DHS S&T’s Agricultural Defense Program Overview

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Chemical and Biological Defense Division
Science and Technology Directorate
The Agricultural Defense mission is to enhance current capabilities and develop state-of-the-art countermeasures for high priority foreign animal diseases. This includes near- and long-term research and development for vaccines and diagnostics, in coordination with internal and external stakeholders.

HSPD-9 Paragraph 23: The Secretaries of [DHS, USDA, HHS, EPA…] in consultation with the Director of the Office of Science and Technology Policy, will accelerate and expand development of current and new countermeasures against the intentional introduction or natural occurrence of catastrophic animal, plant, and zoonotic diseases. The Secretary of Homeland Security will coordinate these activities.
What is the Foreign Animal Disease (FAD) threat?

- Endemic, spreading, and emerging globally on six continents
- Easily introduced intentionally (agroterrorism) or accidentally (imports, foreign travelers)
- **Losses of up to $60 billion** (USDA, 2005) during an outbreak resulting from control measures and protective embargoes
- FMD considered the number one agricultural threat to the U.S.
- More than 93 million susceptible livestock in U.S.
- Will require every tool available to mitigate impact
- New diseases and threats continue to emerge:
  - African Swine Fever virus spreading into Western Europe
  - Schmallenberg virus
  - Porcine Epidemic Diarrhea
- Challenge to maintain traditional prevention while building new early detection and broad spectrum countermeasures

Foot and Mouth Disease - 2010
S&T’s Agricultural Defense Programs span the entire outbreak spectrum

Tools to support planning and response, drive requirements for countermeasures development and inform post-outbreak response activities by creating scalable (local to national) simulation and modeling tools to analyze potential responses and control options to minimize FAD spread.

Agricultural Screening Tools (AST) to verify disease free status so uninfected animals and products can continue to move maintaining business continuity w/in U.S.

Livestock Decontamination, Disposal and Depopulation (3D): New methodologies and decision support tools for depopulation, disposal and decontamination that facilitate rapid response and prevent disease spread in a manner that minimizes waste, environmental impact and negative public perception.

Enhanced Passive Surveillance (EPS) includes diagnostic tests, surveillance tools and data integration procedures to identify infected animals prior to overt symptoms and improve our ability to detect diseases that threaten the U.S. agricultural critical infrastructure.

High throughput diagnostics (DX) allow more rapid confirmation of disease status and increased sample processing capabilities enhancing our ability to contain outbreaks.

Vaccines (VX) to rapidly prevent disease in healthy animals prevents disease spread among healthy herd, maintaining business continuity.

Diagnostics (DX) to distinguish vaccinated from infected animals may allow more rapid return to trade status, enhancing business continuity and minimizing economic impact.

Livestock Decontamination, Disposal and Depopulation (3D): New methodologies and decision support tools for depopulation, disposal and decontamination that facilitate rapid response and prevent disease spread in a manner that minimizes waste, environmental impact and negative public perception.
Agricultural Defense Projects: Present and Future

- **Bioagent Detection**
  - Agricultural Screening Tools
    - FY 10-15
  - Border Agricultural Screening System
    - FY15-19
  - Agricultural Commodity Threat Detection
    - FY18-20

- **Bioagent Threat Assessment**
  - FAD Modeling
    - FY07-14
  - Outbreak Response and Assessment Tools
    - FY14-18
  - FAD Control in Wildlife
    - FY14-16
  - Emerging and Zoonotic Disease Assessment Tools
    - FY18-21

- **Bioagent Attack Resilency**
  - FAD Vaccines and Diagnostics Ongoing
  - Emerging & Zoonotic Disease Countermeasures FY15 start
  - Livestock Decontamination, Disposal and Depopulation (FY13-18)
  - Border Agricultural Disposal Systems (FY18-20)
<table>
<thead>
<tr>
<th>Document</th>
<th>Objective</th>
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<tbody>
<tr>
<td>Foreign Animal Disease Threat WG R&amp;D Plan</td>
<td>Interagency document that highlights past accomplishments and identifies both immediate and long term research and development needs related to foreign animal disease threats to be coordinated across the federal government</td>
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| HSARPA Chemical and Biological Defense Strategic Plan (Annex supporting USDA APHIS) | Priority Area 8: Reduce contamination spread and exposure to agricultural threats  
Priority Area 10: Restore or maintain continuity of business operations following an infectious disease outbreak or persistent threat agent release |
| DHS S&T Strategic Plan                                                   | Strengthen America’s security and resiliency by providing knowledge products and innovative technology solutions for the Homeland Security Enterprise (Goal 1, Goal 3, and Goal 4)                                      |
| Homeland Security Presidential Directive-9                               | Paragraph 23: DHS and USDA are to accelerate and expand development of current and new countermeasures against the intentional introduction or natural occurrence of catastrophic animal, plant, and zoonotic diseases ... [to] include countermeasure research and development of new methods for detection, prevention technologies, agent characterization, and dose response relationships for high-consequence agents in the food and water supply |
| Homeland Security Presidential Directive-7                               | Paragraph 18: Identifies agriculture and food as critical infrastructure and tasks DHS to coordinate with USDA on protecting this critical infrastructure sector                                                                 |
| Presidential Policy Directive - 8                                       | Aimed at strengthening the security and resilience of the U.S. through systematic preparation for the threats that pose the greatest risk to the security of the Nation, including acts of terrorism, cyber attacks, pandemics, and catastrophic natural disasters |
| Homeland Security Act of 2002                                           | Transferred Plum Island Animal Disease Center from USDA to DHS                                                                                                                                           |
In addition to traditional contractual relationships, the Ag Defense Branch works closely with the Plum Island Animal Disease Center (PIADC) and the two Zoonotic and Animal Disease DHS University Centers of Excellence (COEs). Each partner plays a key role in the development process. PIADC develops industry partnerships and conducts critical applied research related to vaccines and diagnostics.

The COEs (i.e., FAZD and CEEZAD) maintain important international, state, local and academic partnerships, and conduct basic research vital to a continuous pipeline of candidates for advanced development and transition.
Coordination with other R&D Organizations

With scarce resources, interagency coordination critical to success

- The National Science and Technology Council’s Foreign Animal Disease Threats Working Group coordinates interagency R&D related to agricultural defense
- DHS S&T and USDA Agricultural Research Service – co-chair
- Departments of Defense, Health and Human Services, Interior, State; Environmental Protection Agency; Smithsonian Institution and the National Science Foundation
- Sub-working groups ensure that DHS and other agency resources are utilized as efficiently and effectively as possible
Agricultural Defense Branch (AGD) projects developed and implemented in close coordination with intra- and interagency partners and industry stakeholders

- Gaps identified by **the Food/Ag Sector Coordinating Council (SCC/GCC)** - public and private sector partners, sponsored by DHS Office of Critical Infrastructure Protection
- R&D gaps validated and prioritized by the **Food/Ag subIPT** - interagency group co-chaired by DHS S&T, OHA and Office of Infrastructure Protection
- R&D gaps translated into operational mission needs and documented in the **HSARPA R&D Strategy**
- **Project IPT’s** - smaller interagency/stakeholder groups which participate in the implementation of new projects and the transition of research products
AGD Coordination with USDA APHIS

- Member of the National Veterinary Stockpile Strategic Steering Committee (NVS SSC)
  - FADT Countermeasures Working Group informs Export Working Group Reports advising NVS SSC on promising FAD countermeasures

- AGD coordinates with USDA Animal Plant Health Inspection Services (APHIS) to pursue the development of countermeasure technologies ready for transition to commercial marketplace
  - Project IPTs track and guide progress of all Ag Defense Projects
    - Includes members as needed from multiple parts of USDA APHIS
    - Also includes partners from other agencies as appropriate
  - Developing an MOU with APHIS to lay out specific transition strategies for each project
• Licensing/permitting of FAD-related products:
  • Form relationships with companies capable of pursuing and holding licenses and permits
  • Regulatory relationship between CVB and the company pursuing the license
  • Federal level coordination for release of critical documents and related press interactions (i.e., licenses/permits, Federal Register Notices)

• Transition of diagnostic and screening tools to the National Animal Health Laboratory Network (NAHLN)
  • Coordinated with the NAHLN Methods Technical Working Group (NMTWG)
  • Frequent interaction between AST performers and NMTWG members
    • AST projects are aligned with NMTWG requirements
  • AST project execution includes dossier preparation and presentation to NMTWG for transition into NAHLN
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<th>TYPE</th>
<th>GRANT</th>
<th>CONTRACT</th>
<th>CRADA</th>
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<tbody>
<tr>
<td>Funding</td>
<td>Advance payment allowed if appropriate</td>
<td>Pay for delivery after receipt</td>
<td>No funding from gov’t to collaborator, but collaborator can provide funding to gov’t</td>
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<td>Competition</td>
<td>Competed based on technical/programmatic merits</td>
<td>Price must be considered, technical/programmatic merits considered as well</td>
<td>Agency may put out Notice of CRADA intent, or either party can approach the other to initiate</td>
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<tr>
<td>Termination</td>
<td>Grantee can terminate</td>
<td>No contractor right to terminate</td>
<td>Either party can terminate</td>
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<tr>
<td>Deliverable</td>
<td>Publication, report or completion of a project</td>
<td>Product or service required</td>
<td>Products or services agreed to on both sides</td>
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<tr>
<td>Legal Authority</td>
<td>OMB Circulars</td>
<td>Federal Acquisition Regulation</td>
<td>15 USC § 3710a</td>
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Working with S&T

- Contact DHS S&T: Phone: 202-254-6006; email: SandT@dhs.gov


- https://baa2.st.dhs.gov: Solicitations Portal for Broad Agency Announcements, including the Long Range Broad Agency Announcement, that address needs of DHS S&T technical divisions

- https://sbir2.st.dhs.gov: SBIR Program for Small Businesses posts two solicitations annually seeking technical capabilities that cut across DHS S&T divisions

- http://www.dhs.gov/do-business-dhs: Provides information on how to work with DHS in general, including information on contracting with the federal government

- www.grants.gov: Assists applicants in finding and applying for federal grants