



National Agricultural Biotechnology Council

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Providing an open forum for exploring issues in agricultural biotechnology

Response to OSTP's

Request for Information: Building a 21st Century Bioeconomy

The National Agricultural Biotechnology Council, a consortium of major public-sector agricultural research institutions, is pleased to provide the following documents—cover pages herewith appended with URLs—that address the grand challenges for the bioeconomy in agriculture, health, energy and climate change:

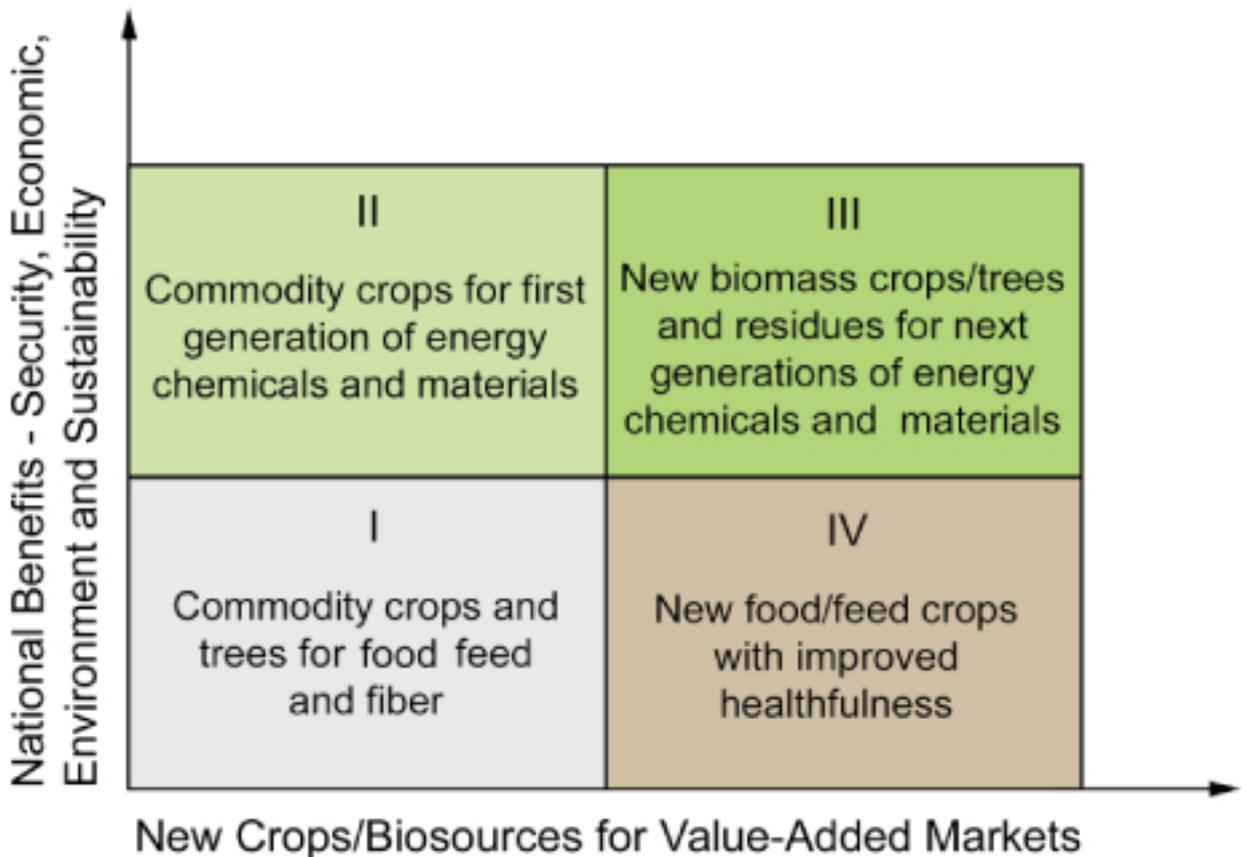
- *Agriculture and Forestry for Energy, Chemicals and Materials, The Road Forward*, which addresses agriculture and energy
- *Food and Agricultural Research: Innovation to Transform Human Health*, which addresses agriculture and health
- *Agricultural Water Security: Research and Development Prescription for Improving Water Use Efficiency Availability and Quality*, which addresses agriculture and water
- *Agriculture and the Changing Climate*, which addresses agriculture and global warming.

In addition, we are providing our *Vision for Agricultural Research and Development in the 21st Century*, which was the basis for Executive Order 13134, *Developing and Promoting Biobased Products and BioEnergy*, issued by President Clinton in 1999.

For further information, please contact Ralph W.F. Hardy, President of NABC,

[REDACTED]

Agriculture and Forestry for Energy, Chemicals and Materials: *The Road Forward*



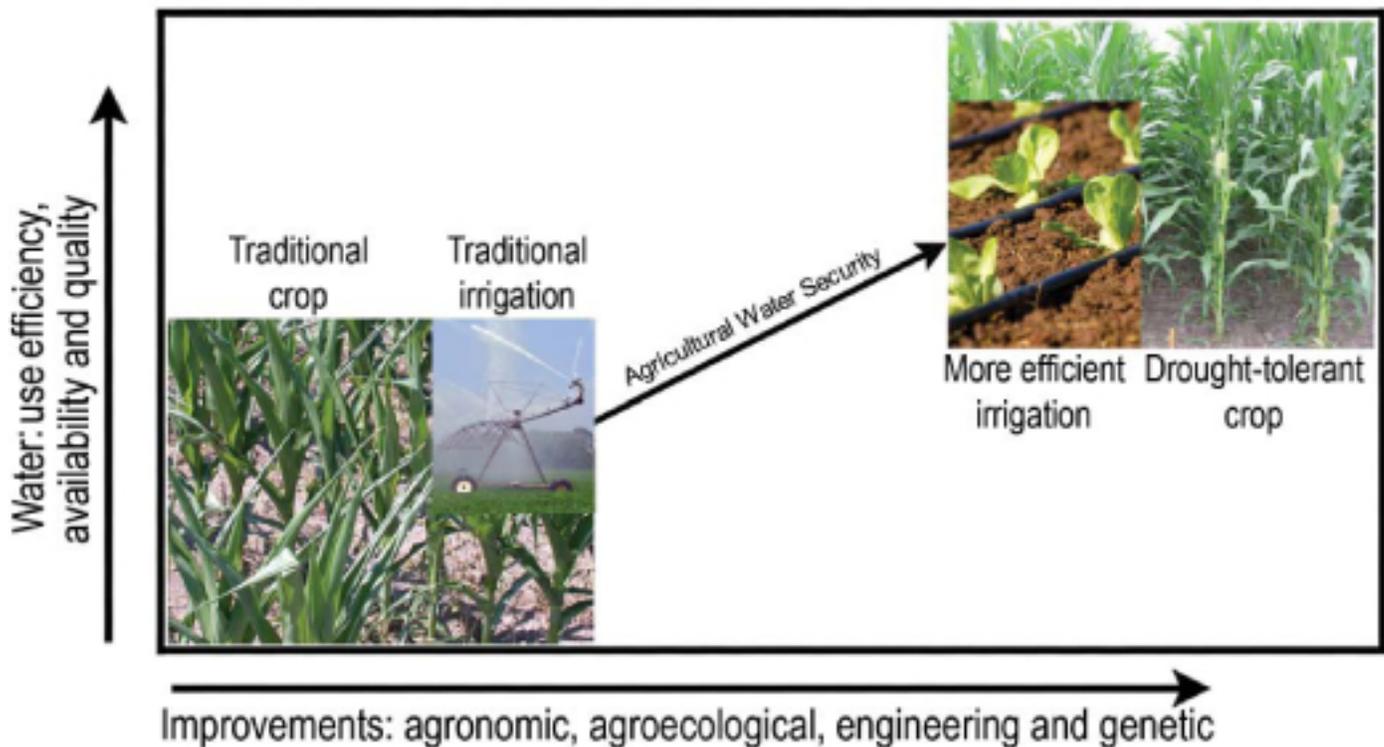
Food and Agricultural Research: Innovation to Transform Human Health



- The role that food plays in human health is historic and broad. “Let your food be your remedy,” attributed to Hippocrates 24 centuries ago, and “an apple a day keeps the doctor away” both encapsulate the food-health relationship.
- A 21st-century plan to make food and agriculture a full partner in human health is proposed. It builds on multiple seminal contributions to key treatment advances from research in food and agriculture, and expands low-cost approaches and quality-of-life benefits by mitigating diet-related diseases.
- A 10% reduction in healthcare costs would save over \$200 billion every year.



Agricultural Water Security: Research and Development Prescription for Improving Water Use Efficiency, Availability and Quality¹



"Water is the staff of life."

—Traditional saying

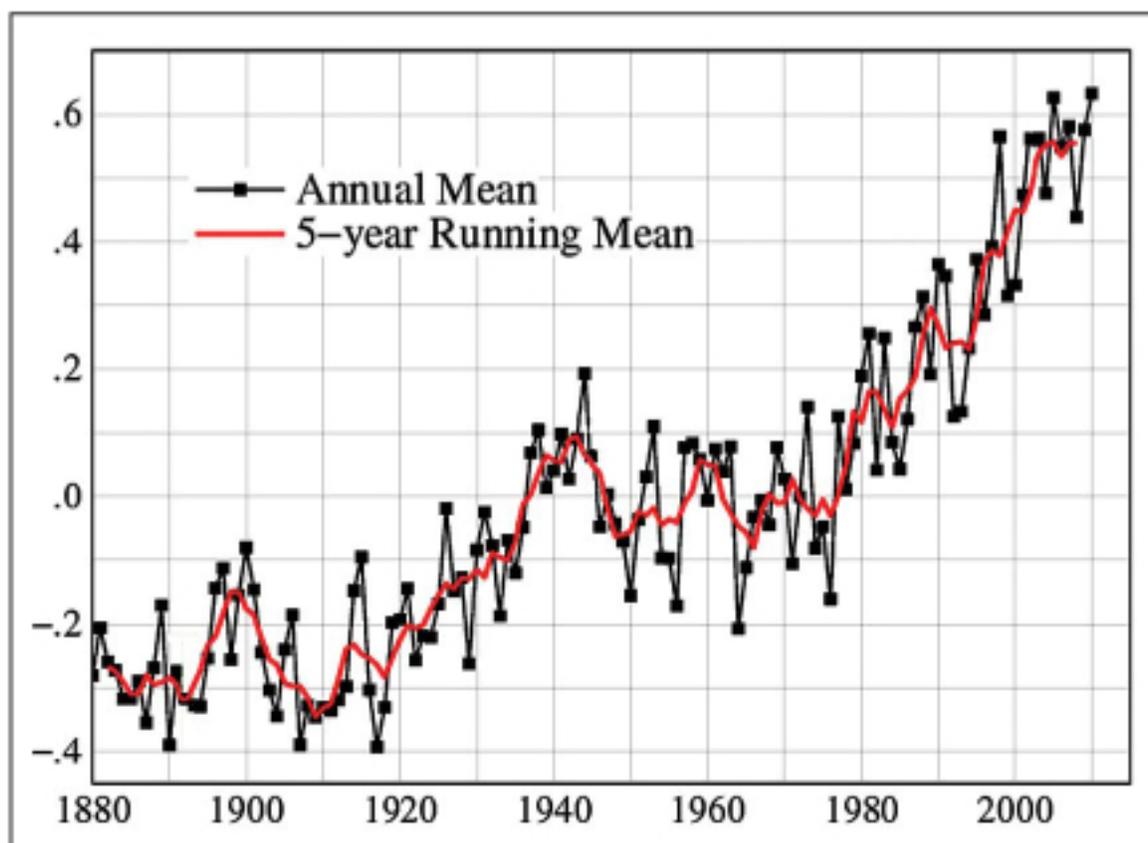
"Our water crisis should occasion grave concern but not panic. We have solutions available; now we need a national commitment to pursue them."

—Robert Glennon (2009)²

¹ In Canada and the United States.

² Glennon R (2009) *Unquenchable: America's Water Crisis and What To Do About It*. Washington, DC: Island Press. Photographs by permission of: (crops) Drs. Kevin Steffey and Michael Gray (University of Illinois at Urbana-Champaign and the University of Wisconsin-Madison); (irrigation systems) Dr. H. Perlman (US Geological Survey) and iStockphoto L.P.

Agriculture and the Changing Climate^{1,2}



Global annual and 5-year running-mean land-ocean temperatures relative to the 1950–1980 mean.³

- *Climate change is occurring, e.g. Earth is warming.*²
- *Over the past 50 years, global research investments to increase agricultural productivity have simultaneously reduced carbon emissions at low cost compared to prior periods.*⁴

¹ Eaglesham, A. and Hardy, R.W.F. NABC Report 21: Adapting Agriculture to Climate Changes. Ithaca, NY: National Agricultural Biotechnology Council (2009). http://nabc.cals.cornell.edu/pubs/pubs_reports.cfm#nabc21.

² National Research Council. Advancing the Science of Climate Change. Washington, DC: National Academies Press (2010).

³ NASA Goddard Institute for Space Studies. GISS Surface Temperature Analysis (2011). <http://data.giss.nasa.gov/gistemp/graphs/>.

⁴ Burney, J.A., Davis, S.J. and Lobell, D.B. Greenhouse gas mitigation by agricultural intensification. PNAS 107(26) 12052–12057 (2010).

Vision for Agricultural Research and Development in the 21st Century

Biobased Products Will Provide Security and Sustainability
in Food, Health, Energy, Environment, and Economy

