USDA Regional Climate Hubs: Southwest Regional Vulnerability Assessment Summary

Climate Vulnerabilities in the Southwest

Regional Description:

The southwestern region contains high climatic diversity, with locations that claim the highest and lowest amounts of annual precipitation, and the highest and lowest elevations in the 48 contiguous states. Within the region, producers cope with severe drought effects on crop and animal systems, catastrophic wildfires, insect outbreaks, and sea level rise. The Southwest States grow diverse agricultural crops, including cotton, lettuce, tree fruit, cantaloupes, grapes, onions, macadamia nuts, coffee, and pecans. The region relies on irrigation more heavily than any other region in the United States.Water supplies, primarily from winter snowfall in the Sierra Nevada and Rocky Mountains, are critical to meeting irrigation needs in the Southwest. Total farm income for the region exceeded $56 billion in 2012, $45 billion of which was produced in California. Livestock account for approximately one-third of the agricultural profits in these six states.

Climate Related Hazards and Vulnerabilities:

- **Freshwater resources in all States of the region are limited.** Regardless of a slight increase or decrease in future precipitation, elevated temperatures will lead to less available surface water by increasing evaporation and transpiration. Altered snowpack levels with earlier snow melt and diminished runoff to reservoirs decreases water availability. Dropping groundwater aquifer levels are reducing irrigation water, and increasing costs.
- **Longer, hotter growing seasons** with earlier arrival of spring as well as altered distribution of seasonal precip.
- **Greater frequency, duration, and intensity of drought** can reduce production and economic viability of enterprises, and increase reliance on irrigation.
- **Abundant fuels and warmer temperatures** lead to large, destructive and catastrophic wildfires that have taken both lives and property.

Adaptation and Mitigation Strategies:

- Genetic development of cultivars through breeding programs can help offset negative effects of rising temperatures, drought, and soil salinity.
- For crops, growers can adjust planting dates, switch to alternate varieties with different maturity dates, and select more heat tolerant varieties.
- Increase soil health through enhanced soil management and residue management.
- Increase irrigation efficiency and utilize new technology for subsurface irrigation to reduce water use.
- Alter grazing strategies and use supplemental feed, use alternative livestock breeds.

Regional Priorities:

To address the impacts of climate change, we host workshops throughout the region in partnership with Cooperative Extension. We reach the next generation of farmers and ranchers via standards-based education modules. We provide an e-bulletin highlighting our programs, events and new research. We partner with other Federal climate groups to host events and share information. Our hub specializes in developing and translating scientific climate information to support Southwestern farmers, ranchers and foresters. We are integrating climate information into NRCS Ecological Site Descriptions used as a basis for implementing conservation programs

To learn more about the USDA Climate Hubs visit: www.usda.gov/climatehubs
To read the full Vulnerability Assessment visit: http://go.usa.gov/3eEfR