



United States Department of Agriculture

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## **USDA Reports Synthesize Literature on Climate Change Effects and Adaptation Strategies for U.S. Agriculture and Forests**

WASHINGTON, Feb. 5, 2013—The U.S. Department of Agriculture (USDA) released two comprehensive reports today that synthesize the scientific literature on climate change effects and adaptation strategies for U.S. agriculture and forests. The reports, entitled [\*Climate Change and Agriculture: Effects and Adaptation\*](#) and the [\*Effects of Climate Variability and Change on Forest Ecosystems: A Comprehensive Science Synthesis for the U.S. Forest Sector\*](#), were created as inputs to the National Climate Assessment. Scientists from the federal service, universities, non-governmental organizations, industry, tribal lands and the private sector contributed to the peer-reviewed studies.

“These reports present the challenges that U.S. agriculture and forests will face in this century from global climate change,” said William Hohenstein, Director of the Climate Change Program Office in USDA’s Office of the Chief Economist. “They give us a framework for understanding the implications of climate change, in order to meet our future demands for food, feed, fiber, and fuel.”

The reports indicate how climate change is affecting U.S. farms, forests, grasslands, and rural communities. While U.S. agriculture and resource management have long histories of successful adaptation to climate variability, the accelerating pace and intensity of climate change presents new challenges to be addressed, as highlighted in the reports.

For example, the agricultural report indicates increases in atmospheric carbon dioxide, rising temperatures, and altered precipitation patterns will affect agricultural productivity. Climate change will exacerbate the stresses already occurring from weeds, insects, and disease. Increases in the incidence of extreme weather events will have an increasing influence on agricultural productivity. Over the next 25 years, the effects of climate change on agricultural production and economic outcomes for both producers and consumers in the United States are expected to be mixed, depending on regional conditions. Beyond 2050, changes are expected to include shifts in crop production areas, increases in pest control expenses, and greater disease prevalence.

The forest sector report indicates that the most rapidly visible and significant short-term effects on forest ecosystems will be caused by fire, insects, invasive species, and combinations of

multiple stressors. Wildfire is expected to increase throughout the United States, causing at least a doubling of area burned by the mid-21<sup>st</sup> century.

“This report strengthens our resolve to aggressively continue treating and restoring our nation's forests to reduce future fire impacts,” said U.S. Forest Service Chief Tom Tidwell. “Recent fires in Colorado and other areas throughout the country serve as a grim portent for what we expect to see more of in the future. I'm confident that we have a strong plan in place to keep pace with the impacts a changing climate will have on our forests and grasslands.”

Although some regions will be affected more than others, these disturbances are likely to change the structure and function of ecosystems across millions of acres over a short period of time with detrimental effects on forest resources. Anticipated effects include increased tree mortality, changes in species assemblages, and reduced water quality.

The reports also explore the potential for adaptive practices to reduce the negative effects of climate change and to potentially take advantage of new opportunities in the forestry and agriculture sectors. Successful adaptation will require research to identify management practices that enhance the resilience of these systems to climate change effects, develop stress-tolerant plant and animal varieties, and establish new approaches to conserve soil and water resources.

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