Biological Control Programs in USDA

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Where are the Programs?

- Agricultural Research Service
- US Forest Service
- National Institute of Food & Agriculture
- Natural Resource Conservation Service
- Animal & Plant Health Inspection Service

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Agricultural Research Service

- National Program 104: Veterinary, Medical and Urban Entomology
- National Program 304: Crop Protection and Quarantine
  - Mission: To provide technology to manage pest populations below economic damage thresholds by the integration of environmentally compatible strategies that are based on increased understanding of the biology and ecology of insect, mite, and weed pests.

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ARS programs address

- Systematics and identification
- Biology and ecology of pests and natural enemies
- Protection of natural ecosystems
- Protection of post-harvest commodities and quarantine

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ARS – Microbial Biological Control

- Using microbes to control microbes, arthropods and weeds
GOAL: “To reduce, minimize, or eliminate the potential for introduction, establishment, spread, and impact of invasive species across all landscapes and ownerships.”
Forest Service Targets

- Cheatgrass
- Chinese Privet
- Emerald ash borer
- Elongated hemlock borer
- Gold spotted oak borer
- Hemlock woolly adelgid
- Knotweeds
- Kudzu
- Leafy spurge
- Mile a minute weed
- Rush skeleton weed
- Spotted Knapweed
- Strawberry quava
- Tansy ragwort
- Toadflax
- Tree of Heaven
- Tropical soda apple
Forest Service Approach

- Long-term approach
- Pest cannot be eradicated without causing significant ecological or economic damage
- Identify potential biological control agents in country of origin
- Research on both the host and its natural enemies in US, and in country of origin, risk benefit analyses, public comment and concurrence
- Pilot releases
- Initial efforts may involve only a few scientists who work with an ever expanding variety of partners including APHIS, ARS, universities, international partners, etc.
National Institute of Food and Agriculture

Supports research in bio-based pest management, which has the goal of providing safer and more effective methods of controlling pests while reducing our reliance on synthetic pesticides.
NIFA Biocontrol Approach

- Regional Biocontrol Committees
  - Facilitate communication and coordination on regional biocontrol priorities
- Support at individual institutions

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NIFA Grant Programs Supporting Biocontrol

- Agriculture and Food Research Initiative
- Crops at Risk Program
- Risk Avoidance and Mitigation Program
- Methyl Bromide Transitions Program
- Pest Management Alternatives Program
- IR-4 Program - biopesticides
- Specialty Crop Research Initiative
- Organic Transitions Program
- Small Business Innovation Research Program

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NRCS Biological Control

- Primary federal agency that works with private landowners to help them conserve, maintain and improve their natural resources
NRCS Biological Control

- User of biocontrol information
- Provides funding for implementation
Animal and Plant Health Inspection Service,
Plant Protection and Quarantine

- The goal is to minimize the impact of exotic invasive insect pests and weeds in agriculture and natural environments
- Accomplished by facilitating the proper use of natural enemies to
  - Prevent pest establishment
  - Suppress pest populations
  - Minimize pest spread
APHIS PPQ Biocontrol Activities

- Permits!
- Domestic policy and regulation
- Congressional reporting
- International capacity building
- Develop science and technology to support programs
- Coordinate and conduct operational activities
- Technology transfer

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APHIS PPQ meets needs

- **Internal capacity**
  - Collect natural enemies
  - Develop mass production methods
  - Technology transfer to operational programs or state partners

- **External partnerships**
  - Foreign exploration
  - Host specificity testing
  - Evaluate efficacy
APHIS Cooperator-driven Approach

- Shared objective
- Outcome focused
- Developed in partnership
  - Cooperator guides overall project
- Expectation of technology transfer
What’s next for USDA Biocontrol?

- White paper: *Microbial Biocontrol of Arthropods, Weeds, and Plant Pathogens: Risks, Benefits and Challenges*

- National Strategy