# GRAND CHALLENGES IN FOOD & AGRICULTURAL RESEARCH

*Addressing Issues Through Our Land-grant Universities & Agricultural Experiment Stations*

Experiment Station
Committee on Organization
and Policy (ESCOP)

# THE GRAND CHALLENGES

Over the years, public investment in research has been key to increased agricultural productivity, community resilience, and economic growth. As the physical environment changes and human societies grow and evolve, our food and agricultural systems face increasingly complex and pervasive challenges—or Grand Challenges. Operating on the forefront of basic and applied research, Land-grant Universities and their partnered Agricultural Experiment Stations are uniquely positioned to address these challenges and impact food and agricultural systems worldwide.

*Sustainability, competitiveness, and profitability of food and agriculture*

*Adapt to and mitigate the impacts of climate change on food, feed, fiber, and fuel systems*

*Improve human health, nutrition, and wellness*

*Support energy security and the development of the bioeconomy from renewable natural resources*

*Play a leadership role in a safe, secure, and abundant food supply*

*Strengthen individual, family, and community development and resilience*

*Heighten environmental stewardship through sustainable management practices*

# CAPACITY & RESOURCES

Institutions in all 50 states and many territories with research facilities representing diverse ecosystems, communities, and food systems and regional associations to facilitate multistate collaborations

Impartial, peer-reviewed science, technology, and recommendations

Far-reaching Extension networks to work with and inform communities across the U.S.

Skilled scientists, educators, students, and staff

Strong relationships with government agencies, non-profit organizations, farm and commodity groups, and the private sector

State-of-the-art tools, technology, and computational centers
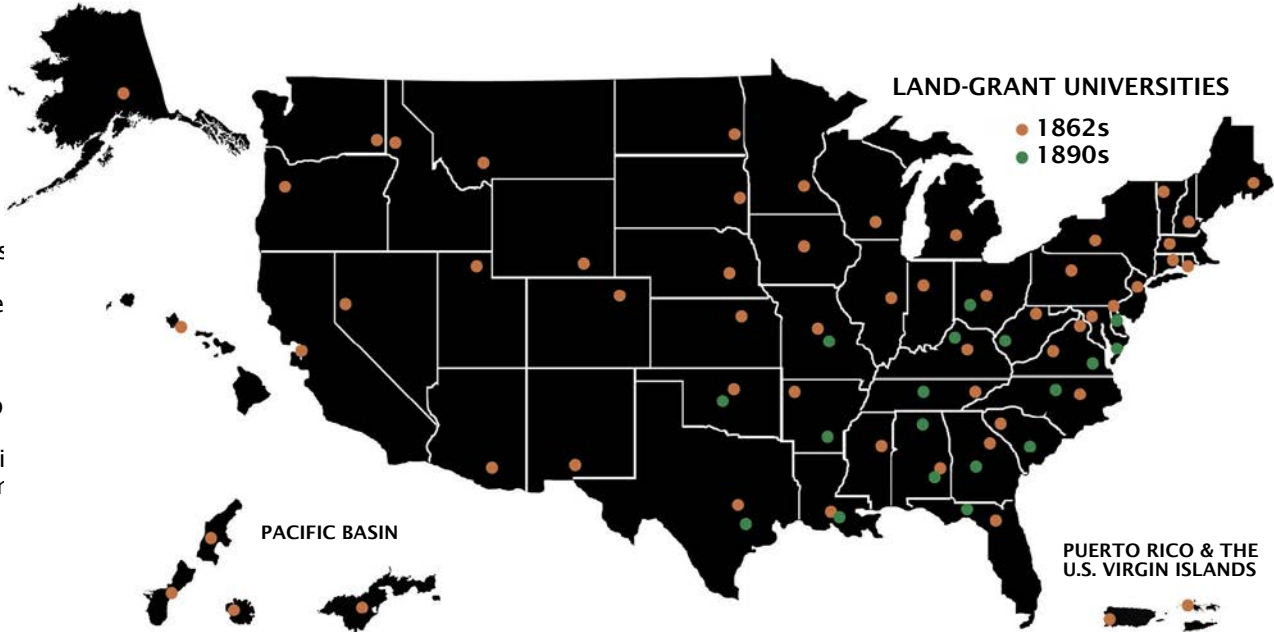
# GAPS & NEEDS

Resources to improve campus infrastructure

Models and decision-making tools that account for interlinked variables and uncertainty

Interdisciplinary, systems-level research

Harnessing advances in big data, genetics, nanotechnology, and other emerging fields

Broader focus on sustainability and wellness

Strategies for communicating information and sharing technology

Evidence-based guidance for policy and regulation

**LAND-GRANT UNIVERSITIES**

- 1862s
- 1890s

**PACIFIC BASIN**

**PUERTO RICO & THE U.S. VIRGIN ISLANDS**

To learn about research needs, resources, and success stories for other Grand Challenge areas, see the rest of this series: escop.info/roadmap

The Grand Challenges are part of the *Science Roadmap for Food and Agriculture* developed by the Experiment Station Committee on Organization and Policy (ESCOP) to guide food and agricultural research. A unit of the Association of Public and Land-grant Universities, ESCOP governs the research activities of Land-grant Universities and Agricultural Experiment Stations. Borne out of the Hatch Act of 1887 and the Evans-Allen Act of 1977, these premier institutions are supported by USDA NIFA and by collaborations across federal, regional, state, nonprofits, and private institutions. For more information:

- escop.info
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