

## **STRATEGIC GOAL 3: ENHANCE PROTECTION AND SAFETY OF THE NATION’S AGRICULTURE AND FOOD SUPPLY**

Exhibit 21: Resources Dedicated to Protect and Secure the Nation’s Food Supply

USDA Resources Dedicated to Strategic Goal 3	FY 2003		FY 2004	
	Estimate	Percent of Total USDA	Estimate	Percent of Total USDA
Program Level (\$ Mil)	2,965	2%	2,604	2%
Staff Years	21,888	19%	21,636	20%

The U.S. has the best production and processing system for food in the world. Consumers are provided with the most abundant and safest food possible. USDA inspects meat, poultry and egg products to ensure that food safety and consumer protection standards are met, conducts research on ways to examine and improve food safety technologies, develops new vaccines and controls pests and diseases that may impact food production. We work to ensure the production of safe and wholesome products for consumers and to protect the food and agriculture sector against pests and diseases.

Food safety is the responsibility of everyone involved in the food chain. We continue to increase our efforts to collectively ensure that everyone from farmer, processor, transporter, and retailer to consumer clearly understands the importance of food safety. We must defend U.S. livestock against threatening diseases; continue to employ aggressive plant, animal and food safety inspection processes; increase our food safety public education efforts and strengthen our science-based systems.

## OBJECTIVE 3.1: Enhance the Protection of Meat, Poultry and Egg Products from Foodborne Hazards in the United States

Exhibit 22: Resources Dedicated to Enhancing Protection from Foodborne Hazards.

USDA Resources Dedicated to Objective 3.1	FY 2003		FY 2004	
	Estimate	Percent of Goal 3	Estimate	Percent of Goal 3
Program Level (\$ Mil)	1,112	38%	1,100	42%
Staff Years	10,893	49%	11,052	51%

Protecting the Nation’s food supply from potential hazards, whether chemical, microbial or physical, is a formidable task and one that is best accomplished by using sound science to drive decisions and policy development. In the light of the public’s heightened apprehension that the Nation’s food supply could be a target for terrorists and with the potential for new and emerging microbial hazards to enter the food supply, USDA’s food safety systems, particularly those for meat, poultry and egg products, must be continually assessed and updated in order to maintain consumer protection and confidence. These systems include activities to track the incidence of pathogens and illness-causing organisms in product to raise public awareness about food safety and safe product handling. Therefore, this objective from the USDA Strategic Plan and some of its performance goals has been updated for emphasis.

### Strengthen Food Safety

One of our major efforts in enhancing food protection has been to determine how to strengthen meat, poultry and egg product inspection activities. The first step in this process has been to obtain a better understanding of the hazards associated with meat, poultry and egg production and consumption through various food safety assessments. This ongoing scientific process has provided a growing body of knowledge that allows us to define methods for inspection and policy development based on food safety hazards. In order to better define progress in this area, USDA has begun to alter some performance measures presented in the strategic plan to more accurately describe its activity, including assessing vulnerability to biosecurity threats.

Exhibit 23: Conduct Risk Assessments

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.1.1 Conduct risk assessments of microbial, chemical and physical hazards to meat, poultry and egg products:						
• Number of risk assessments initiated	N/A	N/A	N/A	N/A	4	3
• Number of risk assessments completed	2	0	2	7	N/A	N/A

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Improve consistency and application of food safety regulations based on risk assessment data.
- Evaluate the effectiveness of various performance standards to mitigate the risk of illness from newly identified pathogens in ready-to-eat products using risk assessments.

- Enhance the capabilities of the inspection workforce through science-based training.
- Focus training and education program on a public health and science basis.
- Conduct an assessment to determine the imported products most vulnerable to biological, chemical and radiological terrorism agents.
- Evaluate the effectiveness of environmental surface and product testing in mitigating the risks associated with the consumption of deli meats and frankfurters using risk assessments.
- Continue our program of soliciting outside scientific expert reviews of risk assessments (peer reviews).
- Integrate “lessons-learned” from risk assessments into policy, inspection and regulatory enforcement activities.

### Key External Factors

The full projected implementation of this goal can be influenced by the fact that food safety biosecurity information may alter assessment priorities. If the food supply were to be compromised, security activities would take precedence over other resource requirements. Emerging information on pathogen identification or trace back may also cause us to alter assessment priorities.

### Enhance Protection from *Salmonella*

In order to more effectively define progress in this area, USDA has modified this performance measure from the Strategic Plan by using the term “incidence” versus “prevalence” to more accurately gauge progress towards tracking the occurrence of *Salmonella* related to classes of meat and poultry products in the United States based on verification sampling. The requirement for regulated plants to employ Pathogen Reduction/Hazard Analysis and Critical Control Point (PR/HACCP) systems is an example of our efforts to require new methods to assure that food safety hazards are identified and managed across the farm-to-table continuum.

Exhibit 24: Enhance Industry Compliance

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.1.2 Enhance industry compliance with regulatory requirements**:						
• Incidence of <i>Salmonella</i> on broiler chickens (Percentage)	11.3%	8.7%	11.9%	11.6%	11.6%	11.6%
• Incidence of <i>Salmonella</i> on market hogs (Percentage)	6.6%	7.6%	4.5%	4.3%	4.3%	4.3%
• Incidence of <i>Salmonella</i> on ground beef (Percentage)	4.4%	3.6%	2.6%	2.8%	2.8%	2.8%

\*\* This standard more accurately reflects figures, which convey compliance-based verification results that will yield either declining or stabilized levels in products tested. The percentages that are considered viable for a stable level of compliance are based on extensive baseline studies and detection methods.

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Conduct hazard-based verification assessments of the food safety systems at slaughter and processing plants to ensure that food safety requirements, in addition to the *Salmonella* performance standards, are being met.
- Evaluate the adequacy and effectiveness of Pathogen Reduction/HACCP plans in operation.

- Ensure that laboratory facilities meet security standards.
- Identify, investigate and respond to food safety emergencies and monitor foodborne illnesses resulting from the consumption of adulterated or unwholesome meat, poultry and egg products.
- Ensure that meat, poultry and egg products imported into the U.S. are safe by reviewing and auditing foreign programs to ensure the continued equivalence of foreign inspection systems.
- Identify “best practices” regarding activities that are demonstrated to be important in effecting the incidence of *Salmonella* and provide guidance to the regulated industry.

### Key External Factors

Many factors can influence the incidence of *Salmonella* on a year-to-year basis. Three representative species were chosen for this report: young chickens, cattle and market hogs. Due to the testing and sampling structure, one outlying result in a plant can affect the Agency’s total reported numbers. This effect can occur independent of the intended target.

### Enhance Protection from *Listeria monocytogenes*

USDA has also modified this performance measure from the Strategic Plan by using the term “incidence” versus “prevalence” to more accurately gauge progress (i.e., the “incidence” of a pathogen reflects the occurrence of this hazard in a set of verification-oriented samples of product that is intended to measure the effectiveness of the food safety system; the “prevalence” of a pathogen reflects the occurrence of this hazard in a set of scientifically-based samples of product that is intended to measure the national occurrence of this hazard, generally referred to as a baseline study).

The incidence of *Listeria monocytogenes* in ready-to-eat meat and poultry products is an important public health risk, and USDA has been proactive in monitoring and addressing this issue. Through participation with other food safety partners in FoodNet and PulseNet, we are beginning to see major scientific advances in tracking matching pathogenic Deoxyribonucleic Acid (DNA) from products, environment and humans afflicted with foodborne illnesses. These advances serve to raise awareness and better protect public health.

Exhibit 25: Enhance Industry Compliance

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.1.3 Enhance industry compliance with regulatory requirements (Percentage)	1.91%	1.45%	1.26%	1.02%	1.02%	1.00%

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Complete an extensive, scientific risk assessment on *Listeria monocytogenes* to determine how the pathogen may contaminate meat and poultry products during production and packaging processes.
- Issue a final regulation for the control of *Listeria monocytogenes* for certain ready-to-eat meat and poultry products.
- Provide guidance to the regulated industry on demonstrating on-going effectiveness of sanitary controls and interventions in all operations, especially ready-to-eat processes.

- Continue the dialogue with food safety stakeholders from government, academia, industry, advocacy groups and consumers through public meetings and forums to present research data as well as receive feedback on actions that best address the problems posed by *Listeria monocytogenes*.
- Begin environmental testing within plants to complement product testing and human isolate determinations to provide DNA fingerprinting for pathogens and improve USDA's ability to trace pathogens back to the contamination source.
- Continue to analyze data gathered during the 2002 outbreak of listeriosis in conjunction with the Centers for Disease Control and Prevention (CDC).

### Key External Factors

Many factors can influence incidence data on a year-to-year basis. *Listeria monocytogenes* is found in soil and water and can contaminate a variety of raw foods, such as uncooked meats and vegetables. Foods can also become contaminated after processing; examples are soft cheeses, hot dogs and luncheon meats. In general, product in the plant targeted for *Listeria monocytogenes* testing is voluntarily put on hold by the plant until results are available. In the event that product was distributed to consumers and a positive sample is discovered, FSIS requests that the plant initiate a voluntary product recall. Depending upon the entity tested in any given year, results can vary.

### Improve Detection of Foodborne Hazards

In order for regulatory/action agencies and industry to ensure the safety of the food supply, continued improvements in methodologies to sample, detect, identify and differentiate foodborne pathogens in all forms of foods are needed. USDA has focused its efforts on methods that can be nationally and internationally standardized for process validation, monitoring and verification. Testing protocols, if designed well, can be integrated into all steps within the farm-to-table continuum. Further, they can also assist in helping resolve disputes over health issues and the import and export of foods from different countries. USDA seeks to develop and transfer to the private sector systems that rapidly and accurately detect, identify and differentiate the most critical and economically important foodborne pathogenic bacteria and viruses.

Exhibit 26: Improve Foodborne Hazards Detection

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.1.4 Develop new systems for detecting foodborne hazards.	1	2	3	2	3	3

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Complete full genome DNA sequencing of specific foodborne pathogens over the next 3-5 years.
- Develop nucleic acid microarrays and specific antibodies for various pathogens over the next 3-5 years.
- Transfer to the appropriate action/regulatory agencies and private sector customers' genome and antibody-based devices that will rapidly and accurately detect, identify and differentiate the most critical and economically important foodborne pathogenic bacteria and viruses over the next 3-5 years.

### **Key External Factors**

Technological innovations have allowed more rapid and sophisticated means of detection. However, even with the most sensitive testing methods, USDA recognizes that there are limitations in current technology that may have a bearing when determining whether a product is completely free of a target pathogen. Therefore, USDA will continue to support partnerships and collaborative efforts with other Federal agencies in the development and validation of new methods as indicated in the means and strategies above.

## **OBJECTIVE 3.2: Reduce the Number and Severity of Agricultural Pest and Disease Outbreaks**

Exhibit 27: Resources Dedicated to Reduce Pest and Disease Outbreaks

USDA Resources Dedicated to Objective 3.2	FY 2003		FY 2004	
	Estimate	Percent of Goal 3	Estimate	Percent of Goal 3
Program Level (\$ Mil)	1,853	62%	1,504	58%
Staff Years	10,995	51%	10,584	49%

Safeguarding America’s plant and animal resources from exotic or foreign pests and diseases is one key way USDA can provide a secure and healthy agricultural production system and abundant food supply to consumers. Often these pests and diseases threaten not only U.S. agriculture, but also ecosystems, human health, trade opportunities and other integral pieces of national security. USDA cooperates with the Department of Homeland Security (DHS) to exclude these exotic or foreign pests from the U.S. USDA also conducts operations to quickly detect and respond to those that are introduced. USDA stations representatives in foreign countries to assist them in eradicating or reducing the prevalence of many of the pests and diseases, thereby reducing the agricultural risks to not only the U.S., but other countries as well. Our actions help minimize production losses, maintain market viability and contain environmental damage. Aside from its regulatory authorities, USDA encourages compliance through public awareness campaigns and educational materials for importers and the general public.

New or re-emerging plant and animal pests and diseases have increased recently. The European experience with Bovine Spongiform Encephalopathy emphasizes the global nature of livestock disease and the potential impact on a country’s food, economy and public health. The threat that terrorists might deliberately introduce diseases or pests has sharply increased the awareness of scientific based programs. Early detection of and rapid response to invasive species is imperative to prevent pests and diseases from becoming established and to eradicate them. The U.S. needs to improve diagnostic tests for foreign and emerging disease agents by building on the expanding knowledge base of microbial genomics for both animal and plant pests. We need to hold periodic reviews of the agricultural and meat, poultry and egg product food safety systems for compliance; and we need to modernize them to keep pace with emerging and often unique challenges and rapidly changing conditions. We will use the best available science, training and technology to improve intervention strategies and design new ones. We will continue to use the best available science, information and technology to protect the Nation’s agriculture and food supply.

Current prevention strategies and diagnostic methods may not be adequate to reduce the number and severity of disease and pest outbreaks for most agricultural products. Early detection of pathogens, pests and other threats, rapid and accurate assessment and immediate responses that reduce or prevent damage and control or eradicate the infection, are essential. Emergency preparedness and management requires that federal and state organizations make agreements in advance to cooperate when and if it becomes necessary.

Research, education and extension programs develop the connectivity, knowledge and expertise required to ensure security of our agricultural and rural communities and a secure and safe food supply. It is imperative that we integrate efforts in basic and applied research, training and education and extension to prevent disruptions in production of raw food products, storage, processing, packaging, distribution and food service. USDA will work with its partners to ensure the conversion of research results into delivery technologies in plant and animal health to provide agricultural systems that are robust and resilient to en-

vironmental and biotic challenges. USDA will build on the animal and plant disease and pest surveillance and detection networks being set up, Regional Integrated Pest Management Centers and Regional Rural Development Centers, the Pesticide Safety Education Program, existing work in microbe, plant and animal genomics and the commonality of host-pathogen interactions among animals, insects and plants. These activities will be coordinated with a host of private and public sector efforts, including USDA agencies and other Federal departments including the DHS.

### Reduce the Risk of Entry and Establishment of Pests and Diseases

For many years USDA has conducted inspection operations on passengers, vehicles and cargo at U.S. ports of entry. To reduce the number and severity of pest and disease outbreaks, USDA’s Agricultural Quarantine Inspection program has monitored the pathways along which exotic pests and diseases approach the country. With the creation of the Department of Homeland Security, USDA’s inspection operations and personnel located at ports of entry were transferred to the Bureau of Customs and Border Protection. They have joined together with federal personnel from U.S. Customs and Immigration to provide the entire range of inspection services. USDA has retained predeparture inspection operations and continues to set agricultural inspection policy, provide instructional guidance to DHS around these policies and provide analytic support in monitoring compliance data for passengers, vehicles and cargo.

USDA’s performance goals and indicators have been adjusted to fit the modified mission. The strategic emphasis has shifted away from safeguarding agriculture by excluding pests and diseases at ports of entry to safeguarding through surveillance activities in foreign countries and domestically. USDA will intensify the strategic thrust towards surveillance and early detection and will also amplify its emergency preparedness effort.

Although USDA will continue to monitor AQI compliance data, the activity will be conducted for DHS’ Bureau of Customs and Border Protection. DHS has adopted USDA’s performance measure focusing on compliance that was formerly shown in this section. The compliance results will appear in DHS’ plan. Two new performance measures are replacing it.

Exhibit 28: Strengthen the Effectiveness of Pest and Disease Surveillance and Detection Systems

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.2.1 Increase the percent of known, significant introductions of plant pests or diseases that are detected before they spread from the original area of colonization and cause severe economic or environmental damage	N/A	N/A	N/A	85%	95%	96%
3.2.2 Number of significant introductions of foreign animal pests or diseases that spread beyond the original area of introduction and cause severe economic or environmental damage, or damage to the health of animals or humans.	N/A	N/A	N/A	0	1	0

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Partner with other countries, the Department of Homeland Security, State agencies, industries and professional organizations, to identify strategies to safeguard the many pathways by which exotic pests



and diseases may enter the U.S. Work closely with DHS to coordinate performance measures and other related issues.

- Conduct offshore threat assessments and risk reduction surveys for targeted pests and foreign animal diseases.
- Assess risks of various pathways for introduction of foreign animal and plant diseases and pests to develop appropriate, science-based quarantine regulations.
- Participate with the States in the Cooperative Agricultural Pest Survey (CAPS) program to conduct more detection surveys, respond to detections in a timely manner, participate on state, regional and national committees, collect and report data, develop State Pest Lists and communicate with the public.
- Participate in the Federal Interagency Committee for the Management of Noxious and Exotic Weeds to develop an interagency national early warning and rapid response system for new invasive species.
- Train more identifiers (entomologists, plant pathologists, botanists) and procure up-to-date surveillance equipment to ensure that data are standardized across the country.
- Track the spread of plant pests within the United States through the National Agricultural Pest Information (NAPIS) database. Expand and enhance it. Use it to demonstrate their absence, plan their control, certify commodities for export and verify and document the pest and disease status of the U.S.
- Conduct research to develop better survey tools and techniques, and technology for diagnostics.
- Expand fruit fly surveillance and eradication.
- Ensure the safety of agricultural biotechnology research, release, movement and other events and of veterinary biologics and other organisms.
- Enhance current animal health surveillance activities by working cooperatively with the States in rapid detection of foreign animal diseases, emerging diseases and diseases of economic importance to industries and those that impact trade.
- Develop an infrastructure for targeted surveillance—a Comprehensive National Surveillance System, which includes a Geographic Information System and spatial analysis component.
- Build an international plant and animal pest, disease and pathway information system that will feed into the National Surveillance System.
- Provide expertise and training in animal and plant health.
- Collect and disseminate science-based information on chemical usage used to fight pests and disease.

### **Key External Factors**

As travel and trade increase around the globe, the number of invasive species that slip through ports into the interior of the country inevitably rises. Outbreaks among our foreign trading partners further increase the likelihood. It takes special expertise to recognize harmful exotic species. Once they start to propagate, crop and animal pests and diseases can spread quickly. Members of the public may not understand or want to cooperate with control and eradication programs.

### **Improve Animal Emergency Management**

Because barriers designed to exclude invasive pests and diseases are imperfect, USDA must conduct other activities including surveillance, quarantine establishment, eradication and emergency management. An isolated incident may not lead to an outbreak if it is handled quickly enough. Pest and disease outbreaks may be contained and their severity reduced by employing quarantine and eradication measures. Effective operations in an emergency are much easier if there has been advance planning and arrangement. USDA is bringing the science of emergency management to bear on its ability to respond to an

animal health emergency that could threaten the Nation’s agricultural industries and the food supply. We have developed key partnerships within USDA, with the Federal Emergency Management Agency and related State Emergency Management Agencies and with State Departments of Agriculture. This infusion of science and technology, along with the human resources available through such partnerships, will help advance the Nation’s capability to respond to animal health emergencies. The National Animal Health Emergency Management Steering Committee outlined standards for animal health emergency management, which all States are working to implement. This initiative is an interdepartmental and a Federal and State effort.

Exhibit 29: Increase the Number of States and Territories Meeting Standards

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.2.3 Increase the number of States and territories, which meet the standards for preventing, detecting and responding to animal health emergencies.	0	0	1	5	30	40

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Establish area emergency response organizations with Federal and State partnerships in each State to provide immediate response capability for emerging events.
- Expand partnerships with other Federal and State agencies and industry to respond to outbreaks.
- Hire a minimum of 12 emergency managers to help USDA and its partners meet the standards in each State.

### Key External Factors

Responses to actual emergencies, such as Low Pathogenic Avian Influenza and Exotic Newcastle Disease in California, impact resources and emergency response capability. The Federal and State expectations for building the response infrastructure involve using non-governmental employees who work temporarily in a variety of response roles. The pool of people who are capable of filling those temporary roles is limited and competing interests may limit their availability. In addition to this, trade barriers and conflicting priorities may limit U.S. exports and place demands on domestic resources.

### Improve Animal Diagnostic Services

USDA partners with States to provide effective emergency response systems to detect, respond to, and eliminate outbreaks of invasive pests and diseases. There is a need for enough people and diagnostic laboratories, supported by modern equipment, to ensure that scientific and regulatory activities are up to the challenges posed by invasive diseases. Having a fully operational diagnostic laboratory located close to a detection site and linked to a national network increases the rapidity with which an unknown sample can be accurately tested and increases the probability that an introduction can be contained before it becomes a significant outbreak. More aggressive scientific monitoring for a broader array of emerging agricultural diseases will lead to earlier discovery and more timely submission of samples. Diagnostic, epidemiological and methods development programs, along with real-time diagnostic capabilities are all essential components of an effective effort to optimize our agricultural biosecurity efforts.

Funding was first provided for the National Animal Health Laboratory Network in FY 2002. In FY 2003, five additional states received Homeland Security money and the actual number of certified laboratories

has been increased from 20 to 25. Any money received by the laboratories in FY 2004 will be concentrated on getting the 25 laboratories trained to conduct additional diagnostic tests and provided with lab equipment, not adding an additional state.

Exhibit 30: Ensure States Provide Animal Diagnostic Services

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.2.4 Increase the number of States that can provide necessary Federal animal diagnostic services	N/A	N/A	N/A	20	23	25

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Partner with States, universities, private practitioners, industry and state, federal and private laboratories to facilitate accurate, timely diagnostic services.
- Increase scientific monitoring for a broader array of emerging agricultural diseases and catalogue occurrences and outbreaks.

### Key External Factors

The introduction of emerging or foreign animal diseases, whether accidental or intentional, poses a threat to animal and human health and to the environment, making prevention, early detection, identification and rapid control or eradication a vital challenge. Collaboration between the public and private sectors plays a critical role in emergency preparedness.

### Improve Plant Diagnostic Laboratory Capabilities

USDA agencies partner with State agencies and universities to achieve a high level of agricultural biosecurity through the early detection, response and containment of outbreaks of invasive pests and diseases. Diagnostic laboratories, adequately staffed and stocked with cutting edge technology, are essential to meet the temporal and spatial challenges of invasive pests and diseases by expediting the testing and verification of samples to eliminate or contain outbreaks before they become epidemic. International Standards Organization Certification of the five National Plant Pest and Disease Diagnostic Network Centers will establish harmonized leadership and coordination of the diagnostic laboratories, ensure the performance of timely diagnostics with uniform and adequate quality and will smooth the progress of producing and maintaining a timely, comprehensive catalogue of pest and disease outbreak occurrences in a nationally accessible database. Certification and linked communication are essential to ensure the accurate identification of new or uncommon pests and diseases, expedite initial control responses, verify the physical boundaries of an outbreak and initiate regional or national containment strategies.

Exhibit 31: Ensure the Capabilities of Plant and Diagnostic Laboratories are Improved

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.2.5 Improve the capabilities of plant diagnostic laboratories:						
• Certify National Plant Pest and Disease Diagnostic Network Centers	N/A	N/A	N/A	N/A	3	5
• Connect State Plant Diagnostic Laboratory to the National Agricultural Pest Information System at Purdue University	N/A	N/A	N/A	N/A	50	52

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Open five (5) National Plant Pest and Disease Diagnostic Network Centers.
- Define the International Standards Organization (ISO) Certification criteria.
- Certify each National Plant Pest and Disease Diagnostic Network Center by ISO.
- Designate and connect 50 State laboratories to the National Agricultural Pest Information System.

### Key External Factors

Continuing the partnerships among USDA research agencies, State Departments of Agriculture, Regional Pest Management Centers, Universities and private laboratories, as well as funding, collaboration, regional and State priorities and interstate barriers may impact or impede progress at any point in time. Mission limitations, multiple point data management and integrated coordination may be difficult to achieve.

### Research Plant Pathogens

Existing and emerging plant pathogens pose serious economic threats to U.S. agricultural production and profitability because of a lack of resistance in commercial cultivars and effective control strategies for devastating diseases. USDA must conduct research to discover and exploit genetic mechanisms for plant pathogen control, develop agronomic germplasm with these defense traits and transfer these genetic resources for commercial use. To achieve these goals in an efficient and expedient manner, USDA will deploy its massive collection of genetic materials and genomic resources to identify or create genes that protect plants against disease symptoms. Advances in biotechnology provide genetic tools that facilitate the selection and development of desirable traits in crop species. Key partnerships have been developed with USDA and with States, commodity groups and industry. These efforts will help advance and expand the capacity of agriculture in the U.S. to provide a front-line of defense for plant pathogens that attack several different crop species, constituting the foundation of U.S. agricultural productivity. USDA will also develop and release to potential users varieties and/or germplasm that are new or provide significantly improved (either through traditional breeding or biotechnology) characteristics enhancing pest or disease resistance.

Exhibit 32: Improve Germplasm Resistance to Disease

Annual Performance Goals and Indicators	Fiscal Year					
	1999 Actual	2000 Actual	2001 Actual	2002 Actual	2003 Target	2004 Target
3.2.6 Release a series of new or improved varieties or germplasm that exhibit enhanced disease resistance to each of the following plant diseases: Sclerotinia, downy mildew, rusts and exotic viral diseases	9	9	5	5	5	5

### Means and Strategies

Planned actions for achieving this performance goal and related objective include the following:

- Use traditional breeding or biotechnology, develop and release new or improved germplasm, or varieties that have enhanced resistance to Sclerotinia, downy mildew, rusts and exotic viral diseases over the next 5 years.

### **Key External Factors**

Development of agronomic crop germplasm with genetic resistance to key disease pathogens is a time and labor intensive process which often is impeded by environmental influences on gene expression. Many agricultural crops species lack sufficient genomic information to expedite the discovery and use of gene markers that will effectively shorten the time-line for variety development. Depending on the genetic approach that is taken, trade barriers and conflicting priorities may limit the application and development of enhanced crop material.