NIFA organic research trends and new initiatives

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NIFA

Agriculture Outlook Feb 19, 2021

NATIONAL INSTITUTE OF FOOD AND AGRICULTURE
Main Take Home Message

Partnership is critical to the development of organic agriculture

USDA is a key element of the partnership
Main Topics

**What is Organic**
What does it mean to us

**Issue**
What are the needs of the organic industry

**Action**
What was done to solve the problems

**Impact**
What was the result of the action. Did it matter?

**Outlook**
What do we expect for the future
What Does Organic Ag Mean to USDA-NIFA?

Agriculture
- A component of Global Food Security
- A component of National Security

Production System
- Highly regulated system
- Limits the use of synthetic inputs and GMOs

Opportunity for engagement
- Research, Education, Extension, Innovation
- Leadership

Economic opportunity
- All types of operations (large and small)
- Job creation
- Promotion of rural and urban prosperity
Organic Farms, Acres, and Sales, 2008 to 2019

Increase from 2016

- 17% # farms
- 31% sales
- 9% Cert. land

USDA NASS, 2019 Organic Survey (2017 Census of Agriculture)
Similar trends observed in Europe

Production and Processing Expansions Aid Organic Sector

Data: EUROSTAT, Gro Intelligence

Despite robust consumer demand, however, there is still limited research, education programs, and extension resources that support organic systems” (NSAC).

- Limited investment in R&D

Source: OECD Main Science and Technology Indicators (MSTI) Database, 28 February 2020 http://oe.cd/msti
Strong investments in research and innovation is critical to the growth of the organic sector.

Two USDA-NIFA programs have helped fill the gap by stimulating cutting-edge research to address critical challenges of the organic industry.

- The Organic Agriculture Research and Extension Initiative (OREI)
- The Organic Transitions (ORG)

While the focus of this presentation is on the two programs, there are many other NIFA programs that fund organic agriculture projects.

- Agriculture and Food Research Initiative (AFRI)
- Sustainable Agriculture Research and Education (SARE)
- Beginning Farmer and Rancher Development Program (BFRDP)
- Hatch program
Many other USDA agencies make significant investments in organic agriculture either directly or through funding opportunities.

- **Agriculture Research Service (ARS)**
- **Economic Research Service (ERS)**
- **Agriculture Marketing Service (AMS)**
- **Natural Resources Conservation Service (NRCS)**
- **National Agricultural Statistics Service (NASS)**
- **National Agricultural Library (NAL)**
- ....
Main Topics

- **Issue**: What are the needs of the organic industry
- **Action**: What was done to solve the problems
- **Impact**: What was the result of the action. Did it matter?
- **Outlook**: What do we expect for the future
- **What is Organic**: What does it mean to NIFA
Challenges of the Organic Industry

True partnership in issue identification

Issues span the entire supply chain from “farm to fork”
Main Topics

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Action by the Industry

Goal: Secure funding to Research, Education, and Extension

- **Issue identification**
- **Priority setting**
- **Work with USDA**
- **Work with congress**
Action by Congress

Funding to states by year

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

OREI funding through multiple Farm Bills
Action by NIFA

- **Industry priorities translated into Request For Applications (RFA)**
- **Rigorous panel review process**
- **Scientific merit used for award selection**
- **Post-award management**
- **We are highlighting one of those projects today**
ORG and OREI # of proposals by year

* OREI Not offered in 2013
ORG and OREI cumulative # of proposals by year

Note: Resubmissions included in the count
ORG and OREI Success Rate

Success rate (24% AVG)

Year


Success (%) 75% 38% 17% 10% 10% 18% 18% 6% 21% 20% 25% 13% 13% 25% 30% 18% 18% 33% 29%

Outlier: only 4 proposals submitted

Potentially fundable zone!
Top States in Organic Farms, 2019

<table>
<thead>
<tr>
<th>State</th>
<th>Farms</th>
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<tr>
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<td>IN</td>
<td>595</td>
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<tr>
<td>MI</td>
<td>541</td>
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</tbody>
</table>

2019 Organic Survey: NASS
Top States in Organic Sales, 2019

- CA 3,597
- WA 889
- PA 742
- OR 454
- TX 424
- NC 370
- NY 298
- WI 269
- MI 231
- ID 206

**U.S. Total = 9.9 Billion**
ORG & OREI # of proposals submitted by state 2001-2020

*Continuations are counted as 1
ORG & OREI # of proposals funded by state 2001-2020

*Continuations are counted as 1
ORG & OREI $$ by state
2001-2016

Total $275.5 Million

Lead institutions only
Example of Challenges of the Organic Industry

• Soil: microbial life, fertility management, and soil quality

• Management of plant pests: weeds, insects, and diseases

• Organic livestock and poultry management systems

• Breeding and genetics

Source: 2007 Organic Survey
Northern Organic Vegetable Improvement Collaborative

Jim Myers – Oregon State University

Co-PDs: Michael Mazourek, Erin Silva, Bill Tracy, Micaela Colley, Joanne Labate

Supporting staff: Lane Selman, Shinji Kawai, Laurie McKenzie, Jared Zystro

Graduate students: Ryan King, Kara Young, Anne Pfeiffer, Ginny Moore, Rachel Hultengren

More than 30 organic farmers
Northern Organic Vegetable Improvement Collaborative

- NOVIC I 2009-2013  $2.3 million
- NOVIC II 2014-2018  $2.0 million
- NOVIC III 2018-2022 $2.0 million
- Adaptation to organic production; season extension
- Breeding of vegetable crops

Additional funding from
- SCRI
- AFRI
Project Outputs from NOVIC I:

- Improved varieties (broccoli, sweet corn)
- Germplasm (carrots, butternut squash, edible pod peas)
- Two books on organic plant breeding, Organic Crop Breeding and The Organic Seed Grower.
- Four graduate students were trained in organic plant breeding.
- Over 130 farmers and seed growers from across the U.S. were trained in the fundamentals of on-farm plant breeding and selection at a series of plant breeding workshops.
Breeding activities aim to develop open-pollinated varieties specifically adapted to meet the needs of organic growers.

- Tomato: Late blight resistant and adapted to the PNW
- Cabbage: Smooth green storage type with cold tolerance
- Bell Pepper: Early, high yielding blocky red types with good flavor
- Sweet Corn: High quality, early maturing hybrid and OP types
- Winter Squash: Short season, disease resistant delicata types
- Farmers’ Choice: Fennel, Basil (OR), Romaine lettuce, Brussels sprouts (WA), Kale (WI), Leeks, Basil (NY),
GOAL

Develop new vegetable varieties for organic agriculture

We have gotten so much out of working with all of you. And the varieties are terrific and serving our growers very well.

Tom Stearns | Vermont
Founder and President
High Mowing Organic Seeds

8 crops being developed for organic agriculture
2 new commercial organic varieties
40 states where new organic varieties have been sold
Farmer participatory plant breeding: breed a striped sweet pepper with broad adaptation
GOAL

Improve the ability of farmers and seed producers to grow organic seed

The NOVIC breeders listened to my needs as an organic farmer, and together we created a new sweet corn variety with traits important to organic production. NOVIC has also helped me hone my seed production skills.

Martin Difflley | Minnesota Farmer and Co-founder Organic Farming Works

80

NOVIC events and presentations

19

states reached with NOVIC in-depth trainings

Credit: Jim Myers
GOAL

Train the next generation of professionals in breeding for organic agriculture

"Organic Research and Extension Initiative funding allowed me to gain valuable first-hand experience in vegetable breeding and trialing during the course of my graduate education. The skills I developed helped me to succeed in my current job breeding pumpkins and squash adapted for organic conditions at an employee-owned seed company. I'm incredibly grateful to have had the opportunity for such high-quality training via the NOVIC grant and to now be working daily to improve our country's food system and make our farmers more productive."

Lindsay Wyatt | Maine
Squash and Pumpkin Breeder
Johnny's Selected Seeds

Credit: Jim Myers
Good News!

- **Funding has improved for:**
  - Animal Systems Proposals
  - Small and Minority Serving Institutions (MSI)
  - Southern Region

- **Success rate is up for**
  - Seeds and Breeds proposals

![Success Rate chart]

- Success Rate Seed and Breed Proposals
- Success Rate all OREI Proposals
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What do we expect for the future
OREI budget increase is a big win for the industry

Great opportunity to stimulate research and innovation and to tackle big challenges
Future Perspective

01 Promote
• Promote Research and Innovation

02 Explore
• Explore New Extension Opportunities

03 Train
• Train the next Generation of Organic Farmers and Leaders
Future Perspective

• Develop smart tools for use by farmers and processors
  • Seeds, Natural substances etc.

• Develop smart tools for enforcement agents to support “Organic Integrity”

• Better understand the human dimension of organic agriculture

• Make new knowledge available and accessible to farmers

• Etc.
Main Take Home Message

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NIFA ORGANIC PROGRAMS

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