

REPORT TO THE PRESIDENT ON
AGRICULTURAL PREPAREDNESS
&
THE AGRICULTURE RESEARCH
ENTERPRISE

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Working Group

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- **Jeff Dangl**, HHMI-GBMF Plant Science Investigator; Professor of Biology, UNC Chapel Hill
- **David Fischhoff**, VP, Technology Strategy and Development, Monsanto
- **Molly Jahn**, Professor of Genetics, University of Wisconsin-Madison; former Dean and former USDA Undersecretary
- **Don Latham**, President, DTB Farms; co-owner of Latham Seed Company; past Chairman of the APLU Ag Research Council
- **Frank Mitloehner**, Associate Professor of Animal Science, UC Davis
- **Tom Sinclair**, Adjunct Professor of crop physiology, NC State University
- **Chris Somerville**, Director of the Energy biosciences Institute; Professor of Plant Biology, UC Berkeley



Corn plants damaged by extreme heat and drought conditions stand in a field in Carmi, Ill.

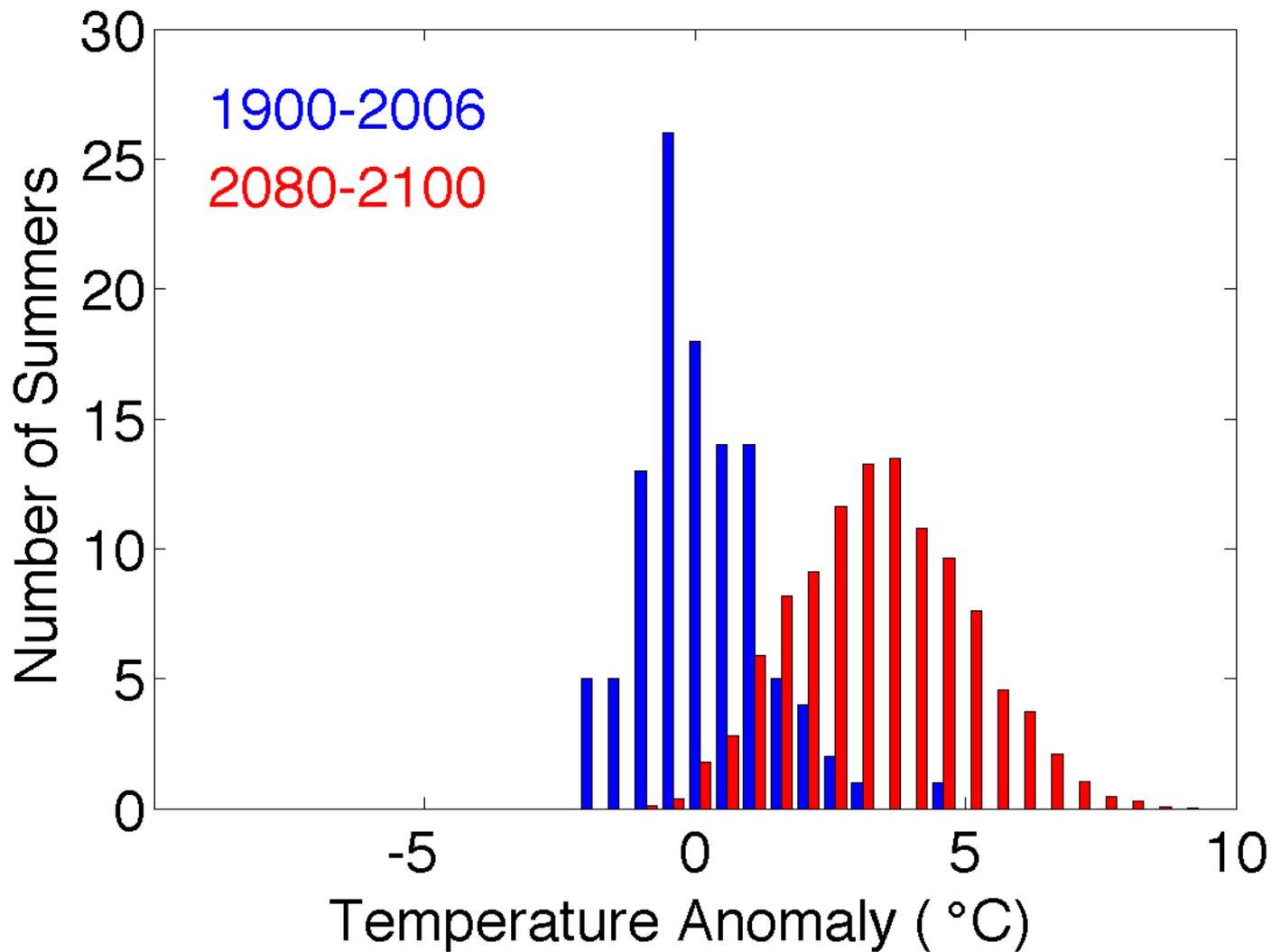
“Drought Puts Food at Risk, U.S. Warns”

(NYT, July 18, 2012)

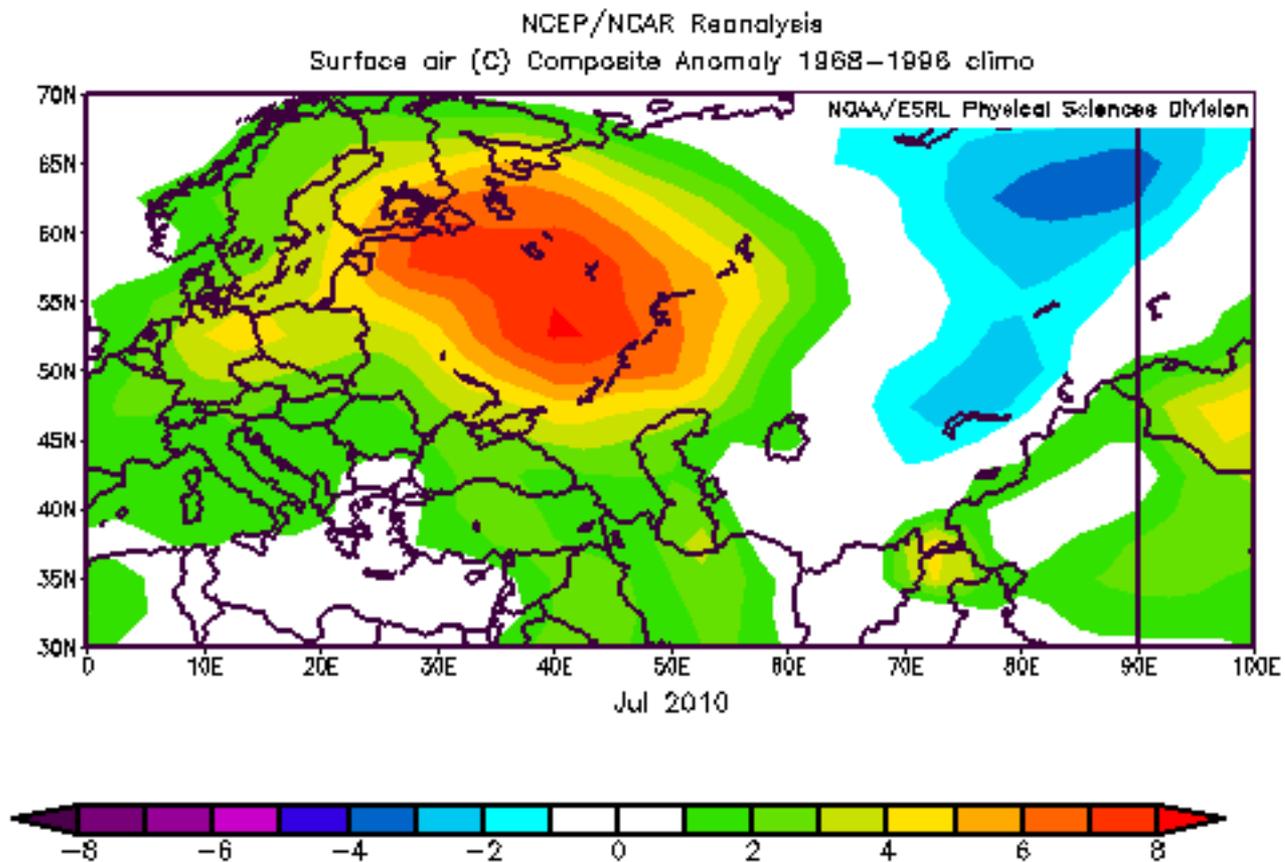


Rodney Byars, center, walked ahead of his brother, Rich, through a field of dead and stalled corn this week in Geff, Ill.

Russia 2010 Fire Region



July 2010 Anomaly





Emerging Challenges to Agriculture threaten our Preparedness

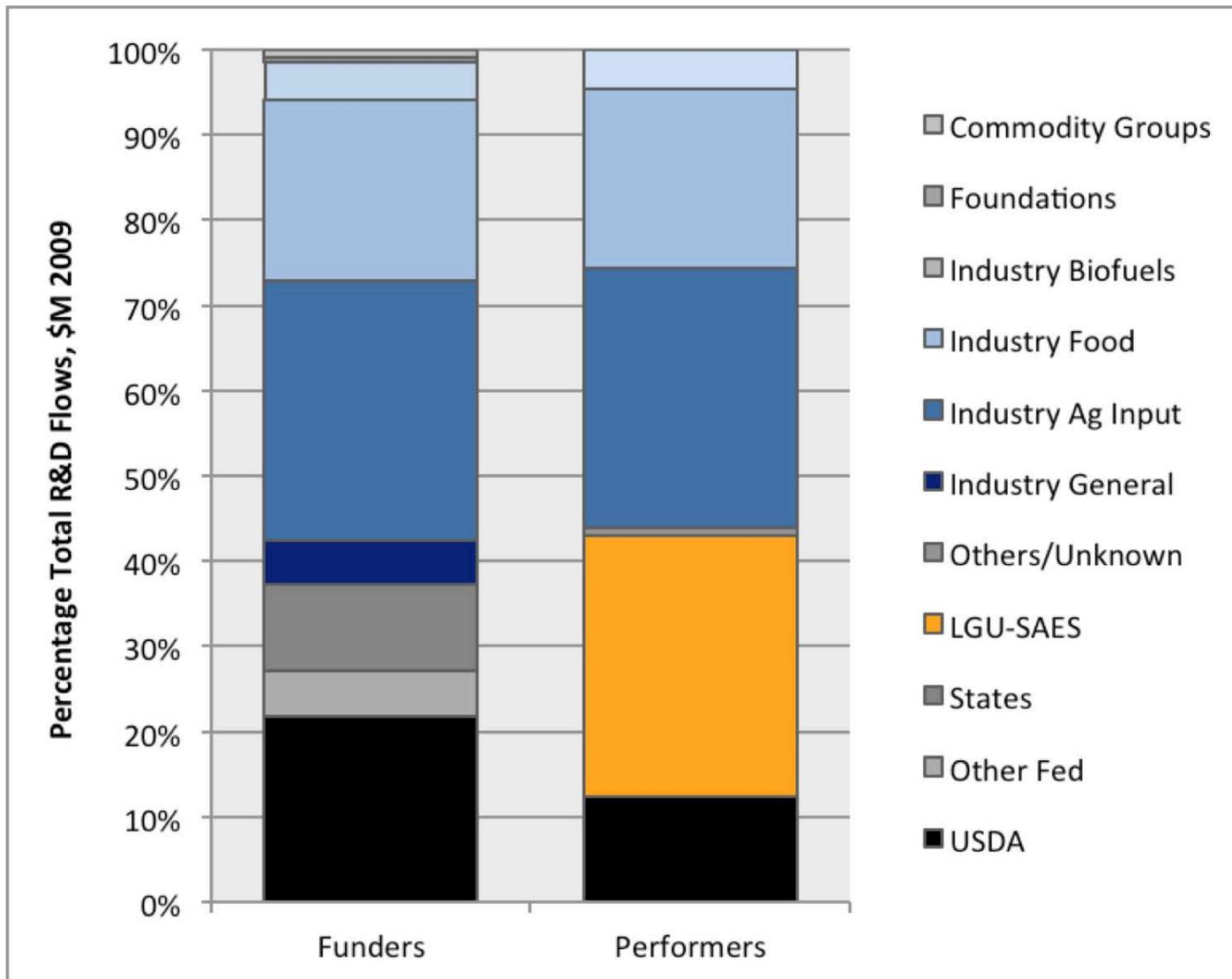
- Need to control new pests, pathogens, invasive plants or face major damage to crops and livestock
- Need to increase the efficiency of water use to counter current and future shortages
- Must reduce the environmental footprint (land, water, fertilizers, chemicals, soil, minerals, GHGs, etc.)
- Must be able to grow food in a changing climate
- Need to produce safe and nutritious food as obesity and diabetes epidemics skyrocket
- Global security depends on the U.S. feeding the world

Is the current agricultural research enterprise
prepared for future challenges?

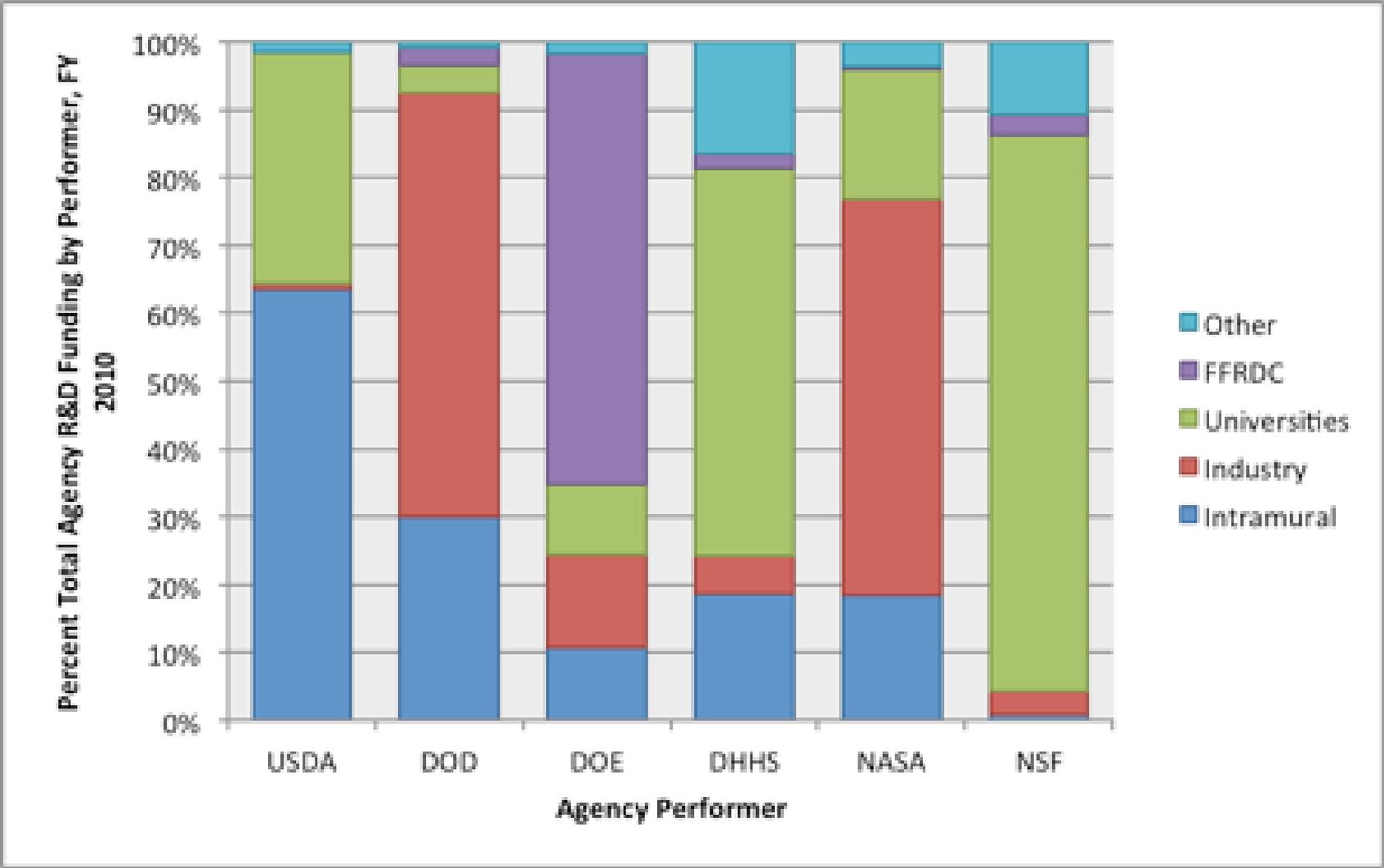
Are new and different types of investments
needed?

Industry funds the majority of R&D

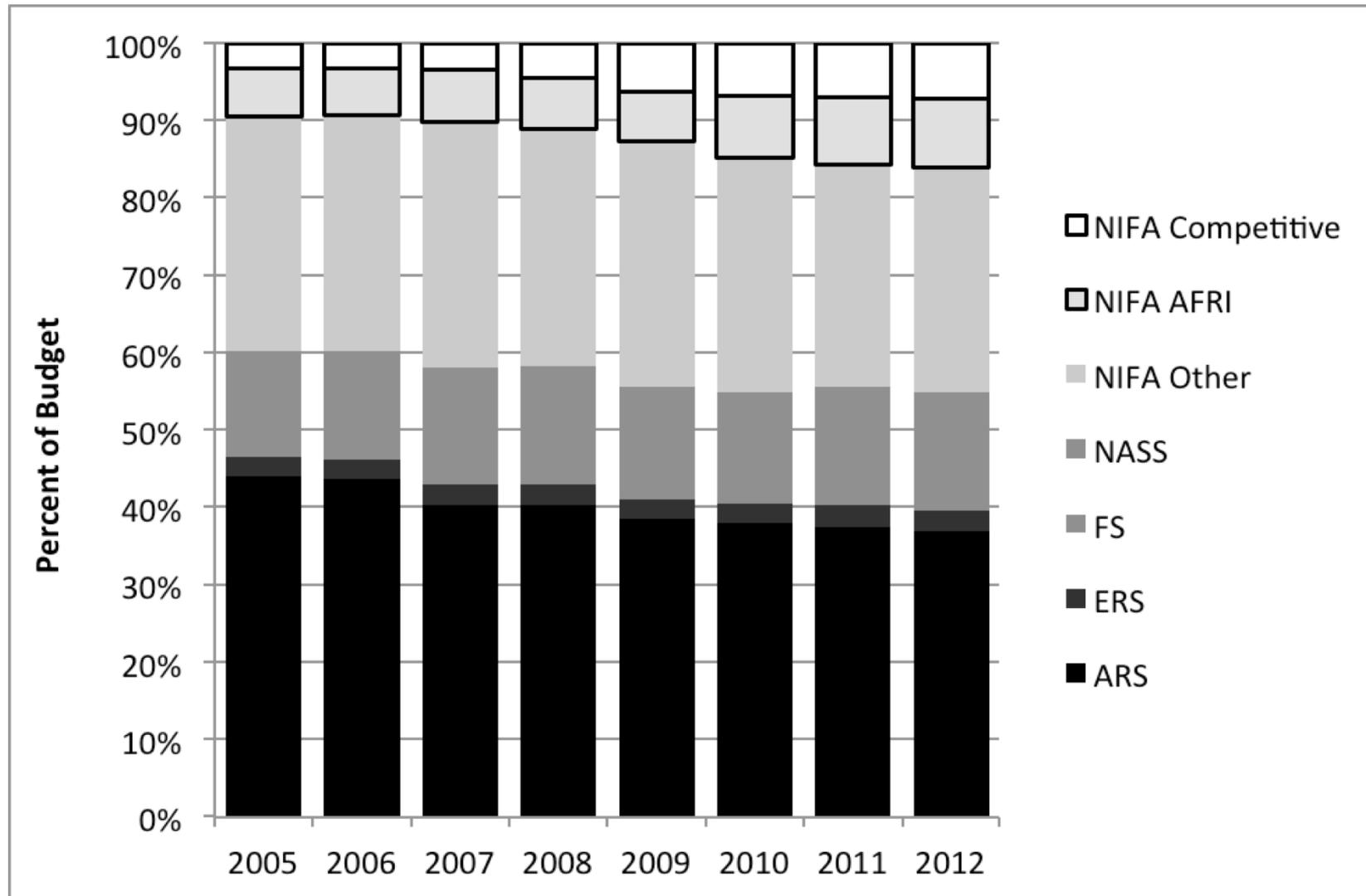
Land grants and industry perform the majority



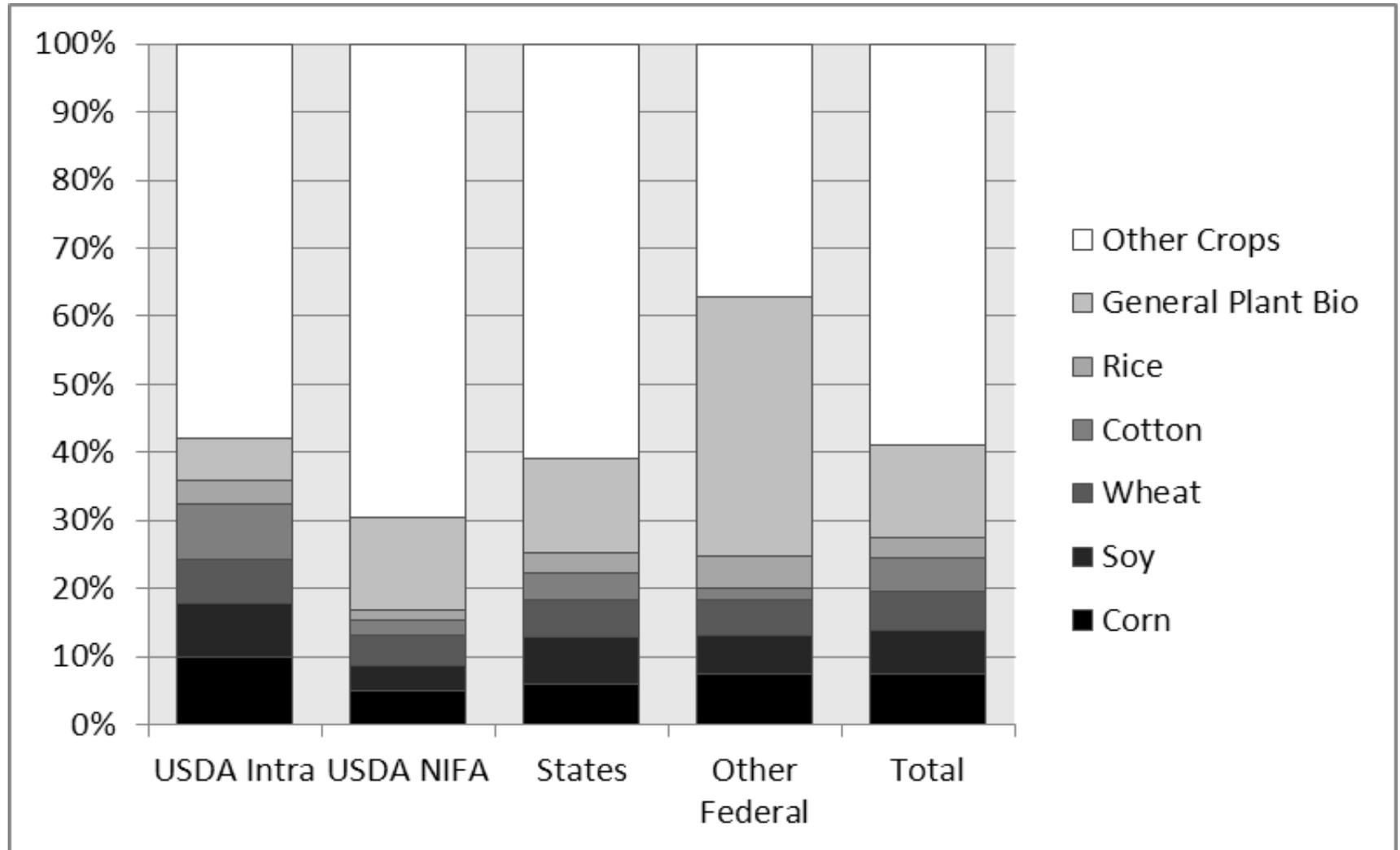
Intramural funding dominates USDA R&D portfolio



Competitive funding at USDA is 15% of the R&D portfolio



The public sector spends 1/3 of public plant research on 5 monetizable commodities



- There are a set of emerging challenges that are crucial to the long-term prosperity of our agricultural enterprise. They are not being adequately addressed by current research efforts.
- There is significant overlap between public and private research efforts; there may be an opportunity for rebalancing.
- The allocation of research support is done primarily through non-competitive mechanisms, which may hinder innovation.

An enhanced Innovation Ecosystem for Agricultural Research is needed

- The Ag S&T workforce must be strengthened from high school to post-docs
- The Ag Research infrastructure should be built on specialization and strategic planning
- A competitively funded, government-led, challenge-focused endeavor is needed across multiple agencies and sectors
- Technology Development and Deployment must be emphasized and augmented

Research: Recommendation 1

- 1a: PCAST recommends that the focus of USDA research funding shift towards competitive grants, gradually rebalancing the research portfolio for intramural funding and funding for land grant institutions to incorporate incentives for innovation consistent with other research agencies across the Federal government.
- 1b: PCAST recommends an increase in funding for basic science relevant to agriculture.
- 1c: PCAST also recommends an increase in competitively awarded funding within the USDA, raising the current level of funding for the Agriculture and Food Research Initiative (AFRI).

Workforce: Recommendation 2

PCAST recommends that the USDA, in collaboration with NSF, establish a national competitive fellowship program for graduate students and post-doctoral researchers.

Infrastructure: Recommendation 3

PCAST recommends that the USDA expand its program of competitive awards for new infrastructure investments in agricultural research with an emphasis on specialization and consolidation to avoid redundancies.

Public-private partnerships: Recommendation 4

PCAST recommends a new Federal investment to create six institutes. Administration of this new program should be done by USDA, but closely coordinated with other federal science agencies including NSF, DOE and NIH, and representatives of these agencies should participate in the planning and funding decisions.

Commercialization & Tech Transfer: Recommendation 5

PCAST recommends that the President request an internal review of Federal regulatory policy for agriculture to promote regulatory clarity, consistent with Executive Order 13563 on Improving Regulation and Regulatory Review as well as the Presidential Memorandum on technology transfer from the national laboratories to the marketplace.

Implementation: Recommendation 6

PCAST recommends that the President establish an implementation committee to act on these recommendations.