USDA Regional Climate Hubs: Managing your risk in a changing climate.

Climate Risks in the Southwest

What type of agricultural production is in the Southwest?

The Southwestern states offer highly diverse agricultural crops which include cotton, lettuce, tree fruit, cantaloupes, grapes, onions and pecans. The region relies on irrigation more heavily than any other region in the U.S. As such, water supplies, primarily driven by winter snowfall amounts in the Sierra Nevada Mountains and the Rocky Mountains, are critical to meeting irrigation needs in the Southwest. Total farm income for the region exceeded $55.7 billion in 2012. Livestock account for approximately one-third of the agricultural profits in these 6 states. Ranchers adjust livestock numbers their rangelands can support based on the amount of seasonal and annual rainfall.

How are climate change and weather variability affecting Southwestern producers?

Producers in the Southwestern United States are already learning to operate in a changing climate and under more extreme weather conditions. These changes are impacting producers' day-to-day decisions. Farmers and ranchers are currently coping with weather-related issues including:

- A prolonged, extreme drought persisting over several years.
- Large, destructive and catastrophic wildfires that have taken both lives and property.
- Expansive areas of forest tree mortality as a result of insect outbreaks.
- A severe decline in reservoir water supplies across the region to previously unseen levels.
- Documented rising temperatures that increase the frequency of heat waves and reduce the frequency of cold snaps.

Changing climatic conditions in the Southwest that impact temperatures, alter growing seasons, increase plant moisture stress, and have the potential to trigger extreme events directly contribute to these recent regional catastrophes and water scarcities. Water is a scarce and vital resource to farmers and ranchers in the region. Models predict that drought and increased competition for water will be a more frequent reality in the coming years. This means reduced soil moisture and grazing productivity. Combined with warmer temperatures, farmers will face a longer frost-free season, which can reduce yields of tree fruit, and wine grapes, stress livestock, and increase agricultural water demand.

What is USDA doing about it?

USDA has established a Southwestern Regional Climate Hub (SWRCH) in Las Cruces, N,M. This multi-agency effort (Agricultural Research Service, Forest Service, Natural Resources Conservation Service) is being led by Al Rango, Senior Level Research Hydrologist with the Agricultural Research Service. The Hub will deliver science-based knowledge and practical information to farmers, ranchers, and forest landowners that will help them to adapt to climate change and weather variability by coordinating with local and regional partners in Federal and state agencies, universities, NGO's, private companies, and Tribes.

The Hub will provide:

- Technical support for land managers to respond to drought, heat stress, floods, pests, and changes in growing season.
- Regional assessments and forecasts for hazard and adaptation planning.
- Outreach and education for land managers on ways to mitigate risks and thrive despite change.

Building on success stories

Water Supply Forecasts: From 2006-2012, the Agricultural Research Service and Natural Resources Conservation Service partnered with the National Science Foundation, New Mexico State University and landowners to expand and upgrade instrumentation throughout the Upper Rio Grande Watershed in northern New Mexico. These instrumented stations are used in real time to provide water supply forecasts for the Upper Rio Grande, which supplies 56 percent of the irrigated agricultural needs in New Mexico. The improved forecasts support decision-making regarding crop selection, time of planting and irrigation scheduling.

Forest Pest Management: From 2000-2009, an estimated 21.7 million acres of forest were impacted by bark beetles in the intermountain west. Although western forests have experienced regular outbreaks of insects throughout history, recent infestations are unprecedented due to extended drought and warmer winters. One recently treated area is within California's Lake Davis Recreational Area of the Plumas National Forest. The Forest Service is developing comprehensive restoration strategies to address insect infestations and other significant disturbance factors that threaten the long-term sustainability of southwestern forests areas and restore weed-invested rangelands; and improve productivity of Pacific Northwest agricultural and range lands under current and potential future climate conditions.

Need more information?

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