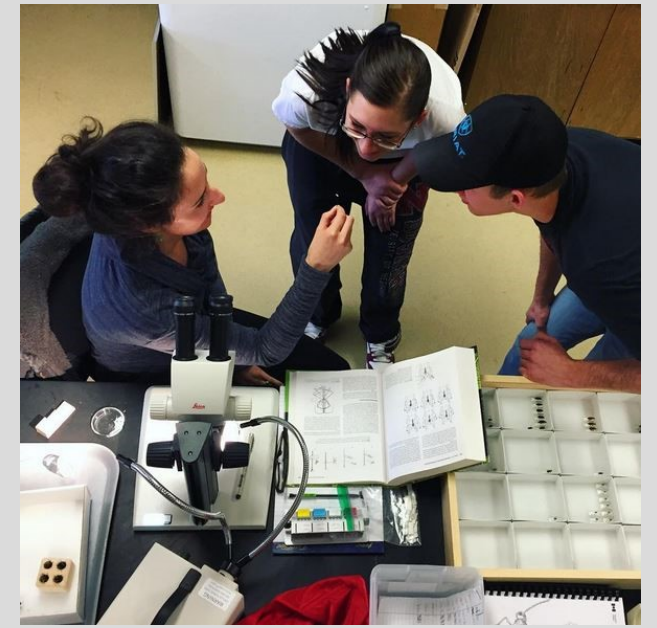


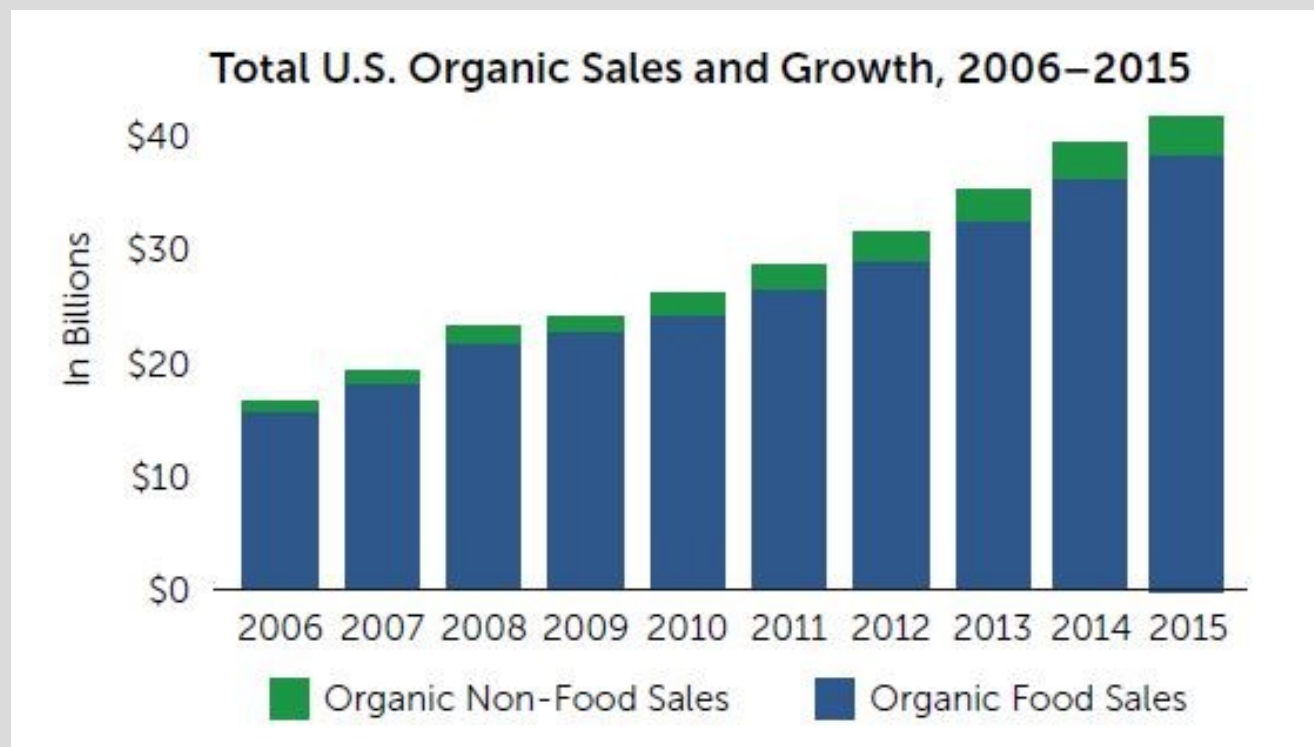
# Characterizing instructor priorities for organic agriculture

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# Organic: A Growing Sector of Agriculture

- Over 20,000 Certified Organic Operations<sup>1</sup>
- Retail Market Valued over \$39 Billion<sup>1</sup>
- 39% of organic producers intended to increase production<sup>2</sup>



3

1. USDA (2016). *USDA Reports Record Growth In U.S. Organic Producers*. Press Release 0084.16

2. USDA NASS (2014). Results from the 2014 Organic Survey. ACH 12-29.

3. Organic Trade Association (2016). *State of the Organic Industry*.



# Young People are Interested in Organic...

- On average, organic farm operators are younger than conventional<sup>1</sup>
- Young consumers (age 18-29) are more likely to buy organic products<sup>1</sup>
- Creation of organic programs and student farms

Land Grant Organic Trends	2003	2011
# of states with certified organic research acres	18	37
# of student organic farms	9	36
# of organic academic programs offered	0	8
# of states offering organic Extension resources	42	45

2

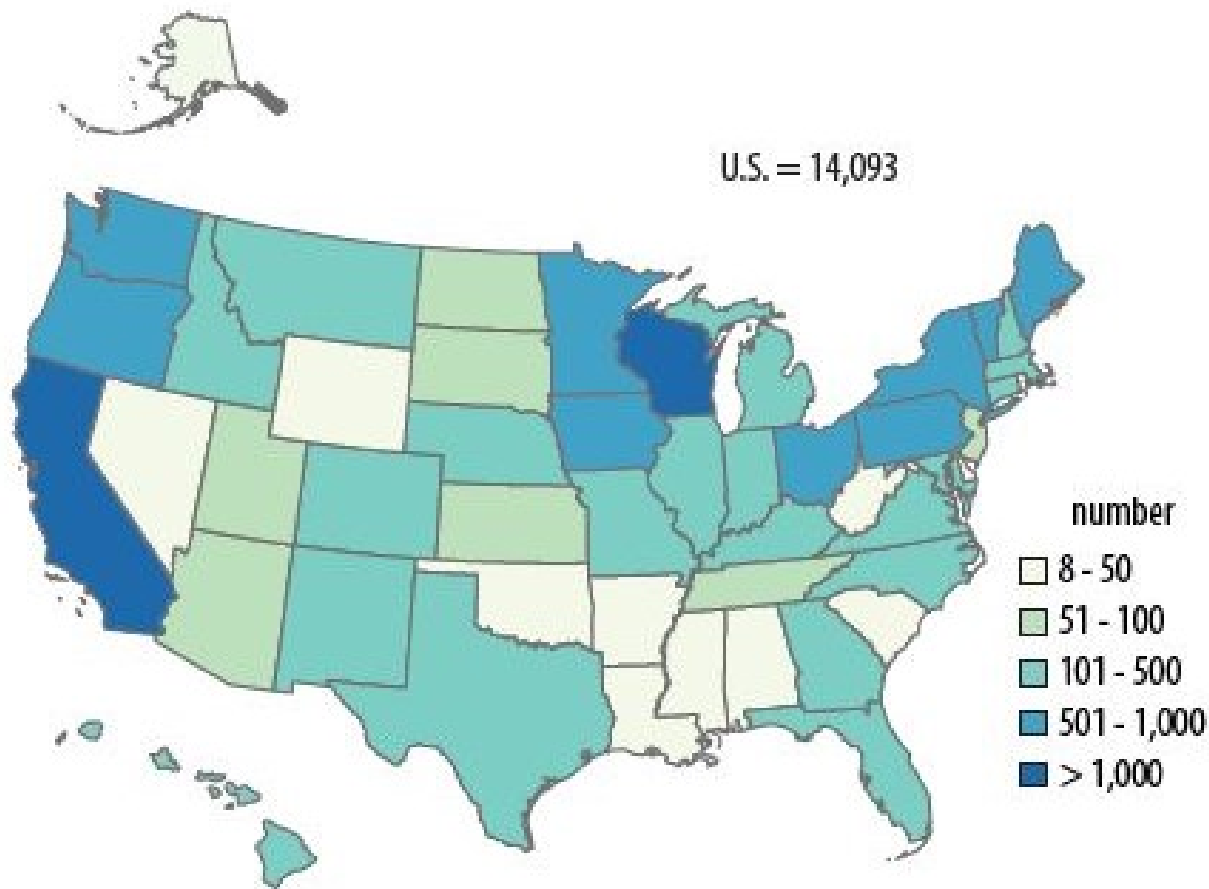
1. Greene, Catherine et al. (2017). Growing Organic Demand Provides High-Value Opportunities. USDA ERS Amber Waves.

2. OFRF (2012). 2012 Land Grant Assessment. [www.ofrf.org](http://www.ofrf.org)



# Industry is Patchy Across U.S.

Number of Organic Farms (certified and exempt), by State, 2014



- Some areas have fewer organic examples for teaching students
- May have fewer resources and less support for teaching this topic

# Develop a curriculum for organic production

What are the most important topics and skill sets to include?

What resources are instructors already using?

What are instructors biggest challenges and support opportunities?

# Project Objectives

- 1. Characterize instructors' mental models for organic agriculture education**
2. Develop introductory curriculum to address critical concepts identified by instructors
3. Test curriculum in target classes across regions, accounting for student perceptions



# Methods: Finding Faculty

- To find faculty who teach organic courses we searched
  - Sustainable ag education association (SAEA) program listing
  - Land Grant Universities
  - Hispanic Serving Institutions
  - 1890 Historically Black Colleges
- Searched **130** universities for organic courses
- Found **38** Faculty currently teaching organic courses
- Contacted **26** Faculty
- Interviewed **19** Faculty

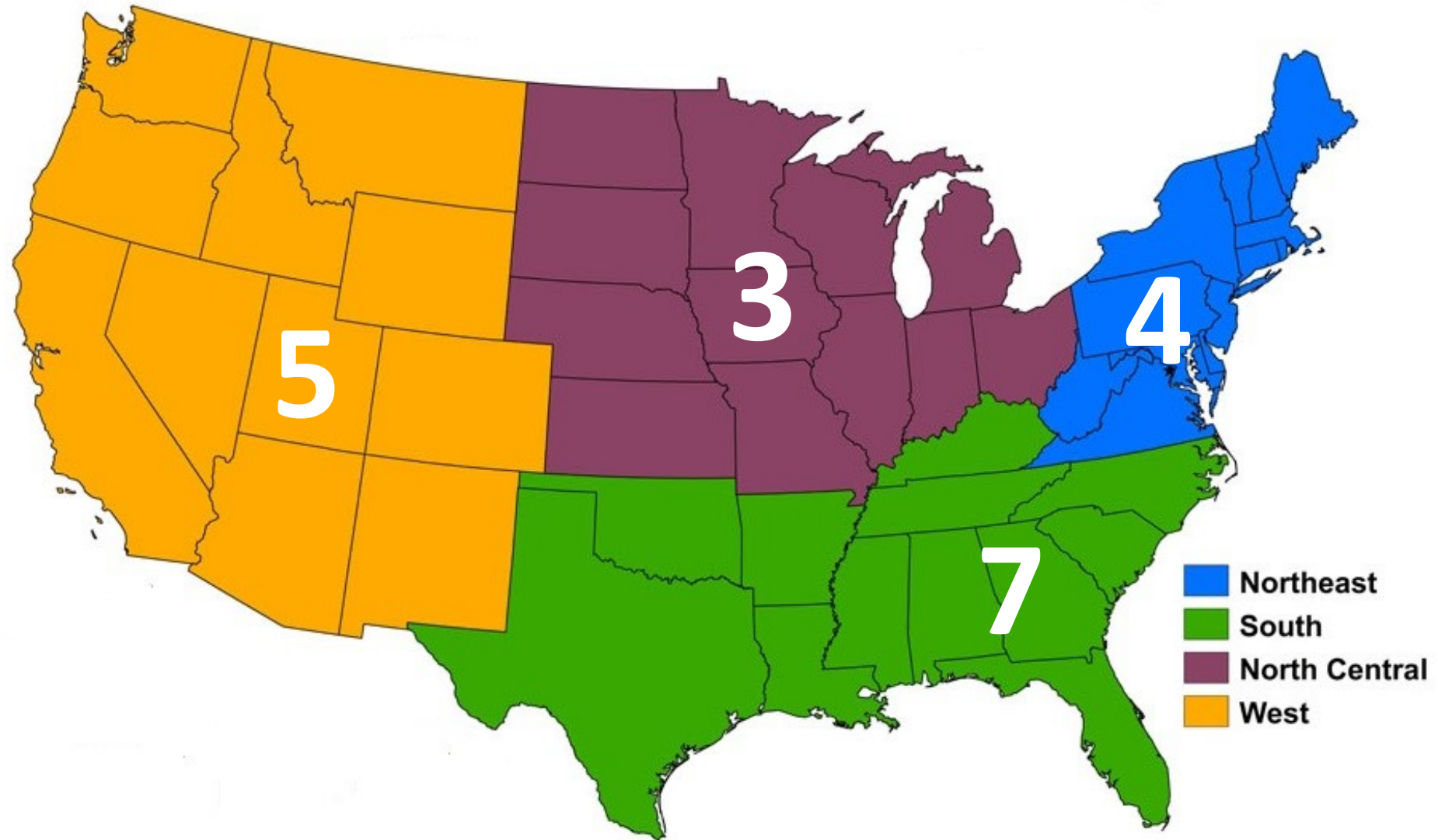


# Methods: Faculty Summary

Criteria	Range
Positions	Instructor - Regents Professor
Institution Types	Land Grant, Other 4-year, Liberal Arts
Teaching appointments	15-100%
Years Teaching Organic	2-15 years



# Methods: Faculty Summary



# Methods: The Interviews

- Via phone or in-person
- Semi-structured, open-ended interview strategy
- Questions developed via meetings w/ an advisory board
- Interested in:
  - Concepts & Skills Covered
  - Scope of Teaching Examples
  - Challenges and Opportunities



# Methods: Question Examples

- What two topics do you consider critical for teaching organic agriculture?
- In your class, do students learn about organic certification regulations? If yes, how do they learn about the history and implementation of regulations?
- Which topics or skills are most challenging for you to teach?

# Methods: Coding and Analysis

- Transcribing
- Labels or 'codes' assigned to segments of interview
- MAXQDA software
- Calculated Frequency of Mentions

The screenshot displays the MAXQDA software interface. On the left, a coding tree is visible with the following structure:

- ..Certification Process (yellow)
- ..Cover a little (orange)
- ..Labor Issues (orange)
- Q4 Teaching Labor & Social Justice (orange)
- ..Cover a little (orange)
- ..Food Safety (blue)
- ..Video/Audio (red)
- ..International (red)
- ..Regional (red)
- ..Multiple Scales (red)
- ..Regional (red)
- Q5 Geographic Scope of Teaching (red)

On the right, a transcript is shown with the following text:

64 I: That totally makes sense.

65 R: So to keep in mind with this interview, we're mentioned the certification piece, being part of

66 I: That makes sense. I appreciate that sort of c

67 25:22

68 R: Only in the context, let's see I don't think I h  
it. I'd love to do more with things like that I've w

69 Let me take you to the reading list and maybe  
those things. On a side note, we have is organ  
more toward production. I do have sociology s

70 26:32

71 R: Here, week 9, organic nutrition and food saf  
say the answer is yes.

72 I: It definitely sounds like it from the things you'  
you're teaching, and you can think about the or  
geographic scope of your examples. Are a lot  
has that changed from when you taught it in W

73 R: Yes, I can tell you that I think it's still, as far  
ecology class, for sure, I'm want to bring it mo  
the first time I thought it, I adapted it. The only  
examples from NRCS (garbled) management

..Tillage  
..Soil Organic Matter  
..Cover Crops  
..Compost



how you can, you know one of the analogies we use is related to soil/organic matter is the bank account analogy. So you can either take less money out or put more money in. Same kind of thing so.. Organic matter you can either reduce tillage and conserve what you have there or you can focus on adding more organic matter inputs through cover crops or through compost. So that's a pretty big one. That's probably the primary thing.

39

16:39

40

# Results: Identify Two Critical Topics...

Topics	% Respondents (out of 18)
Soils	44.4%
Ecological Principles	38.9%
NOP Standards /Certification	27.7%
Systems	16.7%
Insects	16.7%
Cover Crops	11.1%

# Results: Example – National Organic Program

Concept	% Respondents (out of 17)
Standards and Regulations	88.2%
Certification Process	58.8%
People & Organizations involved	52.9%
National List Allowed/ Prohibited Substance	41.2%
History	35.3%



# Results: Teacher Challenges

Teaching Limitations & Challenges	# Respondents
Lack of Resources/Materials	9
Time & Timing	8
Lack of Knowledge/Expertise	8
Lack of Administrative Support	5
Philosophical/Political	5

# Results: Difficult to Cover Topics

Topics	Cover 'a little' # respondents	Don't Cover # respondents
Livestock	10	4
Social Issues	9	3
Climate Change	7	3
Management & Marketing	2	2
Certification & NOP Standards	2	1

“It’s not my specialty. Something I’m extremely sympathetic to and I think like a lot of natural science folks, not trained in it, don’t know quite how to do it, but really want to do it.”

# Results: Support & Opportunities

Support & Opportunities	# Respondents
Guest Lecturers	15 (mentioned 47 times)
Co-teaching	7
Connections with Farmers	7
Partner Institutions & Organizations	4
Conferences/Associations/Societies	4

- 17 out of 19 respondents use spaces outside of the classroom

# Conclusions



Focus on production  
and foundational  
principles



Topic areas of need:

- Livestock
- Social Issues
- Climate Change
- Marketing



Areas of Instructor Support:

- Guest Lecturers
- Outside Teaching Spaces

# Next Steps...

- Analyzing faculty syllabi for:
  - Content
  - Sequencing
- Developing modules
- Module testing

### History of organic agriculture in the U.S.

**Beginnings of the Movement**  
Sir Albert Howard is credited with developing many of the foundational ideas of organic agriculture. Howard spent 26 years of his career in India, conducting agricultural research and learning techniques from indigenous farmers.<sup>1,2</sup> Upon returning to England, he later published *An Agricultural Testament* in 1940, where he introduced "The Law of Return" (where organic waste is returned to the soil to improve soil health and fertility) and composting methods. Howard was not the only one to draw on the farming examples of indigenous peoples. P. H. King, a former United States Department of Agriculture (USDA) official, published *Farmers of Forty Centuries*, *Permanent Agriculture in China, Korea, and Japan* where he describes the agricultural practices that have allowed farmers in these regions to farm without exhausting the soil for generations.<sup>3</sup>

Walter Northbourne's *Look to the Land* (1940) described the farm as a living organism or "organic whole" where nutrients were recycled.<sup>4</sup> Lady Eve Balfour attempted a study to compare organic vs. non-organic farms, and Rodale was a publisher, business man, and fan of Howard's work.<sup>5</sup> He began publishing a magazine, *Organic Farming and Gardening*, which would help popularize the concept of organic in the U.S.<sup>6</sup> The Rodale Press continues in popularity and the Rodale Institute (founded in 1947 in Pennsylvania) conducts long-term organic agricultural research.

Despite these early efforts, the development of the organic agriculture movement in the U.S. remained slow throughout the post-war period as the country was largely focused on productivity and developing new technologies.<sup>7</sup> During this time there was a lot of tension between proponents of organic agriculture and those outside the movement, where organic was described as a cult and fanclub.<sup>8</sup>

**Gaining Momentum**  
In the 1960's and 70's there is a surge of interest in organic farming and organic products. At this time the number of farming communes increased by 5x, circulation of Rodale's magazine skyrocketed, and food co-ops became more common.<sup>9</sup> This surge in interest by the counterculture had social implications that would stay with the movement:  
// Resistance to industrialization, urbanization, modernization and rationalization can all be found in various elements of the organic movement. The embrace of organic agriculture by the counterculture in the 1960's and 1970's infused an anticapitalistic component within the movement. In many ways organic was viewed, first and foremost, as a social issue during this era.<sup>2</sup> //

At the same time, the environmental movement was beginning to take shape with Rachel Carson's *Silent Spring* published in 1962. *Silent Spring* documented the harmful effects that the insecticide DDT was having on bird populations. Carson's work sparked new concern over the health and safety of chemicals used in agriculture and the eventual establishment of the Environmental Protection Agency (EPA) in 1970.<sup>10</sup>

### A timeline of organic agriculture

From movement to federal program in the U.S.

- 1930's: Start of the Green Revolution spurred by higher yielding varieties, new machinery and agro-chemicals.
- 1942: Jerome Rodale begins publishing a magazine titled *Organic Farming and Gardening*, popularizing and promoting organic agriculture.
- 1971: Vermont establishes organic certification standards through the Northeast Organic Farming Association (NOFA). The Maine Organic Farming Association (MOFGA) is formed.
- 1979: California law creates standards for organic production.
- 1980's: Most universities begin offering college organic agriculture.
- 1990: The Federal Organic Foods Production Act is passed. This act was meant to: 1) establish national standards for organic products 2) assure consumers that organically produced products meet a consistent standard and 3) facilitate interstate commerce in food that is organically produced.
- 2002: The USDA implements the National Organic Program (NOP), which establishes the standards for organically-produced agricultural products, maintains the lists of allowed and prohibited substances, and accredits certifying agents to certify organic farmers.

MRI



# Questions?

## Acknowledgements

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