



Plant Protection and Quarantine Biological Control Strategic Plan

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Executive Summary

This strategic plan describes the Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ), Biological Control program's mission, vision, and strategic milestones. The strategic plan includes specific goals, objectives, and deliverables to accomplish the agency's biological control regulatory functions and program mission. These strategic goals provide a traceable framework to ensure that the PPQ biological control program is responsive, sustainable, efficient, measurable, and valued by PPQ and its stakeholders.

The PPQ Biological Control program provides biological control support for management of plant pests and weeds of stakeholder, State, and Federal concern that adversely impact the agriculture and the natural resources of the United States.

The key PPQ Biological Control program goals are:

Goal 1. Administer clear and transparent project selection and evaluation processes in order to support the most appropriate and successful biological control projects.

Goal 2. Develop and deliver timely and informative program and pest specific reports, milestone achievements, and key project impact assessments.

Goal 3. Support existing PPQ biological control expertise, capabilities, and infrastructure while leveraging outside agency expertise and support.

Goal 4. Leverage additional funding sources and opportunities to achieve program goals more rapidly and efficiently.

The strategic direction outlined in this plan is designed to address today's complex agricultural and environmental challenges regarding plant pests and noxious weeds. The strategies and tactics provide an outline to facilitate the development of safe and sustainable biological control options for PPQ's pest management program. The strategies in the plan recognize the value of partnerships, planning, new approaches, biological control staff and facilities, and clear communication.

APHIS uses a definition of biological control that is similar to the ones used by the United States Department of Agriculture (USDA), Agricultural Research Service, (ARS) and the U.S. Forest Service, (USFS): "Biological control is the intentional use of natural enemies ("biological control agents" – parasitoids, predators, herbivores, pathogens (insect and plant), competitors, or antagonists) to reduce pest (insect, weed and plant pathogen) populations to levels below which would occur in the absence of the natural enemies and/or to slow the spread of the pest, thus making a pest less damaging."

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Mission, Vision, and Guiding Principles

Mission

The PPQ Biological Control program promotes, facilitates, develops, and delivers safe and effective biological control through partnerships with other federal, state, tribal, and private organizations that can be used either alone or in combination with other control tactics to help reduce the economic losses and negative impacts of non-indigenous, invasive pests to America's agricultural production and natural areas.

Vision

Promote, facilitate, develop, and deliver safe, low-risk, and effective biological control options and tools for agency and stakeholder biological control programs.

Guiding Principles

Apply Best Science: The PPQ biological control program uses the best available science, information, knowledge, and analysis as well as consistent and transparent processes for identifying, selecting, and supporting biocontrol projects that align with strategic goals and objectives.

Results Orientation and Excellence: The PPQ biological control program has nearly 50 years of experience in initiating, facilitating, and delivering biological control options for pests of agricultural and environmental significance. The biological control program seeks practical, outcome-based program decisions to ensure program resources are applied where they can have the most impact.

Responsive: The program is prepared to facilitate all facets of a biological control project in response to agency needs caused by emerging and current invasive pests by engaging our resources, which include dedicated experts, laboratories, containment facilities, and a network of cooperators to respond to and initiate biological control.

Partnerships and engagement: The program is committed to facilitating and developing biological control through collaborations, cooperative agreements, and interagency agreements that address a wide range of economic and environmental pests of stakeholder, Tribal nation, State, and Federal concern.

Collegial Team Approach: The program values its partners and is committed to their scientific development, safety, and health. Furthermore, the program fosters a welcoming environment that encourages inquiry, innovation, and the sharing of information and knowledge.

Driving Forces

Agency regulatory authority and mission

The APHIS PPQ Biological Control program operates under the regulatory authority of the Plant Protection Act (PPA) of 2000, which states: “biological control is often a desirable, low risk means of ridding crops and other plants of plant pests and noxious weeds, and its use should be facilitated by the Department of Agriculture, other federal agencies, and states whenever feasible.”

Regarding biological control organisms, the PPA also states: “Congress finds that the unregulated movement of plant pests, noxious weeds, plants, certain biological control organisms, plant products, and articles capable of harboring plant pests or noxious weeds could present an unacceptable risk of introducing or spreading plant pests or noxious weeds.”

PPQ’s Biological Control program directly supports USDA’s 2022-2026 Strategic Plan

- Goal 1.1. Use Climate-Smart Management and Sound Science to Enhance the Health and Productivity of Agricultural Lands
- Goal 2.2. Protect Agricultural Health by Minimizing Major Diseases, Pests, and Wildlife Conflicts
- Goal 2.3. Foster Agricultural Innovation
- Goal 6.3. Promote USDA Operational Excellence Through Better Use of Technology and Shared Solutions

The APHIS PPQ Biological Control program includes activities to implement programs against invasive pests including the mass-rearing of biological control agents, release of biological control agents, and monitoring for their establishment and potential impact.

Agency biological control needs for stakeholder, state, tribal, and federal pests

The Biological Control program supports PPQ, state, tribal, and federal needs by addressing plant pests and weeds (i.e., targets) of stakeholder, tribal, State, and Federal concern. The program does this by investing in the discovery, development, and deployment of new, non-native agents (e.g., parasitoids, predators, herbivores, or pathogens) and through surveys, basic research, and methods development that locate and exploit native biological control agents.

The program also supports the development of more efficient and improved operational methods for biological control implementation. Permitting and Compliance Coordination manages the compliance activities required under the authority of the PPA for approval of PPQ 526 permits for the importation, interstate movement, and environmental release of biological control organisms of plant pests and weeds.

Working with others to safeguard American agriculture

Success in the Biological Control program depends on key factors such as identifying and engaging with the most appropriate scientist(s) or institution(s) with necessary expertise on specific pest targets and possible biological control agents for those pest targets. Success also requires the program to develop and maintain effective partnerships. These partnerships enable PPQ to leverage the unique biological control expertise of our partners to address critical information and programmatic needs at each specific stage in the lifecycle of a biological control program, such as initiation, implementation, and technology transfer.

Limited resources and the continued pressure of invasive pests on American agriculture and natural resources make it impractical for PPQ alone to maintain the necessary resources, infrastructure, space, and scientific expertise to effectively sustain the overall biological control program. PPQ's Biological Control program actively seeks and maintains partnerships with tribal governments, state agencies, federal agencies, and universities to be better prepared, equipped, and more efficient in carrying out the agency's biological control mission. PPQ utilizes cooperative agreements, inter-agency agreements, and Memoranda of Understanding (MOU) to leverage and sustain PPQ's biological control projects. These partnerships establish mutual cooperative relationships which PPQ and interested partners can use to develop, implement, and sustain the Biological Control program. PPQ consultation and active collaboration with these partners include discussions and determinations of cost-sharing, prioritization of target pests, availability of funding, infrastructure issues, and leveraging of other resources.

The Biological Control program will continue to maintain and further develop effective collaborations with agencies such as the ARS, USFS, the U.S. Fish and Wildlife Service (FWS), national invasive species coordinating groups, State departments of agriculture, federally recognized tribes, and other committed parties involved with biological control.

ARS, the Centre for Agriculture and Bioscience International (CABI), and university scientists are often our primary partners in conducting foreign exploration and pre-release activities for new biological control agents. State departments of agriculture have been key partners in providing additional quarantine facility options and infrastructure for mass-rearing and release of biological control agents.

Increasing awareness and understanding of biological control processes and partnering with others enhances PPQ's overall knowledge and ability to use biological control solutions for pests of agricultural and environmental significance. The Biological Control program will strive to foster new opportunities and ways to share information and enhance awareness to internal and external stakeholders on biological control facilitation, development, and delivery.

Maintaining program continuity for long-term projects

Obtaining effective biological control for a specific target pest is a long-term process that has many incremental and interdependent steps leading ultimately to the delivery of a biological

control agent(s) and the initiation of an operational biological control program. Completing the necessary steps for each biological control agent can frequently range from four to eight years or more for project initiation and development; another two to ten years for implementing releases of the biological control agent; and in some cases, up to 20 years to fully realize the economic benefits. And at any point in time, the PPQ Biological Control program can have dozens of active projects, in different stages of development, with one or more potential biological control agents for each target pest. The Biological Control program strives to strategically balance the progress on the entire portfolio of biological control projects while considering available resources and capabilities. See Appendix A for a diagram of the generalized steps in the continuum for classical biological control projects.

PPQ Biological Control Program Goals, Objectives, and Deliverables

The PPQ biological control program works to address select pests of stakeholder, State, Tribal Nation, and Federal concern by exploring new technologies; coordinating and leveraging in-house and cooperator expertise and capabilities; being attentive to emerging pest issues; and striving to deliver safe and effective biological control agents to operational pest programs. The goals, objectives, and deliverables described for the Biological Control program will assist in decision making, communication, project selection processes, monitoring, and development of new networking and collaboration opportunities. The goals, supporting objectives, and accompanying deliverables provide a framework to ensure that the Biological Control program aligns with PPQ biological control emergency and pest program needs, is responsive to stakeholders, leverages partnerships, and capitalizes on opportunities.

Goal

- Action(s)
 - Deliverables

Goal 1. Administer clear and transparent project selection and evaluation processes in order to support the most appropriate and successful biological control projects.

- Complete annual call to PPQ pest program managers, state plant health directors (SPHDs), Tribal, and National Plant Board (NPB) representatives for new biological projects (i.e., canvassing processes).
 - Annual list of submitted projects
- Annually determine new project support through clear and defined criteria driven assessments (see Appendix B - Target Selection).
 - Annual list of new projects supported using decision criteria
- Conduct annual project evaluation on existing projects for progress using standardized evaluation measures (see Appendix C - Project Evaluation and Selection).

- Annual list of current ongoing project status using progress evaluation measures (e.g., first time field release, agent established, agent spreading, methods developed, etc.)
- Complete fiscal budget for PPQ Fund Holder’s meeting.
 - Annual budget narrative
- Evaluate all requests from stakeholders for PPQ Permits for Biological Control Agents in compliance with Federal regulations and North American Plant Protection Organization (NAPPO) Guidelines
 - Annual data maintained:
 - Importation permits to import biological control organisms into the United States and its territories
 - Interstate movement permits for the interstate movement of live biological control organisms
 - Curation permits to retain live biological control organisms in containment facilities after expiration of a permit
 - Permits to release a novel biological control organism into the environment from a containment facility or importation for release

Goal 2. Develop and deliver timely and informative program and pest specific reports, milestone achievements, and key project impact assessments.

- Complete annual program updates in annual Fund Holder’s budget narrative.
 - Annual budget narrative – Accomplishments section
- Deliver pest specific updates and program reports when available via PPQ Weekly reports, cross functional areas (CFA) Sharepoint sites, newsletters, and to pest program managers.
 - Annual list of cooperative agreement final reports and CABI reports
 - Announcement of completed biocontrol projects with key findings in PPQ Weekly Activity Report
 - Pest program specific updates and reports (e.g., spotted lanternfly [SLF] project webinars, Forest Pest Methods Laboratory [FPML] annual meeting, etc.)
 - Biological Control Annual Report out to the NPB
- Leverage existing tools for monitoring biological control program and project activities (e.g., EAB Program Reporting www.mapbiocontrol.org.)
 - Web-based reporting of releases and establishment over space and time by PPQ and cooperators (e.g., <https://www.ibiocontrol.org/simp.cfm>)
 - Key performance indicator (KPI) dashboard reporting

- Conduct stakeholder surveys and/or facilitate specific “case studies” on select projects to actively solicit and document feedback on project impact, delivery processes and program performance (Appendix C)
 - Documentation of customer feedback
 - Project review documents and/or impact evaluation studies
- Maintain the PPQ Biological Control website.
 - Updated resource for stakeholders [USDA APHIS | Biological Control Program](#)

Goal 3. Support existing PPQ biological control expertise, capabilities, and infrastructure while leveraging outside agency expertise and support.

- Budget for PPQ biological control expertise and infrastructure to support emergency response and methods development capabilities including quarantine facilities.
 - Annual budget support justifications
 - Talent recruitment, retention, and expertise development
- Support Science and Technology (S&T) in developing and communicating the best available science and technologies available to advance biological control knowledge, skills, and abilities.
 - Delivery of pest specific technical reports, technology white papers, select webinars and presentations, etc.
 - Annual focus meetings, workshops, laboratory tours, and conferences to directly establish working networks, generate innovation, seek project feedback, and foster cross-cutting collaborations with partners
- Leverage funding, expertise, and infrastructure with ARS; USFS; FWS, and Bureau of Land Management; North American Invasive Species Management Association; National Invasive Species Council; state departments of agriculture; and universities.
 - Annual list of cooperators and collaborators including capabilities
 - Annual list and activity reports of meetings and workshops PPQ participates in and the benefits gained
- Leverage cooperator expertise and infrastructure for operational project goals including mass-rearing and distribution capabilities.
 - Number of operational agreements that leverage cooperator capabilities by type (e.g., releases, monitoring, mass-rearing, etc.).
- Participate in the NAPPO Biological Control Expert Group.
 - List of reviews completed for biological control related standards as available

Goal 4. Leverage multiple funding sources and opportunities among partners and vested stakeholders to achieve program goals more rapidly and efficiently.

- Access program pest allocations for biological control
 - Annual list of PPQ pest programs supporting biological control
- Cost share with partners on projects whenever possible
 - Annual list of cost-sharing projects when applicable.
- Leverage PPA 7721 funding to complete biological control projects
 - Connect and encourage collaborators to submit suggestions to PPA 7721 for funding to augment and complete key biological control project data requirements or steps such as gaps in specific scientific, technical, or operational areas
 - Annual list of PPA 7721-funded biological control projects
- Foster technology and project transfer processes and opportunities with states or industry
 - Annual list of projects completed and transferred from PPQ support
 - Development of project manuals that guide partners and stakeholders and assist end-users in implementing biological control

Biological Control Cross Functional Working Group and Cross Functional Areas – Roles and Responsibilities

The Biological Control cross functional working group (CFWG) coordinates activities related to the PPQ Biological Control program across four PPQ CFAs which have roles in the PPQ Biological Control program:

- Emergency and Domestic Programs (EDP); Biocontrol, and Forest, Wood, and Rangelands Pests (BFWRP)
- Field Operations (FO)
- Pest Exclusion and Import Programs (PEIP), Permitting and Compliance Coordination (PCC)
- Science and Technology (S&T)

Biological Control CFWG

The Biological Control CFWG's goal is to increase the cohesion, efficiency, and effectiveness of the PPQ Biological Control program. The Biological Control CFWG coordinates PPQ Biological Control program activities across the four PPQ CFAs listed above. Coordination across the CFAs is necessary because at any point in time, the PPQ Biological Control program can have dozens of active projects in its portfolio of biological control targets. Each target pest may have one or more potential biological control agents, which can be at different stages of program

development (e.g., host specificity testing, mass rearing, distribution, release, and evaluation, and monitoring). Many incremental and interdependent steps exist and must be completed for the delivery of a biological control program. See Appendix A for a diagram of the generalized steps for approval of a classical biological control agent.

The Biological Control CFWG can facilitate information sharing, priority setting, standardization of policies and procedures, and coordination on specific biological control agents as they transition between project phases. The Biological Control CFWG can provide information sharing among the four CFAs throughout the life of each biological control project.

The Biological Control CFWG serves as a resource for specific pest biological control programs funded by PPQ under other funding lines that have a biological control component such as emerald ash borer (EAB), asian citrus psyllid (ACP), roseau cane scale (RCS), or spotted lanternfly (SLF) or through PPA 7721 funding such as brown marmorated stink bug (BMSB), Asian longhorned beetle (ALB), and South American cactus moth (SACM). With many years of experience and partnership connections on these types of programs, the Biological Control CFWG can assist in the development and completion of these programs by being involved in the decision-making process for objectives, budgets, and timelines during the life of each program.

EDP, BFWRP

The National Policy Manager (NPM) for the Biological Control program is assigned from EDP, BFWRP. The NPM serves as the lead for the Biological Control CFWG and leads the meetings of the Biological Control CFWG. The NPM serves as the principal liaison with the PPQ Deputy Administrator's Office, PPQ Management Team, Legislative and Public Affairs, Administrative staff, and other Agency/Departmental-level organizations. The NPM serves as program representative to the NPB.

FO

The National Operations Manager (NOM) for the Biological Control Program is assigned from FO. The NOM serves as the principal liaison with the FO Management Team, SPHDs, other program NOMs, and FO administrative staff. The NOM coordinates Biological Control program documentation for FO such as Tribal engagement, standard operating procedures, outreach material, job aids, and implementation plans. The NOM manages program objectives both within PPQ and through cooperative agreements with state departments of agriculture, universities, and partner Federal agencies. FO invests in rearing newly permitted agents, releasing these agents into the environment, redistributing the agents within the field, monitoring the establishment of agents in the environment, and monitoring the impacts agents have on target plant pests in the environment before the program transfers gained technology to its partners and moves on to new investments. This work is ultimately carried out by cooperators through cooperative agreements with PPQ that specify project objectives, milestones, accomplishments, data and reporting, resources, oversight, and budgets. FO Biological Control funding is primarily directed toward cooperative agreements; however, PPQ staff hours can also be allocated to several states for biological control. For certain PPQ biological control programs funded by a specific PPQ line

item, such as the EAB biological control program, the Biological Control NOM coordinates, as needed, with the EAB NOM on issues involving biological control.

PEIP, PCC

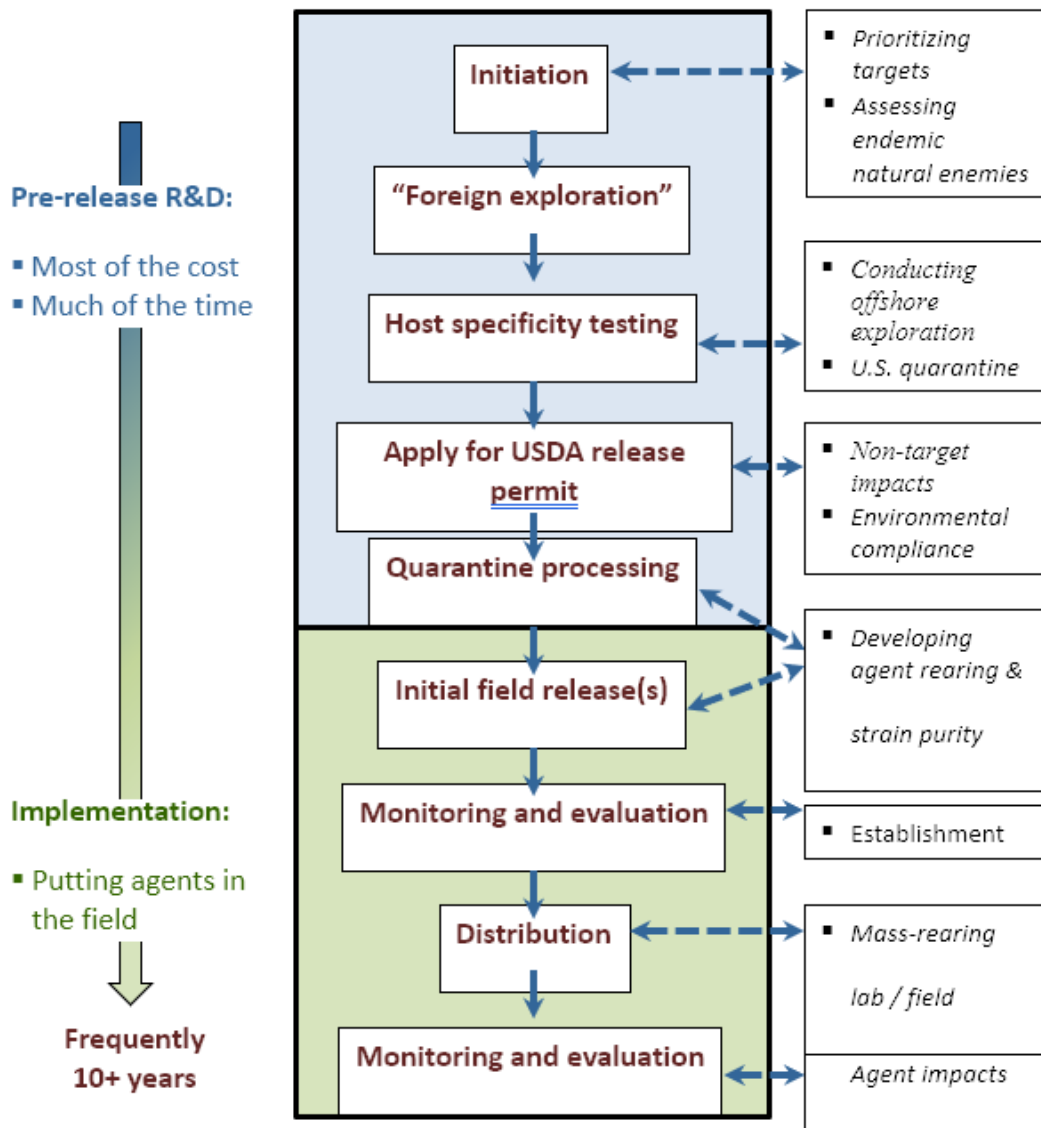
The PEIP, PCC member of the Biological Control CFWG works on permitting and related coordination regarding biological control permits. The PEIP, PCC is responsible for conducting the regulatory activities required by the PPA for all permitting required for biological control agents. This includes responding to all requests from stakeholders for PPQ Permits for Biological Control Agents in compliance with federal regulations and NAPPO Guidelines: Importation permits to import biological control organisms into the United States and its territories; Interstate movement permits for the interstate movement of live biological control organisms; Continued curation permits to retain live biological control organisms in containment facilities after expiration of a permit; and Permits to release a novel biological control organism into the environment from a containment facility or importation for release. The process of reviewing requests for and permitting the release of new biological agents from quarantine, as well as the movement of biological control agents across state lines, is strictly the responsibility of PEIP, PCC. The PEIP, PCC member provides coordination and assistance to internal and external stakeholders regarding the progress of data development, petition review and approval (including environmental compliance steps), and the availability of new biological control agents. They also provide guidance and updates regarding legal/policy (permitting) issues related to the feasibility of environmental release and distribution of biological control agents. The PEIP, PCC is funded through Agricultural Quarantine Inspection funding.

S&T

The S&T Biological Control Coordinator is a member of the Biological Control CFWG. The S&T Coordinator provides technical oversight and expertise to the biological control program in ensuring scientific knowledge gaps are identified and addressed, cooperators deliver needed services, and implementation protocols are effectively developed and transferred to FO and other stakeholders as quickly as possible. S&T provides biological control support for PPQ priority pests and pests of regulatory, stakeholder, agricultural, and environmental importance. S&T has considerable experience delivering and facilitating biological control to customers ranging from emerging pest response to operational methods development support. S&T has laboratories, qualified staff, state of the art infrastructure, and a cadre of collaborators that are equipped and organized to respond to emerging pest needs and operations support through methods development. S&T Biological Control funding is primarily directed toward S&T scientists and laboratories, and cooperative agreements.

Appendices

Appendix A: Biological Control Overall Process Diagram: Classical Biological Control: Generalized Processes



Courtesy of Rich Hansen
Edited from [original](#)

Appendix B: Project Evaluation and Selection Processes

Many incremental and interdependent steps must be completed for the delivery of a biological control program. Each step represents a specific project with a suite of unique and quantifiable performance measures and deliverables. All funding requests will be evaluated annually with the PPQ Biological Control Cross Functional Working Group (CFWG), relevant domestic and emerging pest program managers, and when appropriate select cooperator or interagency partners. PPQ will employ an objective evaluation strategy for determining project applicability, prioritization needs, and project selection determinations.

Project Selection: The Biological Control CFWG target selection process will use applicability assessments for overall biological control project suitability including return on investment potentials, and probabilities for success. Specific scores and weights may be assigned to targets based on a suite of determining factors such as:

- Agency level of pest concern and need (i.e., emergency response or emerging pests)
- Current and potential pest distribution (e.g., local, state, or regional)
- Economic and/or environmental impacts of the pest
- Potential return on investment of the control solution
- Conflicts of biological control agents with non-target plants and animals
- Factored together, these assessments are used to determine if a project is appropriate and applicable for biological control project consideration and to identify specific project needs and challenges

Project Evaluation and Selection considers agency needs, the timing of work, previous accomplishments, and available resources. Project selection assessments ensure that projects are making adequate progress, focused on PPQ pests of interest, supported by stakeholders, and improve internal decision-making. Annual project selection is conducted by the Biological Control CFWG, with input and consultations with appropriate biological control experts and cooperators when needed. Key factors considered for final project selection include:

- History of progress and project performance on existing projects
- Newly permitted agents that need funding in support of field release and/or operational methods development.
- Current status of introductions including whether establishment has been documented and effective over the invasive range of the target. (i.e., number of counties/sites agents have been established, or establishment of field insectaries, etc.)
- Required operational methods development needs for PPQ program pests
- PPQ or collaborator capabilities, and experience relative to the project's goal(s) and objectives.
- The extent of prior use, research, or development of the proposed biological control technology (e.g., leveraging past efforts or progress)

- Timing and access to key infrastructural needs including financial, logistical, or scientific opportunities
- Adequacy of technology transfer plan, commercialization, or utilization of proposed technology

Appendix C: Quantifying Project Impacts

Agents petitioned for approval for release as novel biocontrol agents must have demonstrated some potential to impact the target. However, because impacts are unsure and risks are not tolerated, the regulatory process evaluating petitions for release of novel biological control agents focuses on minimizing risks of releases to non-targets. The environmental compliance process focuses on risks under the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA). Rigorous prevention of risk allows us to release as many biocontrol agents as possible against invasive species without impacting valuable non-targets. PPQ environmental compliance processes, including rigorous TAG (Technical Advisory Group for biological control of weeds) review, Section 7 ESA consultation with the U.S. Fish and Wildlife Service, Tribal review of Environmental Assessments (EA), and opportunities for review of EAs by the public and all stakeholders ensure the safety of our releases.

With this in mind, PPQ counts each new agent project fully successful and ready for operational methods development support after verified permanent establishment of the agent into the environment. The ultimate success of a biological control program is not dependent upon or achievable by the work of a single agency. Documentation, analyses, and verification of population level impacts on the target species requires systematic end-user support, continued assessment, and feedback to record agent performance and target impact variables. Often published literature and cooperative reports are the best avenue for tracking long-term sustainable impacts. PPQ will encourage standard monitoring and evaluation procedures that will become part of project work plan development, execution, and monitoring practices. For select projects, PPQ may support key “case study” projects on a mature biological control program to quantify all economic and environmental impacts including cost-benefit analyses.