Coevolution

Credit: The International Maize and Wheat Improvement Center (CIMMYT)display

Adaptation Contexts

Photo from Ellen Mallory

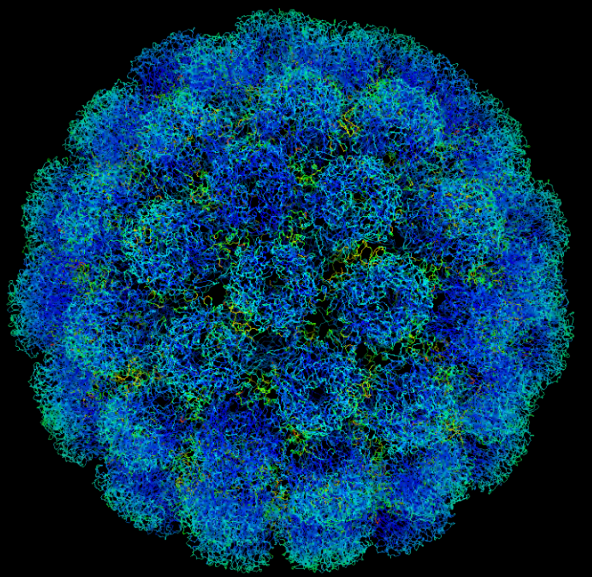
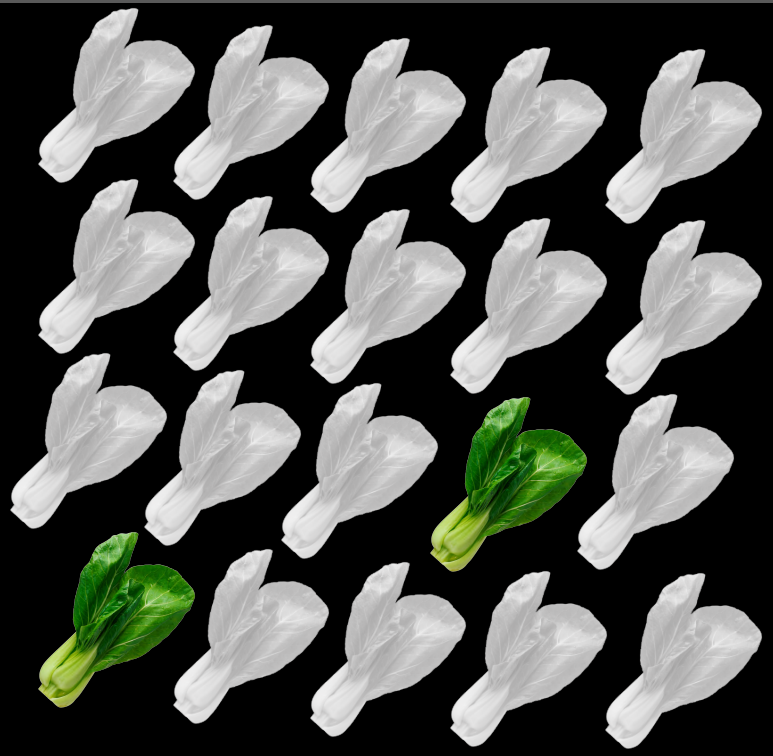
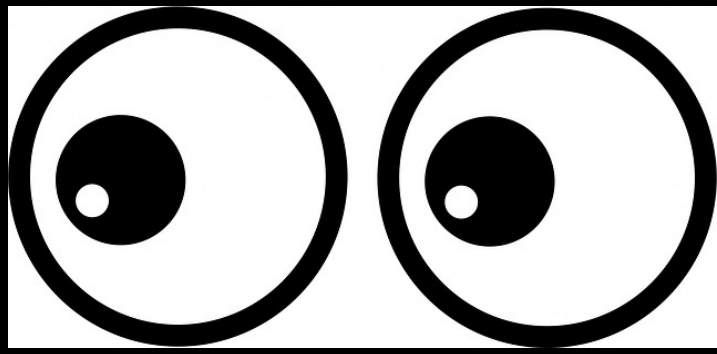


Image from Phoebus87

Crop Adaptation Requires





Genetic Variability

+

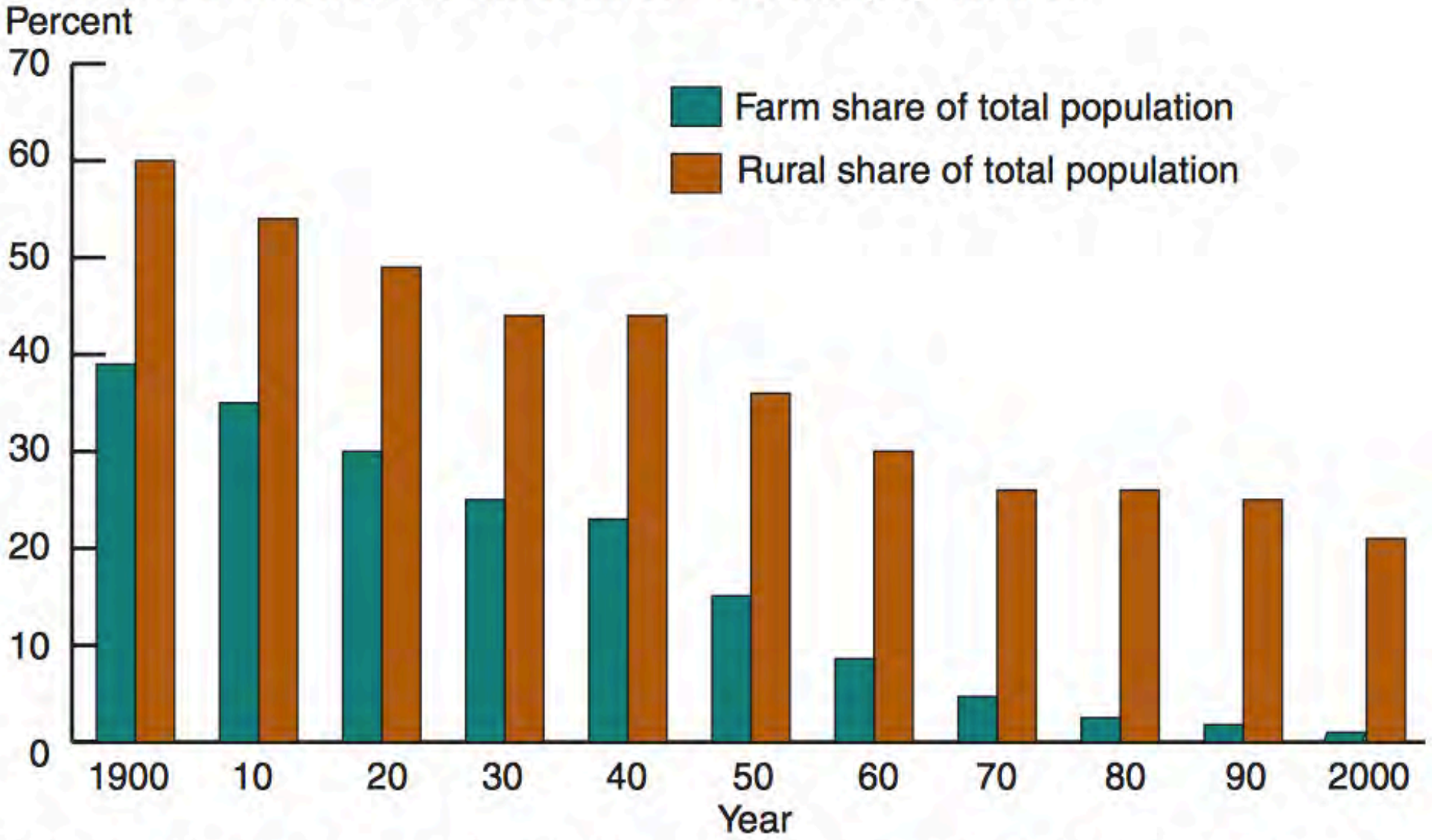
Opportunity to demonstrate success in the target context

+

Identification of superior genotype by humans

Figure 1

Both the U.S. farm population and rural population have dwindled as a share of the Nation's overall population

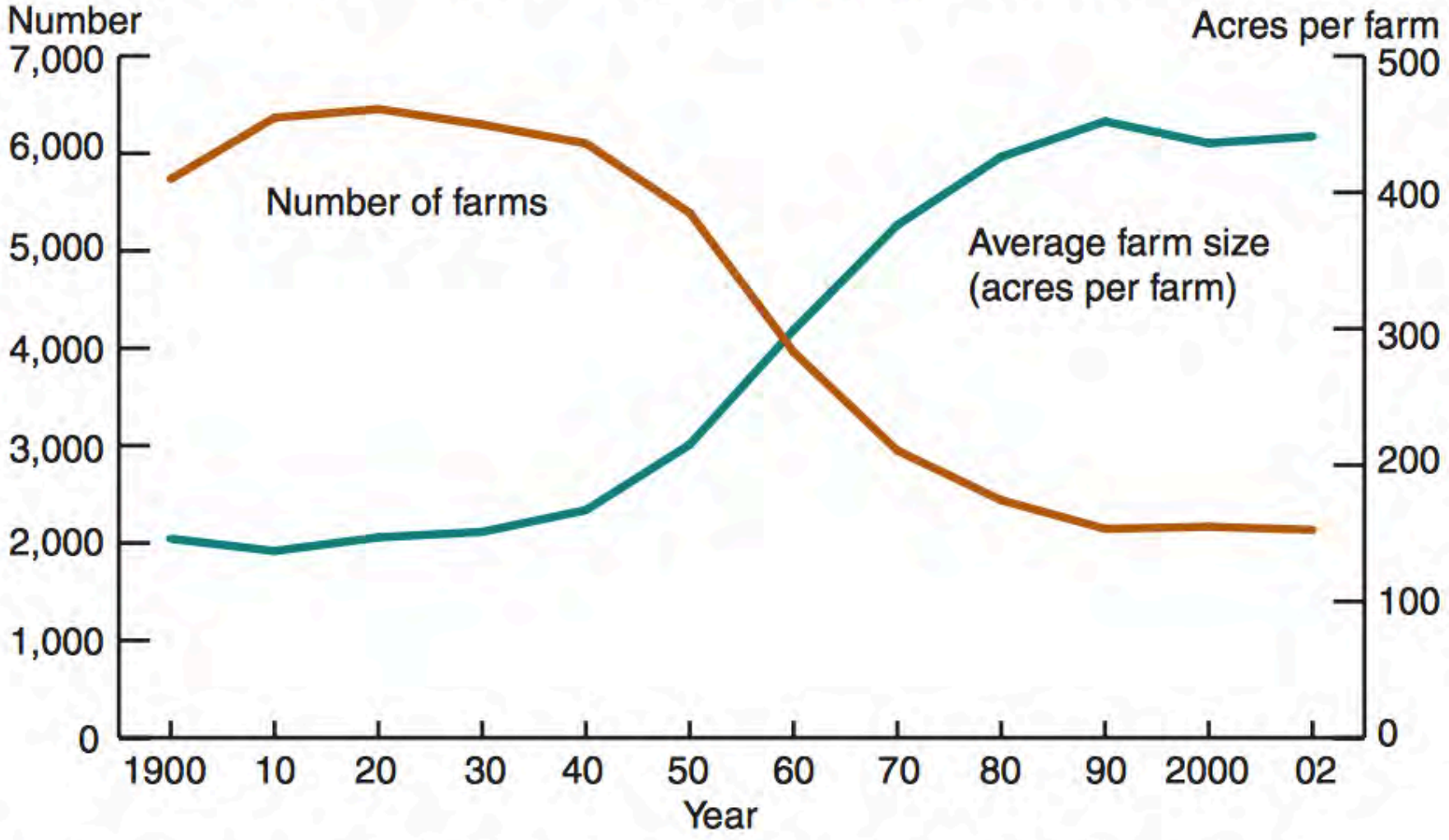


Sources: Share calculated by Economic Research Service, USDA using data from *Census of Agriculture*, *Census of Population*, and *Census of the United States*.

Fewer Observers

Figure 3

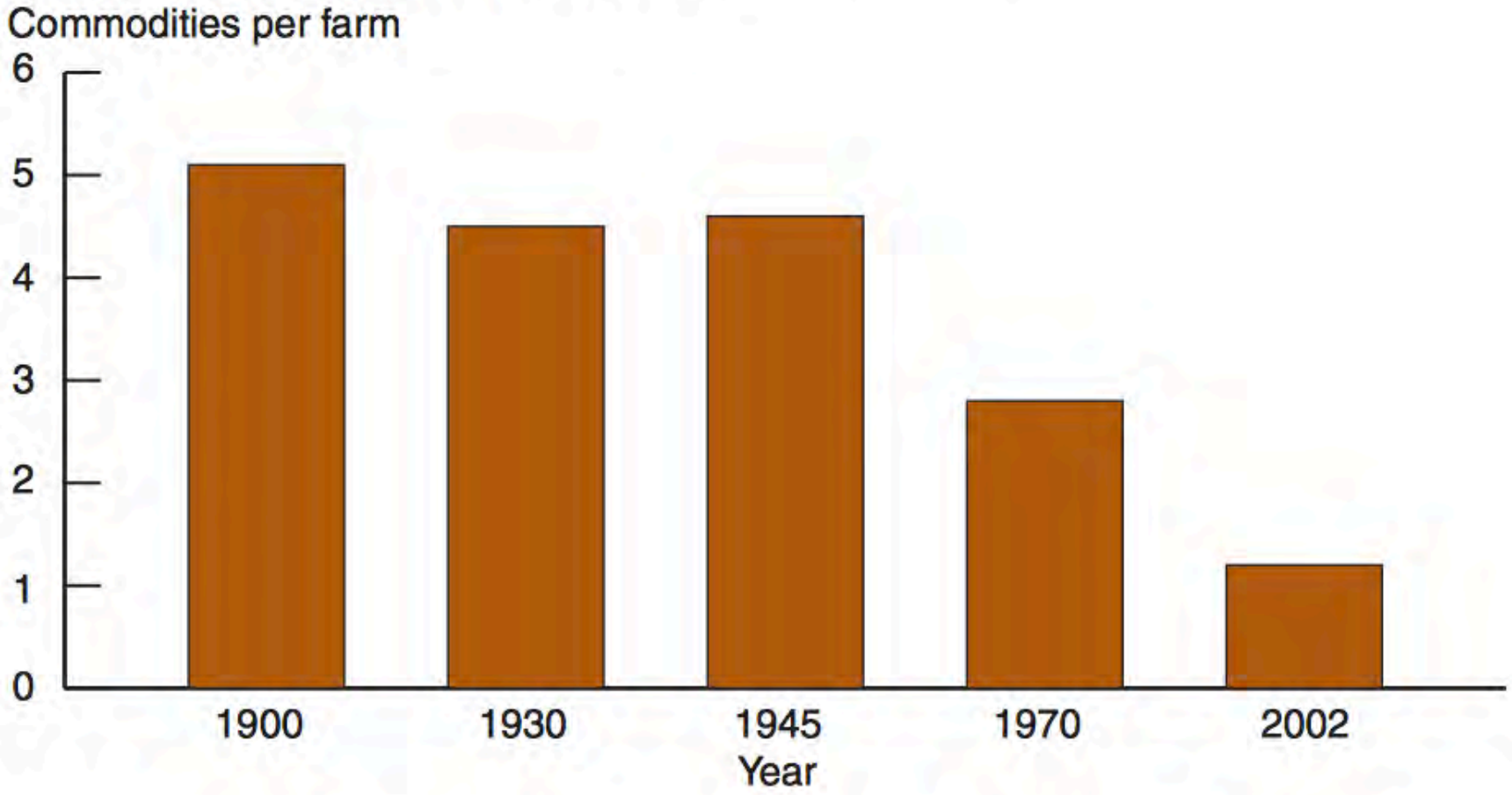
As the number of farms declined, their average size increased



Source: Compiled by Economic Research Service, USDA, using data from *Census of Agriculture*, *Census of Population*, and *Census of the United States*.

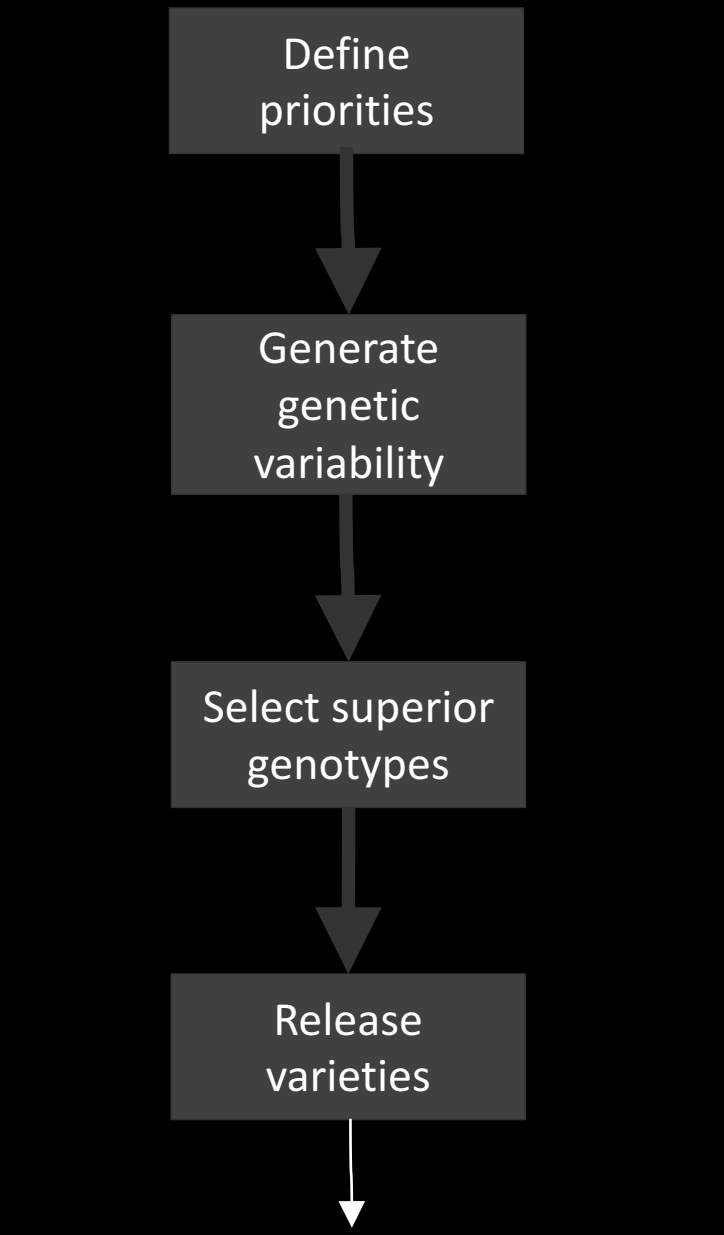
Figure 4

As farms have become more specialized, the number of commodities produced per farm has decreased

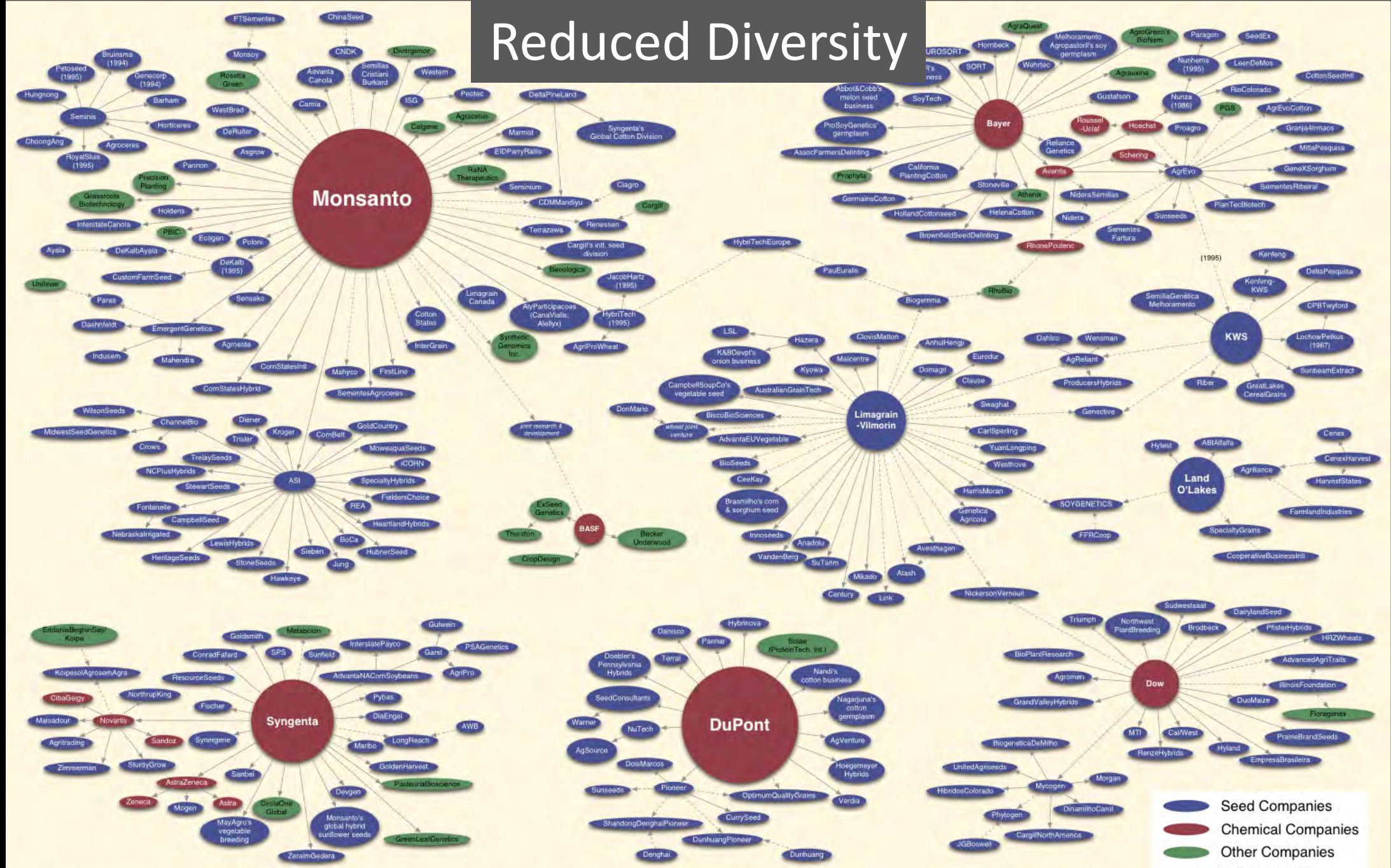


Note: The average number of commodities per farm is a simple average of the number of farms producing different commodities (corn, sorghum, wheat, oats, barley, rice, soybeans, peanuts, alfalfa, cotton, tobacco, sugar beets, potatoes, cattle, pigs, sheep, and chickens) divided by the total number of farms.

Source: Compiled by Economic Research Service, USDA, using data from *Census of Agriculture, Census of the United States,* and Gardner (2002).

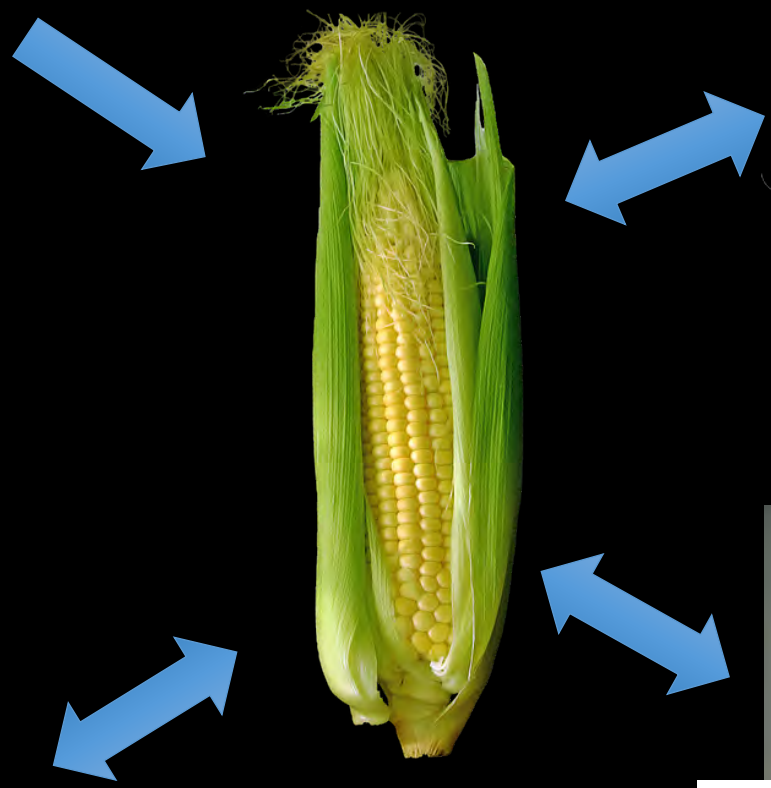

Define priorities
Generate genetic variability
Select superior genotypes
Release varieties
Farmers, food preparers, and consumers

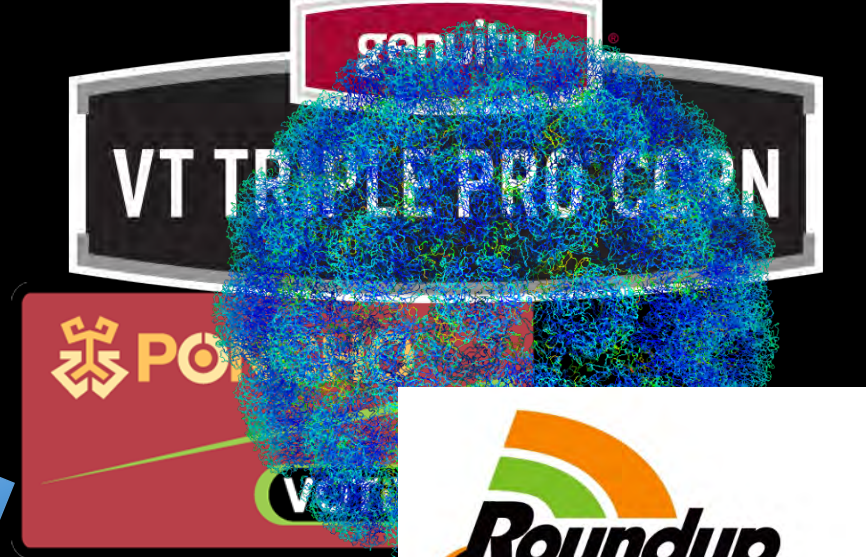
Reduced Diversity

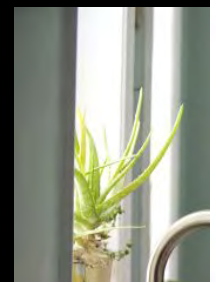


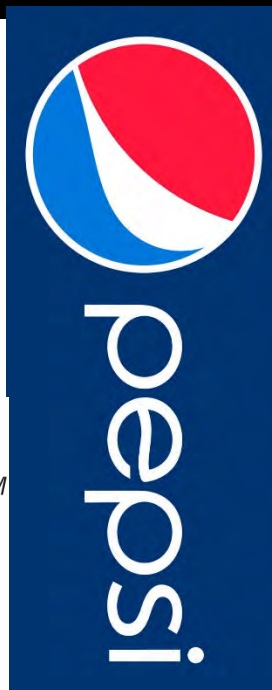
Phil Howard, Associate Professor, Michigan State University
http://www.msu.edu/~howardp

Adaptation Contexts









More seed savers in diverse contexts

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Genetic Variability

+

Opportunity to demonstrate success in the target context

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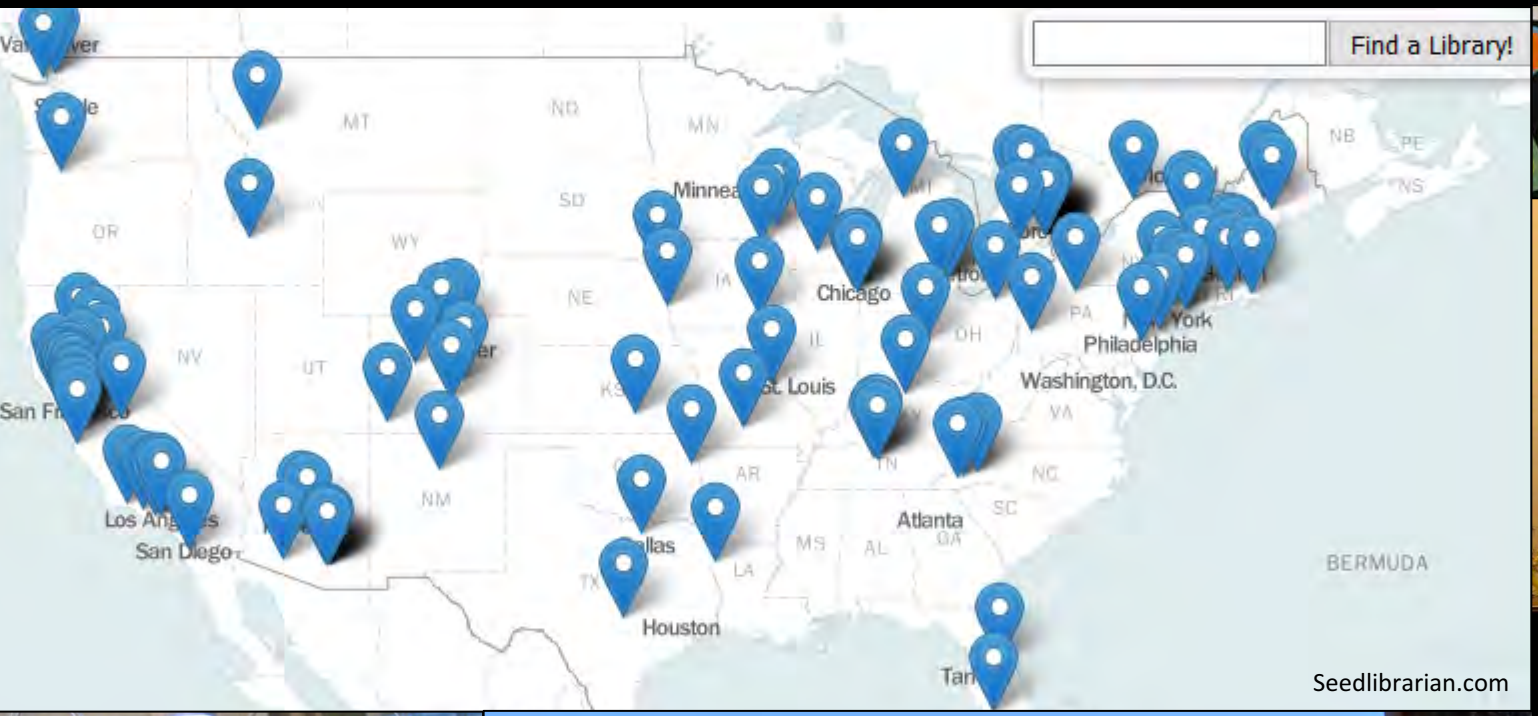
Seed Libraries and Seed Schools



Regionally-focused Seed Companies

FRUITION SEEDS
PROVIDING ORGANIC SEED
GROWN IN THE NORTHEAST


Photo from OSGATA

HIGH MOWING
Organic Seeds
100% Organic Seeds
Since 1996

Adaptive Seeds
Bringing Biodiversity Back

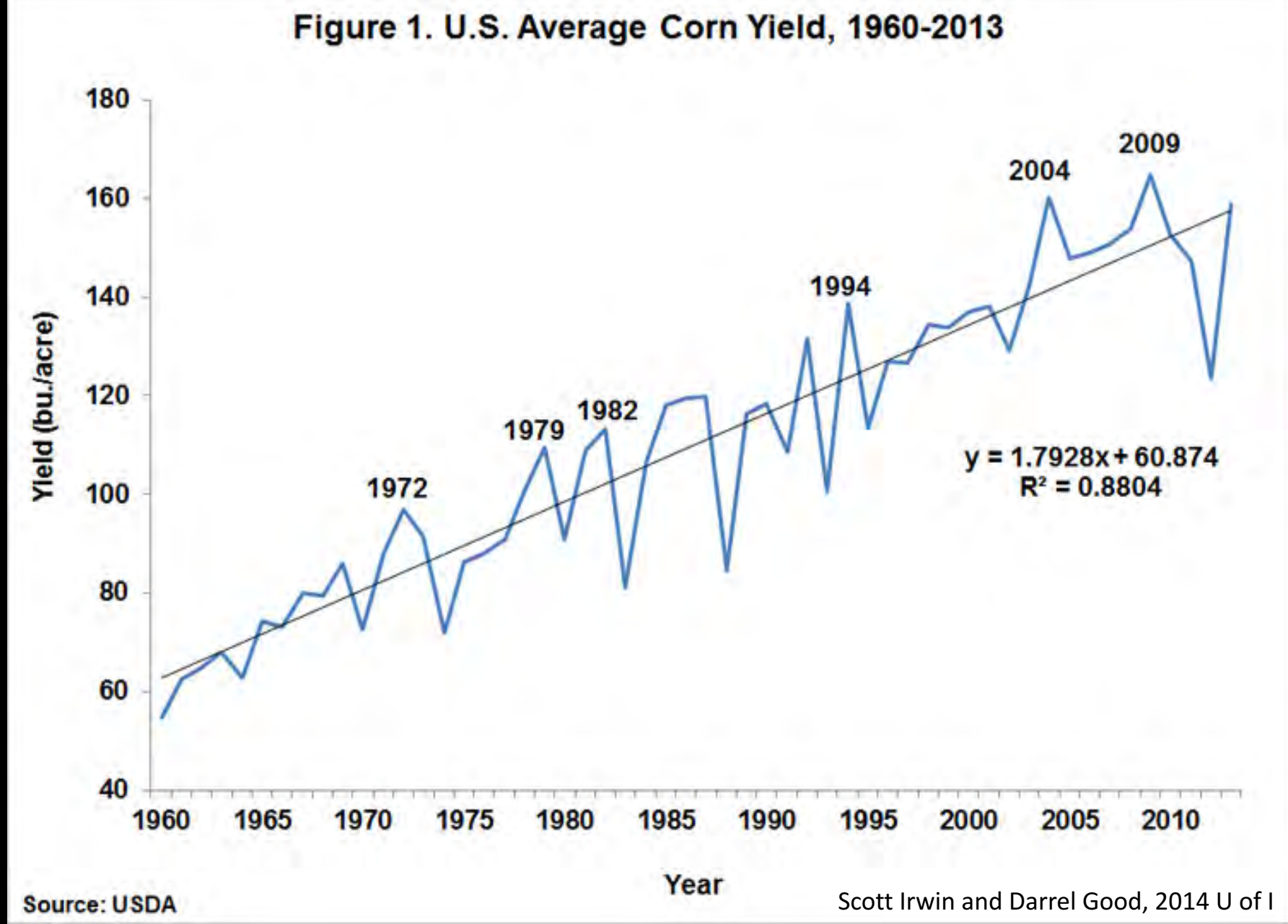

Photo from A Way to Garden

SEED SAVERS EXCHANGE
PASSING ON OUR GARDEN HERITAGE™

blue river
hybrids
Organic Seed


Frank Morton of Wild Garden Seed. Photo from NPR

Innovations of Plant Breeding



Scott Irwin and Darrel Good, 2014 U of I

Define priorities

Generate genetic variability

Select superior genotypes

Release varieties

Participatory Variety Trialing

Photo from Redaccion

Define priorities

Generate genetic variability

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Participatory Plant Breeding

Farmer-breeder Sam Mudge and Tom Molloy from Maine
Image from Ellen Mallory

Define priorities

Generate genetic variability

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NORTHEAST SARE
Sustainable Agriculture Research & Education

Evolutionary Plant Breeding

Define priorities

Generate genetic variability

Select superior genotypes

Release varieties

Thank You

Photo from June Russell