Organic Agriculture Funding & Priorities in the U.S.

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Meeting the challenges of a growing world population

Total world population in billions: probabilistic projections until 2100

Source: Foresight. The Future of Food and Farming (2011)
How to feed a growing world population with minimum footprint on the environment?

- Reduce global poverty and hunger
- National security issue
- Many initiatives currently underway

**1st challenge !!!!**

**Ultimate challenge**

- We need new discoveries and technologies with global applications
- Organic agriculture should be a key player in achieving these goals
Progress in agriculture

Since World War II there has been significant changes in agriculture due to new discoveries and leap frog technologies

- Pesticides: herbicides, fungicides, insecticides, nematicides, soil fumigants, etc..
- Fertilizers: specificity, placement, slow release…
- Machinery: tractors, sprayers,
- Technology: GPS, precision agriculture, plastics
- Molecular biology: stress resistant cultivars

Fewer and fewer farms (2.1 million farms 2012) producing for the rest of the population (313.9 million 2012)
Global trends in the intensification of crop production

Source: Foresight. The Future of Food and Farming (2011)
Monoculture systems

Lettuce field:
Coachella Valley California
Radish: Michigan
Monoculture systems

- Low level of biodiversity
- High inputs
- High pest and disease pressure
- High potential for erosion

- Appropriate for Large-scale production
- Adapted to mechanization
“Our lands, as I mentioned in my first letter to you, were originally very good; but use, and abuse, have made them quite otherwise.”

This was in reference to soil degradation caused by continuous tobacco or corn-wheat rotations in America.
The organic agriculture approach

- Increase crop diversification
- Prohibit most synthetic inputs
  - Pesticides: herbicides, insecticides, fungicides, ....
- Fertilizers

Hmmm! Without those tools I need to go back to the drawing board!!!
The need for a systems research

- With few tools available the research needs to focus more on the entire cropping systems than specific practices.
- Partnership between scientists and farmers becomes critical
- Soil building becomes the foundation of the system
- Critical need for a truly holistic approach in designing experiments

How to put all the pieces together into a working and efficient system?

2nd challenge !!!!
Components of an integrated cropping system

Systems approach to crop production
The need for a process-driven research

- Studies based on observation will continue to play important role.
- Critical to understand the processes underlying key observations.

This requires a solid scientific background.
**Process-driven research**

- More focus on underlying processes

**Input**
- Fertilizer
- New variety
- New practice
- Etc..

**Output**
- Yield
- Pest control
- Quality
- Etc..

Without a good understanding of the processes it is difficult to replicate successful results
The need for appropriate student training

- Few scientists have received formal training in organic ag.
- It is critical to train the next generation of organic ag. scientists
  - Undergraduates
  - Graduates

- Need to include organic courses in agricultural curricula
- That will broaden student experiences

Capacity building
From general to specific priorities

- Whole system research?
- Soil Quality
- Education
- Extension

Specific priorities
Nutrient management

- Low external input systems
- Improved nutrient cycling
- Cultivars with improved nutrient use efficiency
- Soil amendments
- Cover cropping
  - Use of N fixing cover crops
Weed management

- Integrated management
  - Mechanical
  - Biological
  - Physical
  - Chemical
  - Cover cropping
  - No-till systems
- Engineering
  - New tools

Roller Crimper
Insect management

- Integrated management
  - Crop diversification
  - Trap cropping
  - Natural enemies
  - Biological insecticides
  - Etc.

Source: Colorado State Univ.

Source: Cornell Univ. © M.P. Hoffmann
Disease management

- Disease suppressive systems
  - Crop diversification
  - Soil quality
  - Resistant cultivars

Photo credit: Hausbeck Lab, MSU
Ecosystem services

- Impact of organic production on
  - Carbon sequestration
  - Greenhouse gas emission
  - Biodiversity
  - Soil conservation

Wind erosion
Funding opportunities in organic agriculture

- Organic agriculture Research, Extension and Education is underfunded

- Where to go?
Funding of organic research

Focus on programs specific to organic agriculture
Organic Ag. Funding

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**Organic Research Initiative (ORI)**

- Started in 2009
- Universities in the 12-state North Central region.
- About 10 grants of $60,000 max. each per year

**Organic Research by Graduate Students**

- Started in 2010
- North Central region.
- About 10 grants of $10,000 max. each per year
- Canada, Mexico, U.S.
- Max. of $15,000/grant
- Current deadline is Thursday, May 15, 2014

Small grants but huge impact
Launching pad for larger projects
Organic Programs at NIFA

**ORG**
Organic Transitions

- $4 million available in 2014
- About same amount in 2015
- RFA Deadline: ?
- Award Cap: $500,000

**OREI**
Organic Ag. Res. & Ext. Init.

- **Integrated Projects***
  - Research
  - Extension
  - Education
  - * Min. 2 functions

- **Others (historically)**
  - Conference
  - Planning
  - Analytical
  - eXtension

  - $20 million available in 2014
  - About same amount in 2015
  - RFA Deadline?
  - Award Cap: $50K to $2M
Funding to states by year

- Organic Agriculture Research and Extension Initiative
- Integrated Organic Programs
- Integrated Organic and Water Quality Program
- Organic Transition

Funds Awarded (Million)
ORG and OREI cumulative # of proposals by year

Year:
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014

Number of proposals:
- Declined
- Funded

Total proposals:
- 1,026
- 186 funded
**ORG & OREI # of proposals submitted by state 2001-2014**

*Continuations are counted as 1*
ORG & OREI # of proposals funded by state 2001-2014

*Continuations are counted as 1
Some keys to success for NIFA Organic Programs

• Human Capacity
  ▪ Critical mass of organic scientists working together
  ▪ Strong connection University-Extension-Organic industry

• Institutional capacity
  ▪ Support from the upper administration
  ▪ Certified facility for research
Thank you for convening this meeting to tackle organic agriculture issues.