

Advancing agroecology in the US: Science & policy, from soil to spoon

*Agroecological Transitions in a Transatlantic Context:
Concepts, typologies, barriers, drivers & sustainability performance*



Credit: Tobias Carter/Savanna Institute



Marcia DeLonge

*Albie Miles, Liz Carlisle, Rafter Ferguson
AAG Annual Meeting, 6 April 2019*

**[Union of
Concerned Scientists]**

Credit: NRCS/Tim McCabe



Credit: USDA/Bob Nichols



**The food system,
by many accounts,
is not working.**

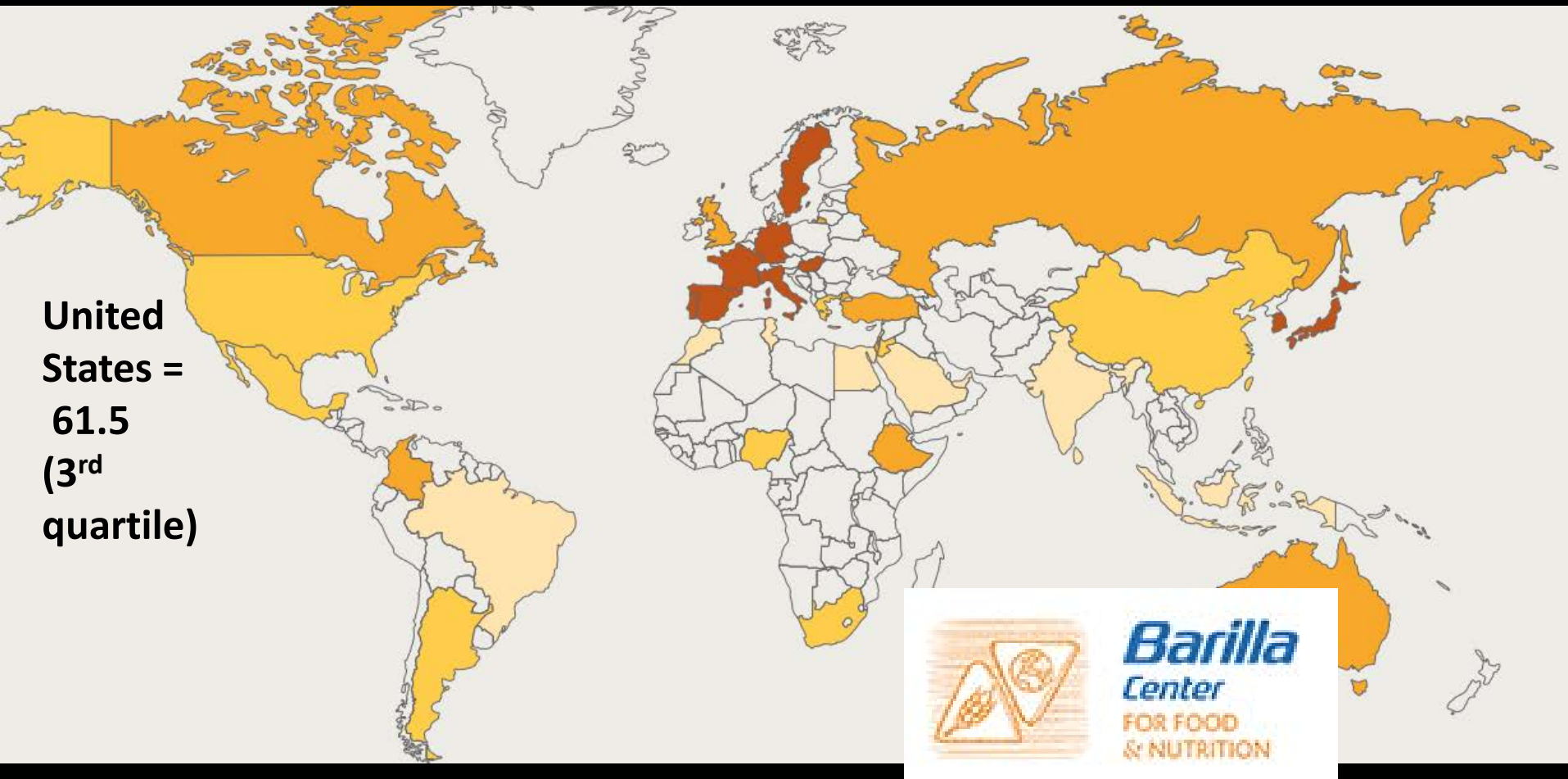


Credit: Russ Munn/AgStock Images

Credit: Ben+Sam/CC(Flickr)



**In a global analysis of food sustainability,
the US scored in the 3rd quartile (not good)**



Global Food Sustainability Index

Food system solutions & agroecology

Right
perspective



Credit: Preston Keres, USDA

Right
foods



Credit: Lance Cheung, USDA (Flickr)

Right
way



Credit: farmhack.net

Right
distribution



Credit: USDA

Food system solutions & agroecology

Barriers & opportunities



Credit: Preston Keres, USDA



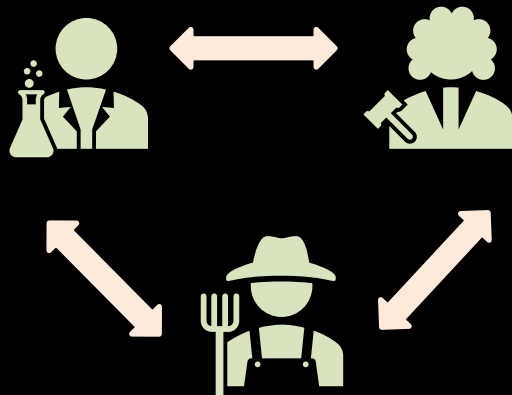
Credit: Lance Cheung, USDA (Flickr)



Credit: farmhack.net



Credit: USDA



1. Research funding
2. Growing demand & US policy considerations

Research funding as a lever for change

- Investment in agricultural research pays off
- Relationship between research investment & dominant practices



Credit: farmhack.net

What is the current investment in agroecology?



Credit: Preston Keres, USDA



Credit: Lance Cheung, USDA (Flickr)



Credit: farmhack.net



Credit: USDA

Challenging question:

- (1) Past attempts to quantify sustainable agriculture research funding had become outdated
- (2) No clear accounting or tracking of funds for agroecology

What is the current investment in agroecology?



Credit: Preston Keres, USDA



Credit: Lance Cheung, USDA (Flickr)



Credit: farmhack.net

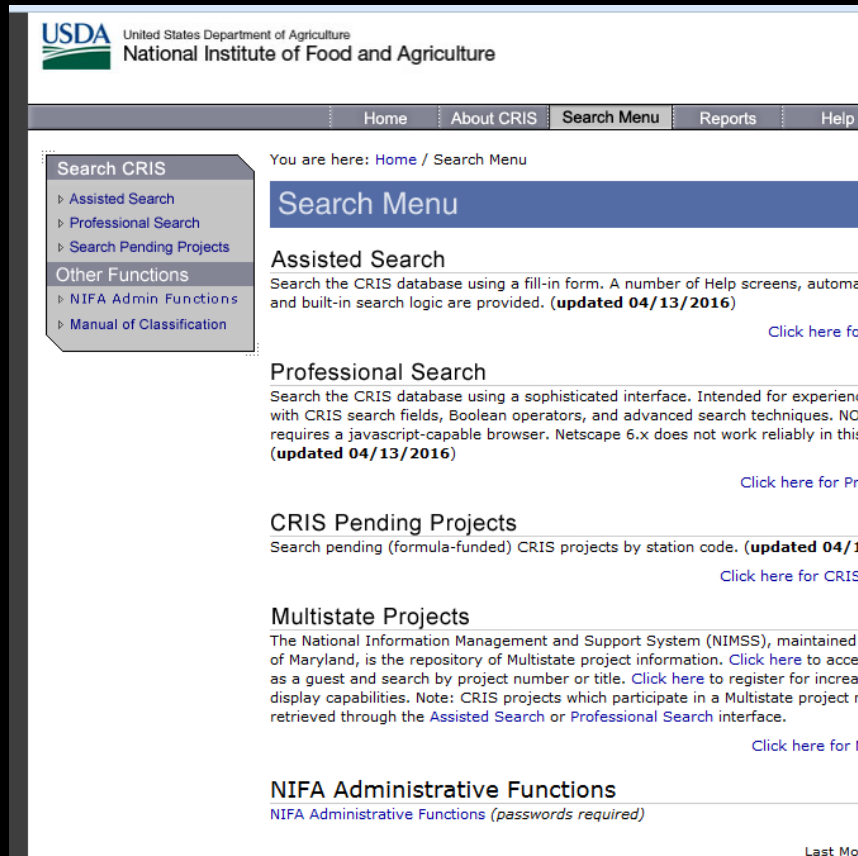


Credit: USDA

Research Methods:

1. Compiled reports of USDA-funded projects that began in 2014, searched for all components in each
2. Developed framework to define & identify components of sustainable agriculture, including agroecology

A database of grants to assess public investment



The screenshot shows the USDA National Institute of Food and Agriculture (NIFA) website. The header includes the USDA logo and the text "United States Department of Agriculture" and "National Institute of Food and Agriculture". A navigation bar contains links for Home, About CRIS, Search Menu, Reports, and Help. The "Search Menu" is selected, and a sidebar on the left lists search options: Search CRIS (Assisted Search, Professional Search, Search Pending Projects), Other Functions (NIFA Admin Functions, Manual of Classification), and NIFA Administrative Functions. The main content area is titled "Search Menu" and lists four search options: Assisted Search, Professional Search, CRIS Pending Projects, and Multistate Projects. Each option has a brief description and a "Click here for" link. The "NIFA Administrative Functions" section is at the bottom, noting that passwords are required.

USDA United States Department of Agriculture
National Institute of Food and Agriculture

Home About CRIS Search Menu Reports Help

You are here: [Home](#) / [Search Menu](#)

Search Menu

Assisted Search
Search the CRIS database using a fill-in form. A number of Help screens, automatic and built-in search logic are provided. (updated 04/13/2016)
[Click here for](#)

Professional Search
Search the CRIS database using a sophisticated interface. Intended for experienced users with CRIS search fields, Boolean operators, and advanced search techniques. NO requires a javascript-capable browser. Netscape 6.x does not work reliably in this interface. (updated 04/13/2016)
[Click here for Pr](#)

CRIS Pending Projects
Search pending (formula-funded) CRIS projects by station code. (updated 04/13/2016)
[Click here for CRIS](#)

Multistate Projects
The National Information Management and Support System (NIMSS), maintained by the University of Maryland, is the repository of Multistate project information. [Click here](#) to access the system as a guest and search by project number or title. [Click here](#) to register for increased display capabilities. Note: CRIS projects which participate in a Multistate project are retrieved through the [Assisted Search](#) or [Professional Search](#) interface.
[Click here for t](#)

NIFA Administrative Functions
[NIFA Administrative Functions](#) (passwords required)

Last Modified: 04/13/2016

- Public USDA database (CRIS)
- Reports with Grant \$ provided, from 2014
- 824 projects, \$294 million
- Text fields: Objective, Non-technical summary, and Approach

A framework for classifying sustainable agriculture

Level 1



BanksPhotos/iStock

Level 2



A Basche

Level 3



E Remsberg/USDA-SARE

Level 4



USDA

Level 5



Input
efficiency

Input
substitution

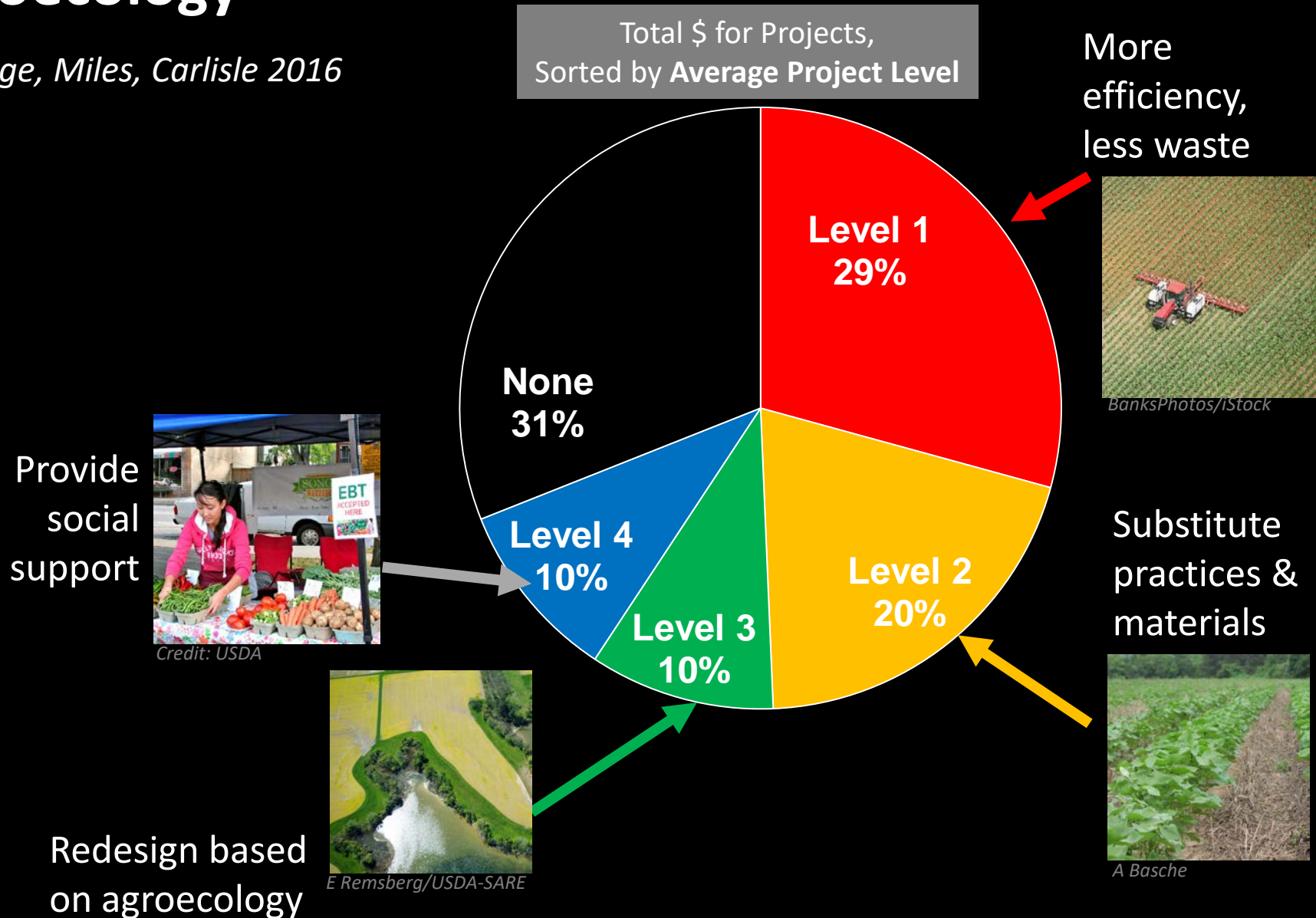
Agroecology
Practices

Socioeconomic
support

Global
sustainable
food system

10% of funds to projects with an emphasis on agroecology

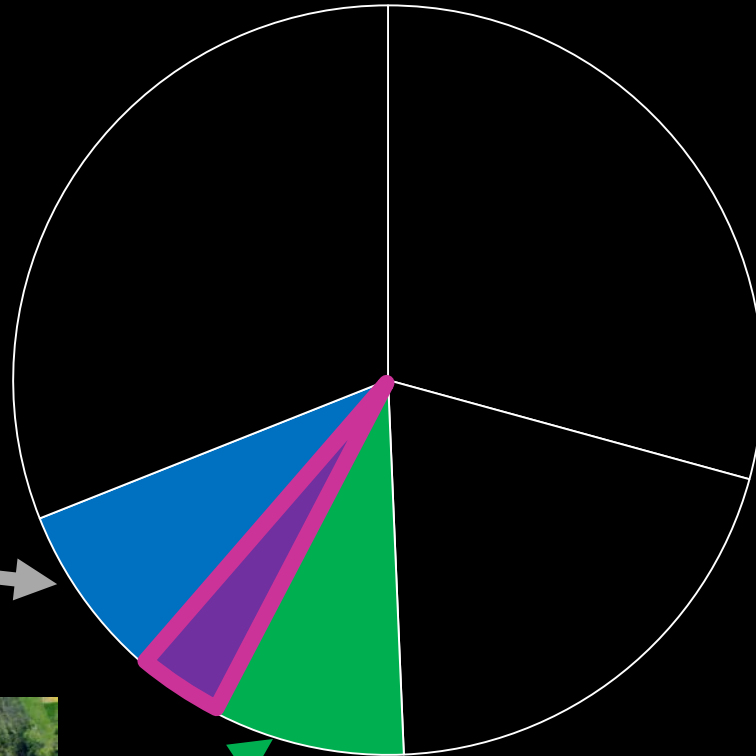
DeLonge, Miles, Carlisle 2016



4% of funds to “transformative agroecology”

DeLonge, Miles, Carlisle 2016

Total \$ for Projects,
Sorted by Average Project Level



Provide
social
support



Credit: USDA

Redesign based
on agroecology



E Remsberg/ USDA-SARE

Opportunity to invest more in agroecology

Current research funding

Levels 3, 4 & 5: Agroecology
& Socioeconomic supports

Level 2:

Substitution

Level 0,1:

Increase

**efficiency + address
symptoms**

Proposed research funding

*Reduce &
improve:
Level 1*

*Boost: Substitute
damaging inputs
and practices*

Level 2

***Prioritize:
Whole systems
research***

Levels 3, 4 & 5

Miles, DeLonge, Carlisle 2017

Scientists interested in more public support for agroecological research

~500 signers

Scientist and Expert Statement of Support For Public Investment in Agroecological Research

We support greater public investment in agricultural research that applies ecological principles and relies, to the greatest extent possible, on ecological processes (“agroecology”) to address current and future farming challenges.

Agroecology regards farms as ecosystems embedded in broader landscapes and society. Agroecological approaches are based on understanding and managing ecological processes and biological functions to increase and sustain crop and livestock productivity, efficiently recycle inputs, and build soil fertility, while minimizing harmful impacts on soil, air, water, wildlife, and human health.¹⁻² Hallmarks of agroecological farming practices include increasing the types of crops rotated on fields from year to year; controlling pests and weeds with fewer chemical pesticides; enhancing soil health while reducing the need for synthetic fertilizers; and valuing non-cropped areas of farms for the services they provide.

Agroecology has a proven track record of meeting farming challenges in a cost-effective manner. Research has found that applying agroecological methods, like those detailed above, can result in high yields for each crop in a rotation sequence.³ In addition, long-term studies have found that organic practices—a specific set of agroecological practices that eschew the use of all synthetic chemical inputs—typically improve soil health compared to plots where conventional practices are applied, and may produce comparable yields. This research also demonstrated that economic returns for organic crops can be greater than for conventional crops, despite higher labor costs.⁴

These findings indicate that additional research has the potential to increase our understanding of agroecological methods and increase their adoption. Farmers could benefit from this added knowledge to produce a wide range of crops in many different regions, with greater resilience to variation in pests, weather conditions, markets, and other factors.

While other approaches may also yield promising solutions, they are more likely to already benefit from private sector support. Agroecology is less likely to be supported by the private sector since these farming



In a survey of scientists, 85% of 165 experts stated that research funding is an important or very important obstacle



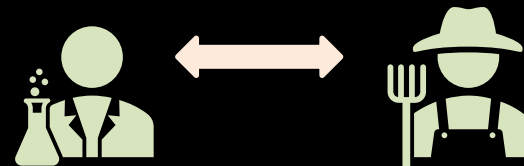
<https://www.ucsusa.org/our-work/food-agriculture/solutions/advance-sustainable-agriculture/scientists-call-public-investment-agroecology>

Farmers are interested in adopting more agroecology... and in supportive policies

FARMER POLL

- 2,867 farmer interviews
 - IL, IA, KS, MI, OH, PA, WI
 - March 2018
 - automated phone survey & online interviews
- **75%** want policies offering incentives to reduce runoff & soil loss, improve water quality & increase resilience to floods & droughts
 - **66%** said that farm bill programs providing > financial incentives for unfamiliar practices would make them more likely to adopt them
 - **72%**—across party lines—said they would be more likely to support a candidate for office who favors success through sustainable agriculture.

<https://www.ucsusa.org/press/2018/under-increasing-economic-pressure-us-farmers-seek-change-next-farm-bill-new-poll-shows>

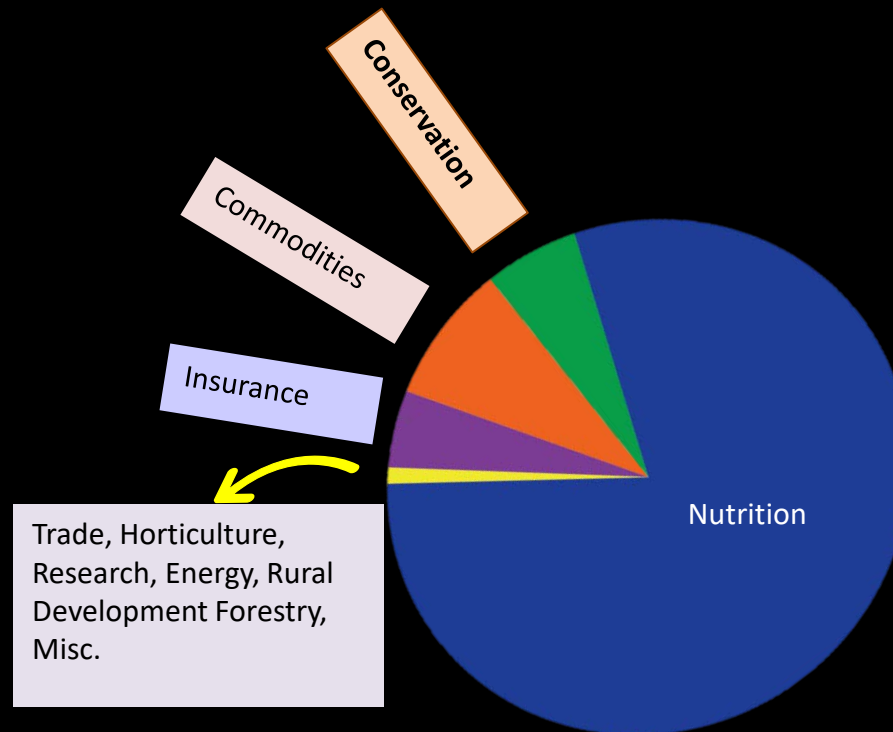


What are the policy opportunities?



Opportunities at the federal level:

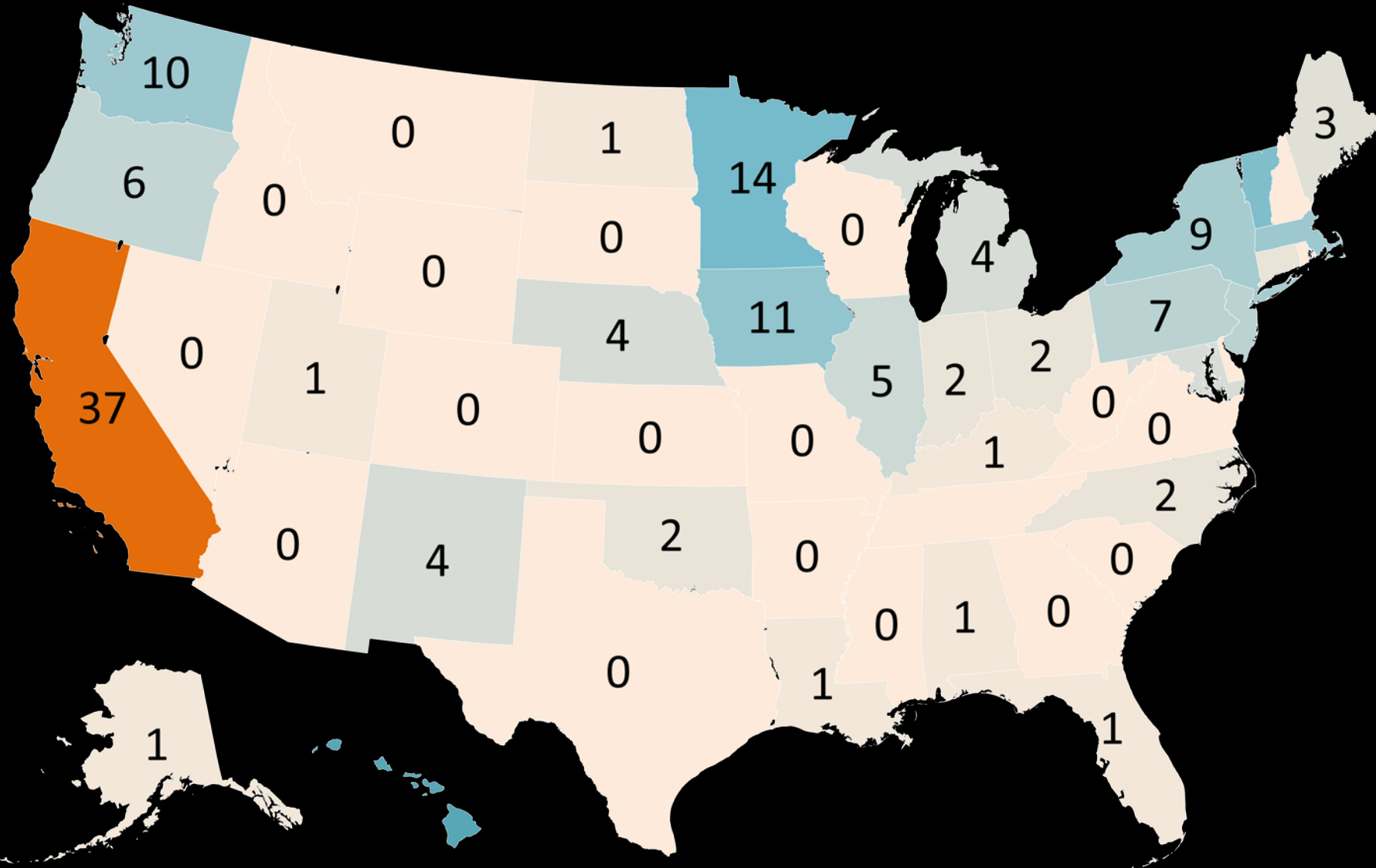
Farm Bill



Source: USDA 2014

Opportunities at the state level:

Healthy soils bills



At all scales, keep an eye on many levers & look for opportunities

Credit: NRCS/Tim McCabe



Credit: USDA/Bob Nichols



Credit: Russ Munn/AgStock Images

Credit: Ben+Sam/CC(Flickr)



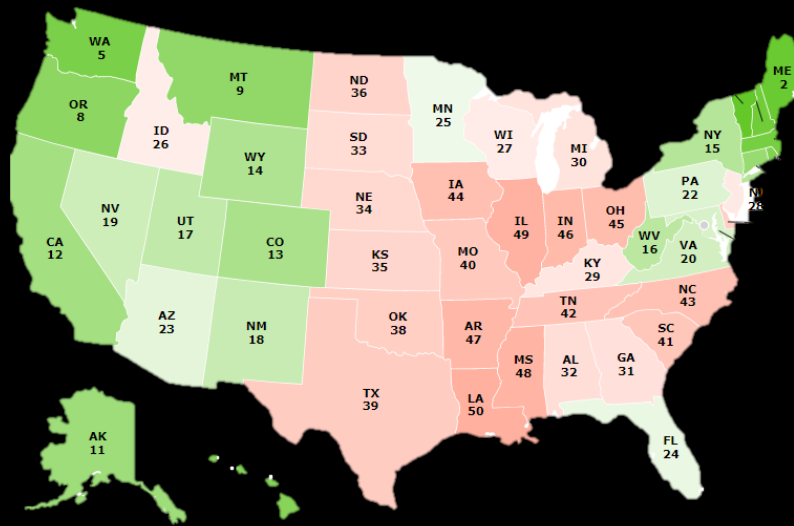
At all scales, keep an eye on many levers & look for opportunities



50-state food system scorecard

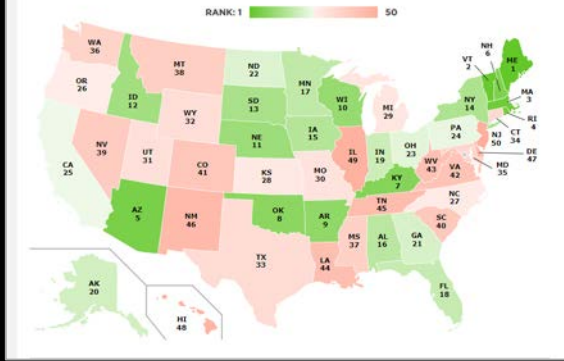
- 68 indicators
- 10 categories (5-9 indicators each)
 - farms & ecosystems (6)
 - food & health (3)
 - social determinants & disparities (1)

Different states lead in different categories



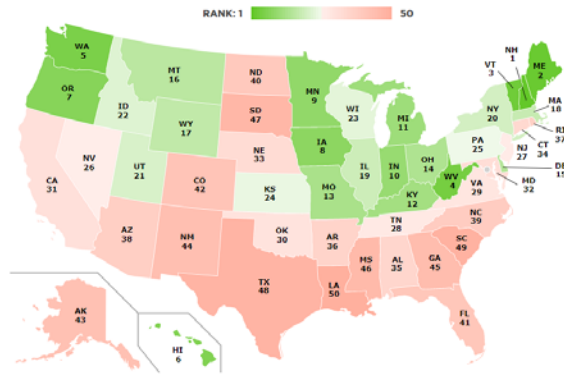
Map 1: Farming outlook

The increasing average age of US farmers and the small numbers of beginning farmers, women, and people of color in agriculture stymie innovation and adaptability, threatening the future of farming. This category includes the following indicators: farmer age; percentage of beginning farmers; farms per 100 residents; percentages of farms that are midsize, owner-occupied, operated by women, or operated by people of color; injuries from agricultural production; and total factor productivity (a measure of efficiency).



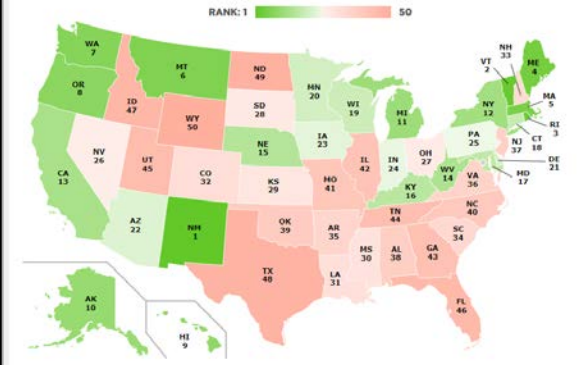
Map 10: Social determinants & disparities

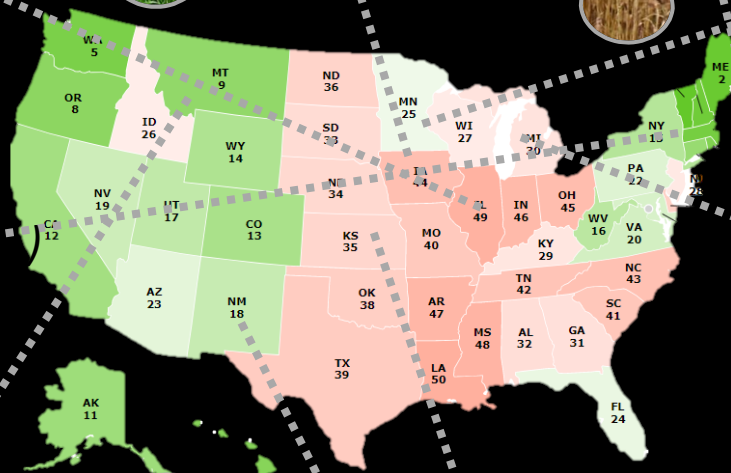
To build healthy food and farm systems, we must address and dismantle the social inequities built into them. Such inequities can be seen as both a result and a reinforcer of today's food system challenges. This category includes: education gap by race; income gap by race; income inequality; gender inequality; infant mortality rate disparity by race; and percentage of the labor force with union memberships.



Map 9: Food investments

The Supplemental Nutrition Assistance Program (SNAP) is the nation's first line of defense against hunger. But several other US Department of Agriculture programs complement and enhance SNAP, making nutritious foods more affordable and accessible while expanding markets for local farmers. This category includes the following indicators, using spending levels for key USDA programs: grant funding for local food and farmers market promotion; percent of farmers markets that accept SNAP and other federal nutrition program benefits; and grant funding to incentivize fruit and vegetable purchases with SNAP dollars, bring grocery stores and other healthy food retailers to underserved communities, support farm-to-school programs, and facilitate other community food projects.





Opportunities to transition to agroecology



[Thank You

To stay connected to UCS,
text “**food justice**”
to “**662-266**”

[Questions?



Credit: Preston Keres, USDA

[Union of
Concerned Scientists

For additional information, reach out at mdelonge@ucsusa.org