Seed Central

January 9, 2014

A Vision and Future of the WORLD FOOD CENTER

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UCDAVIS

The Vision

The World Food Center will connect visionary research and teaching with innovators, philanthropists, industry, and public and social leaders to drive economic, health, social, and environmental value in the world's food system.

Conditions in the marketplace of agriculture and food

Agriculture and food sectors: driven by science and technology, formed by markets, controlled by policies and influenced by wary consumers and activists.

For producers: a profit center and a way of life.

DEFINING THE CHALLENGES AND OPPORTUNITIES

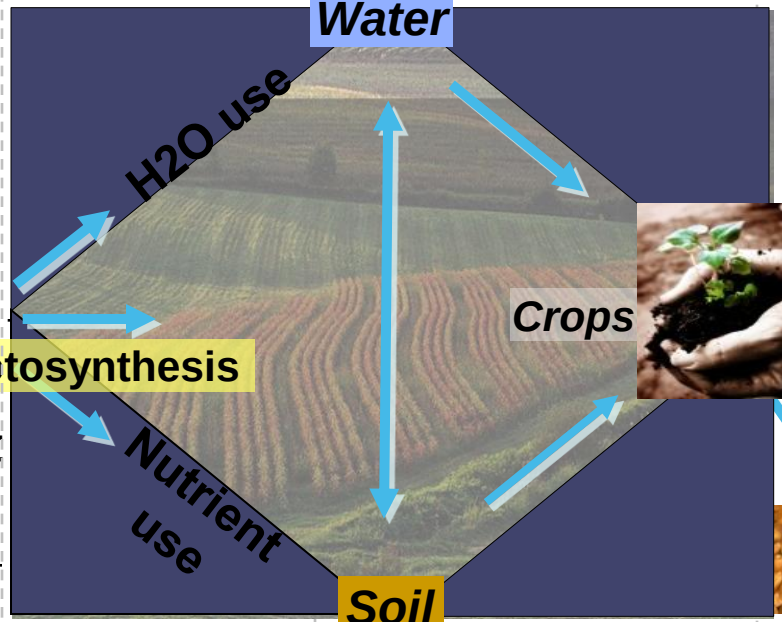
Multipronged approach to achieve food and nutrition security (from Pres. Obama's G8 remarks)

- Water catchment and management
- Education of primary agriculture producers
- Advance better seeds and other suitable agriculture technologies
- Create markets and alternative uses to ensure firm agriculture economies
- Insurance 'safety net' for farmers
- Enact government policies that support agriculture
- Work toward regional solutions of problems

[underline indicates areas of engagement by UCD faculty]

Consider the System of Global Demand-Supply Gap

Platform technologies | Natural resources management | Farmer productivity | Trade, logistics & processing | Output Market Access



Feed

Food

Local Outputs Global

Cash

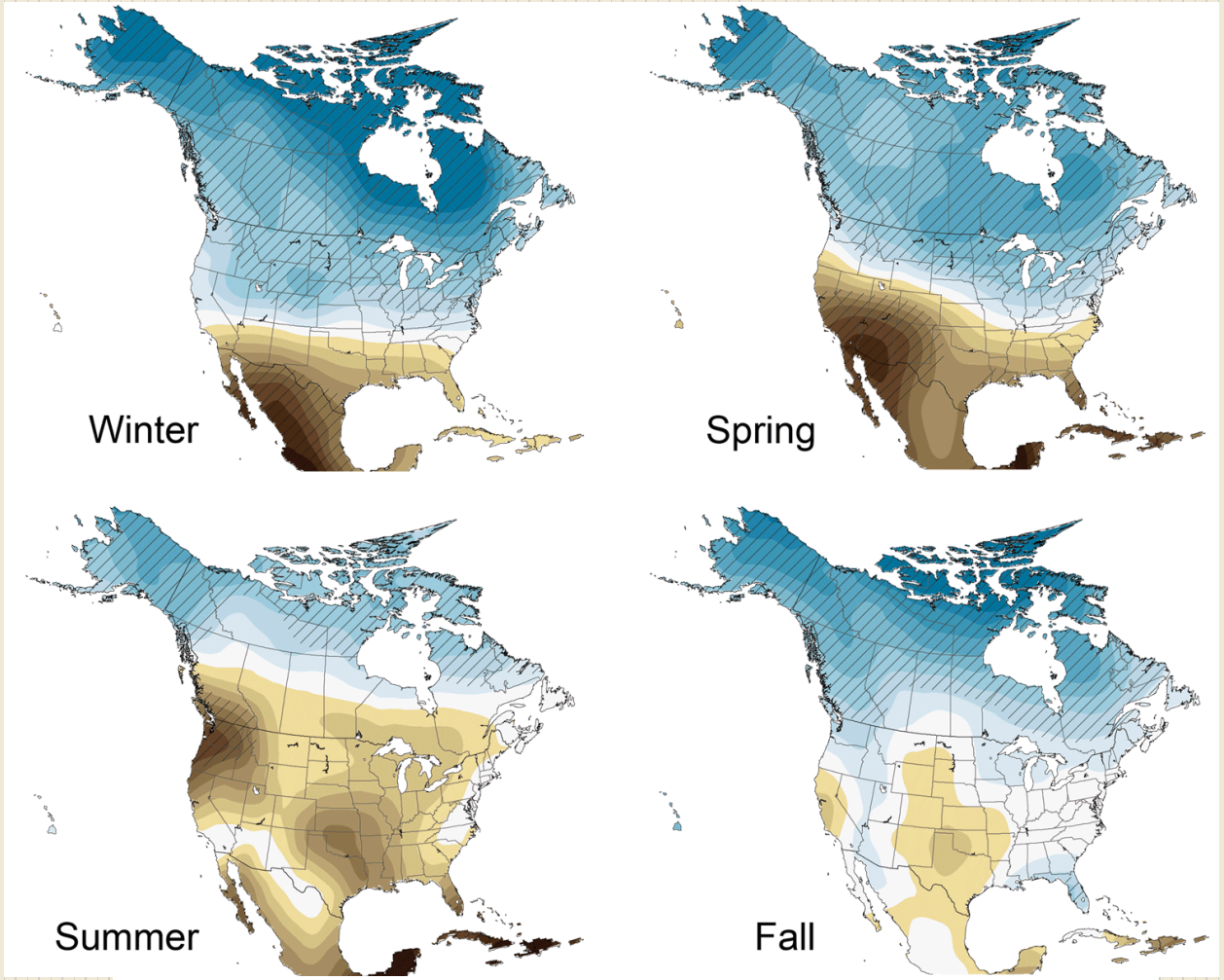
Crop improvement technologies

Platform tech: ↑ crops for scarce resources, processing, nutrition

Data, Policy and Analysis: Develop evidence-based policy

Projected Change in N. American Precipitation

by 2080-2090; requires preparation to mitigate against crop losses



Limitations for a Global Agriculture Economy: *goals for research in food and agriculture*

Scientific and technical

- Achieving maximum crop yield potential with resilience to climate variability
- Protection against biological threats
- Reducing post-harvest losses
- Ensuring nutrition and safety of the food product
- Economizing non-food products – bioeconomy chemurgy, etc

Social and Policy-related

- Acceptance of new technologies
- Regulatory constraints and reluctance to adapt policies to change

Continued success requires adaptation and change

- Technologies will continue to change and adopting societies will thrive in this sector
- Competition amongst companies, countries, and industries will drive tech-adopters to a more renewable future
- Changing/evolving consumer preferences, whether in commercial or public sectors, will require closer linkage coordination of R & D to customer base: this is critical for university research-based activities

What role for universities?

Education, Research, Outreach and Beyond

- **Ensure a sustainable future for humankind**
- **Identifying and addressing the global and national 'grand challenges'**
- **Recognizing who we are and finding a productive role in society**

Requires general + specific education and capabilities

Opportunities and challenges for land grant universities in 21st Century

- Establish and regularly re-examine institutional goals and expectations to meet changing societal needs
- Define role in a changing world: impacting regional, national and global challenges and changes.
- Develop a faculty and facilities that will adapt to changes and opportunities; seeking the best format for education. research, technology transfer and innovation

Creating a new model for translating science to impact society

- Develop 'evergreen' roadmap with input from broad range of stakeholders, acceptable to policy makers
- Develop cooperative university:government:private sector partnership to fund and implement the roadmap
- Make institutional changes to accommodate closer partnerships, goals achievements, with adaptive teaching and research faculty
- Develop broadly based advocacy group of stakeholders to support a competitive research and translation agenda
- Ensure appropriate focus on agriculture as a sustainable economy and agroecology

Trends in research, development, deployment

- Public sector research will become more cross- disciplinary with increased focus on outcomes defined by the stakeholders/end users
- Redefinition of role of land grant institutions *vis a vis* service to society via broader partnerships
- Greater opportunity for private sector to co-fund R&D with federal, state, and foundations
- Private sector recognizing need for their involvement in funding research and training and in priority setting; with ready access to outcomes
- Expected to result in greater innovation/entrepreneurship?

Challenges to be Overcome

- Weak government commitment funding for science and technology in the food and ag sector (including biofuels/bioeconomy, agriforestry)
- Weak commitment to support of science-based technologies that increase sustainability and increased intensification of agriculture
- Weak role of science in policy decisions related to agriculture and agriculture technologies (?)

Opportunities: to create new partnerships to define and implement goals, overcome constraints

Enabling synergies and enhancing outcomes

- Identify suitable 'markets', setting priorities for regional and global goals, engaging broad disciplines and skills in natural and social sciences
- Gathering the 'common goods' – knowledge creation
- Education and training the relevant workforce
- Facilitating information and technology transfer – including and beyond extension
- Sharing in benefits of the outcomes

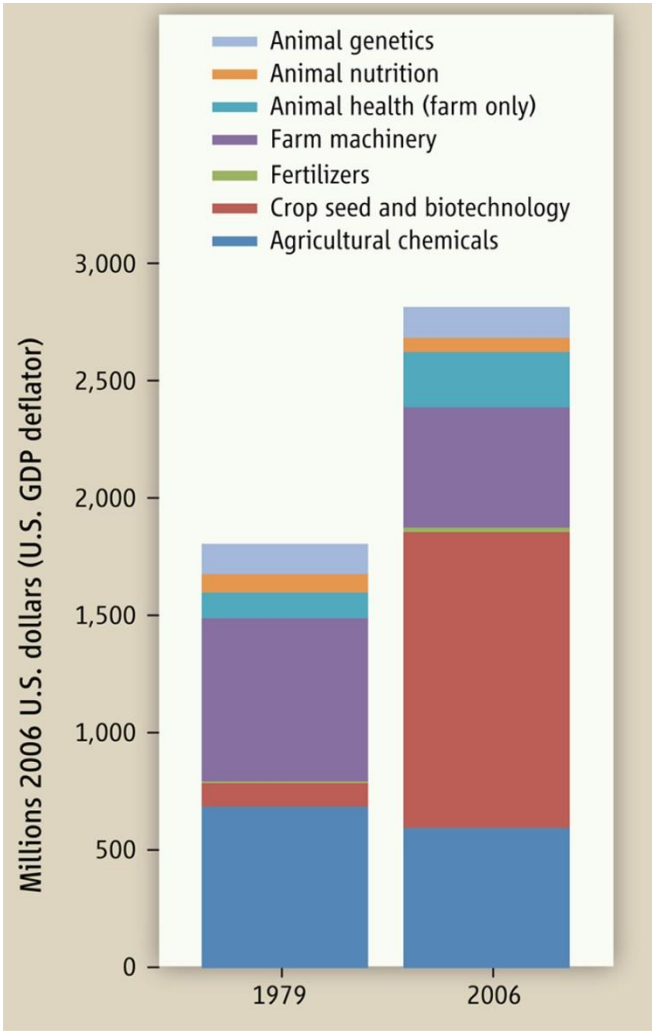
Innovating for a Purpose

- Meet needs for agriculture in face of growing population and expectations (safety, nutrition, diversity of needs, etc); changing climate; etc.
- Increasing global competition for trade in agriculture
- Develop new opportunities for ag products
- Maintain strong rural economies and population

Increase likelihood of success

- Engage private sector/establish societal views early in the process of discovery and/or innovation to assess interest in projected outcomes of R&D

Private agricultural input research in the United States.For 1979 and 2006; see (6) for data and methods.



K Fuglie et al. Science 2012;338:1031-1032

SUPPORTERS OF AGRICULTURE RESEARCH

A broad based coalition to advocate for increased competitive grant-based funding for research for food and agriculture; focus on AFRI at NIFA/USDA. Goals include achieving full funding ($700 mil) for AFRI

January 15, 2014

SOAR

Supporters of Agriculture Research

Final comments

- Support for increased funding for research in agriculture is growing nationally and globally
- The PCAST report provides excellent guidelines for changing the nature of, and funding for, U.S. research
- SOAR will advocate for changes in funding for research and for organizational and structural changes that advance research for agriculture in the U.S.

SOAR
Supporters *of* Agricultural Research

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Latest News

PCAST report: Agricultural Preparedness & the Agriculture Research Enterprise

The President's Council of Advisers on Science and Technology (PCAST) released a report last week urging a $700 million commitment of additional money for new agricultural research. The extra investment is to catch the nation's agriculture research up with new challenges that have arisen in the last 30 years including climate change, land and water [...]

Multimedia

The Vision

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Right time and right place

- Renewed interest in how our food is produced, its impact on our health, and in creating a diverse and sustainable food system globally
- Growing global food demands and changing diets in face of changing climate raise new challenges
- UC Davis was recently ranked top university globally in agricultural research
- Collaborations across the public and private sector in California and globally increase opportunity to leverage partner expertise from policy to production

Our goals

- Dramatically increase the national and global visibility and leadership of the University in agriculture, food, nutrition, and wellbeing
- Enhance UCD research capabilities by tackling larger scale and more complex problems and opportunities
- Increase the impact of research by engaging policy, economic and social sciences to inform translation to practice, and commercial development, and societal impacts

What we will do: expand interdisciplinary research

- Natural Sciences: engaging UCD technical leadership
  - Fundamental discovery in all sciences, including in engineering,
    biomedical, and bioinformatic sciences
  - Plant breeding and crop improvement
  - Sustainability sciences
  - Human and animal nutrition
- Social Sciences: establishing leadership in influencing policy through critical thinking and communications
  - Economics
  - Anthropology
  - Policy

What we will do: expand the dialogue & catalyze partnerships, and add value

- Convene leading thinkers and implementers to shape policy and connect research to society and the marketplace
- Catalyze large-scale and integrated research by providing strategic direction and assisting with operational development
- Serve as a focal point for deepening the university's collaboration with industry, foundations, government agencies and civic organizations

Where we are now – goals for 2014 Q1/Q2

- **Establish the administrative team**
  - Dr. Roger Beachy, Founding Executive Director
  - Dr. Josette Lewis, Associate Director
  - Administrative Assistant (in process)
  - Development Officer (in process)
  - Consultants as needed to implement programs (in process)
- **Identify near term programmatic opportunities and develop programs for 2014-2015 that build visibility, and demonstrate value of the WFC**

Where we are now – goals for 2014 Q1/Q2

- Finalizing governance structures
- Establish founding Board of Directors, and hold inaugural meeting
  - Board will draw from industry, non-profit, and international organizations with both advisory and decision-making authorities
- Establish advisory panels
  - Ensure transparency and draw expertise of multiple stakeholders including
    - Campus community
    - Private and public communities
    - International community

Where we are now – goals for 2014 Q1/Q2

- **Fund raising to ensure WFC financial stability**
  - **Hire senior development officer for the WFC to operate in concert with University goals**
  - **Establish financial goals and development plan, identify key potential donors, establish plan of engagement**
  - **Will propose to create a $100 million endowment**
- **Explore options and advantages of spinning out the WFC to a 501(c)3**
- **Develop a short term and mid-term business plan**

The World Food Center will Enhance the Role of U.C. Davis as World Leader

- Identifying important ['Grand'] challenges that can be led by U.C. Davis
- Validate selections on societal- and market-related factors, and identify policy limitations: develop strategy to mitigate against barriers to success
- Generate new knowledge and relevant technologies through transdisciplinary studies and research that focus on solutions and possible outcomes
- Engage other institutions and private sector to disseminate solution
- Partner with selected international collaborators to expand impact

Practical outcomes for the WFC

- Cheerleading and promoting your efforts at all levels and all locations
- Increasing potential deal flow, helping to close deals that bring resources for important projects
  - Managing and monitoring process and progress to build confidence of the investor/donor
  - Syngergizing activities that increase outcomes/goals achievement
- Expanding opportunities for international collaboration and funding
- Training well-rounded students to fulfill needs of employers

Anticipated areas of opportunity and growth

- Technologies that mitigate effects of climate/weather: resilient crops and animals
  - Heat, drought, flooding, cold, and changing diseases and pests. Multiple pathways to technical success will provide multiple opportunities for market share – competition will be high, returns likely to be modest (?)
- Foods as key factors in health/wellness/wellbeing
  - Validation of nutrition and health claims may create added value
- Biofuels/biomaterials from a 'biorefinery' view of crop plants and farm animals as raw materials: opportunities for rural economies

Crop productivity: limited by water availability

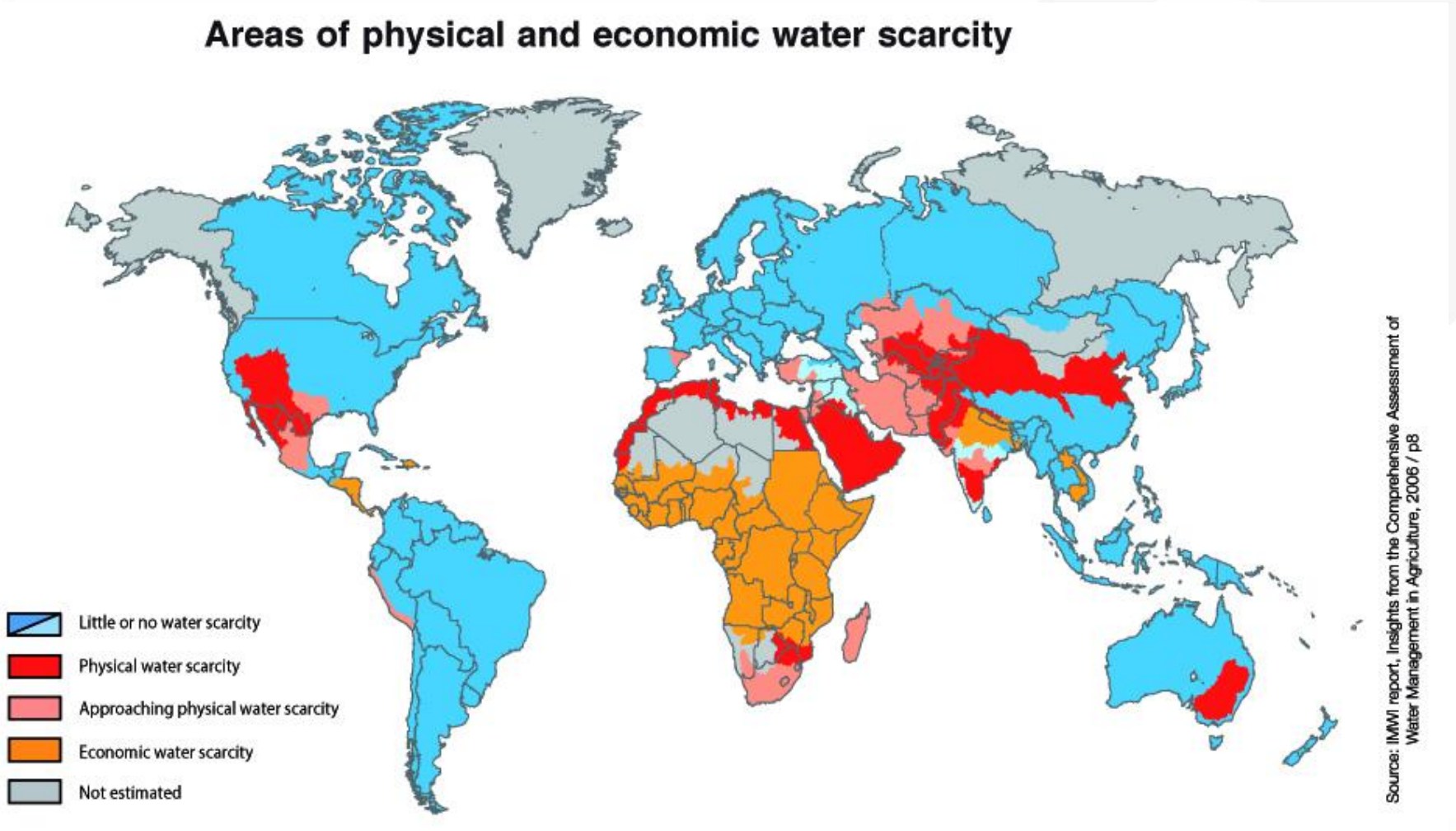

Image source: IWMI