

# IMPROVING HUMAN HEALTH, NUTRITION & WELLNESS

A diverse, productive, and resilient food system ensures healthy, fulfilling lives free from diet-related diseases, such as obesity and Type-2 diabetes. Achieving such a system can be challenging due to socioeconomic conditions, geopolitical instability, climate change, and other factors. Finding sustainable solutions will require interdisciplinary teams, systems-level approaches, public-private partnerships, and broader focus on wellness. With continued support, the Land-grant University system is poised to provide research, technology, and programs that enhance American food systems and improve human health, nutrition, and wellness.

## RESEARCH PRIORITIES



Examine the impacts of social, economic, environmental, and technological factors on food systems



Deliver clear, accurate messages about health and nutrition and new foods, technologies, and programs



Find better ways to distribute food and reduce food waste



Enhance the nutritional value of food



Reduce use of chemicals that can harm environmental and human health



Prevent, detect, and control food safety hazards

## CAPACITY & RESOURCES



Institutions in all 50 states and many U.S. territories with research sites representing diverse ecosystems, communities, and food production systems



Scientists, educators, students, and staff with expertise in agriculture, nutrition, sociology, molecular biology, and other disciplines



Impartial, peer-reviewed science, technology, and recommendations



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



Strong relationships with government agencies, farm and commodity groups, and the private sector



## SUCCESS STORIES

Food systems that prevent diet-related diseases and reduce healthcare costs help build resilient communities. Research and Extension programs at America's Land-grant Universities have helped improve the health, nutrition, and wellness of the U.S. population. For example:

**78%** reduction in pest incidence and **71%** reduction in pesticide use in schools using **University of Arizona's** pest management programs, protecting the health and safety of over **303,600 students**.

A **multistate** research team developed ultraviolet and nanoparticle technology that inactivates allergens in peanuts, shrimp, and wheat, reducing the potential for cross contamination on food processing lines and making these foods safe for more consumers.

**>1,000** 3rd and 4th graders in Texas' "Learn, Grow, Eat & Go!" program say they like vegetables after building gardens at school, eating their harvest, and learning about nutrition.

**75** colleges are using a program developed by Land-grant Universities to provide healthier campuses and encourage healthy diet, exercise, and stress management choices among their students.

**85%** of adults and **75%** of youths improved nutrition practices after participating in a **New Mexico State University** program. **1/3** improved their physical activity. With more than **55,000 participants**, these changes could reduce total health-related expenses by **\$6.6 million**.

**70%** of participants in **Kansas State University's** "Keys to Embracing Aging" program increased their level of physical activity. These changes could help prevent disability and chronic disease.

**50%** of older adults visiting group meal sites in **Washington, D.C.**, have increased their intake of fruits, vegetables, and whole grains and improved their food safety practices at home because of **University of the District of Columbia** programs.

Land-grant University researchers are using genebank resources to breed crop varieties with higher yields, higher nutrient levels, and better adaptation to diverse growing areas. **29 million Americans** with diabetes could use potatoes bred with antiglycemic properties to control the disease.

**700 pounds** of potatoes, **200 pumpkins**, and **400 pounds** of other produce grown for local food banks and elder care programs by schoolchildren and other community members with the help of **Fort Peck Community College** Reservation Extension.

Interviews by Land-grant University researchers suggest that engaging with nature and outdoor recreation have physical and mental health benefits for war veterans, especially women and wounded veterans.



Since 2008, a **multistate** research team has coordinated pioneering research about bioactive compounds in plants, such as flavonoids in ginkgo leaves that reduce heart disease risk and cancer-fighting properties of purple potatoes, cruciferous vegetables, and legumes. These insights are guiding preventative screenings, diet-based interventions, new food products, daily intake recommendations, and accurate food labels and health statements. This ensures a supply of healthy food options, gives consumers better access to information they need to make healthy diet choices, and helps people stave off serious illness and reduce healthcare costs.



Land-grant University researchers showed that higher opioid abuse among rural adolescents is partly due to greater reliance on emergency rooms, where these drugs are more often prescribed. This and other research informed models for opioid use vulnerability, prevention, and treatment that are used by the United Nations and USDA Office of Economic Development.

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](http://escop.info)
- [aplu.org](http://aplu.org)

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



Experiment Station  
Committee on Organization  
and Policy (ESCOP)