

Invasive Species and Pests

Plants and animals have been introduced into California since the mid 1700s. “California crops” derive from European, South American and Asian ancestors. Undesirable invasive species have affected agricultural costs and productivity by decreasing yields and quality and acting as vectors of plant and animal diseases. In California, the spread of invasive species has also threatened the biodiversity of native plant and wildlife and the quality and quantity of water supplies. The term “invasive species” refers to non-native (i.e., exotic) pests and diseases that are likely to cause agricultural, environmental or economic harm or be harmful to food safety and human health. While costs for control of indigenous pests and diseases are generally borne by the private sector, activities to control invasive non-native species have typically been an expense for taxpayers.

The California Department of Agriculture (CDFA) and the U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA—APHIS) cooperate in efforts to exclude, detect, contain, suppress, and eradicate invasive species that threaten agriculture. They also issue pest-free certification for California exports. At international air, land, and sea ports of entry, USDA—APHIS, together with the Homeland Security Agency is responsible for intercepting entry into the United States of prohibited plant and animal material and products, while CDFA conducts similar inspections and exclusion measures at its 16 interstate border protection stations. If necessary to contain spread of outbreaks within the state, CDFA establishes interior regional quarantines and requires permits for movement of pest-free or disease-free plant or animal materials. USDA similarly may establish prohibitions on interstate movement of materials.

California’s waterways are vulnerable to the introduction of invasive species from multiple sources, including the discharge ballast water from ocean freighters, and damage to the water transfer system could impact irrigation and urban water supplies. Invasive plants infest over 20 million acres, or about 20 percent of land in the state (CDFA 2005), decreasing agricultural productivity and adding costs for pest control. They also raise maintenance costs for roads, public lands, and waterways. The duration, rate of spread and extent of invasion determine the feasible response. Nevertheless, pest control measures are not without controversy, whether they be mechanical removal, depopulation, application of chemical pesticides, introduction of predatory or disease causing “biocontrol” organisms, genetic engineering for pest resistance, or regulatory imposition of quarantines and the requirement of pest-free certification and permits for export, import or local transport. However, a policy of preemptive surveillance and exclusion rather than reactive adaptation would likely minimize the long-run costs associated with invasive species.

About \$450 million including emergency funds was spent by the state and federal governments to control invasive pests and diseases of agricultural plants and animals in California during 2003. The state spent \$128.4 million and the federal government spent \$321.2 million. The largest share (44 percent) went to emergency activities to contain Pierce’s disease which harms many crops, including grapes, and is vectored by the glassy-winged sharpshooter and to successfully eradicate exotic Newcastle disease, a fatal disease of poultry and other birds. Not including those two emergency programs,

California spent \$22.3 million to control invasive pests and diseases affecting livestock and poultry and \$85.9 million (primarily on detection and eradication) to control pests and diseases affecting plants (Kuminoff, Sumner and Goldman 2000). That year, the federal government spent \$1.8 million on detection and exclusion of pests and diseases affecting livestock and poultry and \$138.7 million on control of pests and diseases affecting plant crops in California (Kuminoff, Sumner and Goldman 2000). According to Sumner, Brunke and Kreith (2006), the benefits of controlling invasive species and diseases greatly outweigh the costs of government outlays on control programs.

Several cases of bovine spongiform encephalopathy (BSE or mad cow disease) occurred in the United States between 2004 and 2006. This has led to pressure for animal identification and traceability systems, regulation of feed, and increased inspections. No cases of BSE have been reported in California cows. State and federal agencies also engage in exclusion, monitoring and planning to prevent outbreaks of foot and mouth disease (FMD) which could prove damaging for the California dairy and beef industries. FMD caused billions in damage in the United Kingdom in the 1990s but has not been found in California since 1929 (Ekboir 1999).

– University of California Agricultural Issues Center, July 2009

Sources:

California Department of Fish and Game. 2008. *California Aquatic Invasive Species Management Plan*. Available at: http://groups.ucanr.org/Ballast_Outreach/files/49547.pdf

California Department of Food and Agriculture. 2005. *California Noxious & Invasive Weed Action Plan*. Available at: http://www.cdffa.ca.gov/PHPPS/IPC/noxweedinfo/pdfs/noxious_weed_plan.pdf

Center for Invasive Species Research . 2009. "Frequently Asked Questions about Invasive Species." Available at: http://cirs.ucr.edu/invasive_species_faqs.html

Ekboir, Javier M. 1999. *Potential Impact of Foot-and-mouth Disease in California: The Role and Contribution of Animal Health Surveillance and Monitoring Services*. University of California, Agricultural Issues Center. Available at: <http://aic.ucdavis.edu/pub/EkboirFMD-part1.pdf>

Kuminoff, Nicolai V., Daniel A. Sumner and George Goldman. 2000. Chapter V.1: "Exotic Pests and Diseases," *The Measure of California Agriculture*, University of California Agricultural Issues Center. Data updated through 2004.

Sumner, Daniel A., H. Brunke, and M. Kreith, University of California Agricultural Issues Center. 2006. "Aggregate Costs and Benefits of Government Invasive-species Control Measures in California." Proceedings of the International Conference on The Future of Agriculture: Science, Stewardship and Sustainability. Available at: http://aic.ucdavis.edu/publications/Costs-Benefits_govCA-EPDControl.pdf