbreak.

- Developed a publicly accessible HPAI dashboard for use by agriculture partners in all States to support real time data sharing and timely decision-making to aid response efforts. The dashboard also provides a response progress timeline, counts of infected birds and flocks, maps to visually assess impact, and searchable tables that can be filtered by State, month/year, or premises production type.

- Collaborated with the Centers for Disease Control and Prevention to conduct testing for Coxiella burnetii on samples collected from U.S. goats in 2019 as part of the National Animal Health Monitoring System goat study.

- Provided over $9 million in chronic wasting disease (CWD) funding to 27 States and 6 Tribes or Tribal organizations. This funding is used to support the development of CWD management and response activities in wild and farmed cervids (e.g., deer, elk).

- Established a working group to develop stakeholder training on outbreak surveillance to assist internal and external agriculture partners and other Federal agencies with identifying the appropriate surveillance schemes to use for various disease outbreaks and stages of a response to enable the recovery phase of an animal disease event more quickly. These training events are due to begin in FY 2023.

- Conducted multiple training sessions for State and Federal personnel on position-specific capabilities, including case managers, site managers, and field reimbursement specialists. This training improved readiness in key initial animal disease response functions.

- Responded to Hurricane Ian by deploying personnel through a Federal Emergency Management Agency mission assignment to support Florida animal and agriculture needs, as well as covering various critical inspection tasks for State personnel while they were deployed. These efforts supported rapid response and recovery in the agriculture sector due to a natural disaster.

- Conducted several response and recovery exercises to ensure network connectivity and identify high value assets and any single points of failure. APHIS also implemented new capabilities in penetration testing and vulnerability assessment, with the addition of new resources. This allows for additional assessment of risk not previously available.

- APHIS worked with the U.S. Department of Homeland Security's Cybersecurity and Infrastructure Security Agency to conduct three penetration tests on their information technology systems and those of the Agricultural and Marketing Service. The results showed improvements in cybersecurity controls over FY 21 results. The ability to perform additional testing and vulnerability remediation across the portfolio ensures that the attack surface of these applications is reduced, and the mission can continue to be carried out in a more secure manner.

FDA/CFSAN/Coordinated Outbreak Response and Evaluation (CORE) Network (CFSAN/CORE)

- Provided recommendations to the farm, facility, or industry involved after assessing information and identifying factors that potentially led to the following outbreak, including measures to prevent similar contamination from occurring in the future:
    - Factors Potentially Contributing to the Contamination of Packaged Leafy Greens Implicated in the Outbreak of Salmonella Typhimurium During the Summer of 2021 (published January 2022)

FDA/Office of Regulatory Affairs/Office of Regulatory Science (ORA/ORS)

- In FY2022, WEAC and Rhode Island Emergency Management Agency (RIEMA) jointly conducted a nuclear emergency response exercise for enhancing emergency preparedness. WEAC performed gamma-ray analysis of 3 samples collected and delivered by RIEMA and provided analytical result to RIEMA within 2 hours of sample delivery.

FDA/Office of Regulatory Affairs/Office of Partnerships (ORA/OP)

- RRTs worked with industry and State Food Protection Task Forces to improve any systemic issues identified during RRT response activations.

Southwest Border Food Protection and Emergency Preparedness Center:

- Supported the response to multiple wildfires in New Mexico, including the two largest fires in the state's history. This required a concerted effort on behalf of ESF 11 partners to track, shelter, feed, and care for hundreds of evacuated and displaced animals, including livestock and pets. Further, the ESF 11 partners continued to contribute on recovery operations and assisted with multiple avenues of aid from non-governmental organizations to FSA programs.

Michigan Department of Agriculture and Rural Development (MDARD):

- All activities reported for the previous goals supported response and recovery efforts for the FA sector in FY22.

National Agriculture Biosecurity Center (NABC):

- Resumed in-person delivery of Animal Disease Response Training (ADRT) to local/county level responders at multiple sites, offered in conjunction with Regional Homeland Security Councils in state.

Goal 5: Improving Analytical Methods to Bolster Prevention and Response Efforts, as well as Increase Resilience in the FA Sector

FA sector partners spent much of the year working to improve existing analytical methods and develop new capabilities and resiliency to ensure the sector is better prepared to respond to any emergency events.

Environmental Protection Agency (EPA):

- EPA's Microbiology Lab (MLB) continued to be on the forefront of developing and/or improving the various methods used to test the efficacy of antimicrobial products.
    - **Legionella.** Significant progress was made on the Legionella method for cooling tower

water, including continuation of a multi-laboratory study to evaluate the proposed test procedure.

- **Candida auris.** *Guidance for the Efficacy Evaluation of Products for Claims against Drug-Resistant Candida auris* was updated to include the use of a multi-drug resistant strain of C. auris for efficacy testing.

- **Residual Method.** Significant progress was made on the Test Method for Evaluating the Efficacy of Antimicrobial Surface Coatings and the Copper Surface Method. A response-to-comment document was generated to address stakeholder feedback received during the docket process. The two methods and the guidance document were revised based on the comments received and the results from internal data.

- **Porous Methods and Guidance.** In response to stakeholders, created two new interim efficacy test methods and a guidance document to support the registration of antimicrobial products seeking to make disinfectant claims on porous materials in clinical/non-residential settings. MLB is currently working with counsel to prepare the methods and guidance document for public comment.

- **SARS-CoV-2 Pandemic Response & Virology Testing.**

    - Evaluated human coronavirus 229E using the Quantitative Method and a series of sodium hypochlorite concentrations to compare the tolerances of human coronavirus 229E and SARS-CoV-2.

    - Evaluated commercially available antimicrobial treatments against human coronavirus 229E to compare the tolerances of human coronavirus 229E and SARS-CoV-2.

    - Evaluated the efficacy of two residual coating technologies against human coronavirus 229E. These data were used to compare the tolerances of human coronavirus 229E and SARS-CoV-2.

    - Conducted efficacy testing in the Biosafety Level 3 laboratory with SARS-CoV-2 using two virucidal efficacy test methods.

- Participated in the meetings of the EPA Biorisk Management Advisory Committee (BMAC), which is a forum for the technical review of Agency laboratory biosafety and biosecurity protocols, research on select agents, and projects related to COVID-19. In FY22, provided an update on the status of select agent registration and the assessment of SARS-CoV-2 efficacy testing in the BSL-3 laboratory. The *High Containment Laboratories Policy, Practices, and Procedures for Working with Biosafety Level 3 Microorganisms* was recently revised.

FDA/Office of Regulatory Affairs/Office of Regulatory Science (ORA/ORS)

- In FY22, FDA led a multi-laboratory validation study of qPCR for detection of *Salmonella* species in foods using the ABI7500, under the Laboratory Flexible Funding Model. Nine state laboratories and 7 FDA laboratories were included. The results generated from this study

demonstrated that the FDA 24-h qPCR method is sufficiently sensitive, specific, and reproducible to use as a rapid screening method for leafy greens, frozen fish and other food matrices by both public health and commercial laboratories alike.

- In FY22, FDA funded nine laboratories under the LFFM to participate in the verification and subtyping of *Listeria monocytogenes* using qPCR MLV. This method provides relevant typing and phylogenetic information faster, with greater accuracy and easier analysis when compared to the BAM.

- The FERN Methods Coordination Committee (MCC) approved two methods in FY22: Analysis of Am-241 and Gamma Emitting Radionuclides in Meat Samples, and Total Radiostrontium in Ground Beef Matrices.

- FDA ORA/ORS maintained an active research portfolio in method development and validation targeting various analytes in regulated food products. ORA/ORS labs pursue 20-30 different projects a year focused on foods related research and produce 10 – 20 peer-reviewed publications annually. The active research portfolio promotes operational readiness and preemptively adds methods to enhance the analytical toolbox based on horizon scanning of emerging threats.

FDA/Office of Regulatory Affairs/Office of Import Operations/Division of Food Defense Targeting (ORA/OIO/DFDT)

- DFDT added the Food Import Vulnerability Matrix, a novel risk assessment technique that uses product code components to assess potential for intentional adulteration, to DFDT's predictive targeting methods.

Michigan Department of Agriculture and Rural Development (MDARD):

- 2022 STE included various methods of using technology to improve emergency response. One example included the implementation of geographic information systems (GIS) technology during surge field surveys for balsam wooly adelgid and Asian long-horned beetle. Use of the technology allowed efficient data reporting, easy visualization of geographic information, and quick decision-making by emergency responders and department leadership. The 2022 STE after action report includes recommendations for expanded use of GIS at the field level, which will create additional efficiencies in FA emergency response.

National Agriculture Biosecurity Center (NABC):

- Performed a Permitting Analysis and Exercise for High Plains Region (roughly defined/constrained as Texas, Oklahoma, Kansas, and Colorado). The project was designed to facilitate Continuity of Business (COB) during a disease outbreak and was underwritten by the USDA's National Animal Disease Preparedness and Response Program (NADPRP) via a cooperative agreement.

National Institute of Standards and Technology (NIST) Framework for Improving Critical Infrastructure (Cyberframework)

The sector continued its efforts to publicize and implement the NIST Framework for Improving

Critical Infrastructure among SLTT and private sector partners, to gauge efforts made to implement the framework, both now and in the future, and to determine how implementation has impacted sector members.

USDA/Animal and Plant Health Inspection Service (APHIS):

- Committed to the NIST Framework by implementing assessment and authorization processes for all known systems to reduce risks.

- Added additional Federal and contract resources to the Cybersecurity Directorate, allowing for more proactive identification of vulnerabilities, as well as incident response and overall data protection capabilities. Penetration testing services for high value assets has been a great success, aimed at taking an in-depth look at our applications from the point of view of an advanced hacker trying to attack our systems. The resources added another layer of testing of NIST controls and helped to educate program staff responsible for these applications, forming a partnership to ensure continued testing and remediation guidance.

- Identified and assessed configurations of newly installed facility-related control systems at the National Bio and Agro-Defense Facility and applied appropriate NIST frameworks to make risk-based enhancements to system security controls using the NIST SP 800-53 rev 5 guidelines. The local team collaborated to update the locally managed enterprise and line of business systems from SP 800-53 rev 4 to SP 800-53 rev 5.

USDA/ Food Safety and Inspection Service (FSIS):

- Encouraged adoption of best practices in the Food and Agriculture sector from the NIST Framework on phishing and ransomware by posting them on their food defense web page and sharing the information with FSIS-regulated establishments through in-plant inspectors.

Michigan Department of Agriculture and Rural Development (MDARD):

- Identified risk within the department, including completion of a department-wide risk heat map and incorporation of risk into department strategic initiatives.

- Communicated and shared cybersecurity messages, requirements, and alerts with stakeholders through various messaging methods.

- Conducted routine cybersecurity awareness training with employees.

- Implemented an improved hardware and software inventory system to track where and with whom devices are located within our agency.