

USDA Regional Climate Hubs: Northern Plains Regional Vulnerability Assessment Summary



Climate Vulnerabilities in the Northern Plains

Regional Description:

This region includes more than one-third of the U.S. pasture/rangeland acreage (>140 million acres) along with 37% of the US lands enrolled in conservation programs, substantial areas of both dryland and irrigated cropland, mosaics of cropland and grassland, and forested lands. Livestock production includes beef (cow-calf and yearling operations, feedlots), sheep, hogs, and dairy. Crop production is dominated by corn, soybeans, wheat, barley, alfalfa, and hay, but it also includes an array of other crops such as potatoes, sugar beets, dry beans, sunflowers, millet, canola, barley, lentils and dry peas. Public and private forestland contributes clean water, recreation, wildlife habitat, and wood products. In addition, agroforestry includes windbreaks, silvopasture, riparian forest buffers, and alley cropping. Snow-dominated high elevations of the Rocky Mountains serve as reservoirs for water storage and supply irrigation water to croplands/haylands and for municipal use.

Climate Related Hazards and Vulnerabilities:

- **Longer and warmer growing seasons, earlier arrival of spring, and altered distribution of seasonal precipitation (more fall, winter and spring precipitation, less summer precipitation)** can 1) modify snowpack levels with earlier snow melt and runoff to reservoirs influencing availability of irrigation water for producers and municipalities, 2) change pest and weed pressure for agricultural enterprises and forestry, and 3) enhance competitive ability of non-native invasive plants and woody plant expansion which reduces livestock carrying capacity through negative impacts on forage quantity and quality, increases risk of wildfire, and may negatively impact habitat for species of concern.
- **Extreme weather events:** 1) greater frequency, duration, and intensity of drought can reduce forage and crop production, and 2) greater frequency of downpours could present water runoff and quality issues for lands with erosion risk and/or drainage issues.

Adaptation and Mitigation Strategies:

- Technological advances in plant/animal genetics, and irrigation efficiency to help offset negative effects of rising temperatures, drought, and altered distribution of precipitation.
- Increase soil health through 1) enhanced soil and residue management, 2) use of double cropping or cover crops, and 3) integration of crops and livestock.
- Adaptive grazing management to provide flexibility (stocking rates, time/season of grazing/rest, grassbanking) for matching forage demand with availability.
- Increasing tree species and seed source diversity, and planting pest-tolerant, drought resistant trees.

Regional Priorities:

- Extension and producer outreach, such as field days/demonstrations, interactive short videos, and shared experiences of adaptive management.
- Develop educational materials with partners showcasing agricultural producers adapting to weather variability and changing climate for use in K-8 classrooms.
- Coordinate communication/information exchange on adaptive management and mitigation strategies.

To learn more about the USDA Climate Hubs visit: www.usda.gov/climatehubs

To read the full Vulnerability Assessment visit: <http://go.usa.gov/3eENJ>