Water Resilience

Overview:

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Safe and readily available water is critical to agricultural production, public health, and our environment. Research on water resiliency is needed to advance agricultural resilience and conservation efforts to secure the long-term sustainability of water sources for agriculture, communities, and the environment. Research is also needed to develop practices and technologies that ensure water resiliency and conservation amid a changing climate with more frequent and extreme climatic events, such as floods and droughts.

Outcome Goals and Impacts:

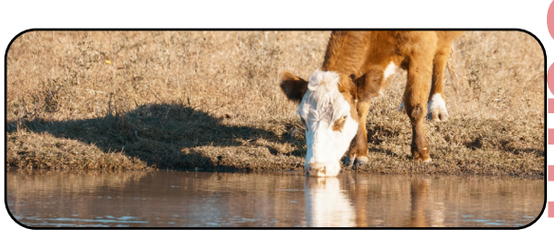
- Increase water use efficiency by 50% across food and agriculture systems (i.e., production and processing).
- Enhance the health and U.S. Environmental Protection Agency compliance of our rivers, lakes, streams, groundwater, and coastal waters by reducing water quality impairment within agricultural watersheds by 40%.
- Enhance agricultural system resilience by reducing agricultural production losses to waterlogging, flooding, and drought by 50%.
- ***Cross-cutting outcome:*** Annually train an additional 20,000 students in food, agriculture, and renewable natural resources, addressing the growing demand for a skilled workforce in these sectors. Students will be recruited with diverse backgrounds and experiences reflective of the U.S. population.

Funding Requirement:

To achieve our water resilience goals and address other societal challenges in the U.S., it's critical to allocate an additional $1.9 billion annually in federal research funding to land-grant universities over the next decade. This annual increase is equivalent to just 1% of the total federal research and development budget.

Research Opportunities:

- Develop and deploy an effective multi-year strategy that prioritizes water monitoring and data collection, innovative practices and technologies, and policy interventions that improves agricultural water use efficiency, flood tolerance and mitigation, water reuse, crop and livestock productivity, profitability, and climate change resiliency.
- Develop water-efficient and flood- and drought-resistant crops.
- Develop and implement AI-driven irrigation systems.
- Develop best management practices for water conservation, reuse, and quality.



Risk of Not Taking Action:

- Less water will be available for drinking and home use in rural and urban communities, as well as for agricultural production. Water levels in streams and lakes will further decline and negatively impact wildlife and recreation.
- Increased withdrawal of groundwater will exacerbate land subsidence that damages community infrastructure (e.g., roads, bridges, water wells, buildings, levees), leading to a heavy financial burden on communities, loss of flooding protection, and the decreased capacity of aquifers to store water.
- The quality of water used for drinking, irrigation and recreation will significantly decline, resulting in negative public health consequences.