



# ASPO • 2009 • Denver

**Jason Bradford, Ph.D.**  
**Managing Partner**  
**Farmland LP**

## Food Policy and a Resilient Food System

# Social and Psychological Shift

» "This of course is our goal: To have zero soil erosion, zero fossil fuel dependency, a greatly reduced chemical contamination of our land and water...It's going to require intelligent people on the landscape that are hybrids between, say, ecologists and agriculturists. I imagine the future farmer will have a psychology more like that of a 19th-century British naturalist than a modern-day dirt farmer."

» **Wes Jackson of the Land Institute in Mother Jones, October 2008.**

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# The State of Today's Food System

## Pros

- » Food is plentiful
- » Food is cheap

## Cons

- » Depleting non-renewable resources
- » Degrade soil, air and water quality
- » Put 5 billion pounds of harmful chemicals into environment per year
- » Major greenhouse gas emissions
- » Unhealthy and unsafe food
- » Unstable economics
- » Poor worker conditions
- » Lack of intergenerational opportunity





# Societal Policy Goals



**Environmental Protection**



**Healthy, Safe Food**



**Economic Vitality**



**Peace and Security**

# Societal Policy Goals



**Current  
Agriculture  
Policy**



**Environment**



**Safe Food**



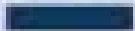

**Economic Vitality**

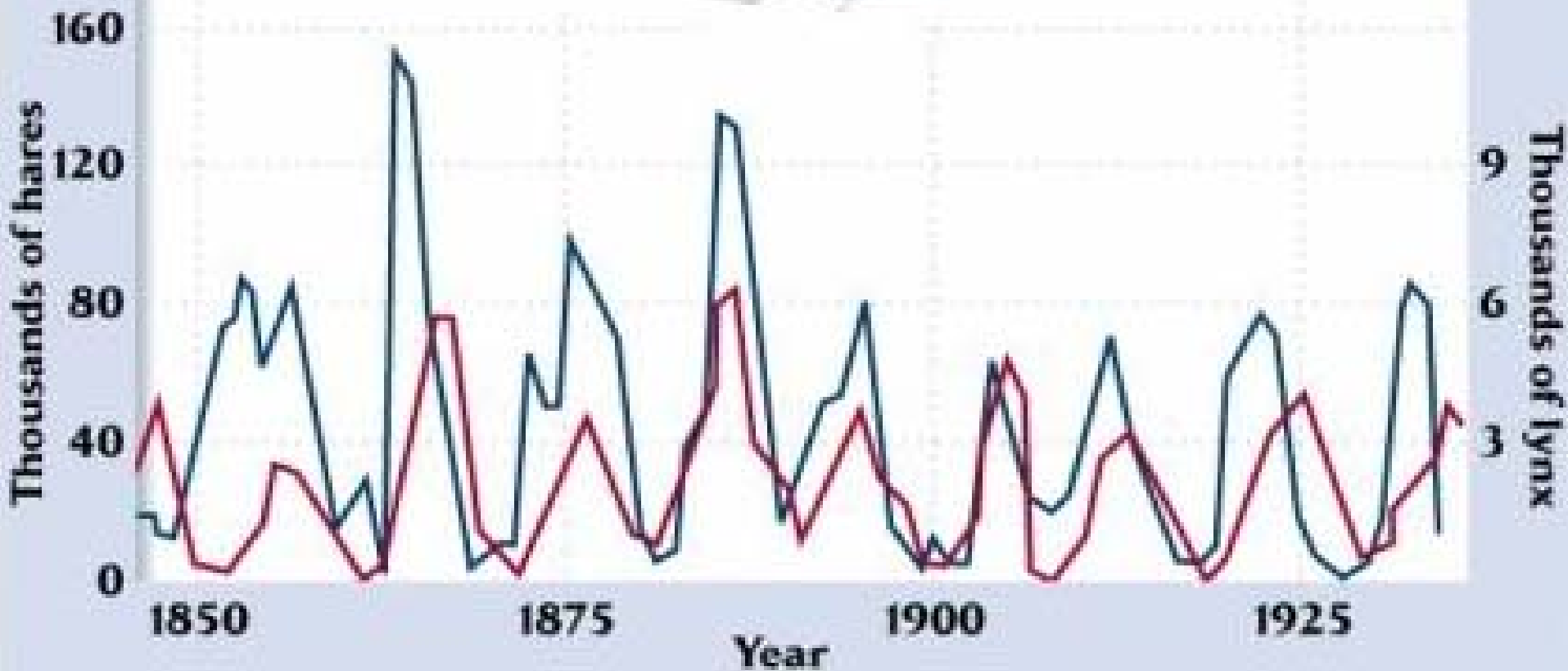


**Peace and Security**

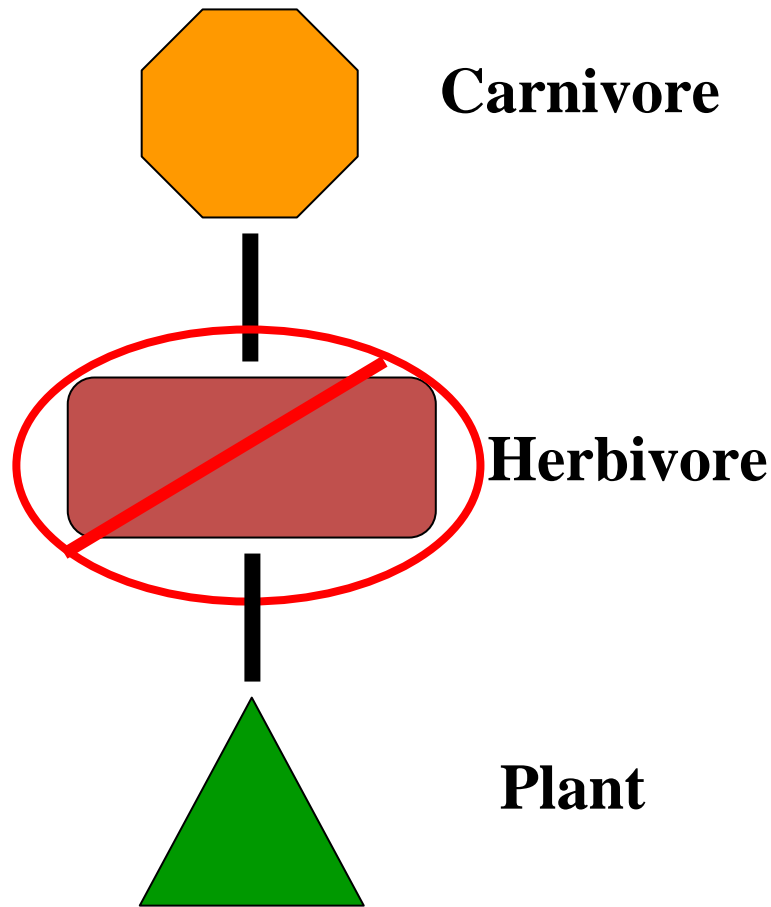


**KEY**

-  Snowshoe hare
-  Lynx



# Low Diversity = Unstable Systems

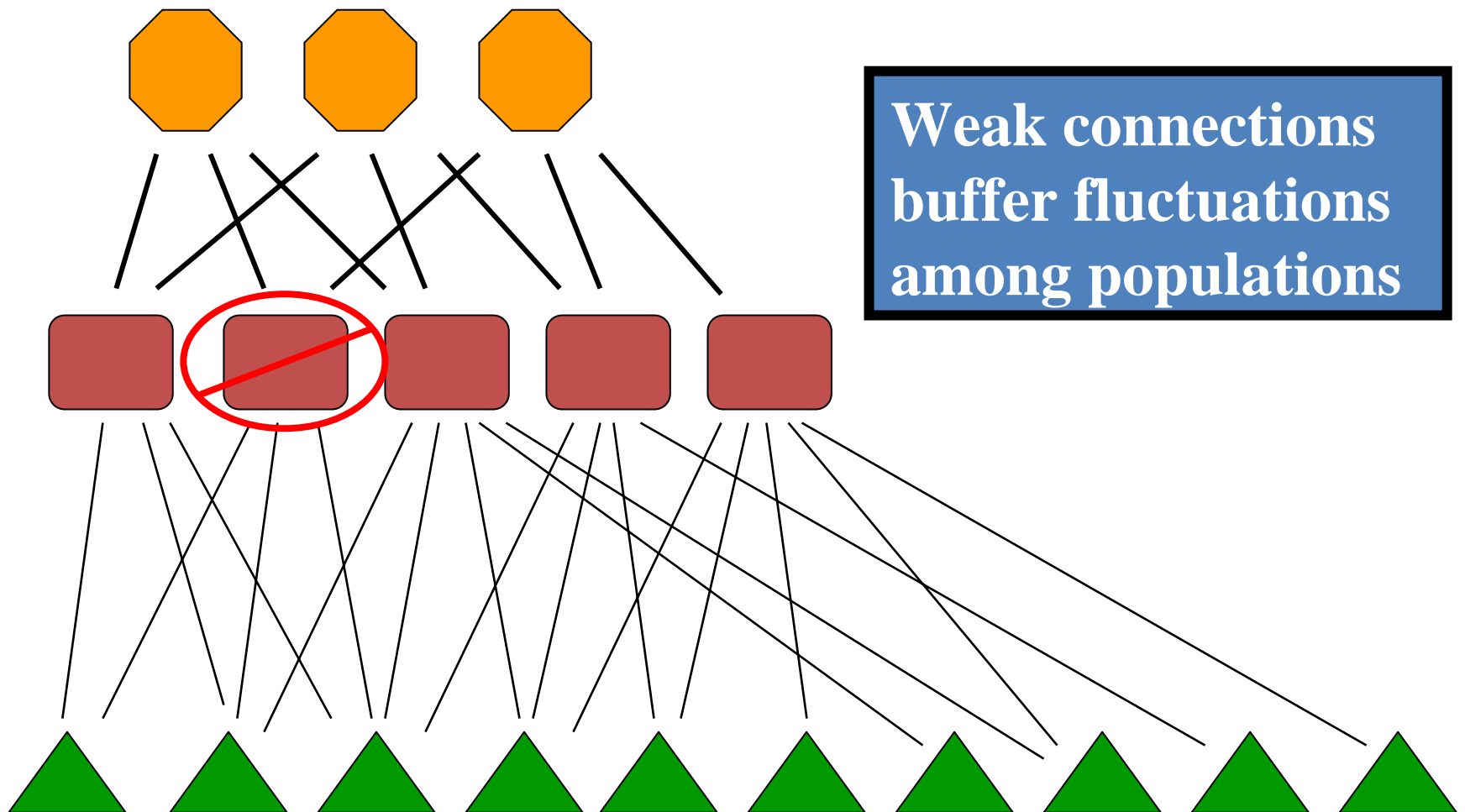


**Change in one  
population rapidly  
changes others**





# High Diversity = Resilient System



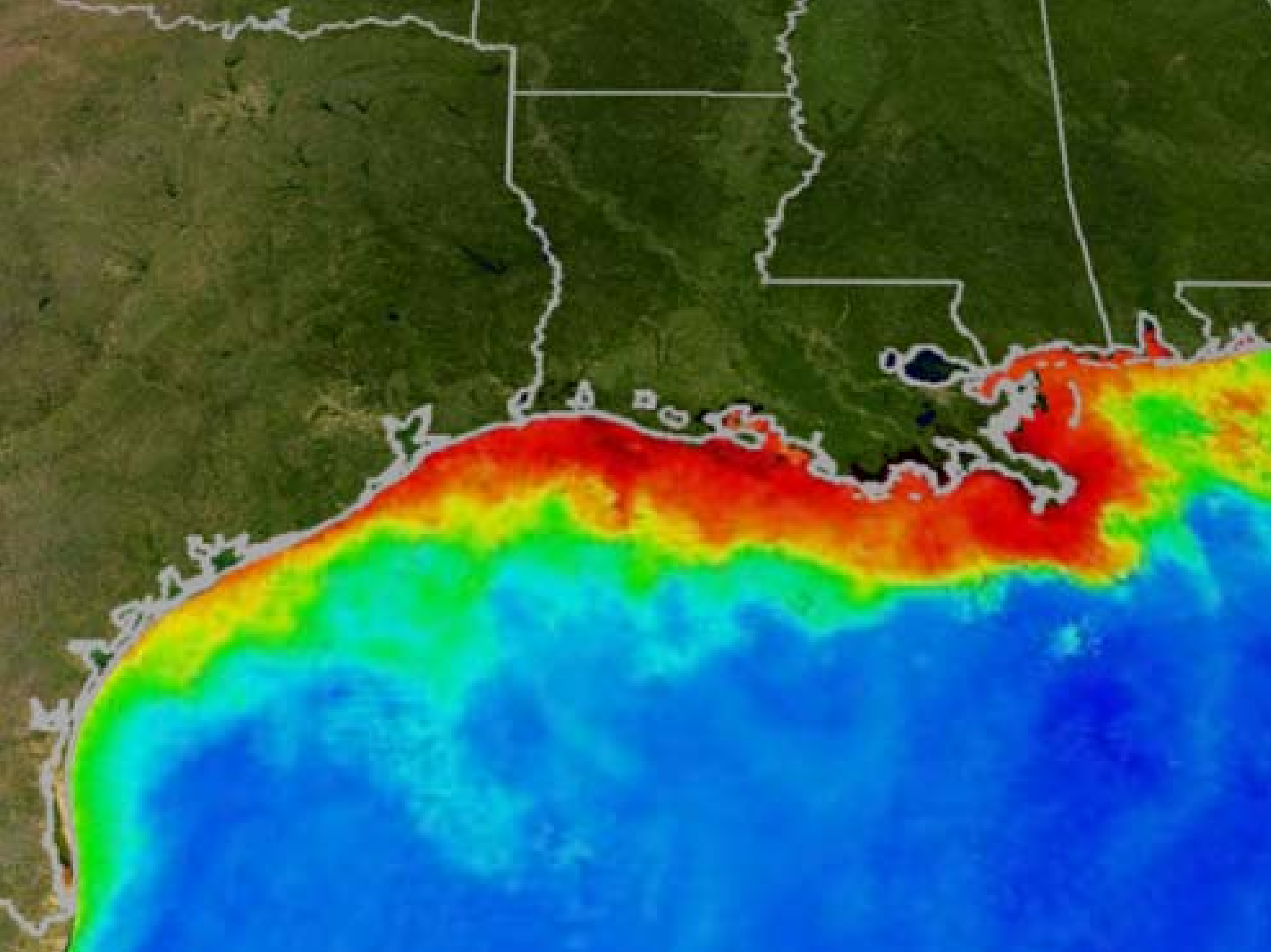


# Feedlot Food System





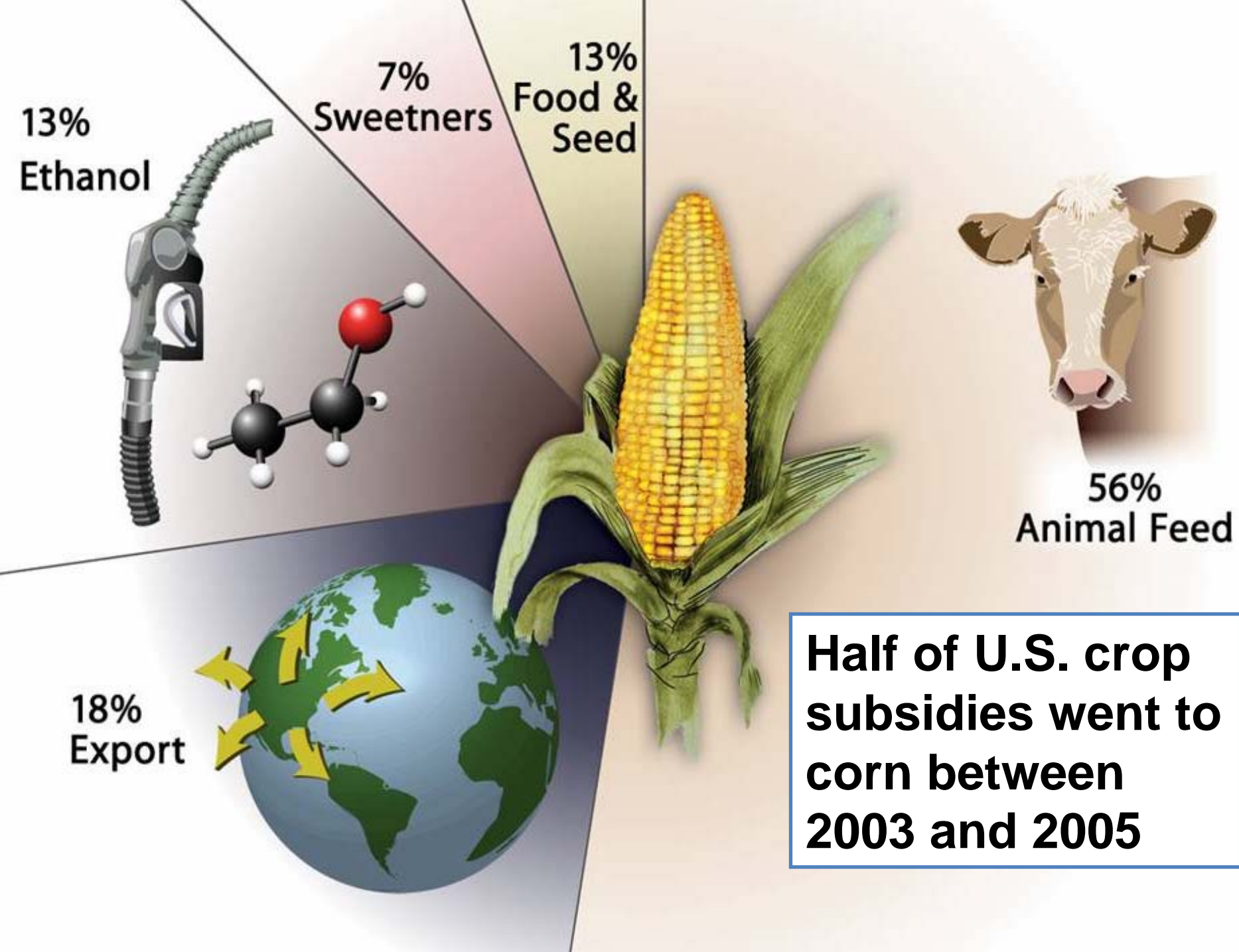




# Three Crops = 71% of U.S. Crop Acres

Crop	Acreage (million)	% Acres
Soybean	77.5	24%
Corn	87.0	27%
Wheat	63.1	20%
Total	320.9	<b>71%</b>
U.S.		







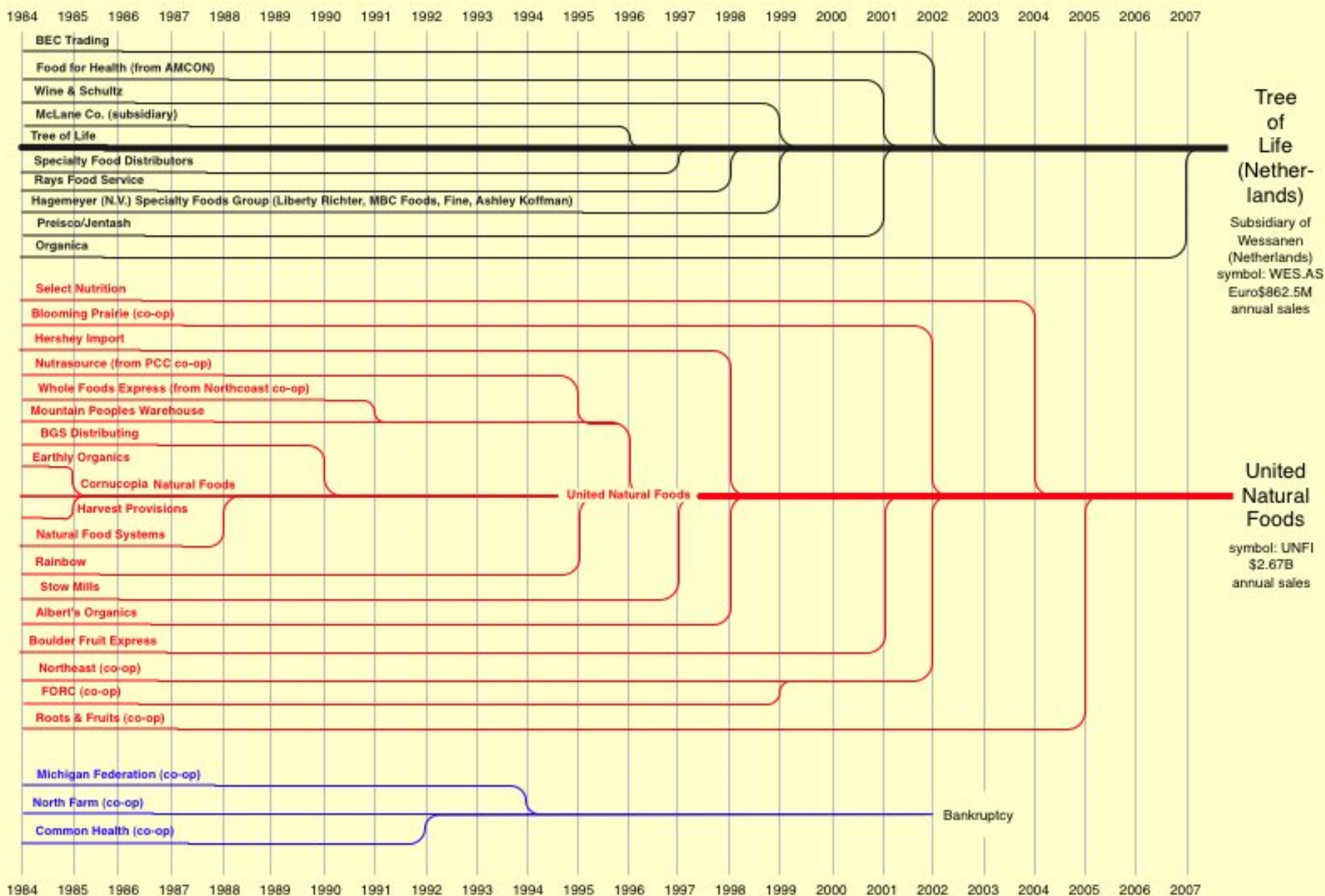






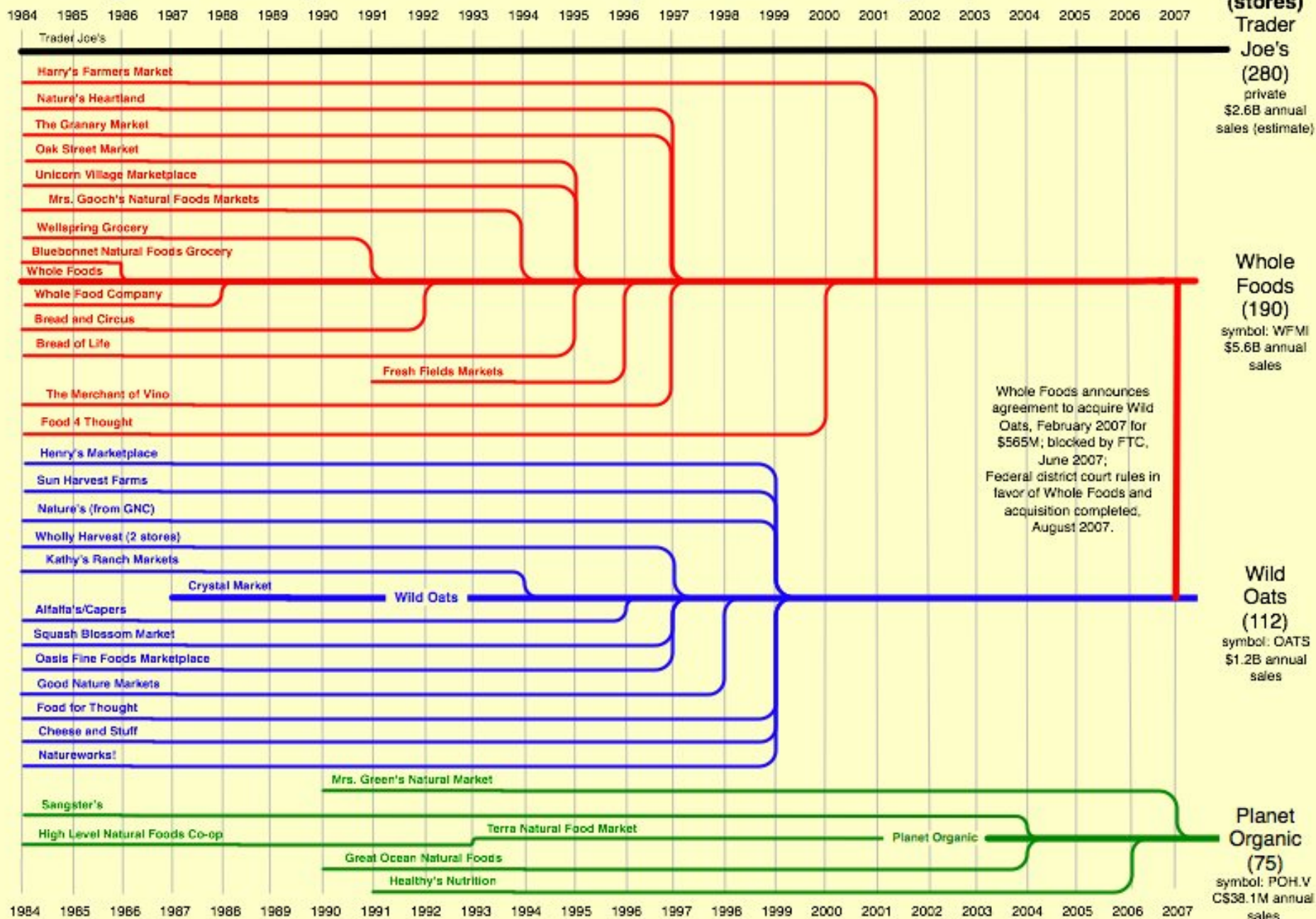


# Organic Industry Structure: Distributor Acquisitions and Mergers, 1984-2007





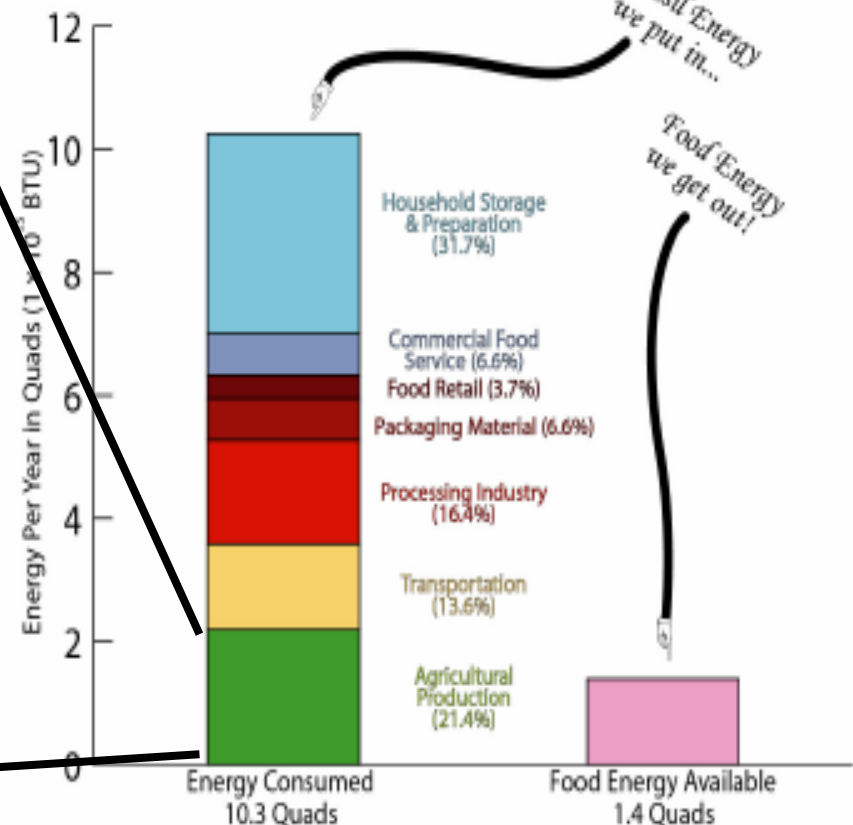
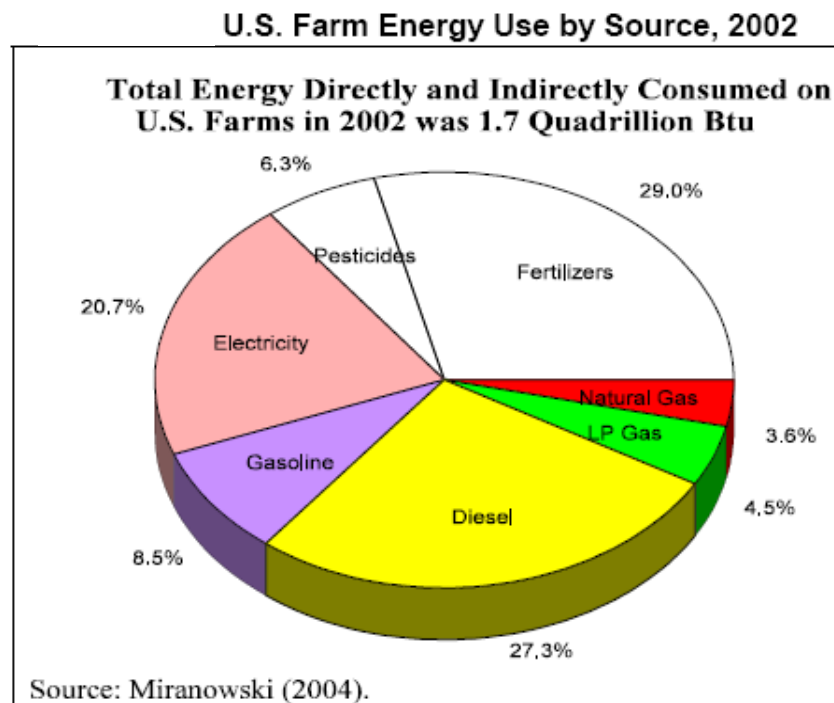
# Organic Industry Structure: Retail Acquisitions and Mergers, 1984-2007





# Fossil Energy In U.S. Food System

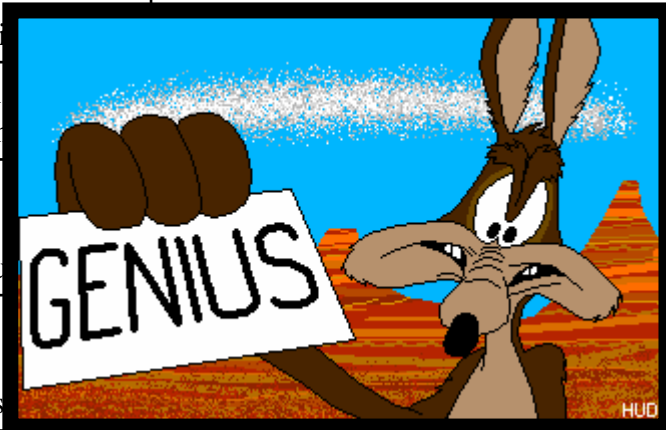
Energy Flow in the U.S. Food System



References: [http://css.snre.umich.edu/css\\_doc/CSS01-06.pdf](http://css.snre.umich.edu/css_doc/CSS01-06.pdf)  
<http://www.ncseonline.org/NLE/CRSreports/04nov/RL32677.pdf>

# Fossil Fuels in U.S. Food System

Type of Work	Common Fossil-Fuel Inputs
Soil cultivation	Gasoline or diesel powered tractor
Soil ferti	
Pest and managem	
Seed sou	
Food dis	
Storage and processing at production end	Preparation of food for long distance transport, storage and retailing requiring energy intensive cooling, drying, food grade wax and packaging
Home and institutional storage and cooking	Natural gas, propane or electric fired stoves and ovens, electric freezers and refrigerators

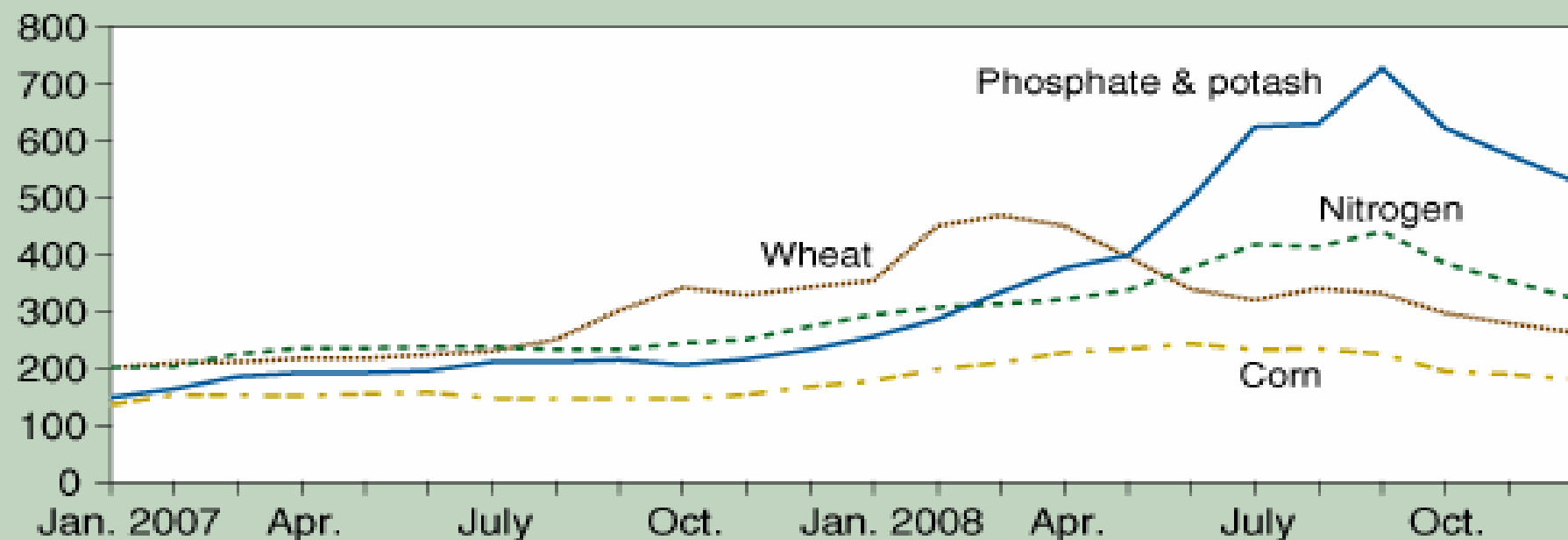


# Rising Input Costs & Falling Crop Prices

Farmers Hurt by Volatility and Price Spread

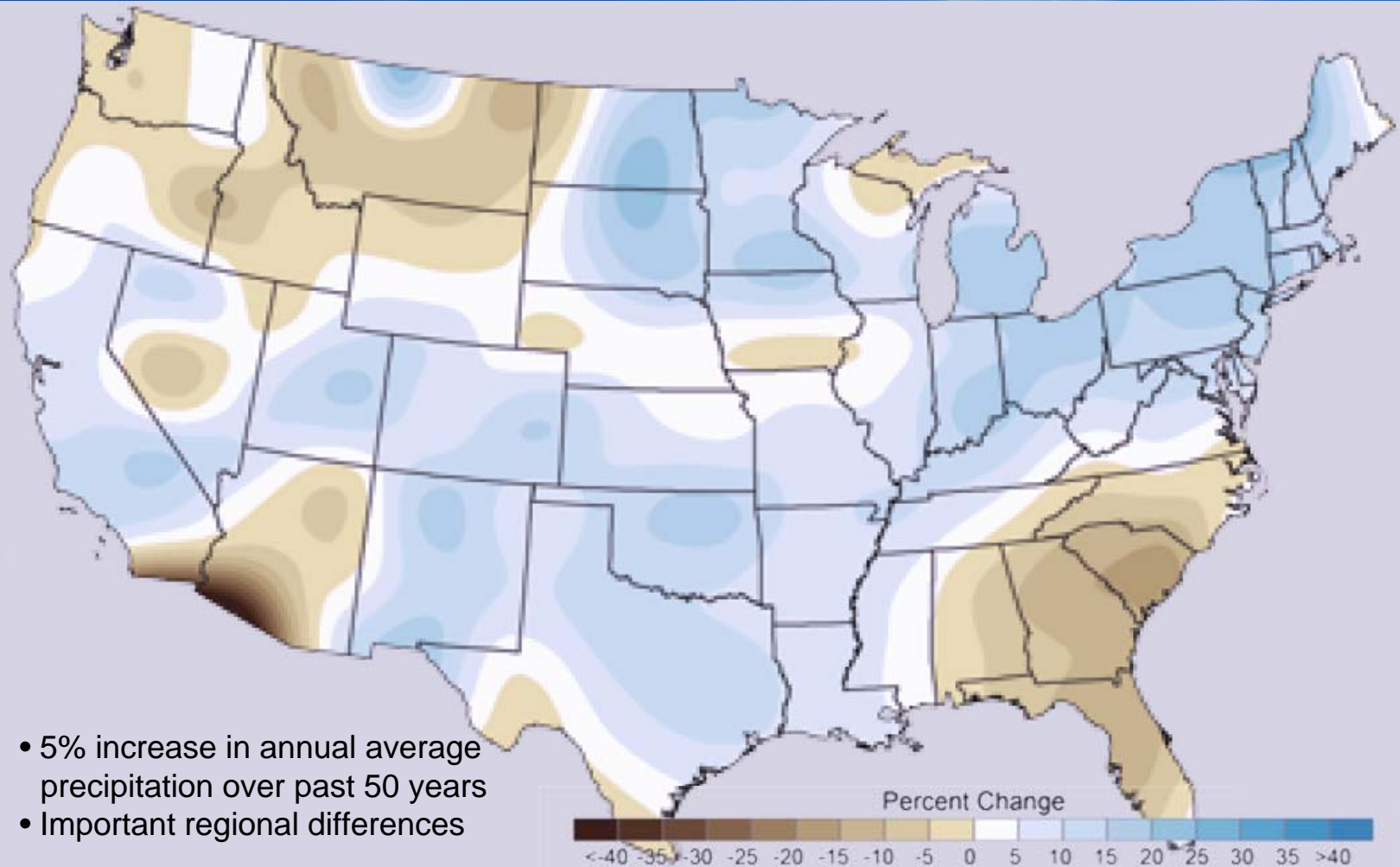
**Mid-2008 fertilizer prices continued high, even as crop prices began to decline**

Index of prices



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service.

# Observed Change in Annual Average Precipitation 1958 to 2008



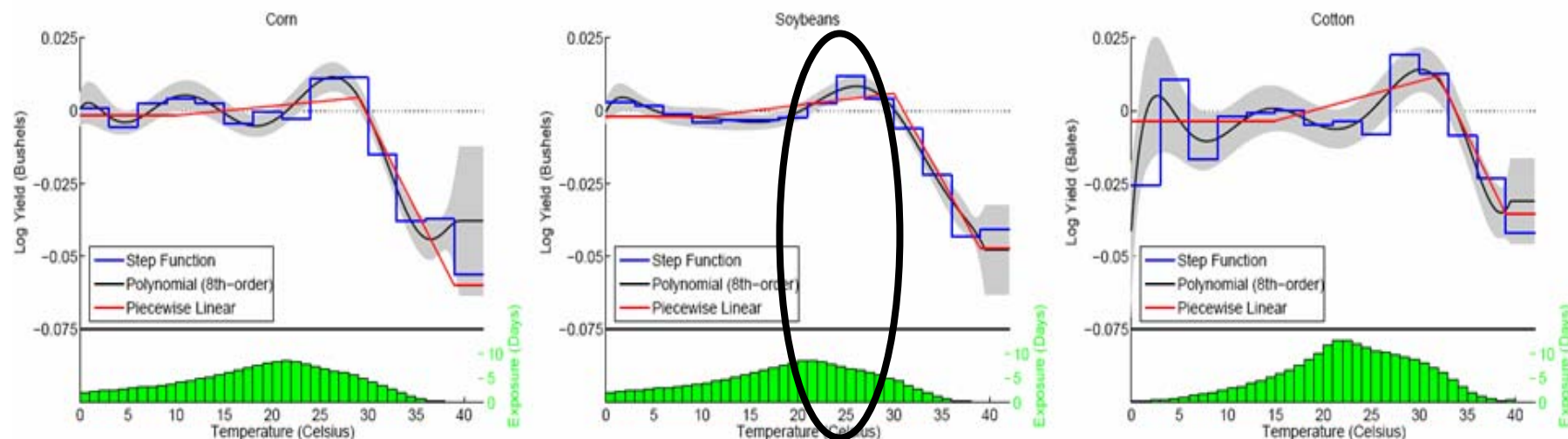


# Crops Vulnerable to Climate Change

## Nonlinear Relationship Between Temperature and Crop Yields

Curves based on historic data relating temperature and yields

→ Historic temperatures in yield “sweet spot”



**Climate change shifts the temperature distribution to the right  
→ the yield curve drops sharply**

Source: W. Schlenker, M.J. Roberts; Columbia U., North Carolina State U.. PNAS, 2009

# Societal Policy Goals



**Environmental Protection**



**Healthy, Safe Food**



**Economic Vitality**



**Peace and Security**



# Defining Sustainable Agriculture

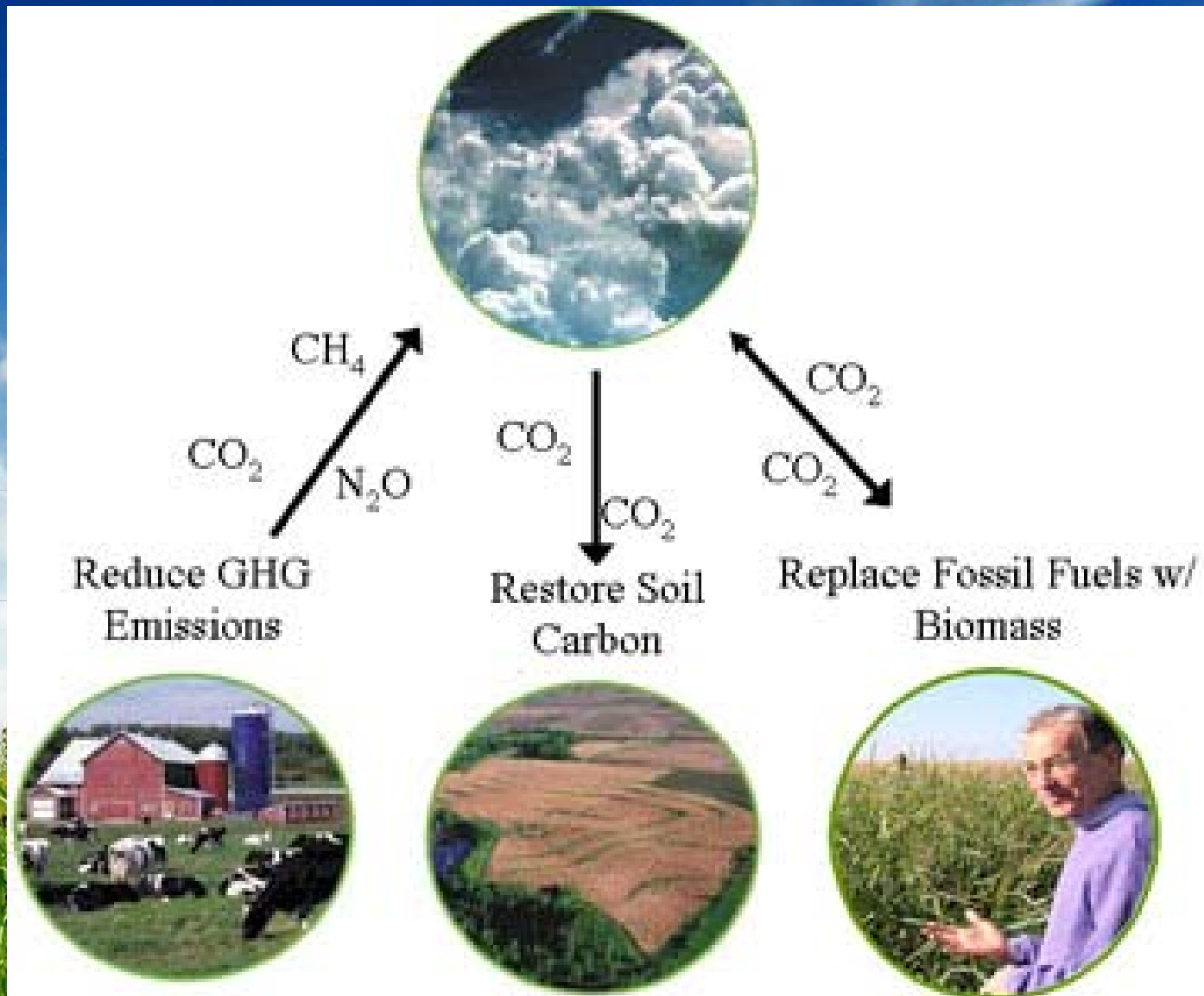
With respect to the environment, society and economics, sustainable agriculture would:

1. Not harm the environment from pollution,
2. Not be reliant on non-renewable inputs or degrade renewable ones,
3. Nourish people with non-toxic, healthy food, and
4. Provide a fair return on investment in labor and capital.





# Benefits of Sustainable Agriculture



# Better Resilience to Stress: Less Volatility



*Better water infiltration, retention and delivery to plants helps to sustain yield during drought.*

# “But Won’t We Starve If Farmers Go Organic?”

## Organic Methods Can Feed the World

**Table 1.** Average yield ratio (organic : non-organic) and standard error (S.E.) for ten individual food categories recognized by the FAO<sup>19</sup> and three summary categories. Average yield ratio based on data from 91 studies (see Appendix 1 for data and sources). (A) All countries. (B) Developed countries. (C) Developing countries.

Food category	(A) World			(B) Developed countries			(C) Developing countries		
	N	Av.	S.E.	N	Av.	S.E.	N	Av.	S.E.
Grain products	171	1.312	0.06	69	0.928	0.02	102	1.573	0.09
Starchy roots	25	1.686	0.27	14	0.891	0.04	11	2.697	0.46
Sugars and sweeteners	2	1.005	0.02	2	1.005	0.02			
Legumes (pulses)	9	1.522	0.55	7	0.816	0.07	2	3.995	1.68
Oil crops and veg. oils	15	1.078	0.07	13	0.991	0.05	2	1.645	0.00
Vegetables	37	1.064	0.10	31	0.876	0.03	6	2.038	0.44
Fruits, excl. wine	7	2.080	0.43	2	0.955	0.04	5	2.530	0.46
All plant foods	266	1.325	0.05	138	0.914	0.02	128	1.736	0.09
Meat and offal	8	0.988	0.03	8	0.988	0.03			
Milk, excl. butter	18	1.434	0.24	13	0.949	0.04	5	2.694	0.57
Eggs	1	1.060		1	1.060				
All animal foods		1.288	0.16	22	0.968	0.02	5	2.694	0.57
All plant and animal foods		1.321	0.05	160	0.922	0.01	133	1.802	0.09

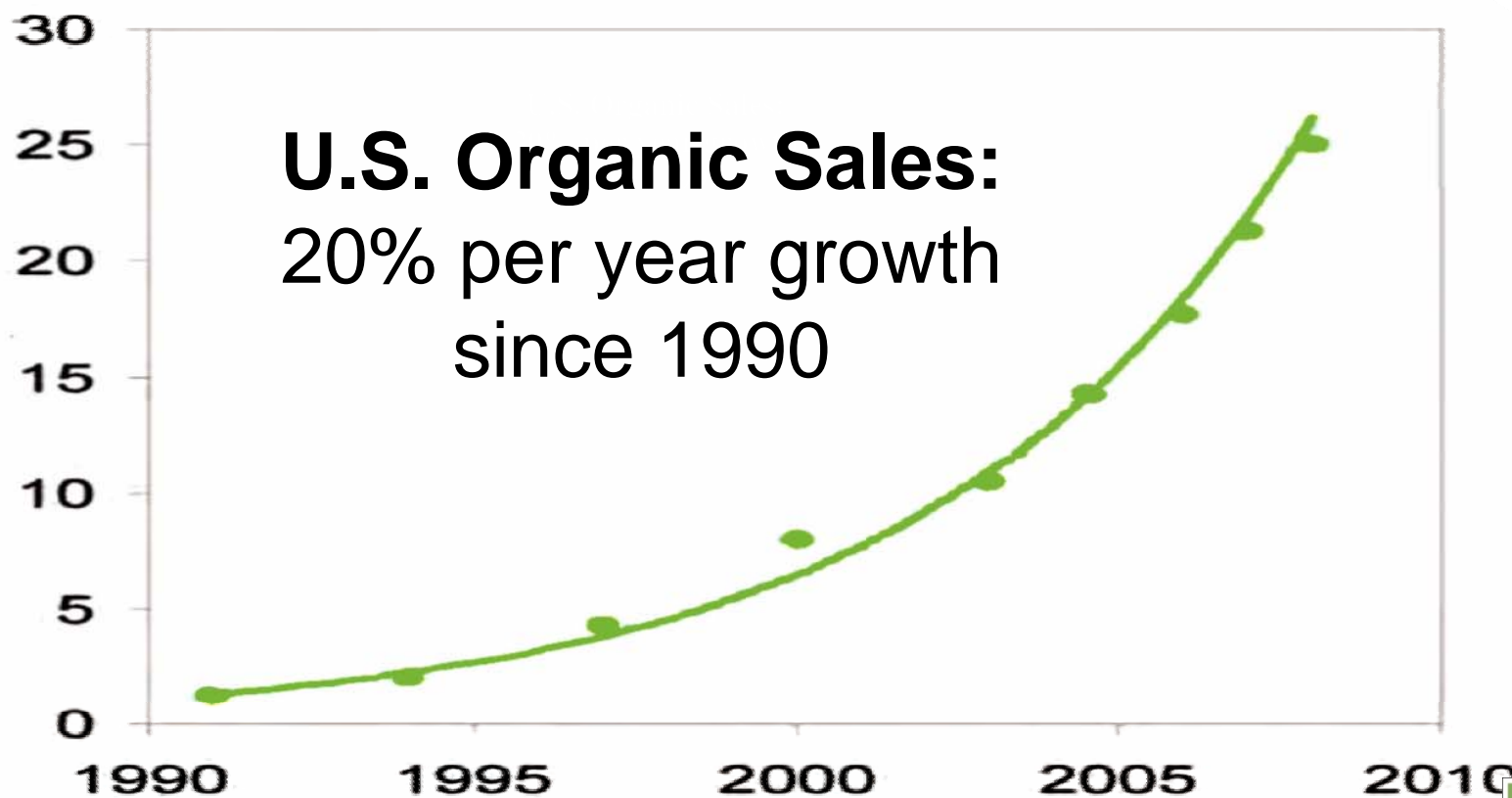
Organic  
Advantage





# Can We Scale the Transition?

Currently 3.5% of total food budget – Limited by Organic Supply, Not Demand



Source: Organic Trade Association

Farmland LP



# Buy Local

## WHAT IS LOCAL SIX?

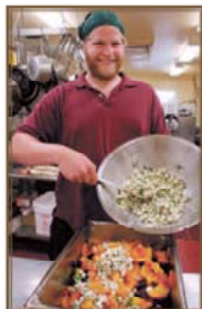
Under the term "Local Six", First Alternative Co-op defines "local" as a product grown, made or processed by a business owned and located within the six counties touching and including Benton county (Benton, Lane, Lincoln, Linn, Marion & Polk).

### A VISION

First Alternative Cooperative aspires to promote local goods, products, and services from within the Local Six to advance the economic prosperity and sustainability of our community.

### A MISSION

First Alternative's Buy Local Campaign supports the local economic vitality and sustainability by reconnecting our customers and owners to the producers, artists, and manufacturers of our community. The desired outcome of the campaign is to keep money and jobs in our community, decrease our impact on the environment as a result of shorter product transportation distances, contribute to the education of staff & customers about the importance of directly supporting our local economy and finally to serve as a model business in the Corvallis community by taking a proactive stance in advancing the overall health of the Local Six counties.



*Feast Alternative, the Co-op's commercial kitchen, chooses Local 6 products whenever possible!*

## TEN REASONS TO BUY LOCAL

1. Keep dollars in our local economy
2. Embrace what makes Corvallis unique
3. Foster local job creation
4. Help the environment
5. Nurture community
6. Conserve your tax dollars
7. Have more choices
8. Benefit from local owners' expertise
9. Preserve entrepreneurship
10. Make Corvallis stand out from the crowd



Buy Local First

### BUY LOCAL FIRST BREAKFAST SERIES

In 2007, 2008 & 2009, First Alternative partnered with the Corvallis Independent Business Alliance (CIBA) on the Buy Local First Breakfast Series. Held on the first Saturdays of May, June, & July, the Buy Local First breakfasts have been a huge success and have brought Corvallis citizens & businesses closer together. Complete with Mayor Tomlinson flipping pancakes!



Local Six product of the month boards at both stores give you an exciting look into locally owned and operated businesses. Check out our displays at both stores!

Local Six counties are all within 100 miles of Corvallis!



*North Store*  
29th & Grant • (541) 452-3115

*South Store*  
1007 SE 3rd • (541) 753-3115

Corvallis, Oregon  
[www.firstalt.coop](http://www.firstalt.coop)

Revised 7-09

*12 easy menu ideas inside!*

## The Co-op's LOCAL SIX



*Over 1,200 delicious ways to bring local home!*

# We Know How to Make the Transition on the Farm

Source: ATTRA (USDA-Funded Program)

## PESTICIDE TREADMILL

Heavy  
reliance on  
pesticides

Little  
emphasis  
on the  
ecosystem

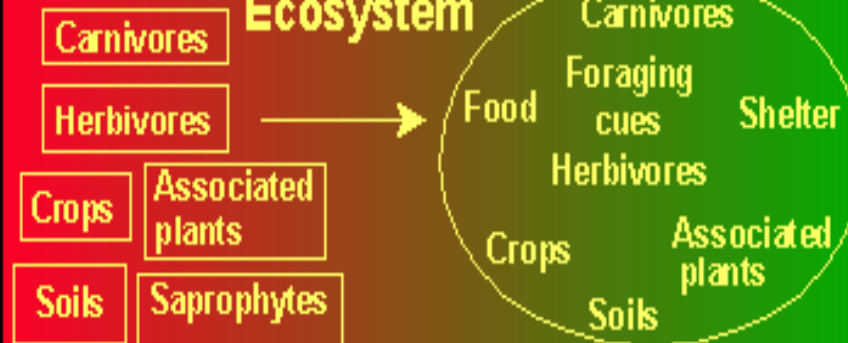
Broad-spectrum chemical Pesticides → Bio-pesticides & Biological Agents

Shift to discrete use of soft interventions

Therapeutics  
as back-ups

Strong  
knowledge  
and emphasis  
on ecosystem  
strengths

## Ecosystem



Shift from reductionist approach to emphasis on understanding multitrophic interactions and use of inherent strengths (including appropriate additions of new traits or organisms)

**TOTAL  
SYSTEM  
MANAGEMENT**



# Elements of a Sustainable Food System

## Type of Work

Soil cultivation

Soil fertility

Pest and weed  
management

Seed sourcing

Food distributi

Storage and  
processing at  
production end

Home and  
institutional  
storage and  
cooking



# Policies: Getting Across



1. **Reduce subsidies** for crops used mostly as animal feed, i.e., corn and soy.
2. **Ensure carbon price reflect full costs** to drive land use towards pasture systems and make long-distance trucking more expensive.
3. **Increase funding for conservation** reserve programs and habitat restoration on farmland.
4. **Fund research** and outreach into low-input farming systems, including public domain seeds.
5. **Support wellness and acute health care** for all citizens.





**Barack Obama**  
*Time* magazine  
October 2008

**I was just reading an article in *The New York Times* by Michael Pollan about food and the fact that our entire agricultural system is built on cheap oil. As a consequence, our agriculture sector actually is contributing more greenhouse gases than our transportation sector. And in the mean time, it's creating monocultures that are vulnerable to national security threats, are now vulnerable to sky-high food prices or crashes in food prices, huge swings in commodity prices, and are partly responsible for the explosion in our healthcare costs because they're contributing to type 2 diabetes, stroke & heart disease, obesity, all the things that are driving our huge explosion in healthcare costs.**





# Farmland LP

**Jason Bradford, Ph.D.**  
**Managing Partner**  
**Farmland LP**

**Converting Conventional Farmland to Organic, Sustainable Farmland**