

STRAT GOAL #	STRAT GOAL OBJECTIVE#	TASK#	ELEMENT#	Objective Description	Implementation Task Description	Performance Element Description	Lead or	Agency Contact		Performance Element Progress				Highlights & Accomplishments Current Year/2011	Highlights & Accomplishments 2012
								Name	Email	FY Plan to Start	FY Started	FY Completed	% Complete		
2	EDRR	EDRR.1.	EDRR.1.4.	EDRR.1.4.1.	Enhance plant or animal pathogen detection methods.	Develop enhanced identification methods and supportive technologies for a group of pathogens.	L	John Lydon/wisler/Fravel	john.lydon@ars.usda.gov			###	ongoing	An efficient diagnostic system for sensitive detection of 14 different viruses infecting important crops; A grower-friendly method for detection of Citrus tristeza virus; Advancing bacterial pathogen recognition through genomics; Genetics of the sudden oak death pathogen; Markers to fingerprint exotic blackberry rust pathogen; Diagnosis and sequencing of Liberibacter species associated with citrus and potato diseases; Identification of the causal agent associated with the almond brownline disease; Description of the fungus Dolabra nepheliae on rambutan and lychee. See ARS FY2010 Do No Harm report for additional information regarding these accomplishments.	1. The recent rapid emergence and spread of boxwood blight disease (<i>Calonectria pseudonaviculata</i>) in the United States places the nursery and landscape industry at substantial risk. A DNA-based boxwood blight diagnostic assay was developed for boxwood blight. This diagnostic test will be used by plant scientists developing methods to halt the spread of boxwood blight and to develop control measures for the disease. 2. Improved testing protocols were developed to detect a new species of potato cyst nematode and for all variants of the emerging tuber necrotic strain of <i>Potato virus Y (PVY)</i> . Protocols were transferred to state and federal partners, which conduct product testing and regulate interstate and international commerce of potatoes. 3. Canines, trained to detect citrus canker in the field, detect much lower levels of canker infections than human visual detection. The methodology has gone to commercialization, with dog team surveys to detect citrus canker in citrus plantations, thus aiding certification of groves free of canker for shipment.
2	EDRR	EDRR.2.	EDRR.2.1.	EDRR.2.1.1.	Make Taxonomic information more readily available to governments and the public.	Develop or enhance taxonomic expert lists to facilitate identification of terrestrial and aquatic organisms.	L	John Lydon/Susan McCarthy	john.lydon@ars.usda.gov		2010	###	ongoing	Information on taxonomic experts has been compiled and posted at the ARS National Invasive Species Information Center website (invasivespeciesinfo.gov) hosted at the ARS, National Agricultural Library. The list will be updated on a regular basis.	
2	EDRR	EDRR.3.	EDRR.3.3.	EDRR.3.3.1.	Develop and evaluate the use of predictive models to forecast the spread of specific invasive species.	Develop and test models to forecast spread of two (2) specific invaders.	L	John Lydon/Carruthers/michael Smith (ALB)/Jian Duan (EAB)/Gottwald?	john.lydon@ars.usda.gov	2009	2010			New research project developed in 2010 and implemented in 2011 on Landscape-level Assessment and Management of Invasive Weeds and Their Impacts in Agricultural and Natural Systems	1. A new statewide residential risk-based model and related survey was developed and is ready to be deployed for citrus huanglongbing (HLB) and its Asian citrus psyllid (ACP) vector. The California citrus industry will be parsed into strata and sampled based on a risk-bias algorithm previously designed and deployed in Florida. Survey data and model risk predictions provide the empirical evidence on which management decisions can be made. 2. An SEIDR model was finalized and validated to predict the spatial and temporal dynamics of citrus Huanglongbing (HLB), and extensive data from infected areas of South Florida. Model output suggests that controlling secondary infections by diseased tree removal and insecticide applications plus controlling primary infection from new insect immigrations by areawide control strategies, can reduce disease increase to a manageable 2 to 5% increase per year, which appears to be economically sustainable. 3. Degree-day models developed for predicting adult Asian longhorned beetle (ALB) emergence from infested trees estimate how long adult beetles survive. Results from these models have resulted in earlier (by 2-3 weeks) survey and monitoring, are used in timing deployment of attractants for early detection of adult beetles, and will be used to time the release of natural enemies for biological control of the beetle. The models of Annual Population Spread and Daily Localized Movement of ALB within indigenous populations in the country of origin are the cornerstone used for establish boundaries to focus survey, detection, monitoring, and control efforts in all established infestations discovered in the US, Canada and Europe. National and international regulatory agencies responsible for conducting ALB eradication programs use these models to optimize the effectiveness and minimize the costs of these efforts (e.g. APHIS, USFS, State Departments of Natural Resource in NY, IL, NJ, MA, and OH, CFIA (Canadian counterpart to APHIS) and similar agencies in Europe (e.g. France, Italy, the Netherlands, Germany, Austria, UK and Switzerland). These same models are also used for early detection of new ALB introductions and infestations by state, county, provincial and municipality agencies, universities, arboreta and civic organizations (e.g. Nature Conservatory). 4. The Argentine cactus moth threatens many Opuntia cactus species valued as a food, a forage, a wildlife habitat, and a major plant group contributing to ecosystem structure and biodiversity along the Atlantic and Gulf coast of Mississippi and Louisiana. Mass-rearing and sterile release technologies were transferred to the Florida Department of Plant Industries, and assisted in the establishment of an insectary

3	C&M	OC.8.1.2	Identify and address strategic gaps in regional invasive species control and management efforts and tools.	Evaluate, develop or enhance three (3) or more biological, chemical, or other control methods.	L	John Lydon/St rickman/Hackett	john.lydon@ars.usda.gov	###	Control strategy utilizing monitoring and sterile insect release mitigates the threat of the invasive Argentine cactus moth in the United States and eradicates the pest in Mexico. A New plant acid-based varroa mite treatment developed. New control solutions for aphids developed based on neuropeptide hormone technology. A new virus is being developed for the control of fire ants . Fungi that control psyllid adults identified and characterized. Improved methods for controlling codling moth while reducing chemical inputs. Enhanced control of wood boring insects using a new gel formulation of beneficial nematodes was developed. Herbicides for the effective control of orange hawkweed in pastures and open fields was demonstrated. Optimization of the aerial application of the arundo wasp was developed. See ARS Do No Harm report for FY2010 for additional control methods developed for invasive species. ARS scientists at Miles City, MT evaluated using fire management to reduce seed viability . Seeds of Japanese brome, spotted knapweed, Russian knapweed, and leafy spurge were deposited on the soil surface, subjected to fire at six fuel loads common to grasslands, and results compared to a non-burned control. Seedling emergence was reduced 79-88%; with fuel loads common to the north-central Great Plains, emergence was reduced by at least 97%; with fuel loads typical of the northeastern Great Plains, emergence probabilities were less than 1% for all species except spotted knapweed. Results indicate the high potential for using fire to disrupt the life cycle of invasive species across the northern Great Plains .	1. The nursery industry badly needs new methods of control of Phytophthora ramorum so that infested nurseries can be removed from quarantine status and resume normal production. The beneficial biocontrol fungus <i>Trichoderma asperellum</i> , reduced <i>P. ramorum</i> soil populations to non-detectable levels after six weeks. California regulatory agents confirmed these results at a commercial nursery, and the nursery was lifted from quarantine status. 2. Over 18,000 wheat and 5,000 barley lines were screened for resistance to stripe rust . This resulted in the advancement and release of more than 10 new wheat and barley varieties with increased stripe rust protection. 3. A new phorid decapitating fly of the imported fire ant, <i>Pseudacteon culltellatus</i> , near Miami and in Gainesville, FL, has been confirmed to be established. Another species of phorid decapitating fly, <i>Pseudacteon obtusus</i> , preferentially attacks larger fire ant workers. This phorid fly was shown to multiply well even in the presence of other species of decapitating flies. This is significant because elimination of the larger worker ants will have a greater negative effect on the colony. 4. An encapsulated formulation of catnip oil was developed by ARS scientists in Lincoln, Nebraska to control immature stable flies developing in animal wastes. The formulation deters female flies from depositing their eggs and inhibits larval development under field conditions. A single application is effective for 5-7 days. This is the first botanical-based product for the control of immature stable flies . The formulation, once registered, will provide an effective stable fly control option for organic cattle producers. 5. A new vaccine against cattle ticks has great potential for integration into APHIS' Cattle Fever Tick Eradication Program and for tick management in contribution toward international food security. 6. Cold treatment stops coffee berry borer : Green coffee carries the risk of spreading coffee berry borer worldwide through global trade. The freezing tolerance of the coffee berry borer was determined, and the temperature and time was established to control 100 percent of all life stages. Hawaii State regulators are using this information to implement a freezing treatment protocol that allows coffee growers in the infested area to ship green coffee to other islands without the need for methyl bromide fumigation. 7. Since the invasive, light brown apple moth (LBAM) was found in California in 2007, several countries have imposed trade restrictions on some of its host fruits and vegetables. A radiation dose was determined that resulted in 100 percent control of LBAM. Some countries require zero tolerance to access their markets. This information will facilitate the trade of commodities that are hosts of LBAM. 8. First biocontrol agent of the air potato released; the Asian leaf beetle. Release and establishment of <i>Lilicoreris cheni</i> promises to help reduce deleterious impacts of air potato on conservation lands and permit recovery of native species excluded by this weed in the U.S. Gulf Coast, and especially Florida where it occurs in 34 counties including many within the historic boundaries of Florida's unique Everglades ecosystem.	
5	Org/Coll	OC.8.1.3	Develop and provide portal, gateway, and reference information, as well as public access to Federal research data, as appropriate and legally allowed.	The Invasive Species Compendium will be developed by interested agencies.	L	John Lydon/S usan McCarthy	john.lydon@ars.usda.gov	2010	In complement to the Invasive Species Compendium, the ARS National Agriculture Library maintains two important web sites (National Invasive Species Information Center, invasivespeciesinfo.gov and The Federal Interagency Committee on Invasive Terrestrial Animals and Pathogens (ITAP), http://riley.nal.usda.gov/nal_display/index.php?info_center=19&tax_level=1&tax_subject=404) that are information gateway to invasive species information; covering Federal, State, local and international sources. Arrangements are being made to information on the upcoming ISC launch by way of the ARS NISIC site.		
5	Org/Coll	OC.8.2.2	Work cooperatively to develop common data standards and enhance databases.	Link and expand data bases of invasive plant pathogens.	L	Amy Rossman// Dave Chitwood	amy.rossman@ars.usda.gov	com plete d	ARS also lists fungal diagnostic fact sheets for on about 100 fungi of important agricultural and forest crops not in the U.S. - http://nt.ars-grin.gov/sbmlweb/fungi/diagnosticfactsheets.cfm The availability of this information is also provided on the ARS NISIC site.	Descriptions and illustrations are available over the Web and have been published as part of the CABI Invasive Species Compendium. As new fungal invasives arrive, the descriptions and illustrations will be included on the Web site.	
1	Prevention	P.1.1.1	Prevent establishment of intentionally introduced invasive species.	Develop screening processes to evaluate invasiveness of plants which are intended for planting and are moving in trade.	P	John Lydon/Don Ortwebster ?		2010	ongo ing	Evaluate the invasiveness of <i>Miscanthus</i> spp. when grown in a biofuels format	Fertile seed in <i>Miscanthus</i> cultivars constitutes a considerable risk factor for invasive potential and spread rates to non-crop areas. Whereas feral populations of sterile <i>M. x giganteus</i> would need to experience frequent and severe disturbance to pose a significant invasion risk, cultivars of <i>M. x giganteus</i> bearing fertile seed may be very difficult, if not impossible, to contain. IS THIS IN THE RIGHT PLACE???
1	Prevention	P.1.2.1		Develop screening processes to evaluate invasiveness of aquatic animals (e.g., fish, mollusks, crustaceans and aquatic amphibians) moving in trade.	P	Jeff Silverstein					NA for ARS