Regional Food Systems: A View from the Northeast

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- Dueling Food Systems (Myth or Reality?)
- Trends in the Northeast U.S.
- Setting the Baseline, Considering the Future
- Challenge of Interdisciplinary work

How many food systems do we have?

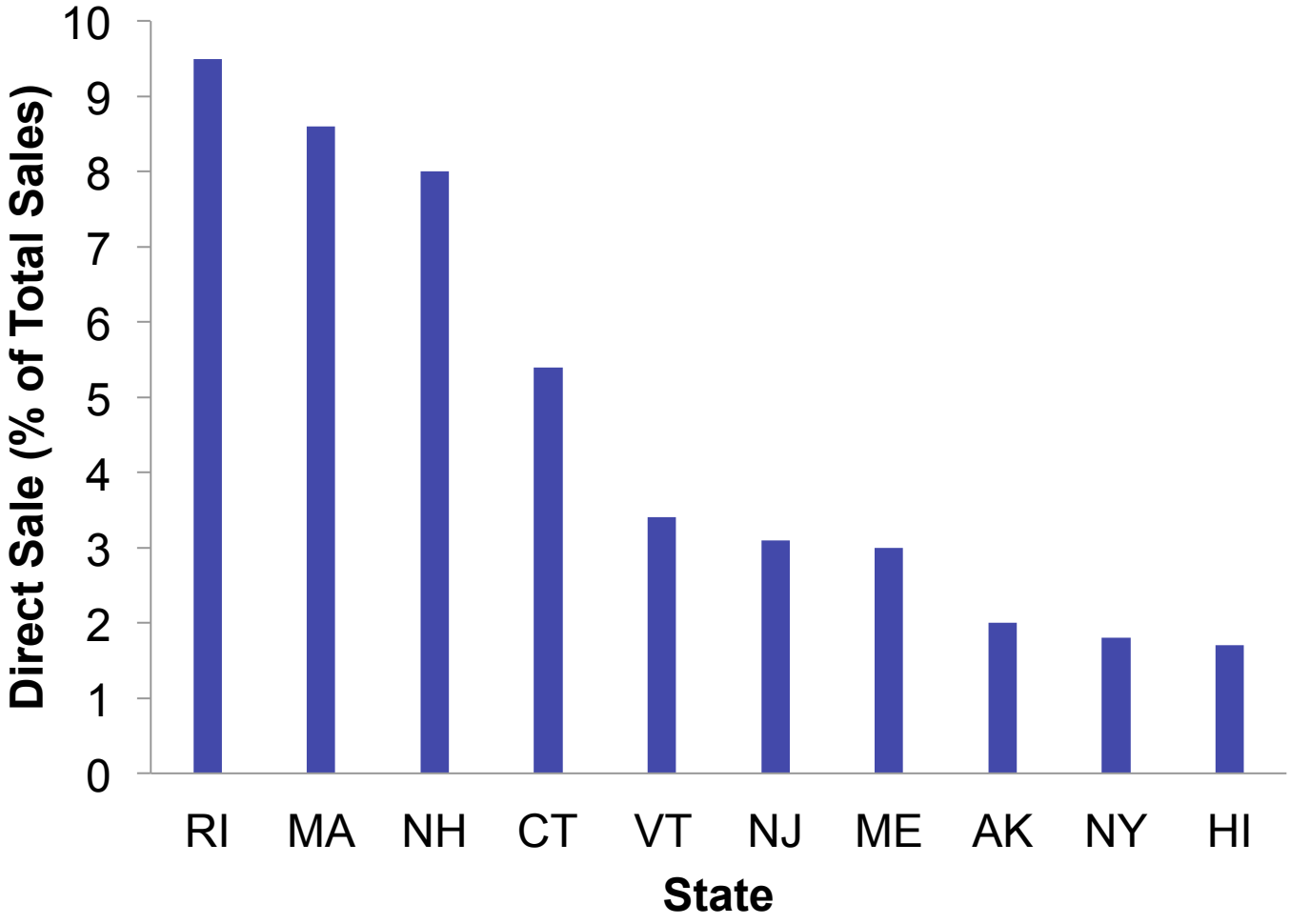
How many do we need…?

Grown in DETROIT

Michigan Farmers Market ASSOCIATION

Relationships & markets

Direct to Consumer Sale of Food: Top 10 States



Diamond and Soto (2009) Facts on Direct-to-Consumer Food Marketing. USDA – AMS.

Food Systems Scales

- "The Industrial"
  - An assumption about scale (large)
  - Producing both feedstocks and foods
  - Provides a large portion of US food supply
  - *Also* conflated with many other characteristics

Food Systems Scales

- "The Global"
  - The Corporate Food System
  - Viewed mostly from farm gate outward
  - Players might be large, small, local, etc.

Food Systems Scales

- "The Local"
  - Tremendous interest
  - Northeast leads in direct to consumer
  - Rapid growth, from a small starting point
  - Conflated with scale, method of production, and nutrition

Food Systems Scales

- "The Regional"
  - Scale is variable (depends on who you ask)
  - More dependent on supply chains that Local
  - Potentially shorter supply chains than Industrial

Scales Overlap, and they should Communicate and Compliment

KALAMAZOO people's FOOD CO-OP · SINCE 1973 ·

Share of the food system?

Impact on food security?
(Household and regional)

Interest in Northeast despite long-term agricultural challenges:

	1925	2007
Number of Farms	50,033	8,136
Land in Farms	5.16 million acres	1.34 million acres
Cropland	1.64 million acres	0.53 million acres

Comparative Advantage to Achieve Low Food Cost

Specialization

Economies of Scale

Input/Output Efficiency

Nearly Complete Externalization of Non-Production Costs

Environmental Degradation

Health Impacts (direct and indirect)

Economic Opportunity


Local
Eric Brennan


Global
John Hendrickson

Getting back to Regional…

- Maine to West Virginia
- Supply chains
- Farms are the start
- Consumers are the end

http://www.usgcrp.gov/usgcrp/Library/nationalassessment/images/NE.jpg

EFSNE

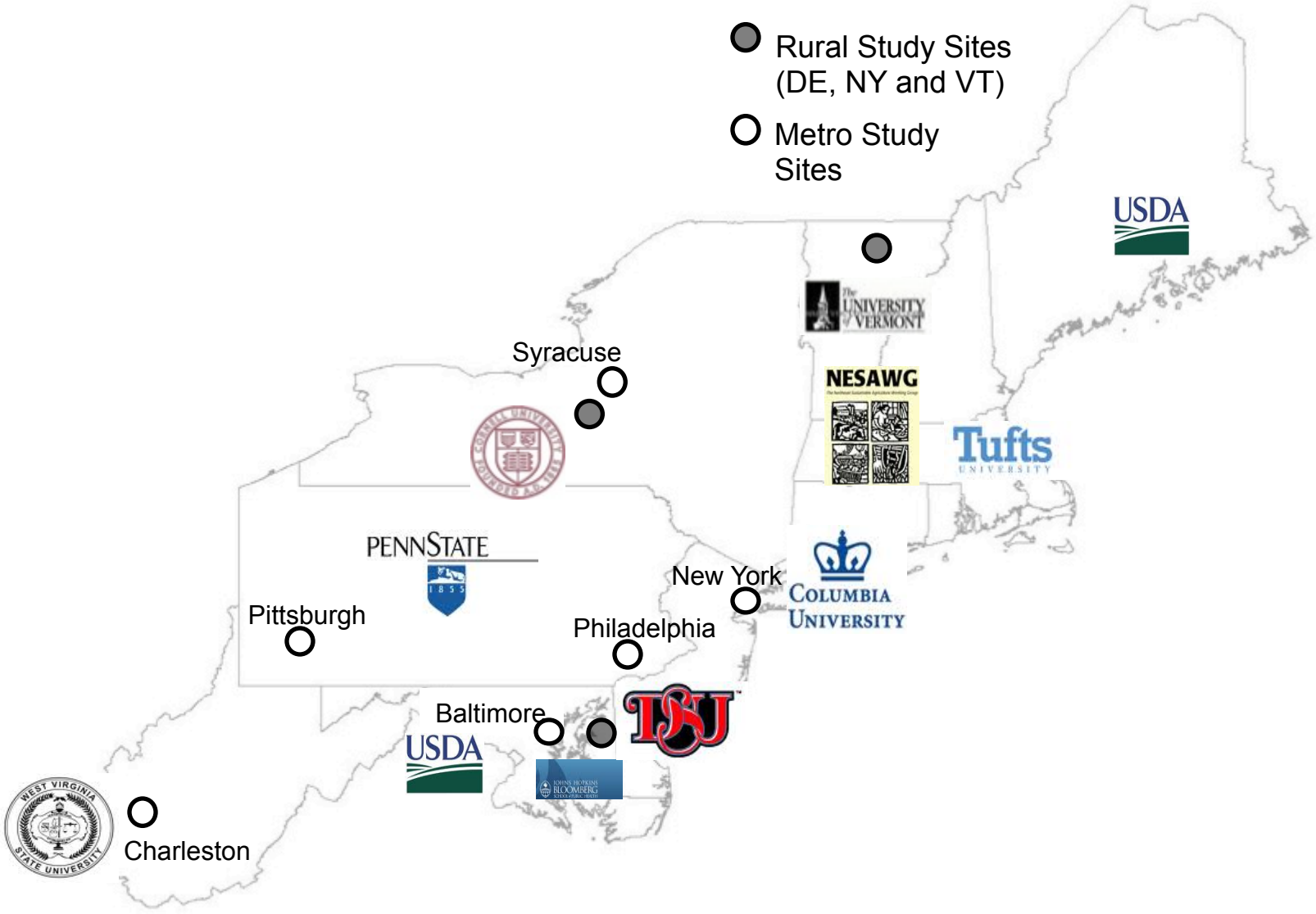
Enhancing the Food Security of Underserved Populations in the Northeast U.S. through Sustainable Regional Food Systems (EFSNE)

Funded by USDA/NIFA (Global Food Security Program)
Prepared for the March 26, 2013 PD Meeting, Washington, DC

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

Grant No. 2011-68004-30057

Northeast Project Sites and Collaborating Institutions



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Mi-Plaza

Supply Chains

Processing/Distribution

Access in Communities

Farm-level Production

Some Details

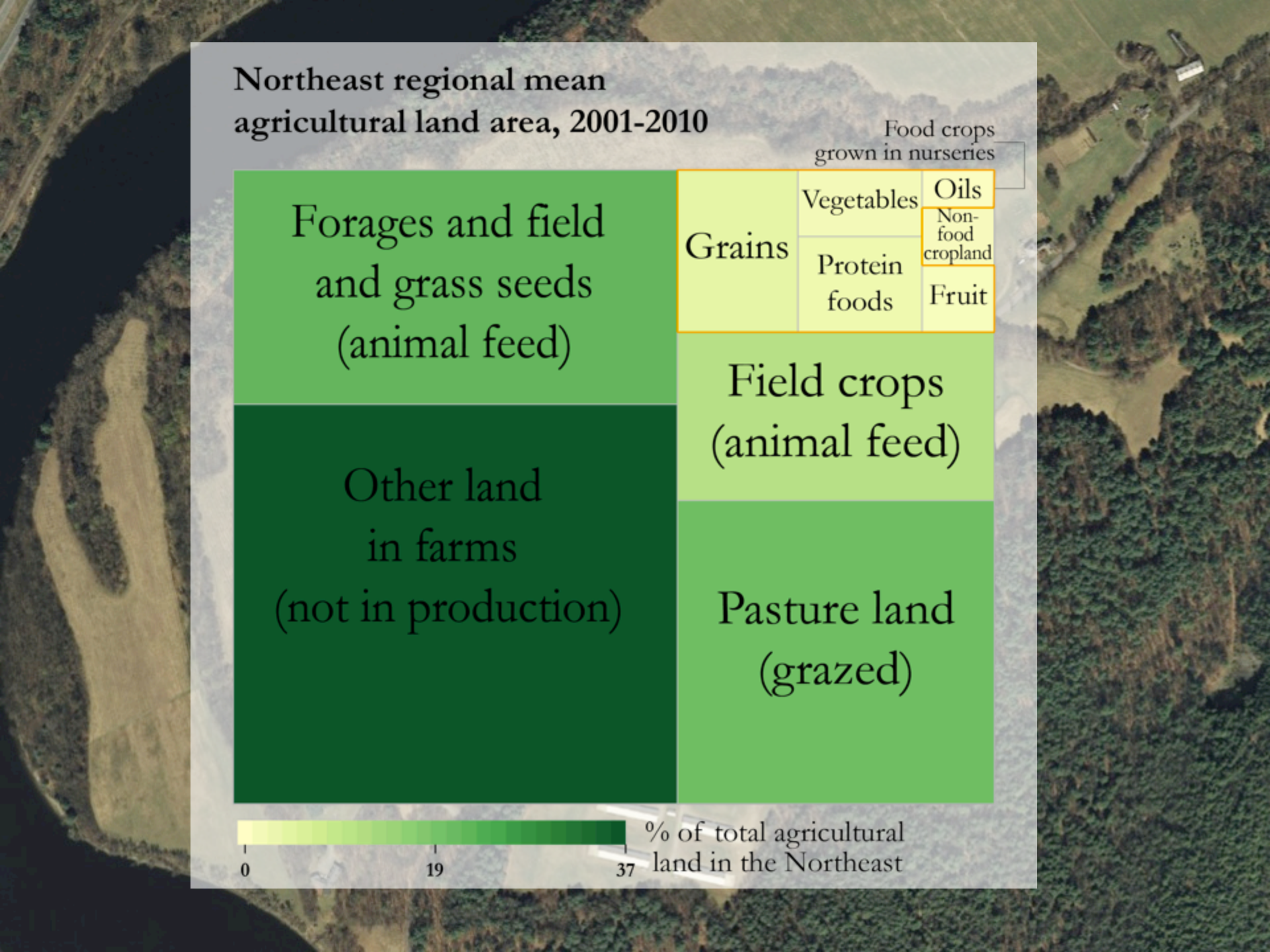
- Estimation conducted at state level
  - NASS Survey date
  - Census of Agriculture
  - Experiment station research and Depts. of Ag
  - Extension experts
- Some aggregation to larger areas
- **Goal**: 10-yr time-series of *Output*
- Data Gaps are a significant issue, especially for Fruit and Vegetable crops

Production

Consumption

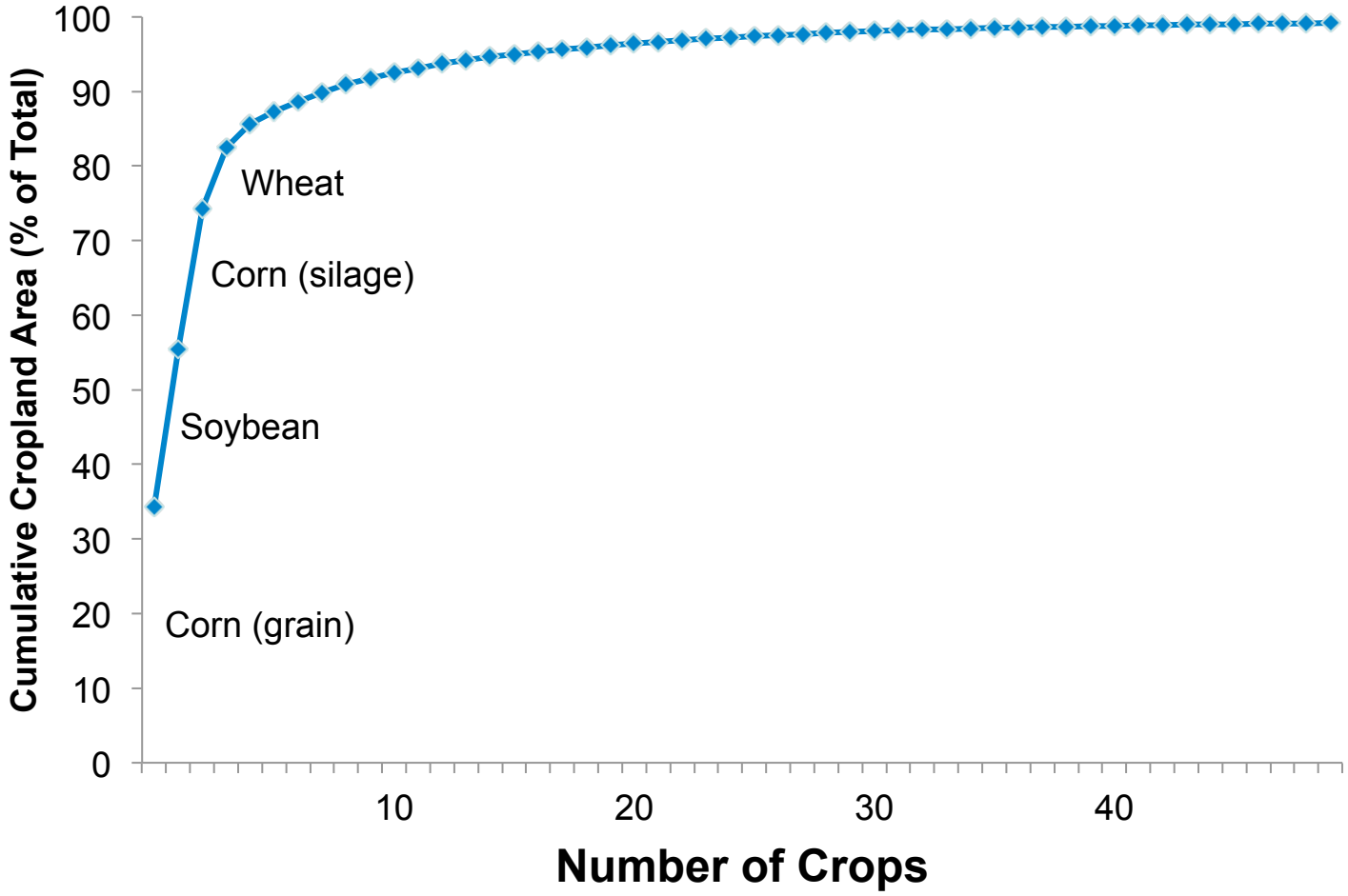
Land and Land Use in NE

	Northeast	U.S.	Share
	----------Millions of Acres----------		%
Land in Farms	27.5	922.1	3.0
Cropland	12.1	309.6	3.9


Northeast regional mean agricultural land area, 2001-2010
Food crops grown in nurseries
Forages and field and grass seeds (animal feed)
Grains
Vegetables
Oils
Non-food cropland
Protein foods
Fruit
Field crops (animal feed)
Other land in farms (not in production)
Pasture land (grazed)
0
19
37
% of total agricultural land in the Northeast

Crop Diversity in the Northeast

More than 300 different crops grown
(includes feed, food, non-food, "other")



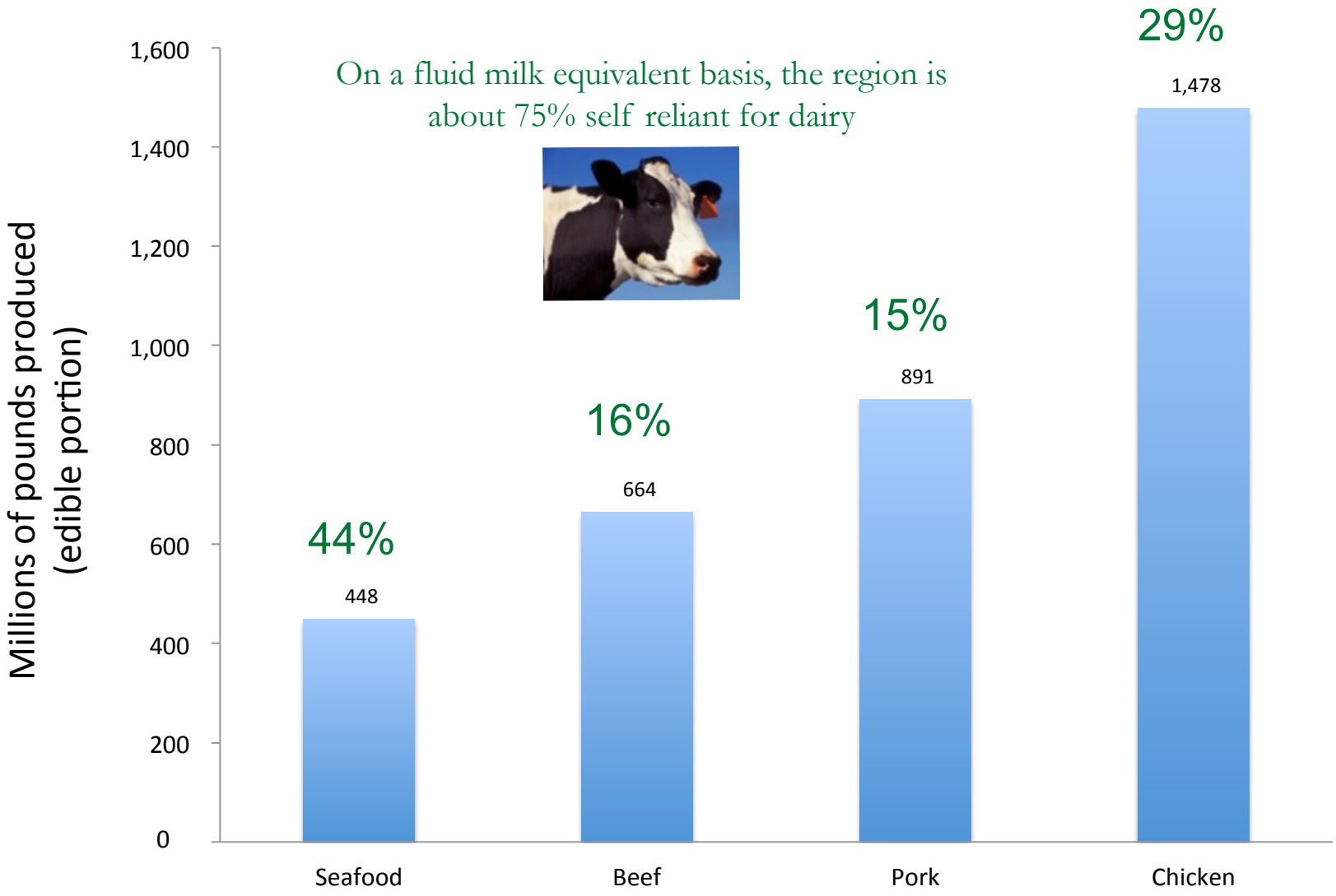
Category	Regional Self-Reliance (%)
Grains	8
Proteins	8
Vegetables	26
Fruit	18

Reliance = (regional production / regional consumption) * 100

Vegetable Group	Regional Self-Reliance (%)
Dark Green	11
Starchy	33
Red and Orange	13
Other	33

Fruit Group	Regional Self-Reliance (%)
“Commonly Eaten”	17
Berries	13
Melons	13

Northeast Regional Production from Meat Animals (mean, 2001-2010)



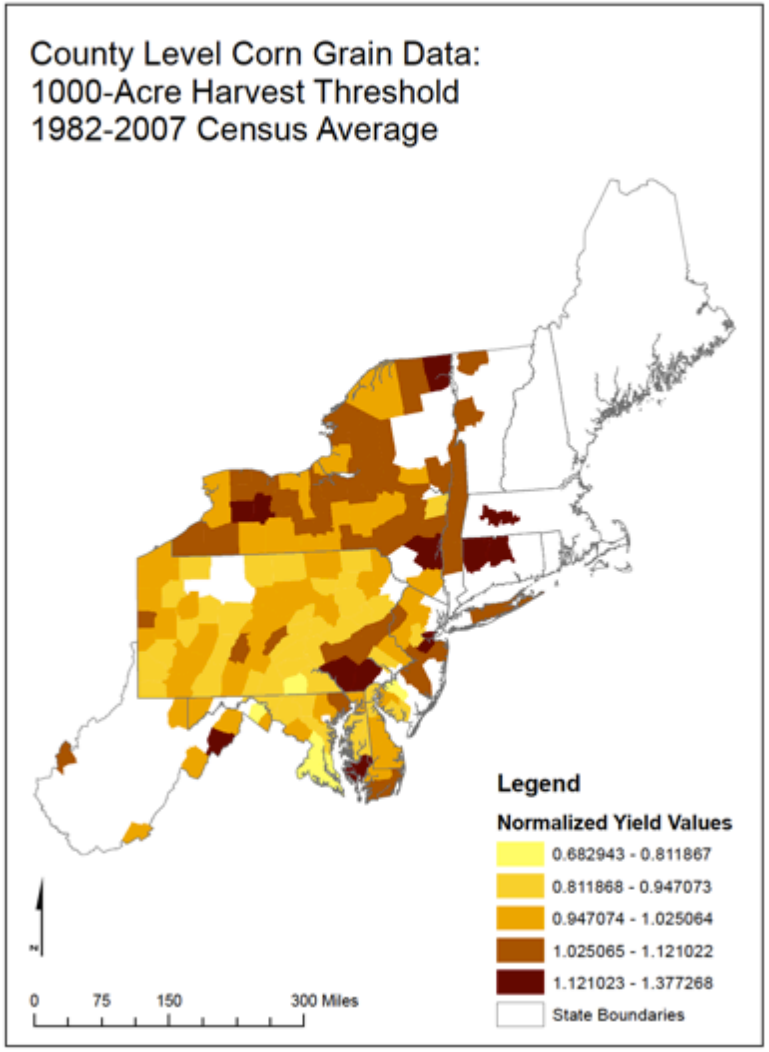
Fluid milk is a regional product; Other dairy products are not (necessarily)

Production

Consumption

On a fluid milk equivalent basis, the region is about 75% self reliant

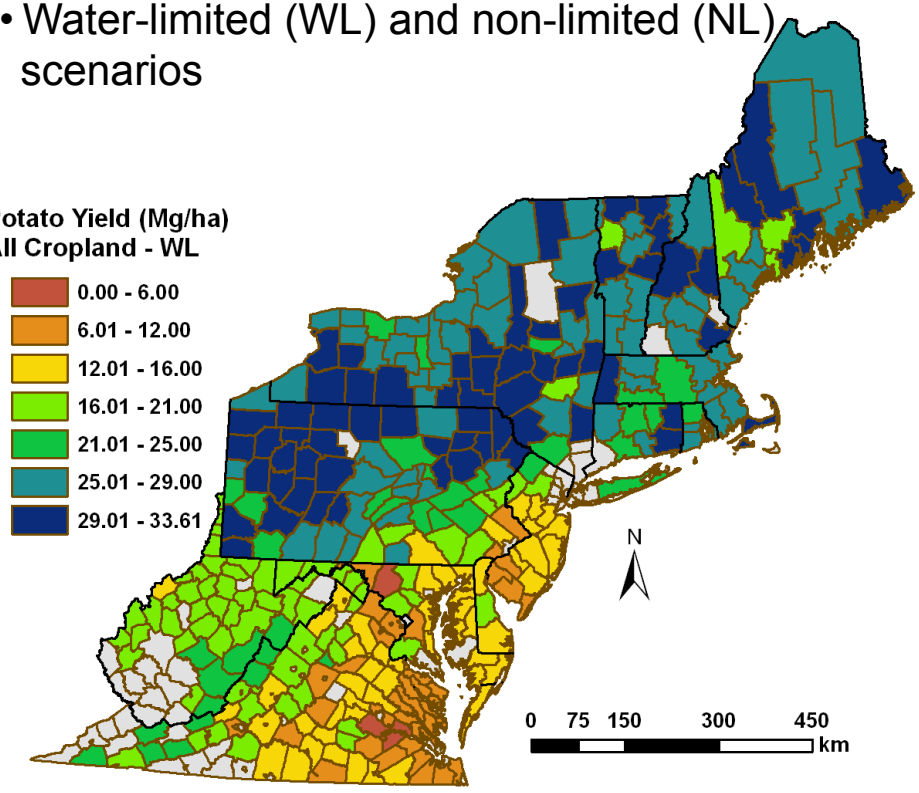
Clustering of higher or lower yields and stability of yields over time



Geospatial Crop Modeling

- Current production
- Production Scenarios
  - Water use
  - Land use change
  - Climate change
- Questions:
  - How much land?
  - Highest potential yield?
  - Production constraints?
  - Resource needs?

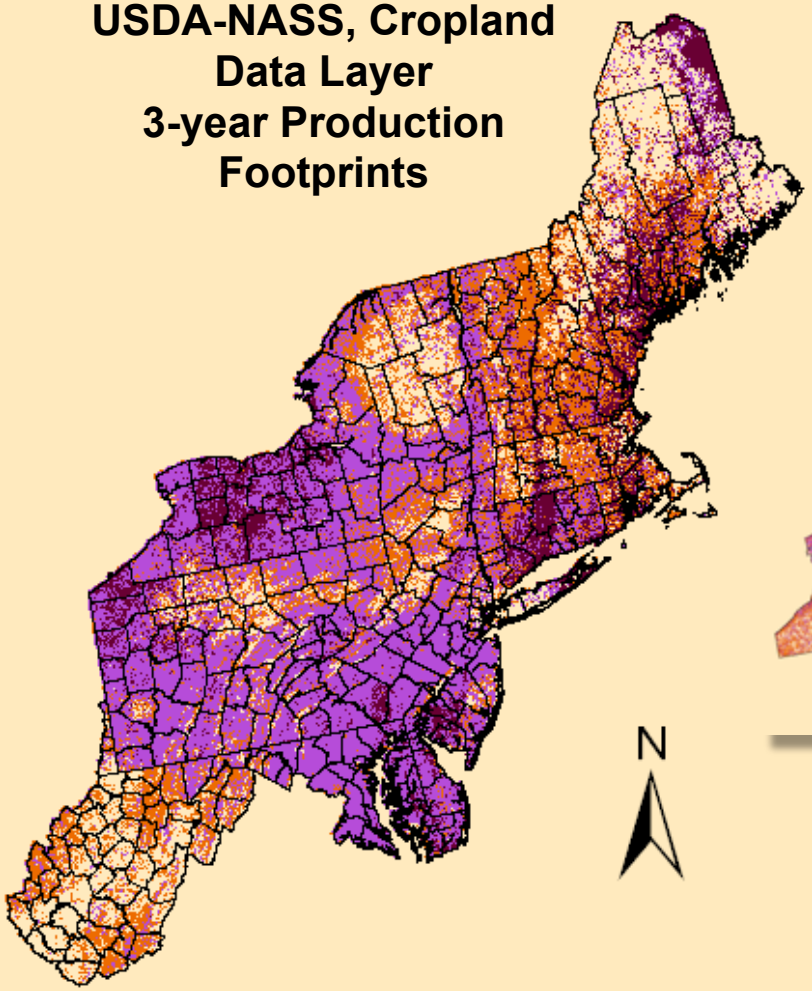
- Results aggregated to the county-level
- Three crops to be simulated (potatoes, corn, wheat)
- Water-limited (WL) and non-limited (NL) scenarios

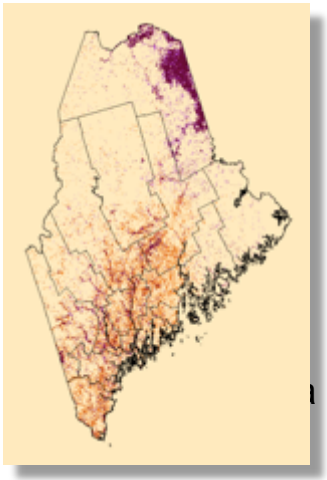


Fleisher and Resop, USDA-ARS, CSGCL, Beltsville, MD

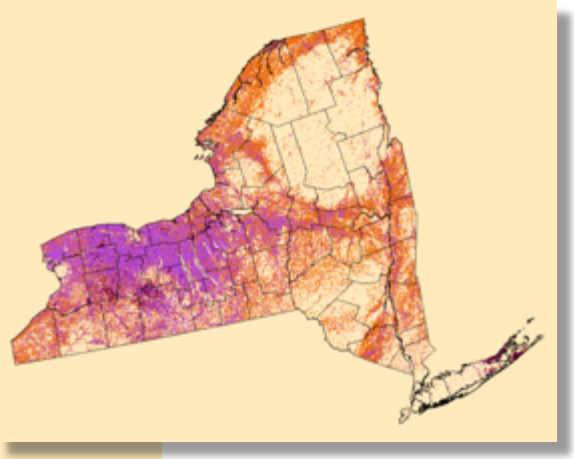
Cropping System Linkages

USDA-NASS, Cropland Data Layer 3-year Production Footprints

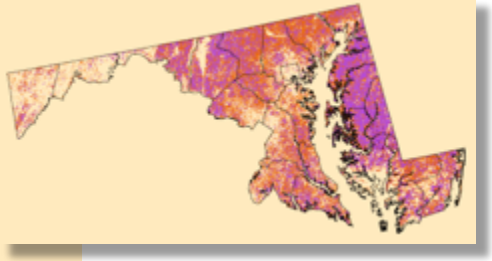




ME Total Cropland 214,000 ha

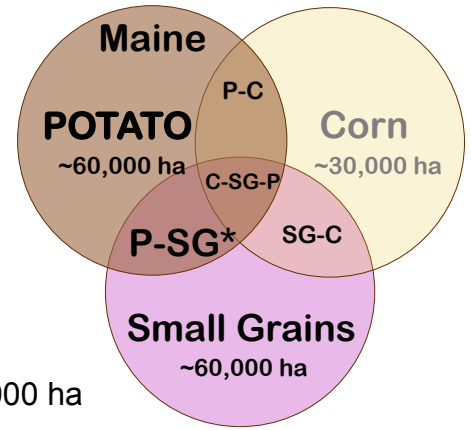


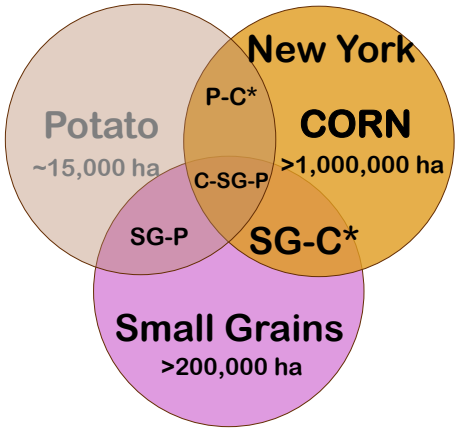
NY Total Cropland 1,746,000 ha

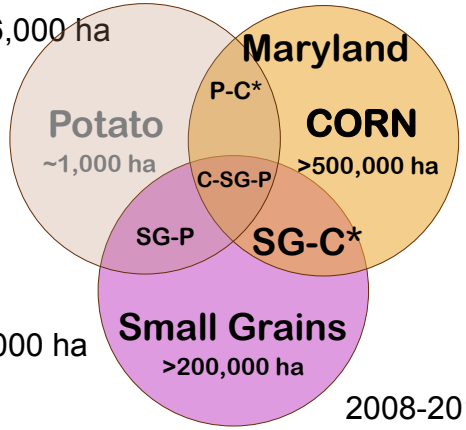


MD Total Cropland 569,000 ha

3-year Production Footprints



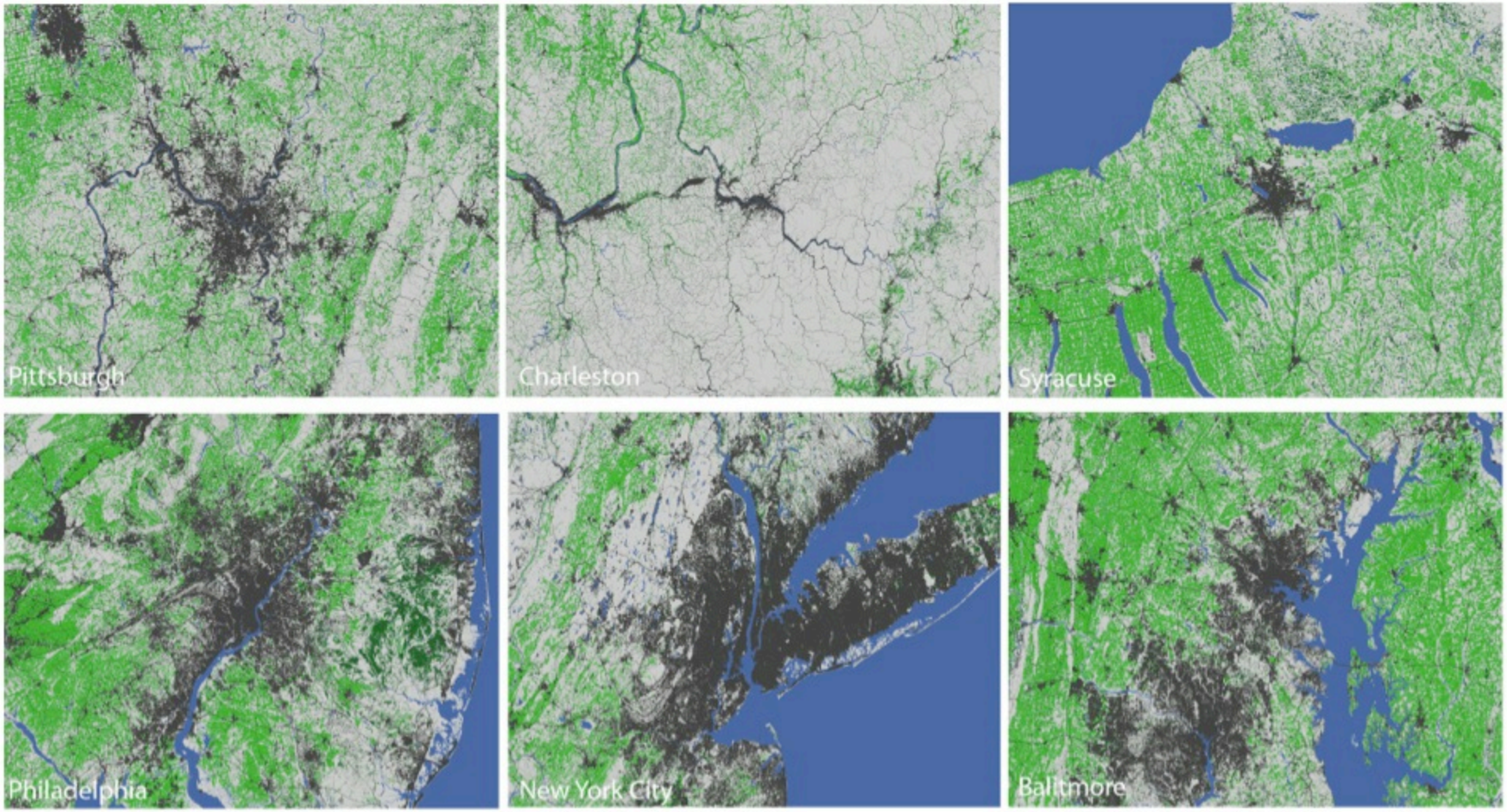




2007 Census of Agriculture

2008-2010

Urban & Peri-Urban Agriculture Assessment



Subsequent Questions:

If we are to grow more food within the region, *where* would that occur?

How would such shifts be impacted by drivers like climate change, dietary shifts, etc.?

How are production and consumption changes likely to be affected by policy??

How does this type of work get done?

The Ideal…

PROD Team Meetings

Keeping in Touch

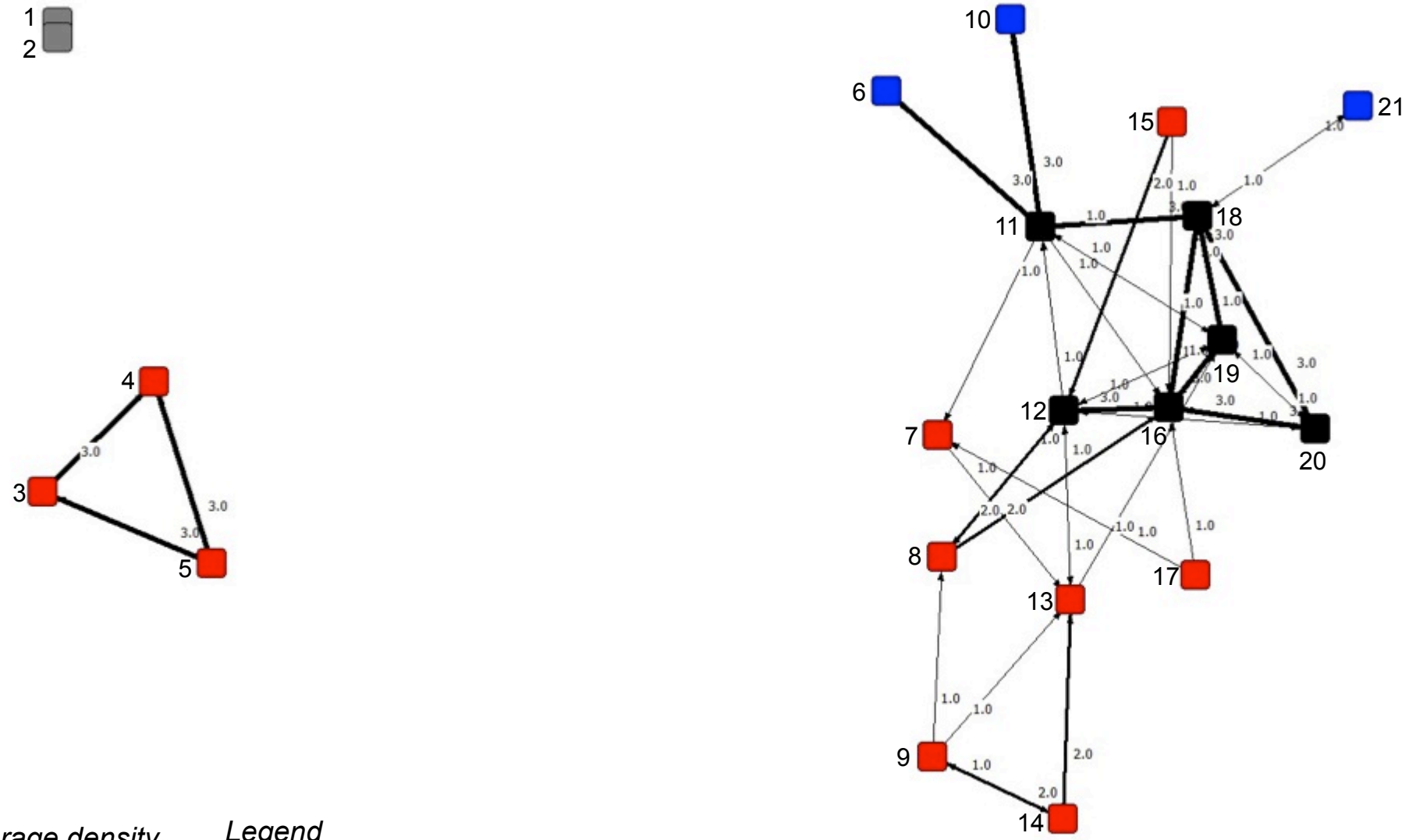
Data sharing and file versioning are very real challenges

Our PROD group has had a conference call every 2nd Friday since March 2010

Other Learnings

1. Student interest and engagement greater than anticipated
2. Work at community level requires substantial effort-uneven results
3. Adaptive management is key to daily problem solving
4. Teams learning to utilize new methods from unrelated disciplines

GFS Project Network: 2006 (Stephan Goetz)

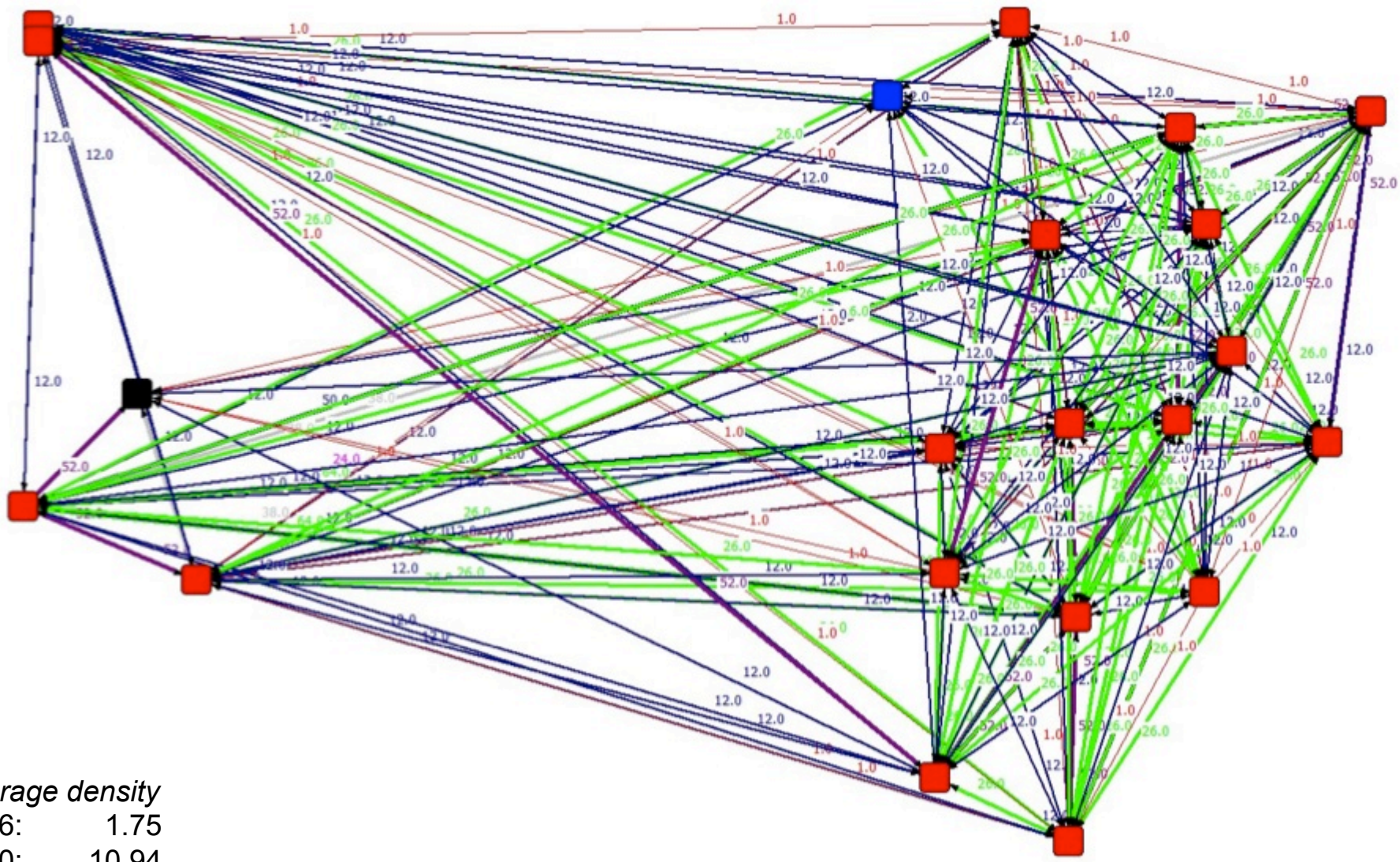


Average density
2006: 1.75

Legend
1: if knew of this individual in 2006
2: if ever cited this person's published work
3: if had working relationship with (in local or regional foods)

Note colors represent *k*-core

GFS Project Network: 2012 (Stephan Goetz)



Average density

2006:	1.75
2010:	10.94
2012:	18.29*
**t*-stat:	(9.92) 2012/2006

Legend

Line colors show intensity of interaction

Node colors represent *k*-core

Thanks!