Food and Agriculture Sector Annual Report

Fiscal Year 2021

FDA Food and Drug Administration

USDA

U.S. Department of Homeland Security

Homeland Security

Table of Contents

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 and 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. Once this 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.

The 2015-2019 FA Sector Goals that will remain in place until a new SSP is finalized are:

Goal 1	Promote the combined Federal, 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 lists of 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 implementation of activities and programs by Federal partners to strengthen response and recovery capabilities, both within their agencies and in the SLTT and private sector. There was a particular focus on efforts related to Animal Disease Outbreak monitoring and response, and on how Federal departments can assist communities in meeting the challenge of climate adaptation.

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

- Conducted 4 virtual workshops with the Commonwealth of Pennsylvania that helped to improve their capability to respond to animal disease outbreaks.

- Tested the Logistics Center's 24/7 emergency hotline quarterly to validate that its external service provider followed procedures in a timely manner.

- National Animal Health Laboratory Network (NAHLN) - participated in the National Institute of Food and Agriculture project to develop a network that offers the tools to protect the U.S. food and agriculture system against threats from pests, diseases, contaminants, and disasters. Served as an active member of the Integrated Consortium of Laboratory Networks (ICLN), participating in monthly meetings and subgroups, such as the ICLN COVID-19 Lessons-Learned Work Group, drills, and exercises.

- Certified 22 of the 33 NAHLN laboratories capable of testing for SARS-CoV-2 to test human samples for COVID-19 by the end of FY 2021.

- Coordinated the collection of SARS-CoV-2 testing information for more than 9,350 animals from NAHLN, private, and research laboratories, and USDA's SARS-CoV-2 confirmation testing. This effort resulted in the testing of over 1,000 animals, with 235 confirmed positive across 13 species.

- Expanded SARS-CoV-2 surveillance around mink production facilities to include surveillance in Utah, Michigan, Oregon, Pennsylvania, and Wisconsin, resulting in the submission of 234 samples from 14 different species. These efforts helped protect the industry and animal and human health.

- Conducted SARS-CoV-2 surveillance in wildlife species associated with municipal wastewater systems in New York City in the late summer of 2021, as part of the

American Rescue Plan.

- Assisted the Federal response to states, territories, and tribes regarding 30 incidents with the potential to threaten food and agricultural infrastructure. These events ranged from major wildland fires, tropical storms, hurricanes, severe winter weather, and the COVID-19 pandemic and vaccination campaign to the presidential inauguration. Support during wildfire emergencies included the protection of livestock and domestic animals by moving them to safety and helping to contain, feed, and hydrate them behind wildfire lines until others could provide care.

- Conducted comprehensive, risk-based surveillance for foreign animal diseases in domestic feral swine, modifying the sampling areas annually based on disease risk and changes in feral swine populations to ensure maximum disease detection.

- Conducted enhanced feral swine removal and surveillance for ASF and classical swine fever in Puerto Rico and the U.S. Virgin Islands, in response to the detection of African swine fever (ASF) on the island of Hispaniola.

- Supported ASF deployments and mitigation efforts to stem the spread of the disease in neighboring countries and Puerto Rico and minimize its impact on U.S. agricultural goods and services. This support included developing agreements for USDA Mission Areas and Department-wide IT services, and the coordination, deployment, and set-up of IT equipment in international locations to support APHIS responders and their reach-back to USDA labs and facilities.

USDA/Food Safety and Inspection Service (FSIS):

- Responded to the aftermath of Hurricane Ida, which made landfall in Louisiana and caused significant damage from the Gulf of Mexico through the Northeast. The event affected FSIS employees, the operational status of regulated facilities, and the disposition of regulated products. Lessons learned were incorporated into future disaster event planning, including maximizing communication within agency staff and collaborating more efficiently with program areas in the projected impacted regions, both before, during, and after disaster events.

- Supported 14 proficiency testing events for 308 state laboratory participants demonstrating proficiency in food safety and food defense testing capabilities through the Food Emergency Response Network (FERN) program.

- Conducted food defense target surveillance activities at Super Bowl LVI and the Indianapolis 500 to enhance prevention of and response to a large-scale intentional food adulteration incident. FSIS coordinated with Federal, state, and local partner agencies, as well as the private sector, conducting outreach, collecting samples for

threat agent testing, and ensuring that these food defense activities were incorporated into the overall security plans.

- Tested 262 samples for threat agents at Super Bowl LVI and the Indianapolis 500, through FERN program, at 11 state food testing laboratories, resulting in 2,073 microbiology samples, 2,521 chemistry samples, and 464 radiochemistry samples for 5,058 total food defense samples analyzed. All samples from both events tested negative.

USDA/Rural Development (RD):

- USDA Rural Development Innovation Center - created a Disaster Resiliency and Recovery Resources Guide[1] to provide guidance to SLTT on recovering from disasters that threaten national food and agricultural infrastructure. The guide clarifies the funding and resources available from RD and outlines how its programs and services can help rural residents, businesses, and communities impacted by disasters and support their long-term planning and recovery efforts.

- Electric Programs - made 81 loans, totaling $4,575,899, to finance infrastructure improvements made by electricity providers in rural America, decreasing the frequency and severity of power outages that affect the food and agriculture sector, thus improving the reliability and resiliency of American's rural electric infrastructure.

USDA/National Agricultural Statistics Service (NASS):

- Monitored 5 agricultural disasters in near real-time and provided quantitative assessments using remotely sensed data and geospatial techniques to aid in disaster response.

Environmental Protection Agency (EPA):

- Developed a draft Climate Adaptation Plan that outlines the EPA's steps to address this critical issue. The Office of Chemical Safety and Pollution Prevention plan has several elements that are agriculture-related topics.

- Provided leadership to align strategies and responsibilities between Federal agencies for conventional pesticides, new animal drugs, and genetically engineered animals, including insects.

- Participated in activities related to public health issues that could impact the FA sector, including:

[1] Disaster Resiliency and Recovery Resources Guide (2021). https://www.rd.usda.gov/sites/default/files/rd_disastertoolkit-final508.pdf. Accessed on 8/1/22.

- Reviewed parameters for gene drive design and a community outreach-and-release, targeting human malaria in Africa. Participated in a Target Malaria workshop that included international partners and researchers working to develop genetic biocontrol mechanisms through mosquito modification.

- Continued to expedite new chemical approval submissions for Disinfectant List N that are effective against the SARS-CoV-2 virus, the cause of COVID-19. These included new products as well as amendments to existing products that have new efficacy data. EPA completed 318 expedited actions for List N products, which now includes over 570 EPA-registered disinfectant products effective for use against the SARS-CoV-2 virus.

- Created List P: Antimicrobial Products Registered with EPA for Claims Against *Candida Auris*. *C. Auris* infections tend to occur in health care settings and can be resistant to antifungal drugs. Prior to the creation of this list, there were no antimicrobial pesticides registered specifically for use against *C. Auris*.

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

- Continued to host bi-annual membership meetings, which occurred on April 20-21, 2021, and November 30-December 1, 2021. The meetings covered a wide variety of topics, including cybersecurity, COVID-19 near- and long-term impacts on agricultural commodities, food supply chain, agroterrorism, state partnership, the 2020 Seafood Trade Relief Assistance Program, combatting human trafficking updates, and agriculture threats.

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

- Held the 10th annual food protection alliance meeting, focused on food protection lessons learned from the COVID-19 Pandemic and discussing the roles and responsibilities that food safety professionals have assumed to solve complex problems during the pandemic.

- New Mexico Agriculture Livestock Incident Response Team (ALIRT) – bolstered communications and surveillance regarding animal disease detection and response with a formal training session.

- Served in the Emergency Support Function 11 in the State Emergency Operations Center. During the continued COVID-19 response, the desk was highly active with coordination of food location and distribution to those in isolated counties and tribal locations.

- Continued an ongoing study of food supply chain disruptions.

- In conjunction with the New Mexico Department of Agriculture, continued assistance with an all-hazards incident management team initiative in New Mexico. If successful, this process will greatly enhance our preparedness posture in every area of the critical mission areas.

- Continued efforts to lead the produce safety rule (Food Safety Modernization Act-FSMA) for New Mexico remotely. This has resulted in great coordination between agriculture, industry, and New Mexico State University (NMSU), with numerous training sessions held for regulators and producers.

- Piloted a Recall Essentials training at the 6th Annual Western Regional Center to Enhance Food Safety.

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

- Released several new publications and a video to further outreach efforts, including the following examples:
  - A video that shows what FDA does to ensure the food supply is safe and how we identify and remove FDA-regulated food products that are causing illnesses from the market. It explains each step of the outbreak investigation and how the Centers for Disease Control and Prevention (CDC), FDA, and state public health partners work together to respond to foodborne illness using science and modern technologies, such as whole genome sequencing.
  - A publication that highlights how FDA conducts traceback investigations and describes how 3 outbreaks of Shiga toxin-producing *E. coli* infections linked to romaine lettuce in 2018 and 2019 were investigated to demonstrate challenges, limitations, and opportunities for improvement.
  - A publication that provides insight into the structure used to detect, respond, and follow up on foodborne illness outbreaks from the perspective of the FDA.
  - 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/Center for Veterinary Medicine:

- Continued to co-chair the Animal Diagnostics and Testing subgroup of the One Health Interagency COVID-19 Coordination Group with USDA/APHIS. This effort helped to provide timely information to decision makers regarding SARS-CoV-2 in animals, and helped coordinate Federal, state, and other partners' ongoing activities related to animal diagnostics and testing. These partners also played a vital role in coordinating communication between Federal, university, and private laboratories to optimize information sharing and collaboration, and anticipate potential challenges.

- Division of Residue Chemistry (DRC) within the Office of New Animal Drug Evaluation (ONADE) - evaluated commercial rapid test kits for use in the National Conference on Interstate Milk Shipments. Under the Grade "A" Pasteurized Milk Ordinance standards, all raw milk in commerce, including milk directly processed on-the-farm, must be tested for beta-lactam antibiotics, one of the most used drugs in dairy farming. They have expanded the scope of the regularly-tested drug classes to include the tetracycline drug class as part of a pilot program.

- Veterinary Laboratory Investigation and Response Network (Vet-LIRN) - collected more than 4,000 bacterial isolates of food producing and companion animal pathogens for antimicrobial susceptibility testing. Conducted whole genome sequencing on more than 1,400 of these isolates, as part of the Vet-LIRN Antimicrobial Resistance (AMR) Monitoring Program. This program provides essential information on trends of bacterial resistance in animals, generating insights into ways to prevent or respond to the threat of antimicrobial resistance. Sequencing results are publicly available at the National Center for Biotechnology Information (NCBI) website.

- USDA/FSIS and FDA/CVM - processed over 6,735 intestinal samples from food-producing animals (FSIS), and 8,675 corresponding retail meat samples (FDA), testing for bacteria potentially carrying resistance to medically important antimicrobial agents, as collaborators in the National Antimicrobial Resistance Monitoring System (NARMS) program. Genomic sequences were uploaded to NCBI website for global access. This effort provides important data to stakeholders on foodborne bacteria, to limit development of resistance and respond to outbreaks.

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

- Laboratory Flexible Funding Model Cooperative Agreement – provided state partner laboratories with $31.7 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 September 2020 through June 2021.

- Reviewed 66 data packages from state laboratories for potential FDA action with a concurrence rate of 91 percent.

- Continued development of the FDA BS2+ BSL3 Program by holding a LB313B Overview of BSL-2+ and BLS-3 Safety Principles, purchasing ELISA plate readers and washers, 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.

- Private Laboratory Program – reviewed 9,706 packages with 98.7 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.

- 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.

- 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.

FDA/ORA/Office of Partnerships

- Maintained 24 Rapid Response Teams (RRT) throughout the U.S., with a yearly average of approximately 500 investigations of foodborne outbreaks and other incidents. This year the RRTs also responded to approximately 20 natural disasters and 5 incidents of intentional food contamination. The RRTs minimize the time that elapses between agency notification and implementation of effective control measures.

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

This year saw sector members in academia and extension services carry out several initiatives to improve sharing and awareness of information availability to SLTT and private sector partners. APHIS kept a steady pace of activities that improved situational awareness within the sector on critical disease and pest issues. Finally, related to the ongoing drought impacting the southwest, the Southwest Border Food Protection and Emergency Preparedness Center took an active role in sharing vital forecasting data with local communities and increasing awareness of resources that could help support those areas.

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

- Hosted stakeholder feedback sessions that included discussions of diseases and pests of concern, emerging issues, industry challenges, and more. Representatives in attendance represented commodity sectors including apple, berries, citrus, cotton, forest products, grain, grape, nursery, potato, seed, animal and animal products , cattle, cervid, poultry, and swine.

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

- Continued outreach efforts in support of 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 in early FY 2021.

- Prioritized electronic messaging capability within NAHLN laboratories. As of September 30, 2021, 95 percent of NAHLN laboratories were approved to electronically message NAHLN test results, and 56 laboratories were capable of messaging results for at least one NAHLN scope disease.

- Partnered with the Agricultural Research Service (ARS) to establish the Research Alliance for Veterinary Science and Biodefense BSL-3 Network, a collaboration between BSL-3 agriculture facilities across the United States to assist each other with the management, training, and operation of BSL-3 facilities for livestock pathogens.

- Participated in a Defense Against Agroterrorism Working Group tabletop exercise that focused on the importation of a plant pathogen. The exercise included Intelligence and other Federal partners who were able to share information and discuss challenges.

Food and Agriculture Defense Initiative – Extension Disaster Education Network (FADI-EDEN):

- Enhanced communication and collaboration with more than 7 partner networks and organizations, including the Global Forum for Rural Advisory Services (GFRAS), Smithsonian Cultural Rescue Initiative's Heritage Emergency National Task Force (HENTF), Federal Emergency Management Agency (FEMA) Higher Education Program within the National Training & Education System, and FEMA's Individual and Community Preparedness Division.

- Expanded conversations with fellow tactical science and FADI networks, including the National Animal Health Laboratory Network (NAHLN) and National Plant Diagnostic Network (NPDN).

Food Protection and Defense Institute (FPDI):

- Conducted the following 5 briefings, which resulted in intelligence communication and information sharing among the FA Sector partners:

  - Presented Supply Chain disruption issues and cyber risk brief to the Cross Sector Blockchain council.

  - Briefed the Senate Homeland Security and Governmental Affairs Committee staff on food and ag sector supply chain issues, focusing on disruptions and cyber-attacks.

  - Briefed Senator Smith's staff on food and agriculture supply chain issues.

  - Hosted a Zoom presentation to House Staff Members on the impact of COVID-19 shutdowns on food supply chains.

  - Testified before the House Ag Committee on the State of the Beef Supply Chain: Shocks, Recovery, and Rebuilding.[2]

- Conducted 14 presentations and webinars to facilitate intelligence communications and information sharing among FA Sector partners.

USDA/Food Safety and Inspection Service (FSIS):

- Continued participation in 5 interagency committees to raise awareness of food defense concerns. These efforts allow FSIS to work with the private sector and Federal and state partners to share information and provide input on agroterrorism-related activities and projects.

USDA/ Office of the Inspector General (OIG):

- Designated one Special Agent-in-Charge as the National Joint Terrorism Task Force (NJTTF) liaison for USDA.

USDA/Rural Development (RD):

- RD Electric Programs - worked with the National Rural Electric Cooperative Association (NRECA) and several Generation and Transmission (G&T) rural electric cooperatives to implement best practices for the identification and mitigation of grid security and cybersecurity risks to power systems in rural America.

- RD's Innovation Center - created 2 mapping tools on the ESRI geospatial platform, ARCGIS Online (AGOL), described below, that provide critical information about the

[2] State of The Beef Supply Chain: Shocks, Recovery, and Rebuilding (2021). https://agriculture.house.gov/uploadedfiles/117-14_-_47124.pdf. Accessed 8/1/22.

availability of USDA-financed multifamily housing rental units, areas impacted by disasters, and areas of critical concern where Rural Development has investments.

- The *Multifamily Housing Priority Mapping Tool* identifies the location of properties within communities considered a priority for Rural Development Programs.[3] This tool uses the Distressed Communities Index[4] and the CDC Social Vulnerability Index[5].

- The *Rural Development Investments in Areas of Emergency Concern Mapping Tool* identifies the location of Rural Development investments in areas of natural disaster concern. This tool focuses on the program delivery of Rural Development's field-based programs: Community Facilities, Rural Business-Cooperative Services, Multi-Family Housing – Direct, and Water and Environmental Programs. The map can direct Rural Development assistance during emergency events, as well as identify any threat to agency investments. The natural disaster layers include dynamic and frequently updated information on earthquakes, weather, and fire locations.[6]

FDA/CFSAN/ CORE Network

- Released the *Coordinated Outbreak Response & Evaluation (CORE) Investigation Table*, which provides information on FDA foodborne illness outbreak investigations and responses. It can give 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.

FDA/ORA/Division of Food Defense Targeting

- Developed a Trifold Brochure guidance for outreach of Prior Notice information.

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

- Conducted ongoing meetings regarding food sources, FA information, and intelligence dissemination to enhance the state distribution network.

- Organized and participated in drought meetings across the state to provide forecasts and updates on the drought and tools to handle it in New Mexico.

[3] USDA MFH Priority Mapping. https://ruraldevelopment.maps.arcgis.com/apps/webappviewer/index.html?id=40dd1e2b9d0d4b689a4164240e804826. Accessed on 8/1/22.
[4] Economic Innovation Group Distressed Communities. https://eig.org/dci. Accessed on 8/1/22.
[5] CDC/ATSDR Social Vulnerability Index. https://www.atsdr.cdc.gov/placeandhealth/svi/index.html. Accessed 8/1/22.
[6] USDA Rural Development Investments in Areas of Concern. https://ruraldevelopment.maps.arcgis.com/apps/webappviewer/index.html?id=99d2796f63b74b80bded7211bb842ccc. Accessed 8/1/22.

- Participated in numerous multi-state partnership FA coordination calls and other related activities with our partners including planning exercises.

- SWBFPEPC Co-Director - served as the point person in the state emergency operations center in Santa Fe. He coordinated calls with SWBFPEPC response partners and was responsible for sourcing food for those in need. He oversaw an operation that delivered hundreds of thousand pounds of food to thousands of people in quarantine.

- Coordinated animal health initiatives along with the New Mexico Department of Health (NMDOH) human health efforts.

The Food Defense Consortium:

- Coordinated monthly conference calls among the 50+ members of the private sector food and beverage manufacturers, trade associations representing the food industry, occasional representatives from academia, and non-regulatory government entities to discuss:

    - Understanding how "quick-checks" are being performed across the country, relative to assessing compliance with the FSMA IA Rule-based food defense plans.

    - Sharing lessons learned and best practices regarding mitigation strategies employed to reduce vulnerability or feasibility at actionable process steps (APS).

    - Pursuing alignment among the participating firms about the use of the representative contaminant approach (RCA) and scientific rigor to aid in reducing the number of APS within the site's food defense plans.

- Collaborated with the ASIS Food Defense and Agriculture Security community to sponsor an intern from Coastal Carolina University's Intelligence and National Security studies program, who updated the foundational work written by G.R. Dalziel in 2009: *Chronological Listing of Food Defense Events: 1950-2008.*[7] The research ensures that intentional acts of food contamination are not only tracked and included within the updates to Appendix A of the Dalziel document, but that synthesis and rationale behind these incidents is more fully understood.

- Started a smaller subset of firms meeting monthly to delve deeper into topics that are briefly covered during the regular FD Consortium monthly meeting. Some of the items covered during the Research series include:

[7] Food Defence Incidents 1950-2008: A Chronology and Analysis of Incidents Involving the Malicious Contamination of The Food Supply Chain (2009). http://www.cold.org.gr/library/downloads/Docs/Food%20Defence%20Incidents.pdf. Accessed 8/1/22.

- An overview of the recently completed Threats to Food and Agriculture Resources, as supported through the DHS Analytic Exchange Program.[8]

- Experts from the DHS CSAC who shared the methodology and research behind an article, *Protecting Food From The Farm To Our Plates*.[9]

- Entertained multiple presenters and exchanged information with attendees relative to threats posed by cyber, including various articles and news stories. Discussed *Adulterating More than Food*,[10] a research paper by the incredibly insightful personnel at the University of Minnesota's Food Protection and Defense Institute (the former Center of Excellence for the Food and Agriculture Sector [and no longer funded by the USG] National Center for Food Protection and Defense - NCFPD).

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 from pests and diseases that impact animals and plants, and strengthening cybersecurity initiatives that mitigate risks to vital information technology systems critical to protecting the FA sector.

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

- Collaborated with the Epidemic Intelligence Service, Centers for Disease Control and Prevention (CDC), U.S. Virgin Islands Department of Public Health, and local entities on surveillance projects in the U.S. Virgin Islands and Puerto Rico, designed to evaluate wildlife reservoirs to understand the sources of human and animal exposure. This collaboration resulted in adding 2 diagnostic tests to the APHIS Veterinary Services diagnostic catalog and provided the local public health departments with information needed for risk communication and biosecurity planning.

- Collaborated with regional Mexican officials on a project to improve in epidemiological tracing by characterizing the genotypes of *M. bovis* in infected Baja California dairies, which have contributed to zoonotic tuberculosis (TB) transmission locally and possibly into southern California. APHIS processed and cultured 412 samples from dairy cattle and 314 cheese samples, obtained 346 whole genome sequences, and developed an improved method of culturing *M. bovis* from cheese samples.

[8] Threats to Food and Agricultural Resources (2021). https://www.dhs.gov/sites/default/files/publications/threats_to_food_and_agriculture_resources.pd. Accessed 8/1/22.
[9] Science and Technology Feature Article: Protecting Food from The Farm to Our Plates (2021). https://www.dhs.gov/science-and-technology/news/2021/05/13/feature-article-protecting-food-farm-our-plates. Accessed 8/1/22.
[10] FPDI Adulterating More Than Food the Cyber Risk to Food Processing and Manufacturing (2019). https://conservancy.umn.edu/bitstream/handle/11299/217703/FPDI-Food-ICS-Cybersecurity-White-Paper.pdf. Accessed 8/1/22.

- Participated in an international collaboration with counterparts from the United Kingdom and Mexico to test improved diagnostics and vaccines, including the cattle bacillus Calmette-Guérin (or BCG) vaccine. In FY 2021, Mexico approved the participation of 4 dairies in the vaccine project.

- Sought collaboration with 4 Central American countries (Costa Rica, Guatemala, Honduras, and El Salvador) to characterize *M. bovis* from regional cattle, enhance laboratory capacity, and train officials on sample collection and skin testing. These talks led to 3 signed agreements and work on a fourth agreement in FY 2021.

- Launched a cybersecurity improvement plan, including a gap analysis of APHIS and Agricultural Marketing Service (AMS) operations, applications, information storage, and personnel access procedures. The plan identified 20 unique areas to strengthen over the next few fiscal years. These include disaster recovery improvements, incident response and process overhauling, zero Trust architecture implementation, access control process improvements, and high value asset classifications. The plan will improve daily operations that support the Food and Agriculture Sector.

USDA/Food Safety and Inspection Service (FSIS):

- Conducted the biannual Vulnerability Assessment (VA) Framework survey. The VA Framework uses a risk-based research methodology that enables FSIS to evaluate all previous VA topics, including cybersecurity, and select the most appropriate VAs to update (per HSPD-9), while optimizing the use of limited resources. The survey requests input from subject-matter experts (SMEs) in industry, government, and academia to assess changes in policy, risk, threat, and operations that may require a new VA or an update to an existing VA.

- Continued its cybersecurity partnerships with USDA and DHS' Cybersecurity and Infrastructure Security Agency (CISA) to enhance and enforce Executive Orders as they pertain to strengthening critical infrastructure systems. To continue to meet the security requirements, which ensure confidentiality, availability, and integrity of FSIS systems, the following cybersecurity disciplines are measured by USDA: Incident Response Handling, Information Security Awareness, Risk Management, Vulnerability Management, Security Policy, Assessment, and Authorization. The federal guidance and directives associated are National Institute and Technology (NIST), Federal Information Security Modernization Act (FISMA), and Office of Management and Budget (OMB). USDA provides real-time dashboards that track the cybersecurity posture for FSIS.

- Conducted a COOP Ransomware Workshop event that involved the preparedness and response efforts of the Emergency Response Group and the Devolution Emergency Response Group. The exercise identified the need for backup processes or workaround measures to mitigate the loss of support or service disruption from external dependencies, including contract services support, vendors, and other stakeholders that provide the agency with vital or unique services.

USDA/OIG:

- Participated in the Foreign Influence Investigations Working Group, USSS High Tech Crimes Task Force, and the Joint Terrorism Task Force (JTTF).

USDA/Rural Development:

- Electric Programs - discussed with the NRECA and several G&T rural electric cooperatives the various grid security and supply chain risks involved in the generation, transmission, and distribution of electricity in rural America. These discussions have assisted USDA Rural Development in developing a better understanding of both the natural and manmade risks that its borrowers face in providing electric service to the F&A sector.

- Electric Programs - conducted operations and maintenance (O&M) reviews of approximately 1/3 of its borrowers to assess the condition of their electric systems. These reviews help ensure that America's rural electric cooperatives devote the necessary resources to their O&M programs to continue providing affordable and reliable electric service to the F&A sector.

FDA/ORA/Division of Food Defense Targeting (DFDT):

- Developed the concept of text mining as useful intelligence gathering tool for DFDT and provided proof of concept demonstrations for further development and implementation.

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

- Partnered with the state's critical infrastructure representative in the All Source Information and Intelligence Center to educate on the importance of the FA sector in New Mexico.

- Worked with the Cybersecurity and Infrastructure Security Agency (CISA) to integrate infrastructure from the state's dairy industry into the National Critical Infrastructure Prioritization Program.

- Met with regional representatives on a quarterly basis to assess risks and preparedness. Our state Department of Homeland Security and Emergency Management coordinates these meetings.

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

Federal sector members leveraged their available resources to maintain an active participation in major ongoing response and recovery missions throughout the year, related to human and animal disease outbreaks and the impacts of increasingly severe weather events. At the same time, they worked to strengthen their ability to respond to potential threats that may require

additional response efforts. Nonfederal partners 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):

- Provided subject matter expertise, logistical support, and supplies to assist the Dominican Republic's response to the detection of ASF.

- Shipped supplies to Puerto Rico to support ongoing ASF enhanced surveillance activities meant to prevent ASF introduction to the U.S.

- Supplemented AMS' inventory of personal protective equipment to help grading operations continue at meat processing plants during the COVID-19 pandemic.

- Built and shipped 375 test kits to be used on farms to collect samples for testing in support of a National Animal Health Monitoring System swine study.

- Purchased $14.9 million in vaccine antigen concentrate for foot-and-mouth disease (FMD) for the National Animal Vaccine and Veterinary Countermeasures Bank. The concentrate can be converted to vaccine for use during an FMD outbreak. APHIS awarded contracts to private companies to help supply the vaccine to the Bank.

- Hosted or participated in approximately 80 exercises, trainings, or drills to prepare Federal, state, and industry partners to respond to various incidents that could harm the agriculture and food infrastructure. This effort resulted in an enhanced readiness posture for all participants.

- Developed tabletop exercises in conjunction with state cooperators and industry for FMD vaccination importation and plan development, Secure Food Supply, and ASF in packing plants.

- Prepared 11 states and one territory for a FY 2022 FMD functional exercise.

- Increased the number of first responders to support rapid and effective response to animal health emergency events.

- Hosted an Exercises and Drills Working Group webinar series, which included Decontamination in the Lab training in February, the Foreign Animal Disease Southern Agriculture Functional Exercise in May, and the Food and Agriculture Defense Initiative Lab Exercise in June.

- Conducted several response and recovery exercises to ensure network connectivity and identify high value assets and any single points of failure. APHIS coordinated with the U.S. Department of Homeland Security and the Cybersecurity and Infrastructure Security Agency to perform 3 penetration assessments on APHIS and AMS systems. The results showed improvements in cybersecurity protection and recovery accountability.

USDA/Food Safety and Inspection Service (FSIS):

- Identified, tracked, and successfully responded to 243 incidents that met the threshold for the creation of an incident report in the FSIS Incident Management System. These incidents included the COVID-19 pandemic, fires, severe flooding, hurricanes, chemical spills, active shooter, and intentional contamination, among others.

- Coordinated reporting on agency employee and facility status across all districts for the COVID-19 pandemic, providing a daily Situation Report and Impact Summary for FSIS and USDA leadership.

- Supported the efforts to vaccinate the American public against COVID-19 by providing 35 volunteers at 7 vaccination sites across 4 states.

USDA/RURAL DEVELOPMENT (RD):

- Communicated directly with borrowers to determine the extent of damage caused by natural disasters and what repairs were necessary to reestablish electric service. General field representatives facilitated the borrowers' submission of financing requests to pay for the required repairs. This minimized the amount of time that electric service was disrupted to rural America and actors within the FA sector.

Food and Agriculture Defense Initiative – Extension Disaster Education Network (FADI-EDEN):

- Expanded disaster planning to support response and recovery through a partnership with the North Central Regional Center for Rural Development (NCRCRD) by providing a workbook for local community development districts to use in applying strategies of their comprehensive economic development plans.

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

- Continued ongoing efforts to maintain, coordinate, and train a team of agency personnel to respond to the state emergency operations center so the FA sector is better positioned for response, mitigation, and recovery.

- Continued outreach at various FA meetings across the state, such as Stockman's and Farm Bureau, to maintain relationships for future support.

- Continued efforts to prepare responders for a FA Sector disaster by offering courses such as Large Animal Emergency Response training.

- Embarked on NADPRP High Mortality Carcass Disposal Project to develop a Large Animal Mass Mortality Carcass Management Plan, used in the event of a mass livestock casualty. Such an event might occur from an infectious disease, like Foot and Mouth Disease, or natural disaster, like the Goliath snowstorm.

- Collaborated with NM Farm and Livestock Bureau and CES's Health and Wellness Initiative to develop the Farm and Ranch Stress Assistance Network to improve behavioral health, reduce and mitigate stress, and provide positive outcomes for New Mexico's agricultural communities.

FDA/CFSAN/Coordinated Outbreak Response and Evaluation:

- Provided recommendations to the farm, facility, or industry involved after assessing information and identifying factors that potentially led to the 3 following outbreak or contamination events, including measures to prevent similar contamination from occurring in the future:

  - *Factors Potentially Contributing to the Contamination of Peaches Implicated in the Summer 2020 Outbreak of Salmonella Enteritidis,* June 2021

  - *Factors Potentially Contributing to the Contamination of Red Onions Implicated in the Summer 2020 Outbreak of Salmonella Newport,* May 2021

  - *Factors Potentially Contributing to the Contamination of Leafy Greens Implicated in the Fall 2020 Outbreak of E. coli O157:H7,* April 2021

FDA/Center for Veterinary Medicine:

- Provided online resources and FDA Office of Regulatory Affairs contacts for farmers to assess potential harvesting of flooded crops for animal food use following hurricanes. This information included relevant FDA Compliance Policy Guides and types of testing for fungal, microbial, and other hazards.

- Responded to and supported recovery from approximately 22 potential animal drug shortages in food producing animals.

FDA/ORA/Division of Food Defense Targeting:

- Worked with Presidential Fellows to assess methods of using artificial intelligence to determine the potential risk of a shipment.

Food Protection and Defense Institute (FPDI):

- Conducted workforce development training sessions that improved the awareness and ability of personnel to prevent, protect against, mitigate, respond to, and recover from food defense and intentional adulteration incidents.

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 to ensure the sector is better prepared to respond to events and will be more resilient should they occur.

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

- Partnered with the Puerto Rico Department of Agriculture (PRDA) to provide laboratory personnel and supplies to establish a satellite laboratory at PRDA's Dorado Veterinary Diagnostic laboratory. This location will continue ASF surveillance testing in response to the detection of ASF in the Dominican Republic.

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

- Supported USDA's implementation of the Farm Bill by awarding $9.3 million through the National Animal Disease Preparedness and Response Program (NADPRP). Additionally, APHIS provided $5.1 million to NAHLN laboratories to enhance early detection and improve diagnostic testing for high-consequence animal diseases, such as ASF, classical swine fever, FMD, and avian influenza.

- Expanded ASF testing capacity to 48 approved laboratories. The Agency expanded the list of approved sample types to include whole blood, tonsil, spleen, and lymph nodes. Additionally, APHIS strengthened ASF high throughput diagnostic capabilities by approving spleen swabs, blood swabs, and blood cards as additional sample types. These samples can now be pooled so that samples from up to 5 animals may be included in one test for ASF. This has increased the NAHLN laboratories daily testing throughput from 200,000 to 430,500 animals per day.

- Provided $450,000 for projects to improve analytic methods to bolster animal disease response efforts. These projects included a risk analysis for moving vaccinated poultry during a highly pathogenic avian influenza outbreak, and developing a decision support tool to help regulators evaluate and select carcass disposal options during an animal disease outbreak. These tools will provide information that state and Federal regulators

may use to control a fast-moving animal disease outbreak.

- Launched a security training program for IT customers that focused on Federal reporting requirements for cybersecurity, and assessment and authorization processes for the lifecycle development and maintenance of program applications and systems. The goal was to increase employee awareness, bolster security, and prevent unauthorized access to information. These efforts helped in Departmental cybersecurity response efforts by providing insight and protection measures to address access and intrusion concerns.

USDA/Food Safety and Inspection Service (FSIS):

- Conducted 2 validation studies through the Food Emergency Response Network (FERN), resulting in the approval of one additional microbiology and one additional chemistry food defense method for use with FSIS regulated commodities.

USDA/ National Agricultural Statistics Service (NASS):

- Announced enhancements to the CropScape web application, making it easier for users to conduct area and statistical analysis of planted U.S. commodities. These enhancements were developed in conjunction with the Agricultural Research Service (ARS).

USDA/ Rural Development (RD):

- Electric Programs - began mapping borrowers' service areas in a GIS/GPS format. This format will allow RD to extract data concerning the borrowers' electric systems, and analyze and mitigate the potential impact climate change may have on the agency's investments. RD can then work with its borrowers to identify and implement necessary improvements to make the electric grid in rural America more resilient.

Environmental Protection Agency (EPA):

- Supported enforcement actions related to the COVID-19 pandemic including:

  - Analyzed 9 different antimicrobial disinfectant products for the content of the active ingredients (ai) and presence of other possible components that may contribute to the antimicrobial efficacy of the products.

  - Analyzed samples in 3 enforcement cases to verify label claims and identify the species of quaternary ammonium compounds of 33 disinfectant samples.

  - Evaluated suspected fraudulent or false antimicrobial efficacy claims being made by the manufacturer of an ozone-water generating device.

- Improved or developed new methods of antimicrobial efficacy testing to address microbial pathogens including:

    - Two *C. difficile*-related standards (E2839 and E3218), which were revised and approved.

    - A method for identifying Legionella in cooling tower water, including initiation of a multi-laboratory study to evaluate the proposed test procedure.

    - A method for testing residual efficacy of surface coating materials claiming long-term disinfection. The method, along with proposed guidance, was posted to a docket for public comment. Blind samples coated with commercial residual products are being evaluated for efficacy against human coronavirus 229E.

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

    - Completed a NaOCl kill curve on Human coronavirus 229E, evaluated recovery of 229E on porous materials, and evaluated additional commercially available antimicrobial treatments against 229E.

Food and Agriculture Defense Initiative – Extension Disaster Education Network (FADI-EDEN):

- Implemented an agrosecurity competitive grant program that funded 7 projects. Topics addressed included wildfire preparedness through virtual simulation, strengthening multi-state animal response capabilities, development of a disaster planning integration toolkit, expansion of a resilience curriculum for early childhood caregivers, and development of a disaster training program for Extension professionals. Individual project progress and technical reports provide key data on changes in knowledge, attitudes, and behaviors of target audiences.

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

- Maintained the tip reporting line for use regarding FA suspicious activities. This system notifies appropriate personnel with the tip and logs them for tracking.

FDA/Center for Veterinary Medicine:

- Supported capacity and emergency response related to COVID-19 by providing an opportunity for laboratories to evaluate their RT-PCR method for detecting SARS-CoV-2 in animals. A total of 3 Inter-Laboratory Comparison Exercises for SARS-CoV-2 were conducted with more than 40 participating laboratories.

- Developed a high-resolution mass spectrometry method for screening and quantifying 30 veterinary drug residues in raw milk, supporting the FDA's multi-drug surveillance testing program for raw milk.

FDA/ORA/Office of Regulatory Science:

- Participated in a multi-laboratory validation study of qPCR for detection of *Salmonella* in foods using the ABI7500, under the Laboratory Flexible Funding Model. Nine 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 and other food matrices by both public health and commercial laboratories alike.

- FERN Methods Coordination Committee (MCC) - approved a Strontium method in September 2021 and posted a glyphosate method as a resource in January 2021. Updates to 2 other methods were in process for final approval: *Bacillus anthracis* and *Yersinia pestis*.

FDA/ORA/Division of Food Defense Targeting:

- Initiated a statistical study using Statistical Package for the Social Sciences (SPSS) to develop a more thorough understanding of real-time Predictive Dynamic Targeting (PDT) performance metrics, such that targeting of imported food shipments could be adjusted in real-time to accommodate for emerging conditions or sentinel surveillance.

National Institute of Standards and Technology (NIST) Framework for Improving Critical Infrastructure (https://www.nist.gov/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):

- Completed the annual documentation and assessment of NAHLN Laboratory Messaging Services (LMS) controls. LMS is on a 3-year Authority to Operate cycle where one-third of the National Institute of Science and Technology (NIST) guideline security controls are assessed for compliance yearly. The assessment and authorization work are tracked in the Cyber Security Asset Management application, USDA's Federal Infrastructure Security Management Act tool of record, currently using NIST 800-53 Rev 4.

- Created an Engineering and Technology Services team and instituted a program application release management process to ensure cybersecurity concerns are addressed in every new program application.

- Increased collaboration with the Department's Information Security Center to identify vulnerabilities and risks more effectively and efficiently across the Department's IT infrastructure.

USDA/ Food Safety and Inspection Service:

- Posted a link on the website to NIST's cyber tools and resources to raise industry awareness and encourage use of these resources, particularly by small and very small establishments.

- Conducted security assessments using NIST guidance: FSIS performs 14 security assessments annually using guidance from NIST 800-53 and NIST 800-53A to identify risks to FSIS operations, assets, staff, other Federal agencies, and the nation resulting from the operation of an information system. To date, FSIS has completed 5 assessments and 2 more are in progress.

USDA/ National Agriculture Statistical Service (NASS):

- Adopted a cloud computing strategy and industry security best practices. Transitioning of IT operations continues, including IT infrastructure, applications, and data, from an on-premises environment to a government cloud (FISMA-moderate) environment, as required to protect PII and CUI sensitive data.

USDA/ Rural Development:

- Electric Programs - encouraged borrowers to adopt the cybersecurity and supply chain risk identification and mitigation measures contained in the NIST framework. This was supported by working with the NRECA to encourage borrowers to adopt the NRECA's Essence 2.0 cybersecurity risk management program, incorporating the best practices contained in the NIST Framework.

- Created the Grid Security Division (GSD) to implement its financing authority for grid security and cybersecurity measures that Congress added to the Rural Electrification Act of 1936 (REA) in the 2018 Farm Bill. GSD is responsible for coordinating and implementing policies regarding RD financing of grid security and cybersecurity projects, which are meant to mitigate agroterrorism threats to the electric grid in rural America.

New Mexico Department of Agriculture (NMDA):

- Improved Site-To-Site Virtual Private Network (VPN) access through the purchase of Meraki devices that encrypt traffic between remote offices such as Albuquerque District Office (ADO), Veterinary Diagnostics Services Center (VDS), Peanut Grading Station in Portales (PGS), Roswell District Office (RDO), and throughout the state. The Meraki devices also allow NMDA Information Technology and Communication (NMDA-ITC) staff to closely monitor, analyze, and mitigate undesired network traffic.

- Purchased Meraki Z3 for personnel who do not travel and are telecommuting from their homes during the COVID-19 pandemic. This device connects to the home user's internet

and encrypts traffic back to NMDA via Network Cable and Wireless. This becomes an encrypted network within the home of the user. Only NMDA devices are permitted to connect.

- Increased licensing for NetMotion. This is a persistent virtual private network (VPN) software that is invisible to the user and encrypts traffic after login credentials are provided and accepted as valid. All remote staff use NetMotion from any location to auto-encrypt traffic back to NMDA Main systems. NMDA also uses CISCO AnyConnect proprietary software to authenticate and encrypt traffic as backup, should NetMotion fail.

- Monitored and analyzed the network and internet traffic generated by users located all over the state via the NetMotion software. As violations are detected, supervisors and the Deputy Director are notified. NetMotion also allows for a type of "business logic" to be implemented, where sites not needed for regular business operations can be blocked. This keeps the network and internet free for NMDA business purposes only.

- Added the NMSU firewall, which keeps NMDA secure and allows for quick mitigation when undesired traffic is detected.

- NMDA Computer Operation Manager – as a member of various committees, mitigated any NMSU network policies that might impact NMDA operations or violate policies.

- Working closely with HR, verified that personnel are given the correct access and privileges to do their jobs while maintaining security. NMDA-ITC also coordinates additional personnel requests with direct Supervisors, Assistant Division Directors, and Directors, as needed, to get approval prior to providing any type of resources. This standardizes the equipment and software used by those areas.