



Greening the food supply chain

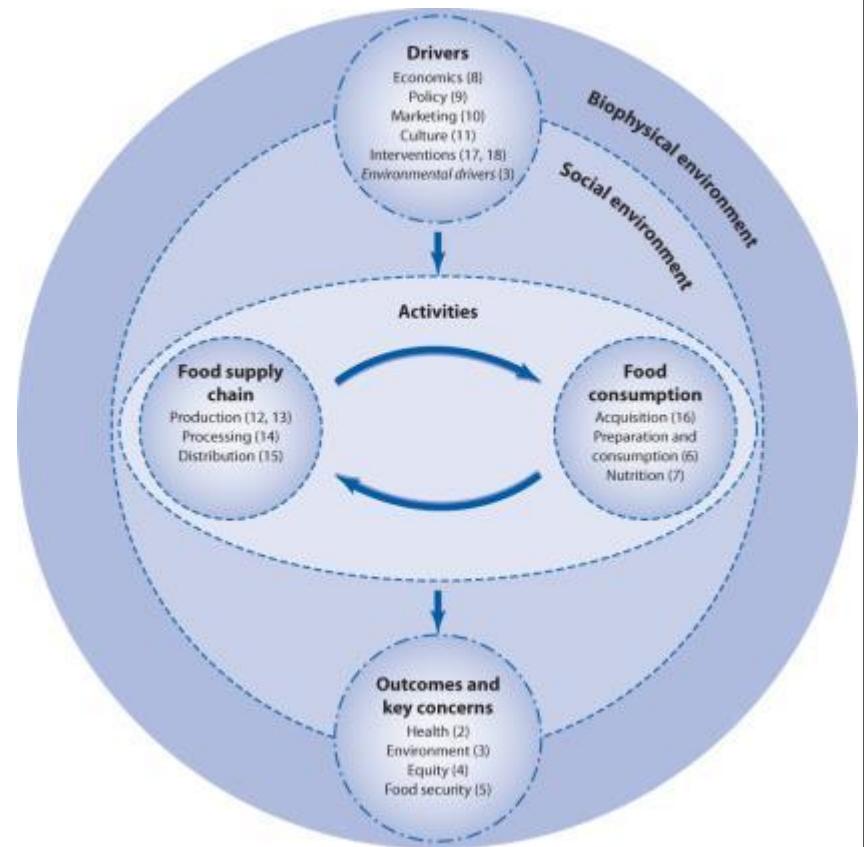
Creating relationships
between farmers and
markets

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mPower October 2016

CIAS – the sustainable ag research center at UW



The food system as a complex adaptive system



System relationships are:

- Non-linear
- Delayed
- Discontinuous
- **Made up of critical thresholds**
- Give inaccurate feedback
- Give untimely feedback

--Donella Meadows

Food system resiliency

Optimize diversity

- Different types of foods grown, available
- **Different sizes of businesses**
- Different supply chains

Optimize efficiency

- Cropping systems manageable
- Enough product to fill a truck
- **One point to load and unload**

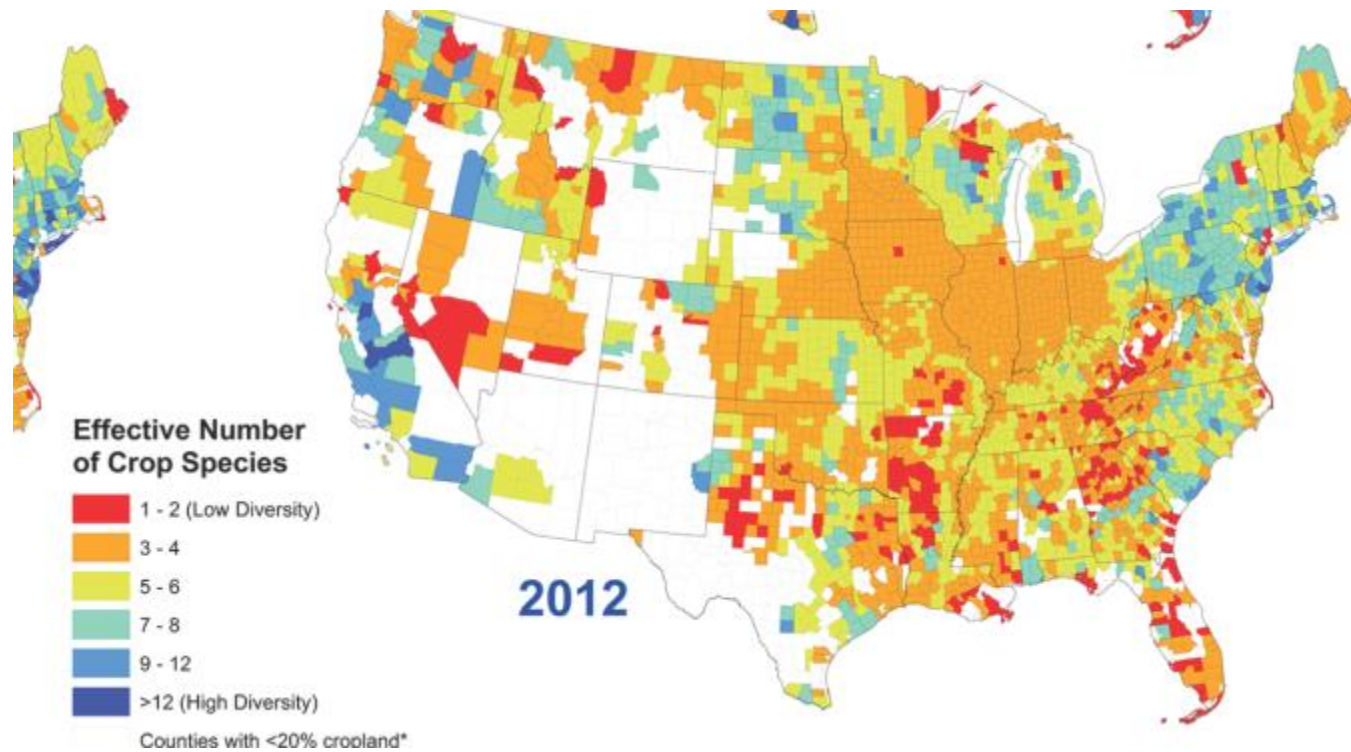
Beginning farmers and profitability

Farmers smaller than \$75k are reliant on off-farm income.

Farmers \$350k-\$1m: half show positive returns and the top quartile are making 42% ROA.

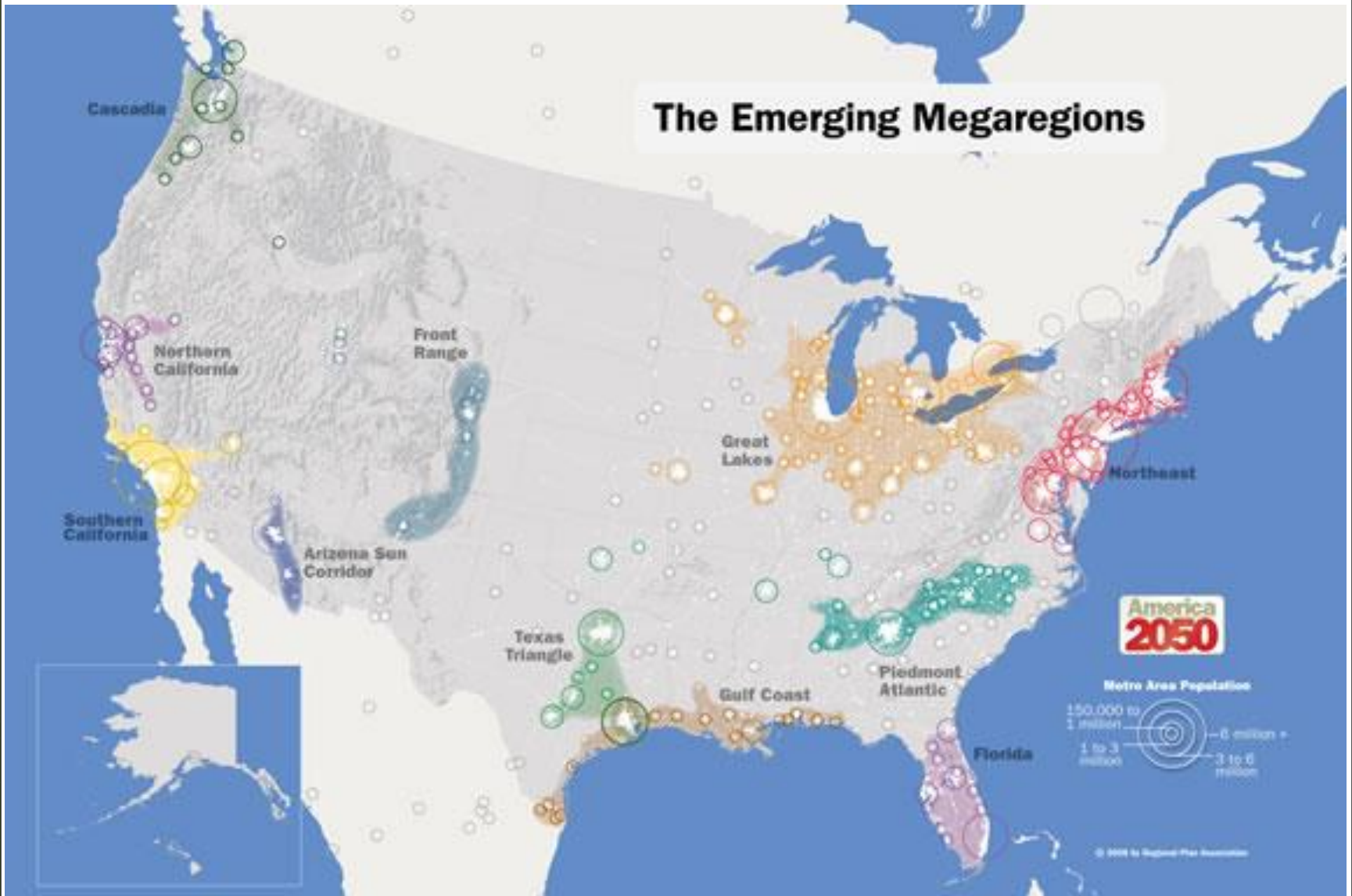
Farmers selling over \$1m: 75% are profitable, with top quartile making 65% ROA.

Crop diversity at the landscape scale



From Aguilar et al 2014

The Emerging Megaregions



Wholesale food movement



A → **B**

BIGTRUCK

SHIPPER OWNS PRODUCT

B → **C**

SMALLTRUCK

RETAILER OWNS PRODUCT

Critical transportation thresholds for efficiency

- **Direct markets – 50-60 miles**
- **Regional markets - ~400 miles**
- City scale – when a “congestion barrier” forms at the edge of the city (~200k?)
- Truck size – 53’ trailers / 30 pallet footprints
- Tractor/trailer weight, empty – 28k-40k#
- Weight with loaded trailer – max 80k#
- Hwy speed minimum for diesel – 55mph
- Diesel \$ before alt fuel competitive - \$3.75
- Others?

Infrastructure for regional food supply chains – Ontario Food Terminal



CIAS Harvest Dinner
November 5, 2016
University Club



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AGRICULTURAL SYSTEMS