

Setting the Stage for Consideration of Long Term Issues for Nutrient Management & Water Quality

- Larry D. Sanders
- 2012 National Training Workshop on CWA 303(d) Listing & TMDLs
- Environmental Law Institute
- National Conservation Training Center
- Shepherdstown, West Virginia
 - 10-12 April 2012

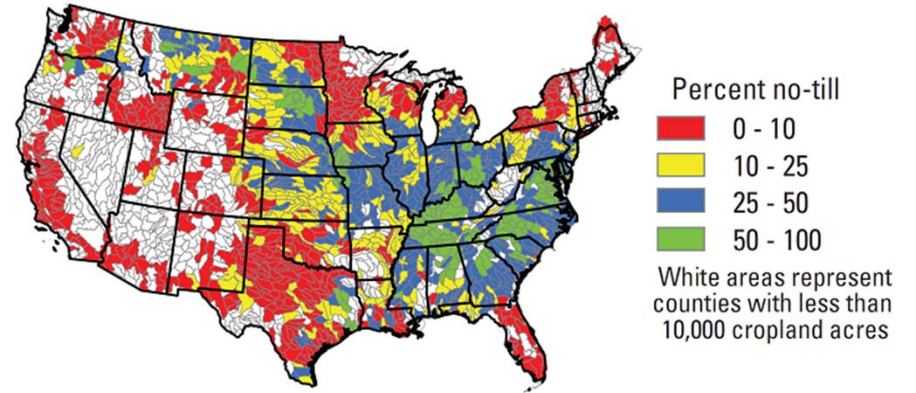
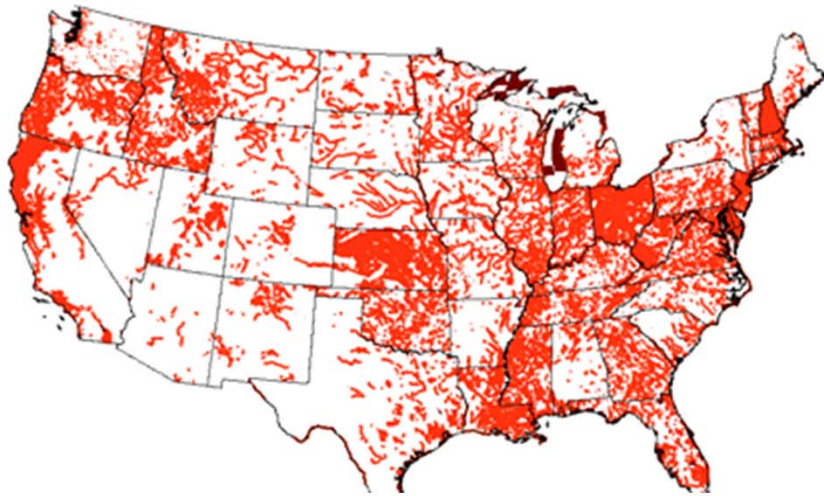
In apologia...

- This presentation isn't about the technical aspects of CWA 303 (d) listing & TMDLs
- Rather, I suggest there are certain “macro” issues that will affect the factors that impact nutrient management & water quality
- Lots of data in presentation; don't focus on detail, but trends & geographic distribution
- I assume that **most producers & land owners care about the environment & are good stewards of the land**
- Water quality is affected by a variety of sources
- I am not promoting specific policy agendas of any specific group(s)

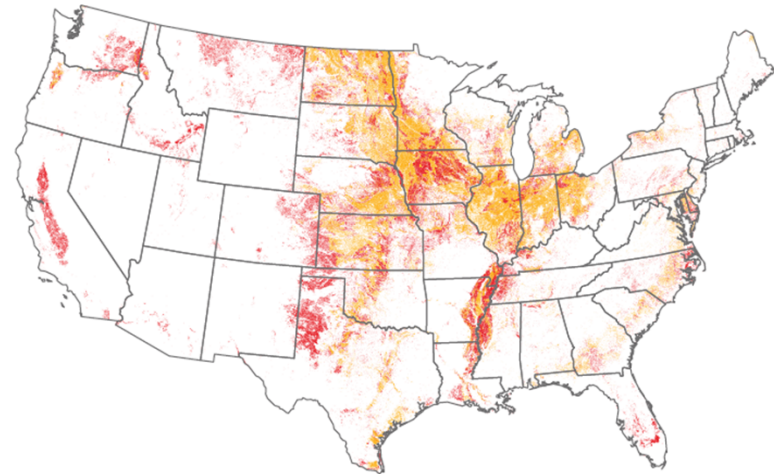
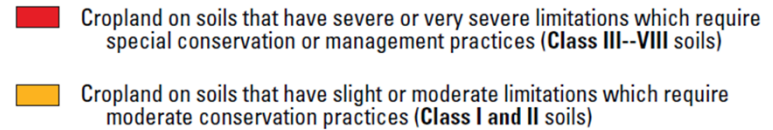
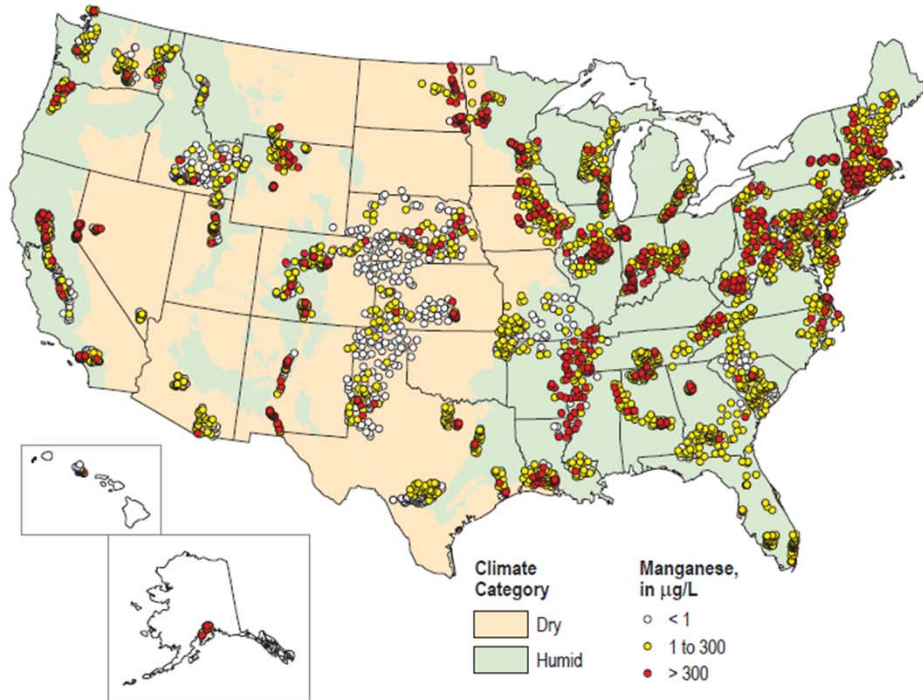
Issues

1. Farm bill & commodity prices
2. Weather projections
3. Evolving dietary needs
4. Urban-rural fringe pressures
5. Ecosystem services as opportunities
6. Macroeconomic issues (including trade)
7. What are our goals—Sustainability? Protect environment/ ecosystems? Economic growth/development? Protect private rights?

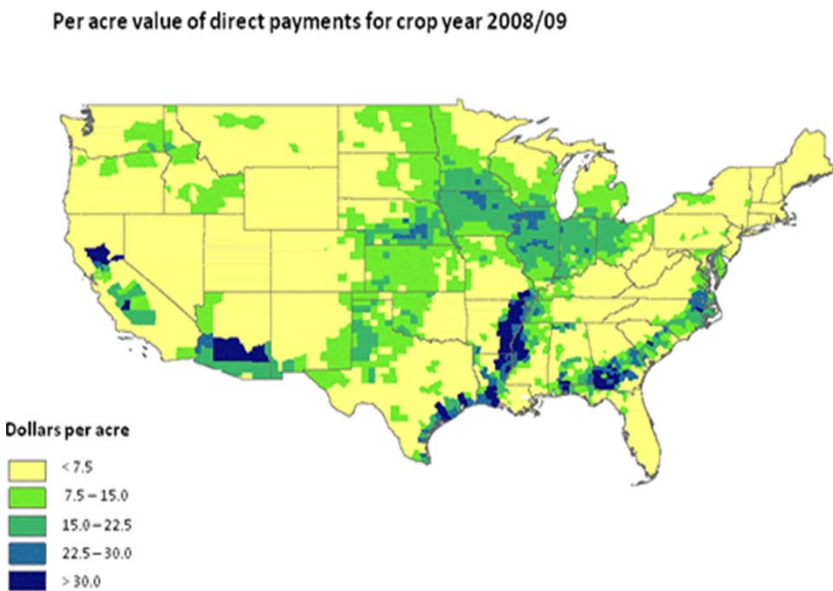
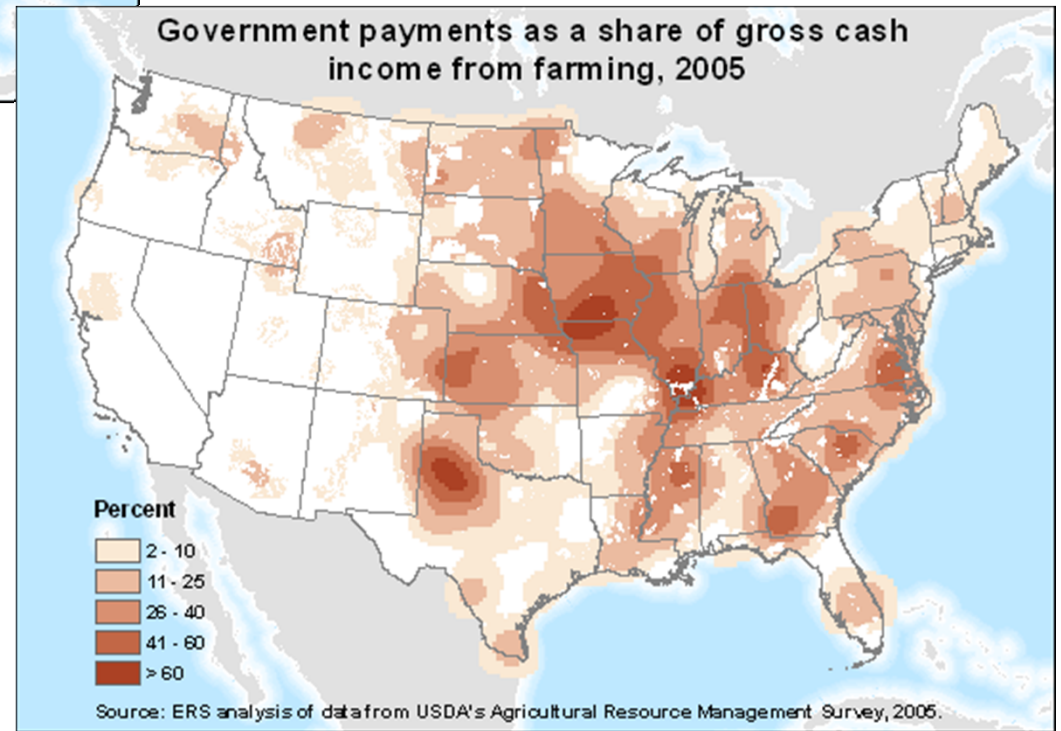
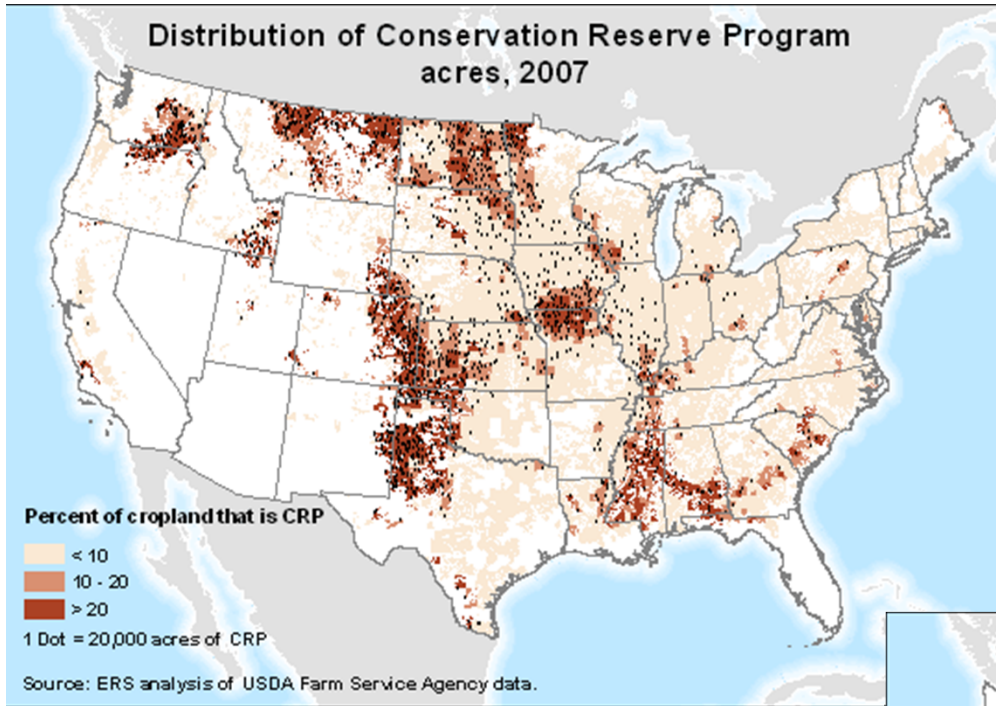
Impaired waters, trace elements, soil conservation issues, ...



Percent No-Till for All Crops, 2004



Farm Bill Update —the Social Contract with Agriculture is evolving



Source: Compiled by USDA, Economic Research Service from USDA, Farm Service Agency data.

Where Would You Cut \$1.5-\$4.5 Billion/yr?

CBO Actual and Projected Costs of the 2008 Farm Bill

(\$ Millions)

2008 Farm Bill	Commodity	Conserv.	Crop Ins.	Energy (a)	Export	SNAP (b)	Total
Total (2008-12)	32,233	22,457	28,518	1,936	1,524	314,264	400,932
Average Annual	6,447	4,491	5,704	387	305	62,853	80,186
2013-17 Annual (Est)	6,408	6,260	7,840	101	345	67,955	88,909

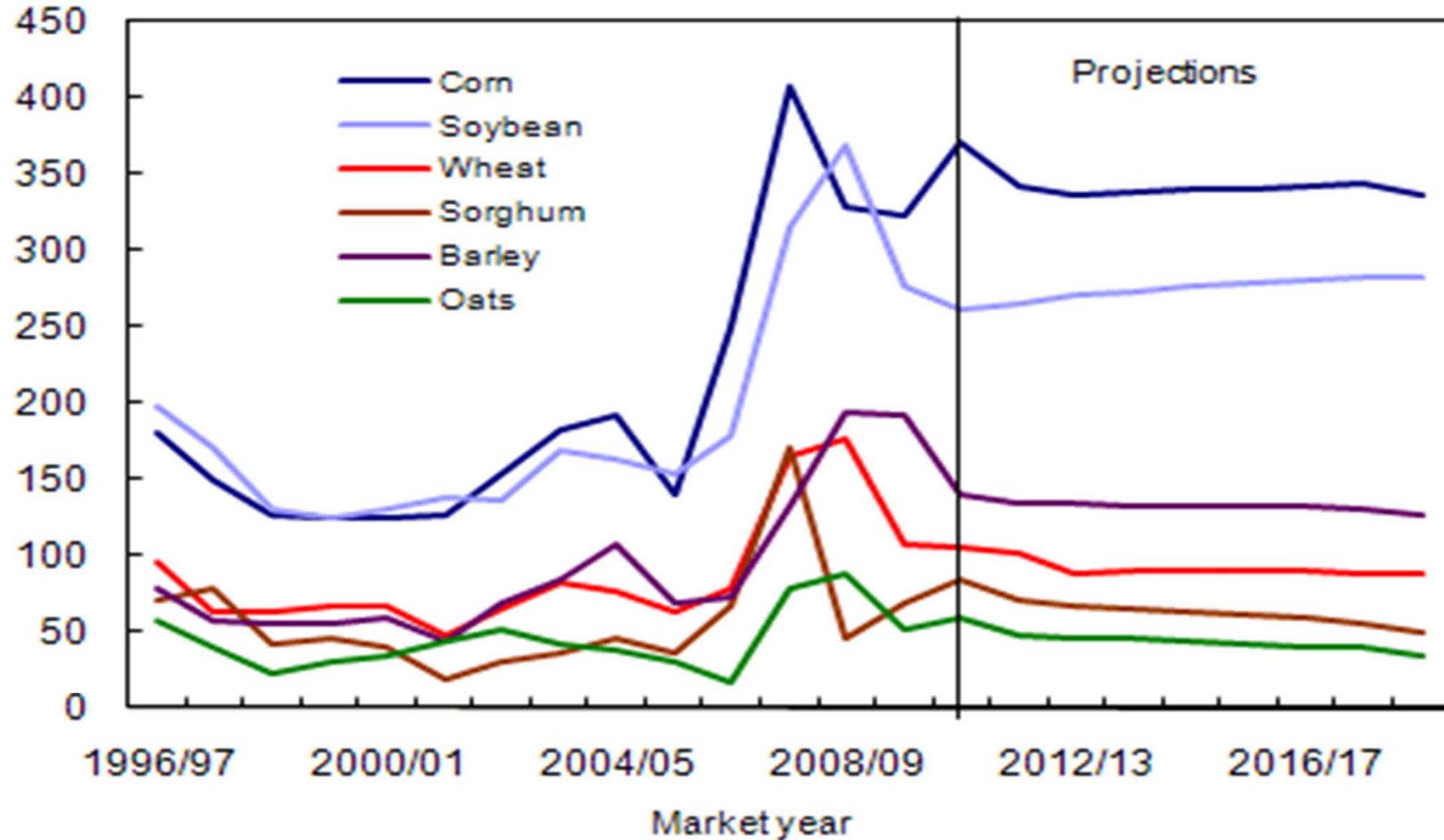
Source: From Monke, Jim and Renee Johnson, "Actual Farm Bill Spending and Cost Estimates," CRS Report for Congress, December 2010. 7-5700.

- Spending for farm-based "energy" programs included.
- Supplemental Nutrition Assistance Program or SNAP. includes food stamps, as well as increased expenditures beginning in 2009 due to nutrition provisions in ARRA (P.L. 111-5), including costs for commodities under The Emergency Food Assistance Program (TEFAP) and the Puerto Rico block grant.

37 Programs with no baseline renewal 5 year budget = \$9.815 Billion

Net returns for various crops

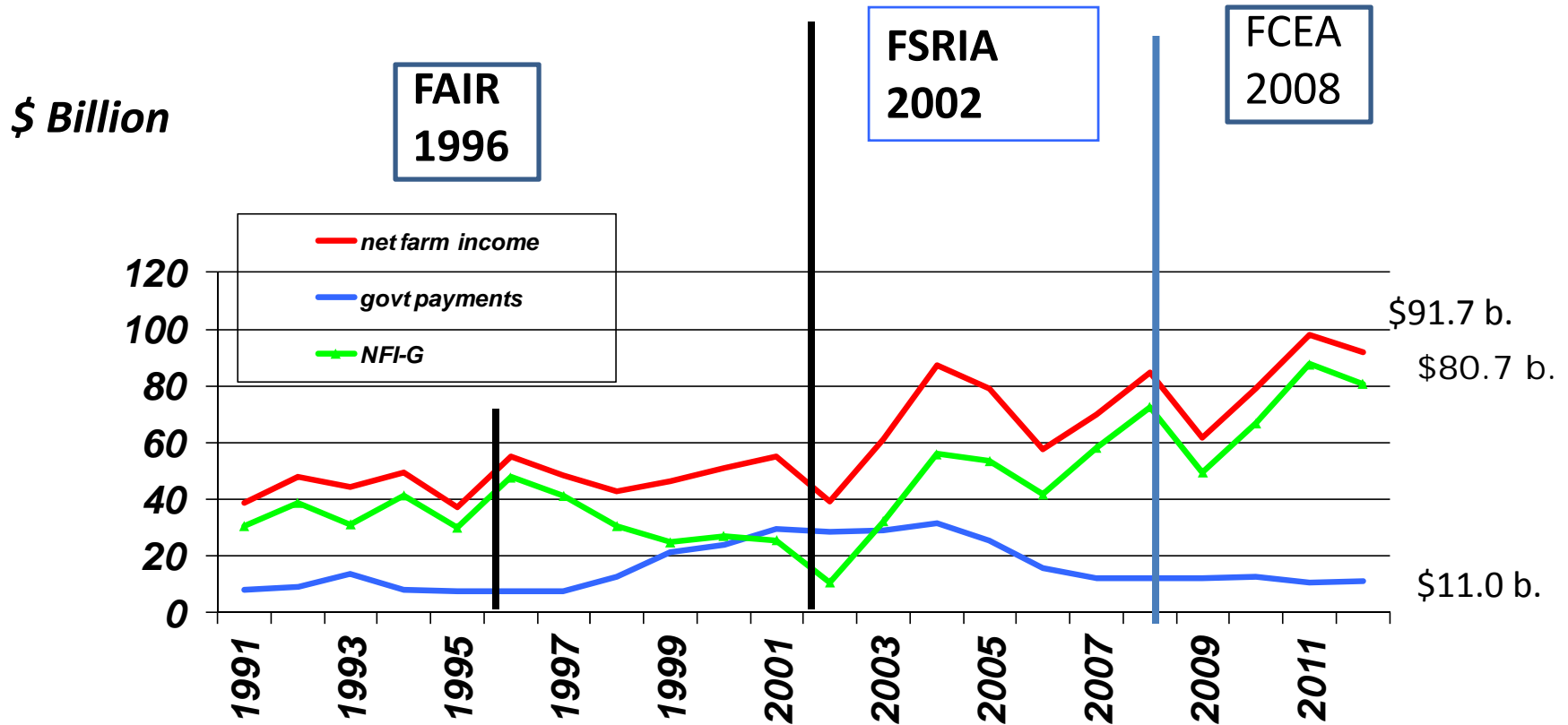
Dollars per acre



Source: *USDA Agricultural Projections to 2019*, February 2010.
Economic Research Service, USDA.

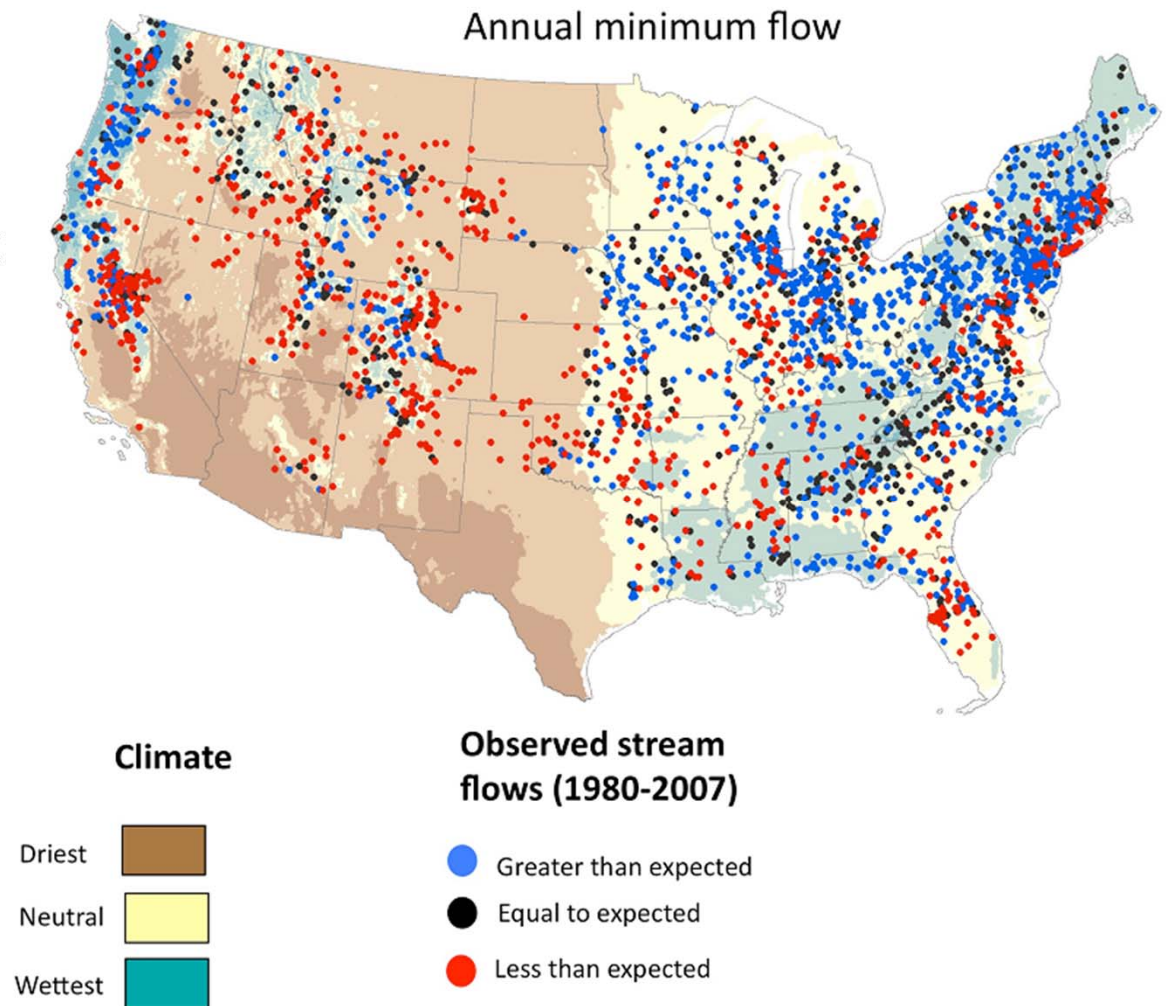
<http://www.ers.usda.gov/Briefing/Corn/2010baseline.htm>

Net Farm Income & Direct Government Payments (1991-2012f)



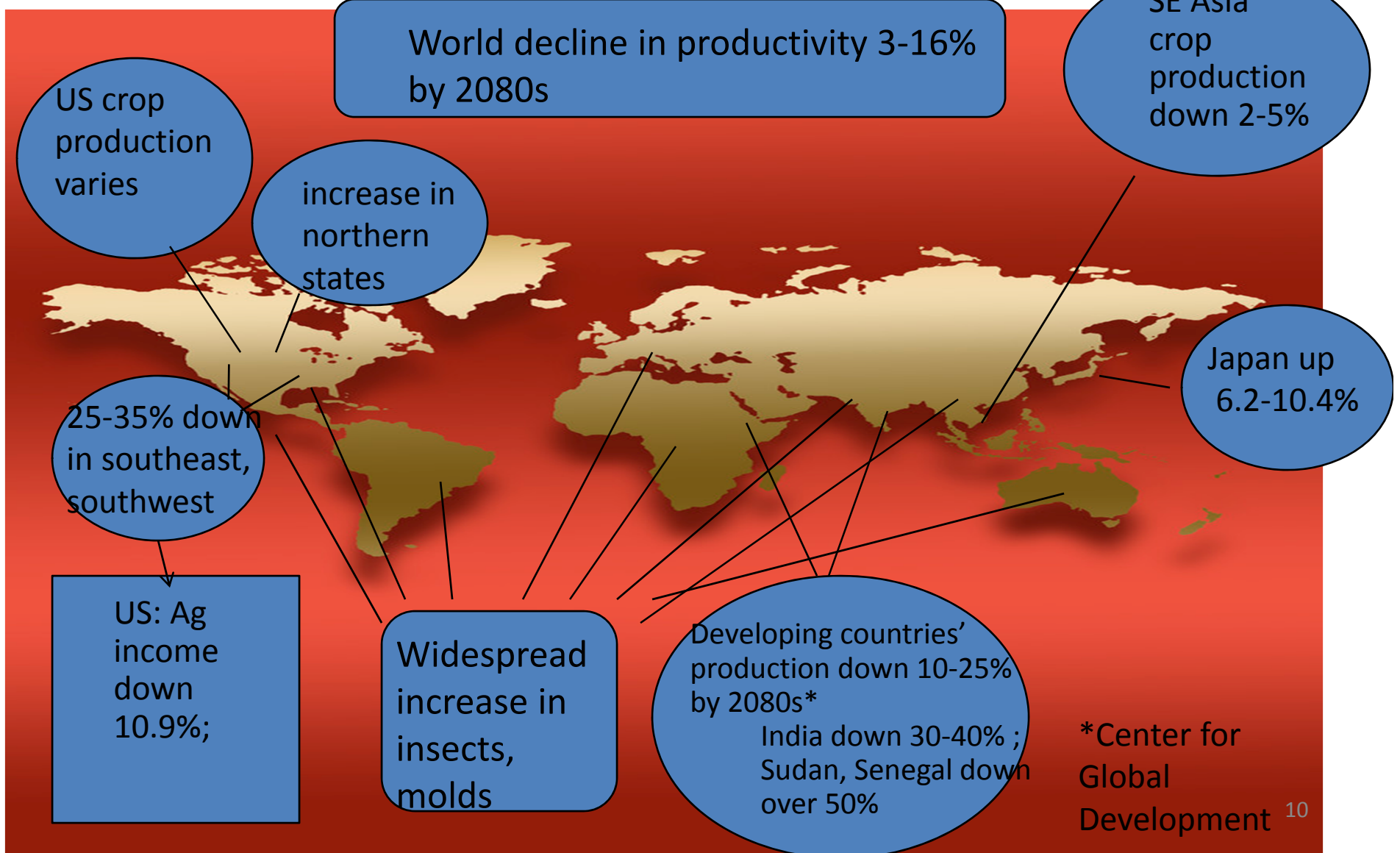
Weather Projections

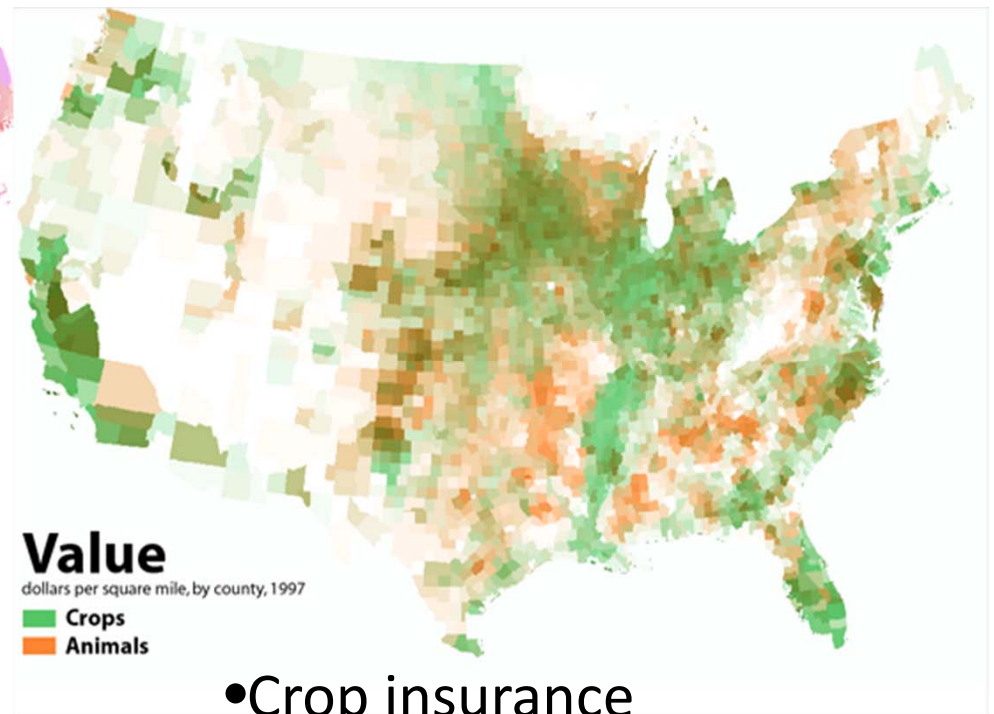
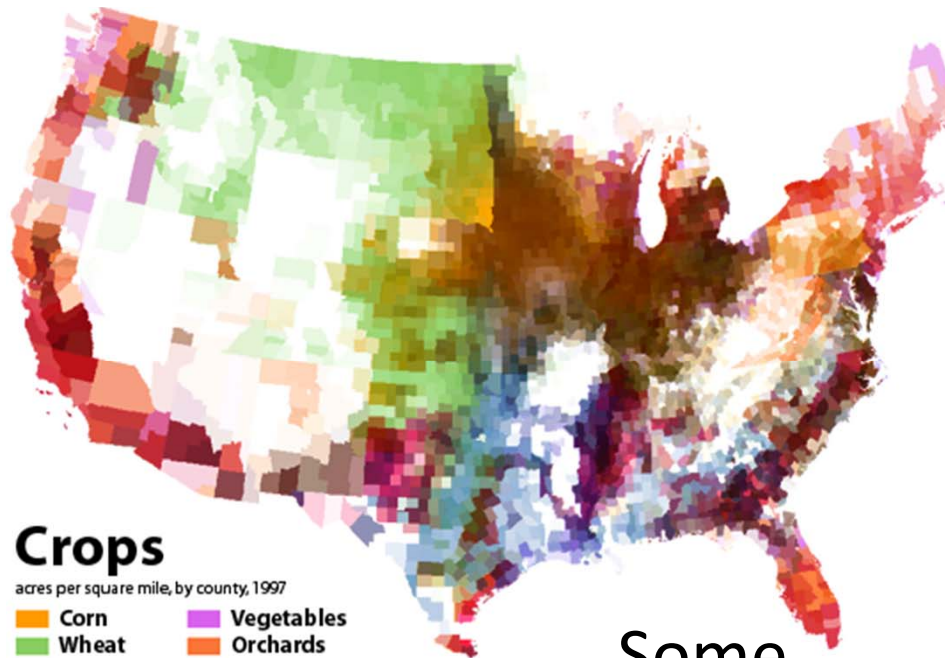
- Short-intermediate term:
 - Climatologists predicting 3-15 years of ongoing drought pattern in OK-TX region
- Longer term:
 - Continued debate about global climate change
- Risk & uncertainty require adaptation and mitigation options & consideration of public & private investment
- If govt. isn't funding, what will the private sector be likely to do?



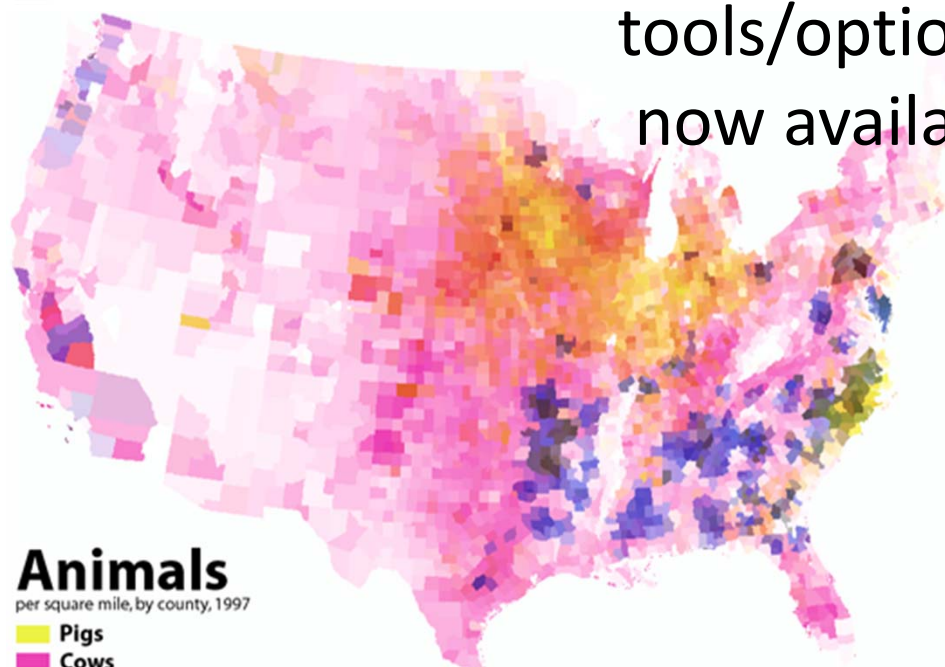
Potential Impacts to Agriculture from Global Climate Change

--longer term geographic effect*





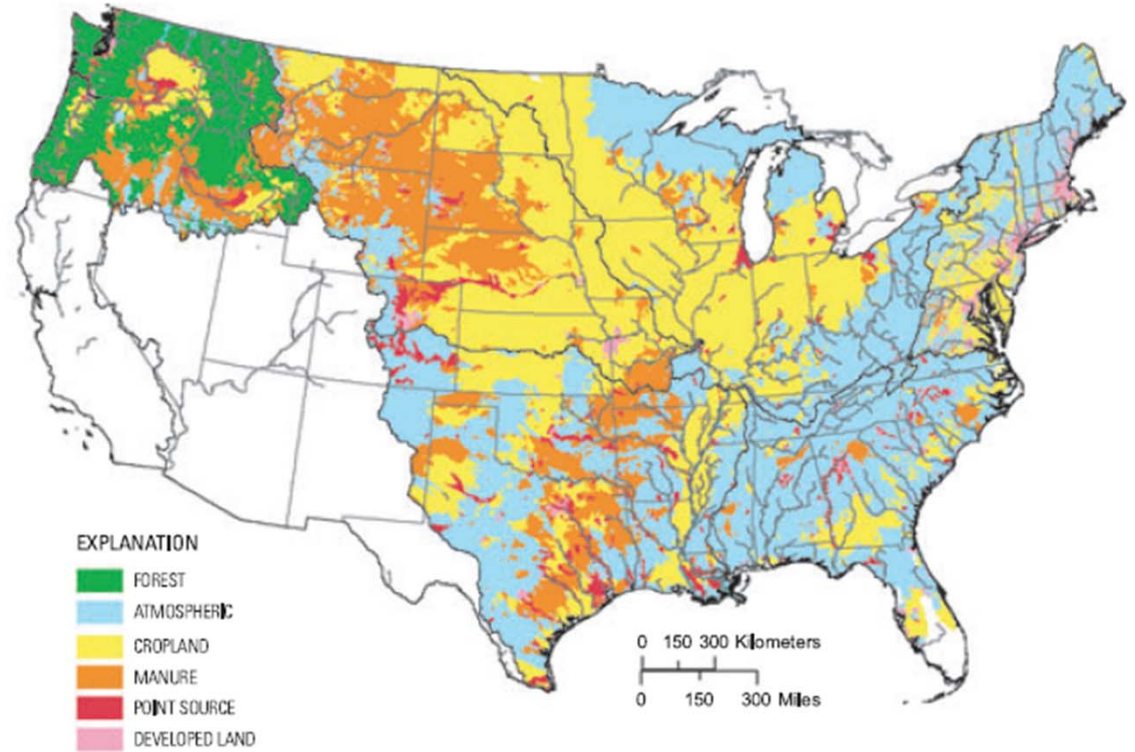
Some
tools/options
now available



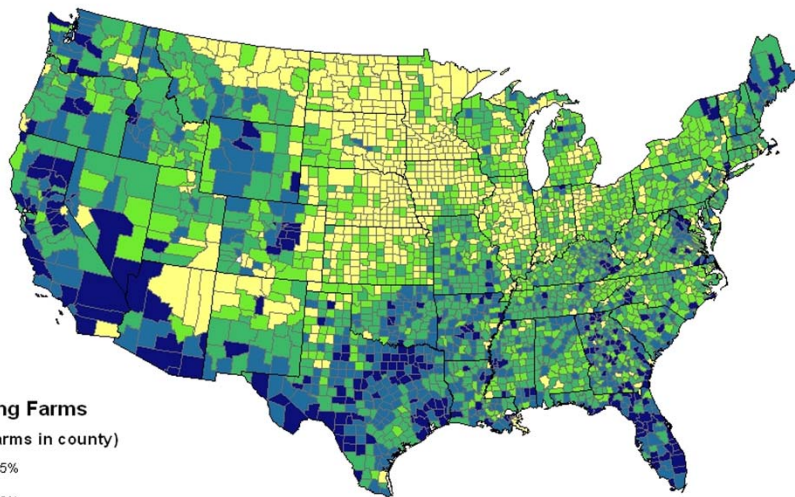
- Crop insurance
- Conservation programs
- Research, development & education
- Futures markets
- Conservation tillage
- Holistic farm management
- Carbon sequestration
- Waste management
- Wetlands

<http://www.radicalcartography.net/?crops>

Urban Pressures —the Rural-Urban Fringe



Share of farms in a county that are beginning farms



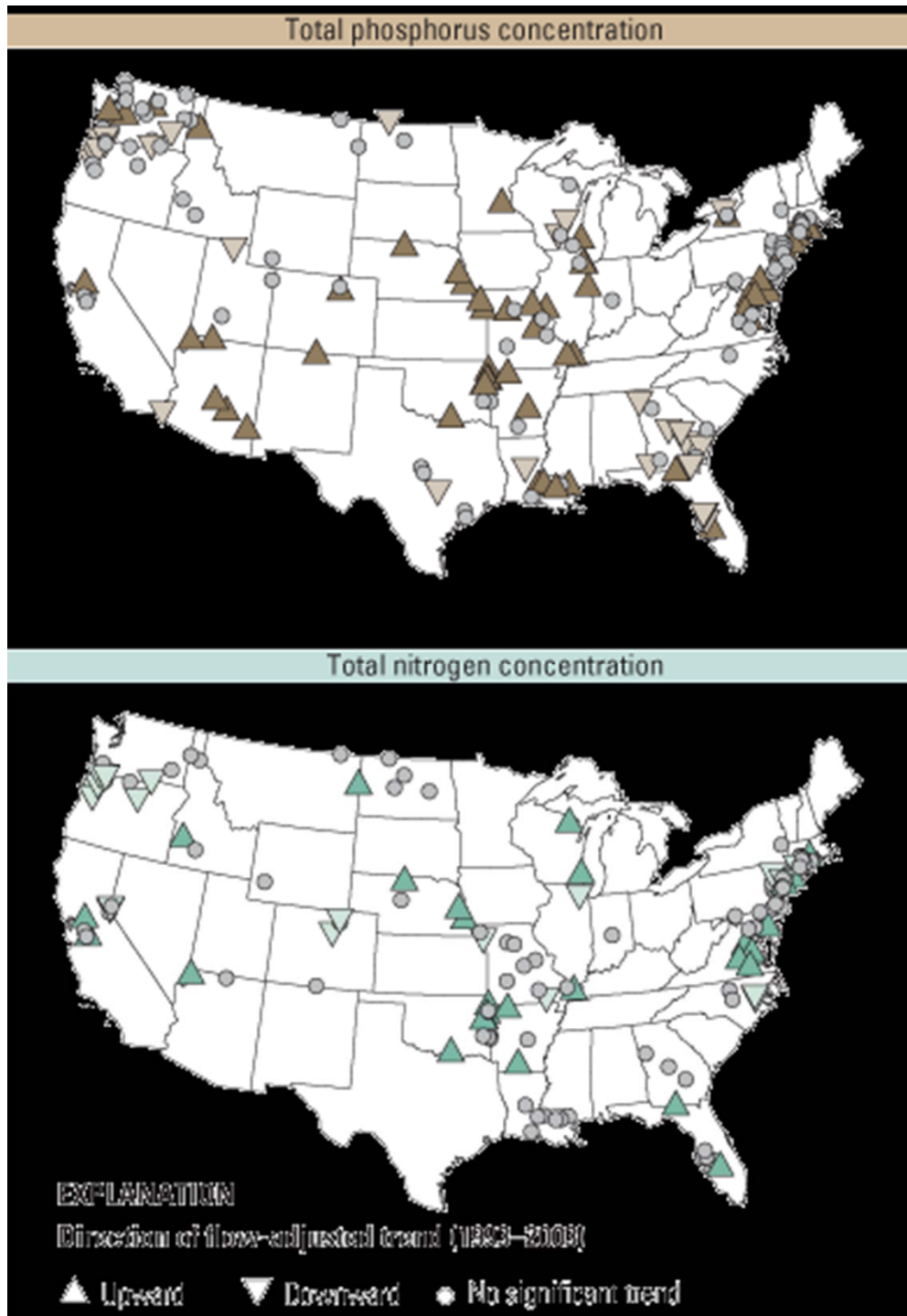
Beginning Farms
(% of all farms in county)

- under 25%
- 25% - 30%
- 30% - 35%
- 35% - 40%
- over 40%

Includes farms where all operators have less than ten years experience on current farm.

Source: ERS Tabulations based on USDA/NASS 2007 Census of Agriculture.

Nutrient Sources & Transport to
Streams, Reservoirs, Estuaries

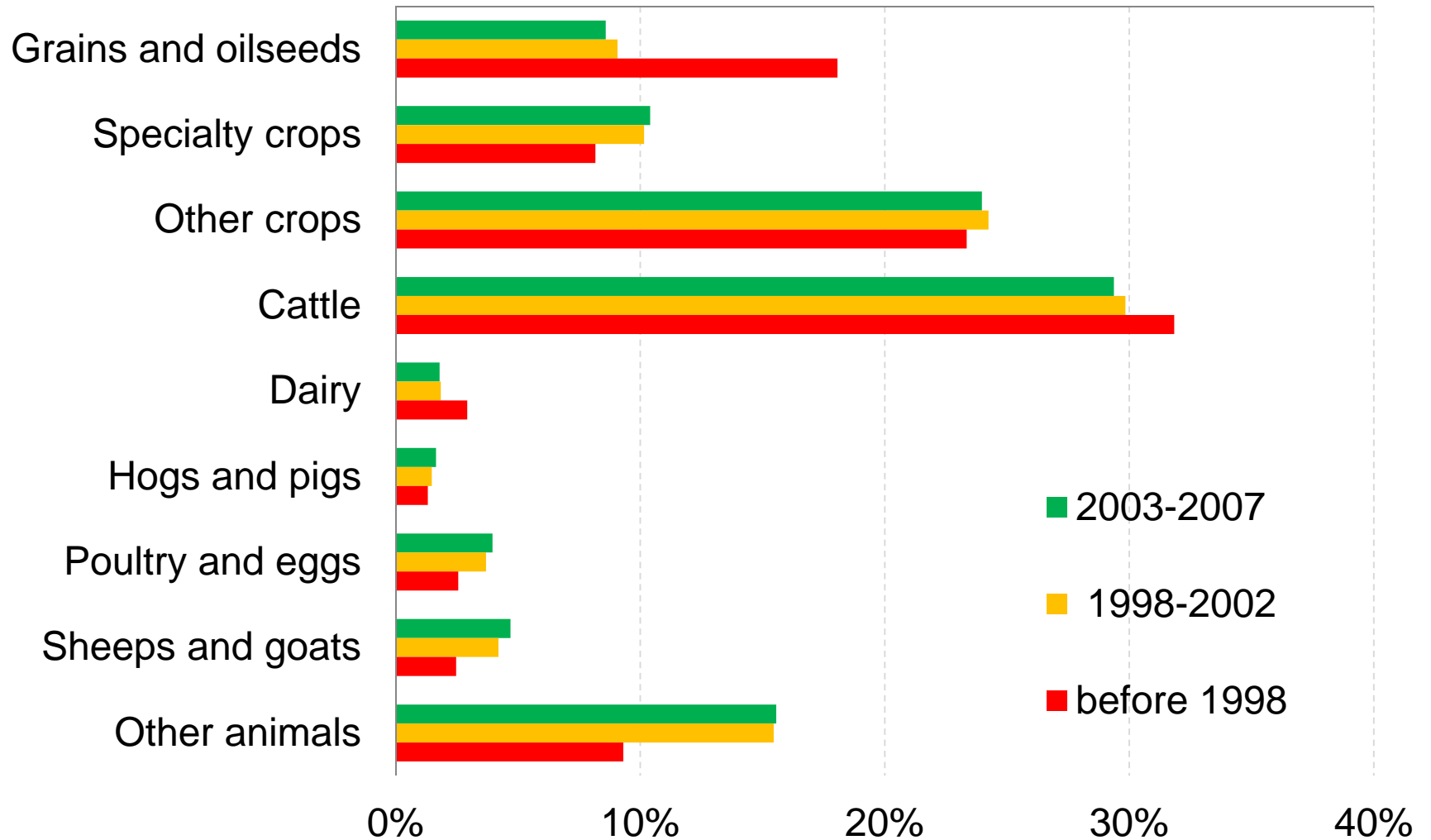


Nutrient Concentration Trends

--complex sources

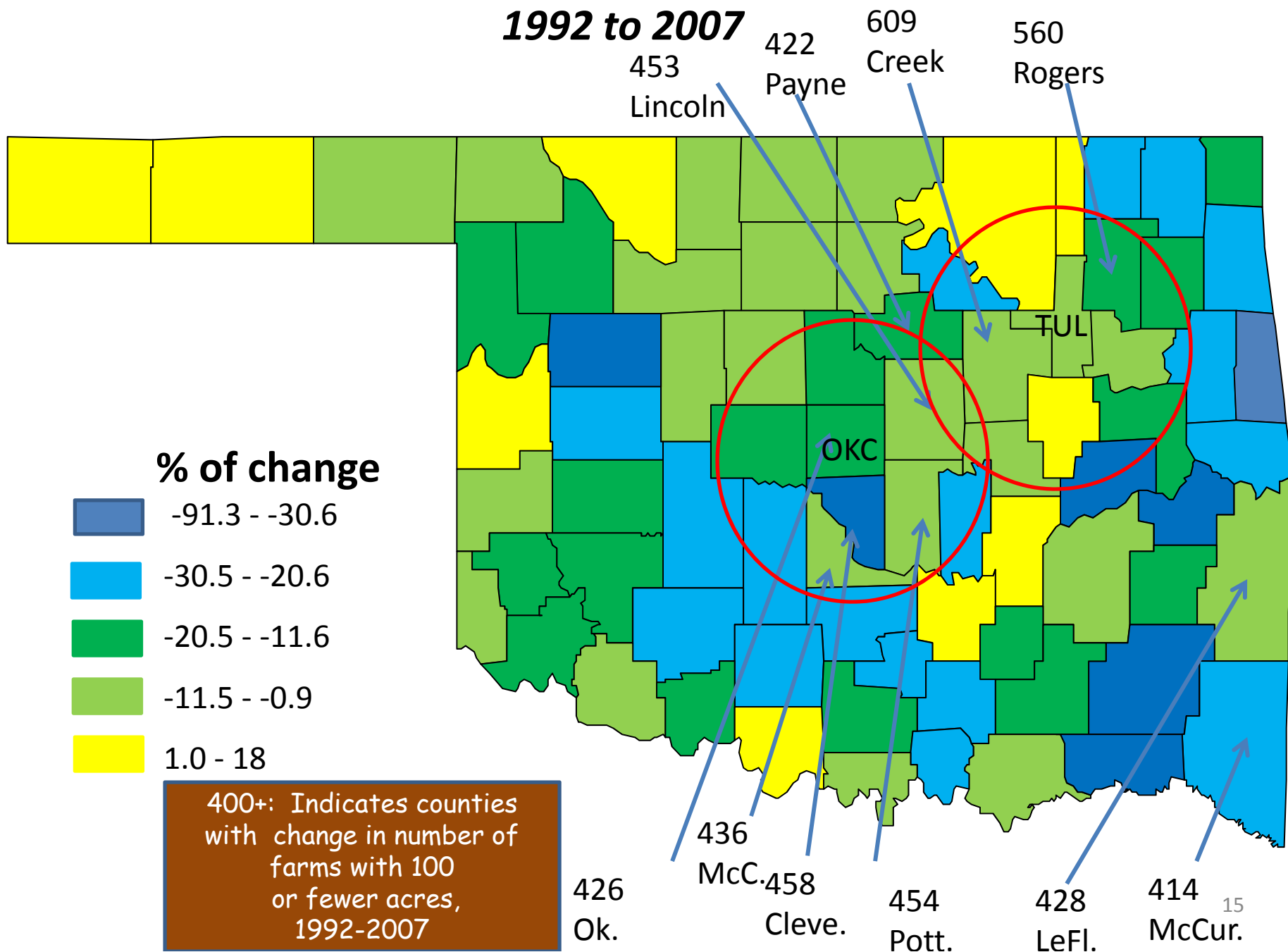
- Relatively localized
- Chesapeake Bay
- Southeast
- Miss. Watershed
- NW

Beginning Farmers* and Type of Production

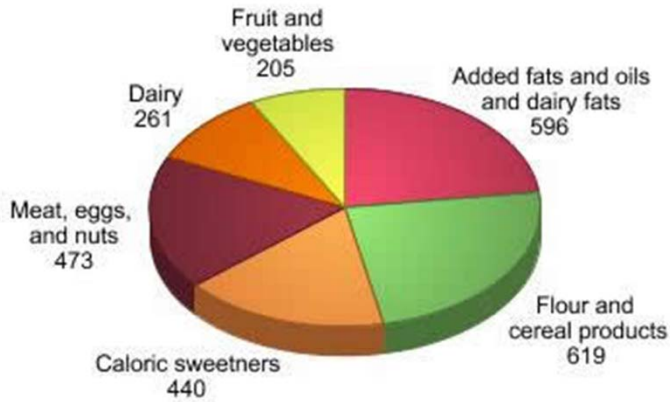


* Beginning farmers: about 1/5 of all farms

OK Example: Percentage Cropland Acres Changed – 1992 to 2007



Flour and cereal products provided more calories per day for the average American than any other food group in 2009



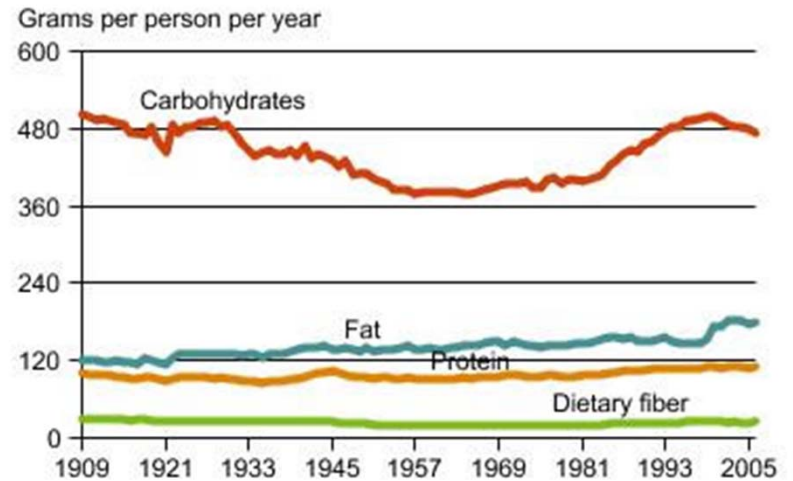
Evolving dietary needs

Note: Food availability data serve as proxies for food consumption. Added fats and oils and added sugars are added to foods during processing or preparation. They do not include naturally occurring fats and sugars in food (e.g., fats in meat or sugars in fruits).

Source: USDA, ERS.



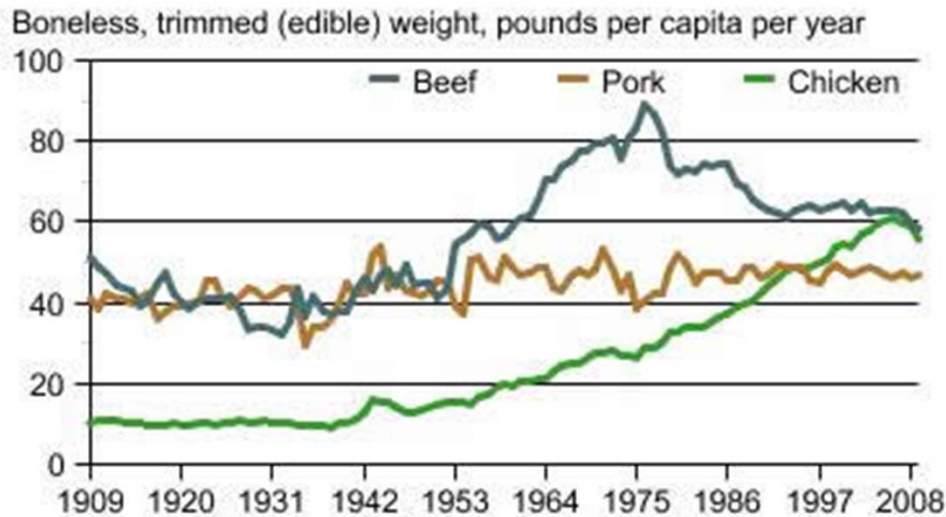
Carbohydrate intake has fluctuated over time



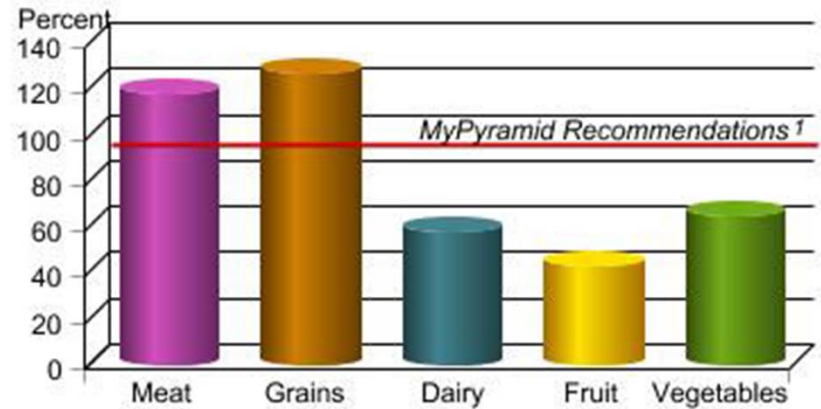
Source: USDA, Center for Nutrition Policy and Promotion, Nutrient Availability data, 1909-2006.



The amount of chicken available for consumption has steadily increased in the past 60 years

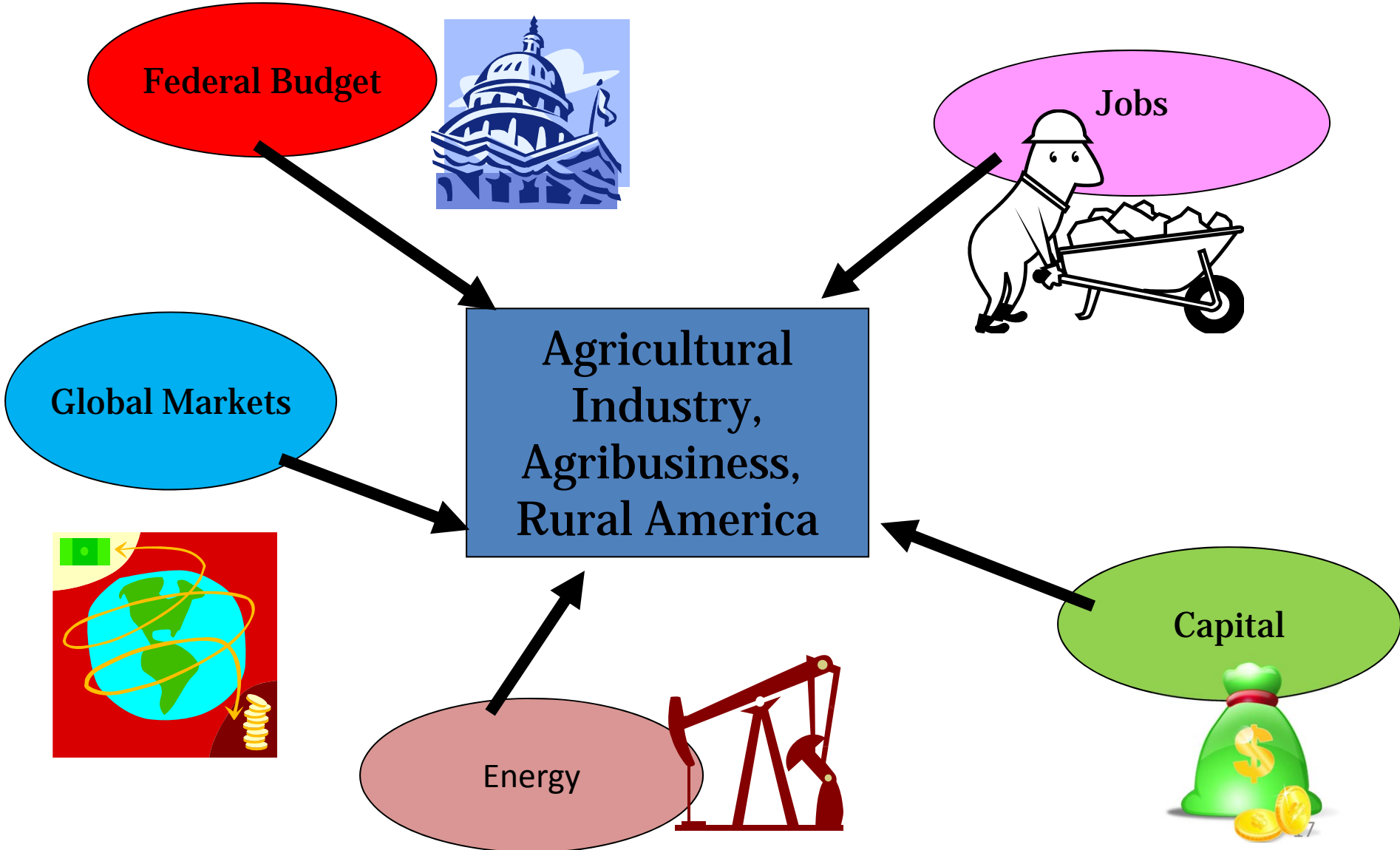


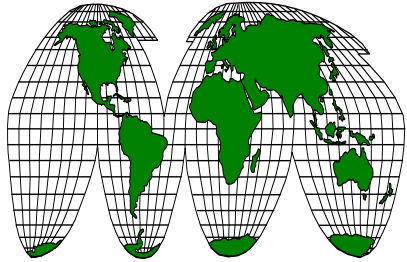
American diets are out of balance with dietary recommendations



Note: Food availability data serve as proxies for food consumption.

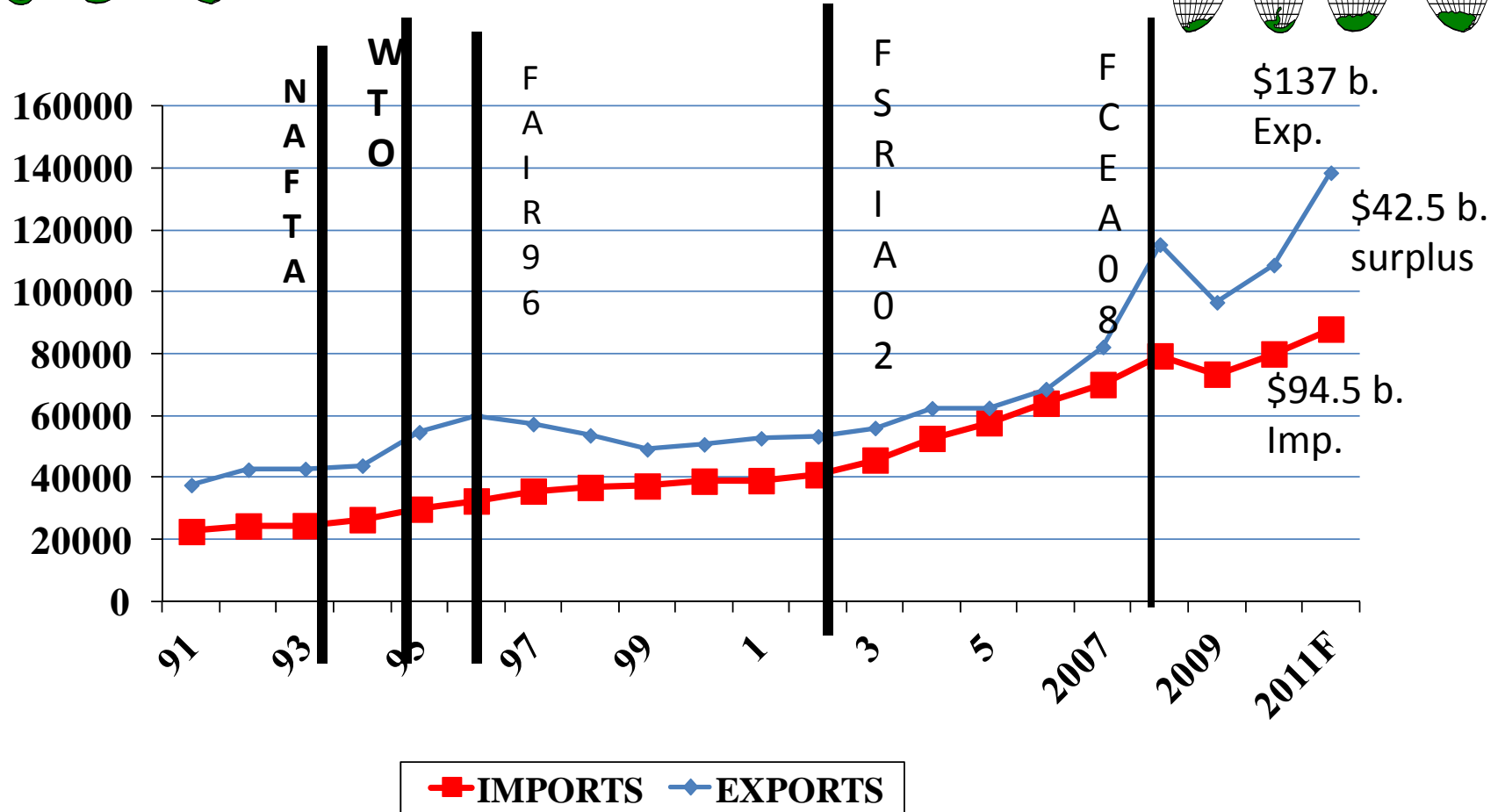
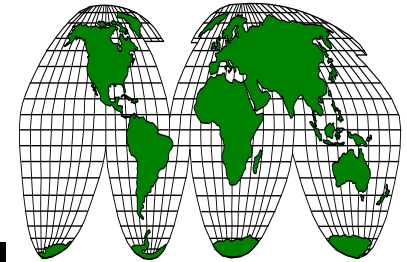
Macroeconomy & agriculture--linkages





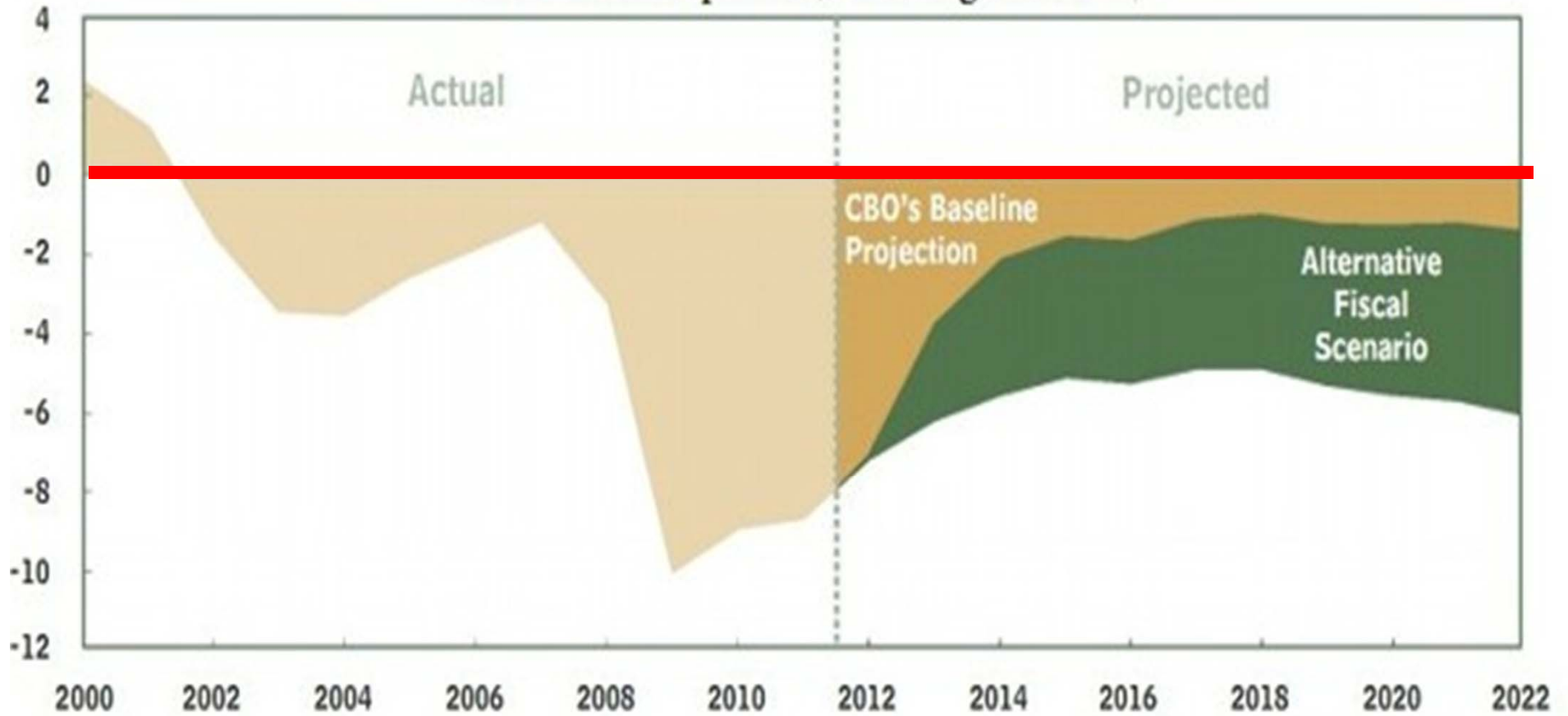
US Agricultural Trade Balance, 1991-2011F

(\$mil/FY; agricultural product only)

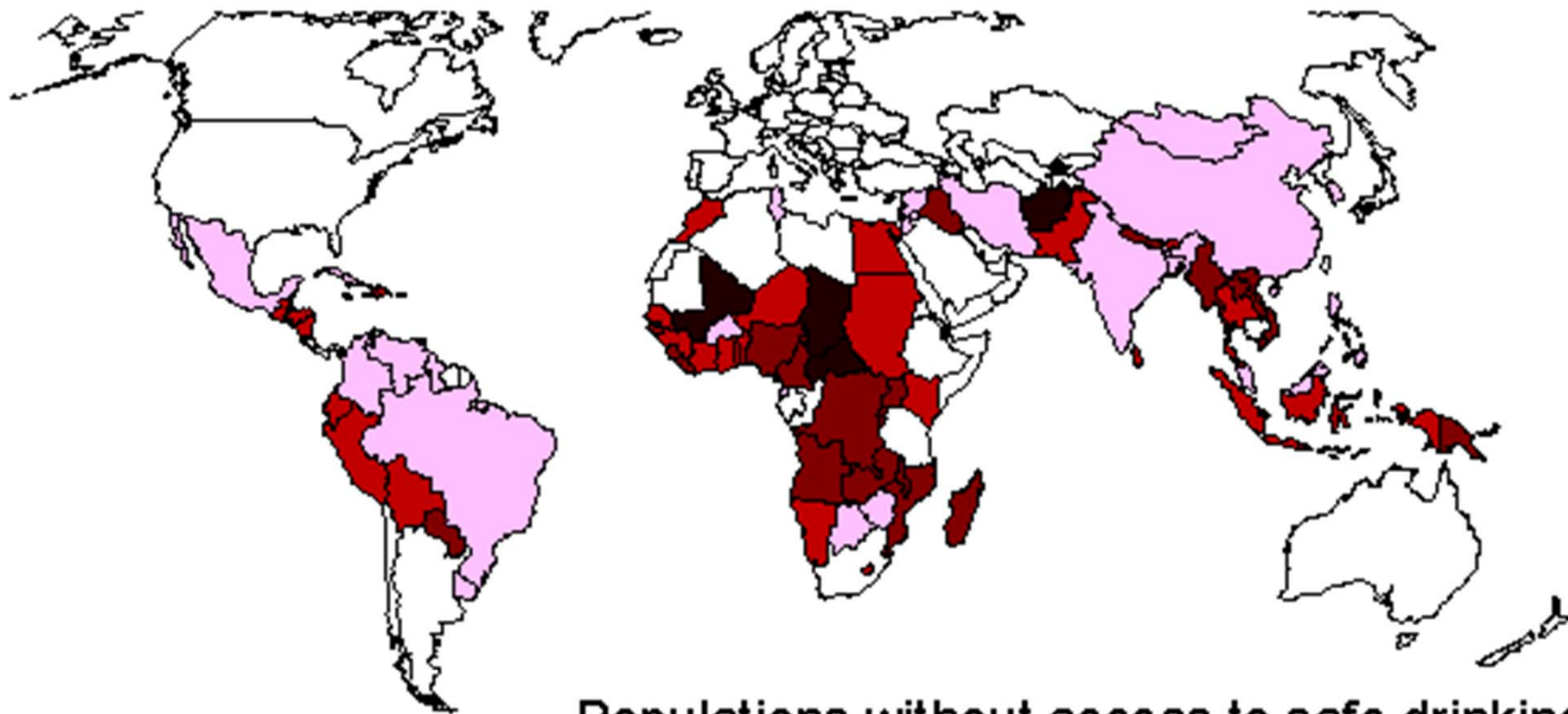


*NOTE: If fish & forest product added to ag, trade balance would be \$15.2 b. for fy10.

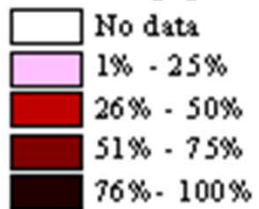
Deficits or Surpluses (Percentage of GDP)



http://www.washingtonpost.com/blogs/ezra-klein/post/cbo-if-congress-does-nothing-deficit-plummets/2011/08/25/gIQATgE9eQ_blog.html



Percent of population without access



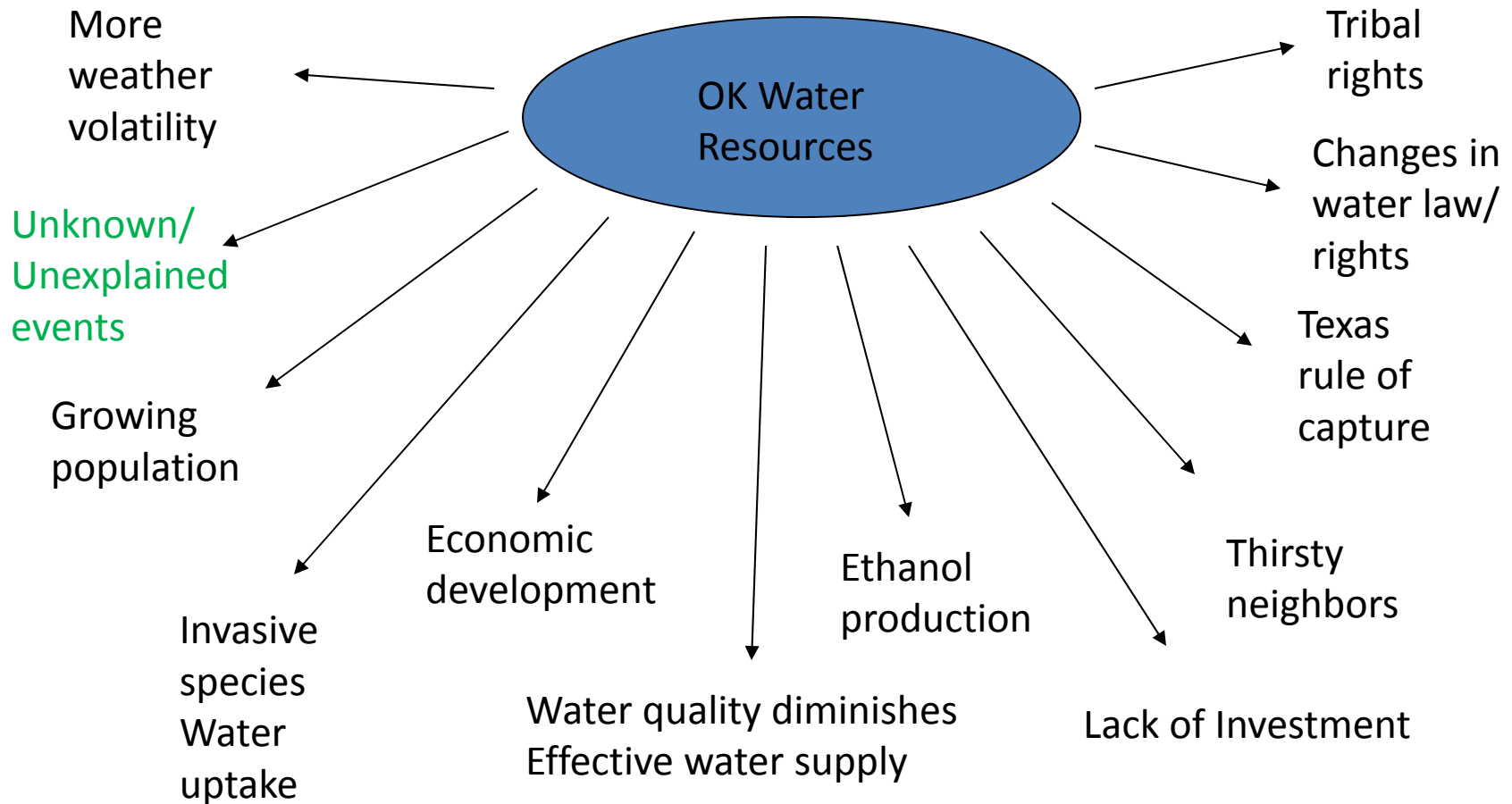
Populations without access to safe drinking water

*from The World's Water
The Biennial Report on Freshwater Resources
(Gleick 1998)*

The World of 2050, esp. without adjustments: 9-12 bil. people doesn't just mean more people

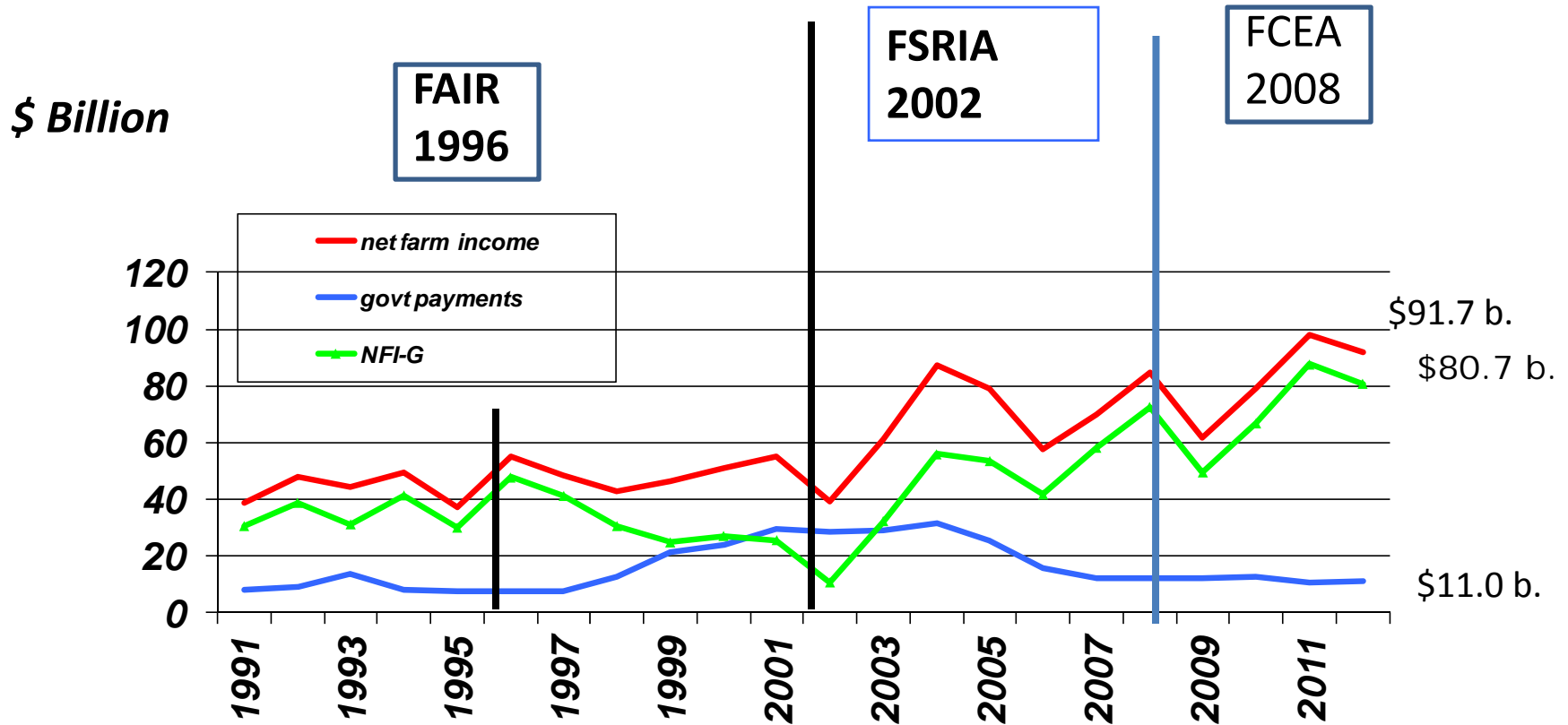
- Power shifts among countries and within countries
- **More scarcity of natural resources, esp. potable water**
- More crime
- More military adventurism & saber-rattling
- More social unrest, likely leading to more reliance on religion and less on science (post-modernism rules!)
- **More hunger**
- **Less wild species, whether flora or fauna**
- More disease
- **More climate change/global warming unless mitigated**
- More economic inequity
- White Anglo-Saxons will be in the minority everywhere--no more enclaves in US or Europe or Canada
- Fish will be farmed
- **Less meat per capita--too expensive to produce relative to alternative uses of land & energy**

OK example: Water resources under pressure

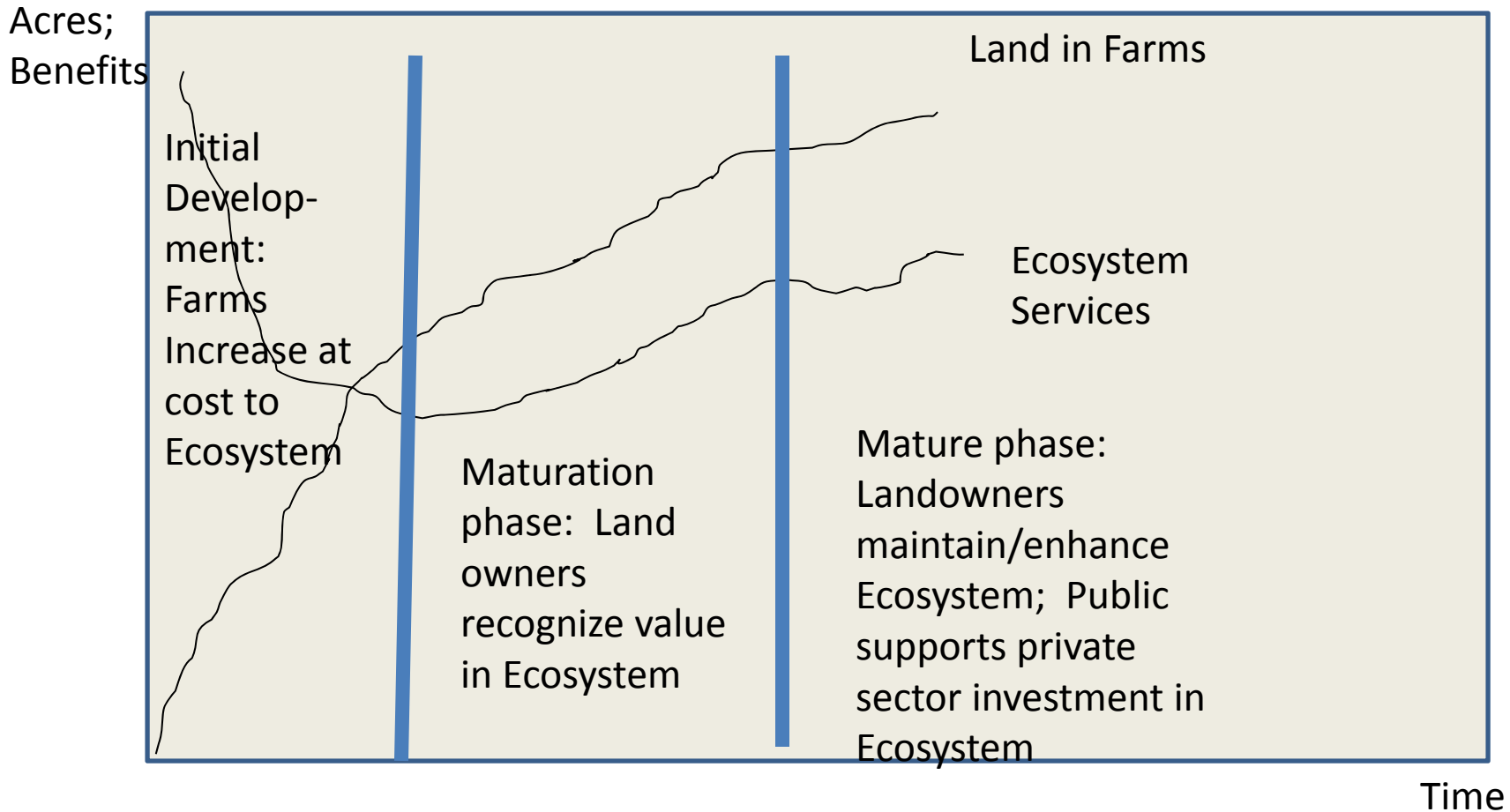


20 years ago, how many of these were unexpected events?

Net Farm Income & Direct Government Payments (1991-2012f)

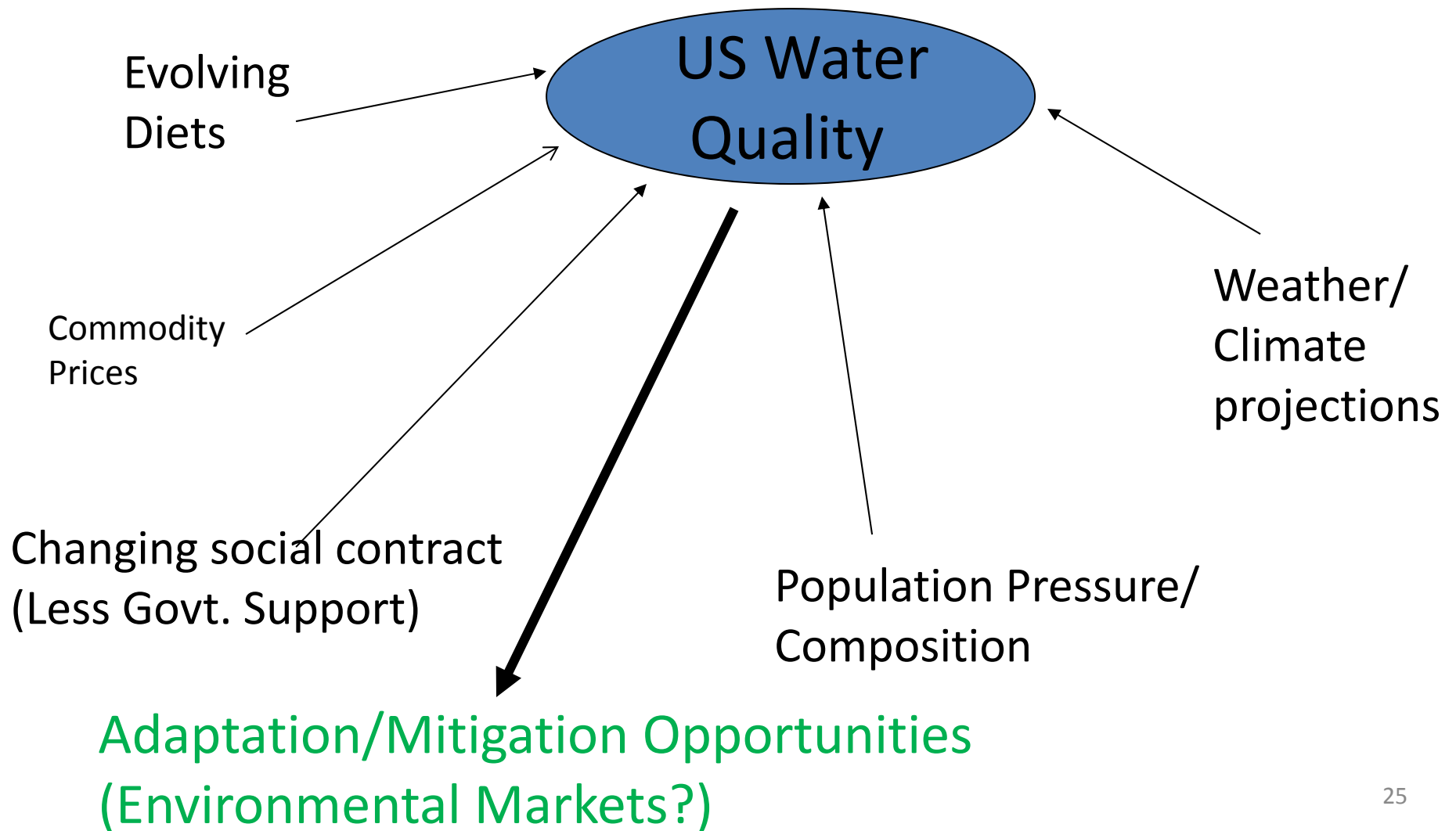


Environmental Markets: Ecosystem services as opportunities



Hypothetical Correlation between Land in Farms and Level of Ecosystem Services

Intersection of issues affecting our natural resource base...



Views from the ground (NOT a scientific sample)...

- Commercial producers
 - States/Feds need to give industry early access to process
 - Courts become the place for input/interaction
 - Need for Science
 - Small operations less likely to be enviro-friendly
 - Media/govt bias to find a villain not solution needs to end
 - Need to work together to find solutions
 - Commercial operations is adapting to be more enviro-friendly
 - Increase in lifestyle farms
- Nontraditional producers
 - Loss of govt support will hurt agribusiness more than producers
 - Many producers will shift to low-input practices
 - Increase in intensive grass land ag (beef, sheep, dairy)
 - Increase in regs will push more producers to retire/sell out, or into organic
 - Small operations are hobby farms, not interested in profit
 - Opportunities for sustainable ag to serve “locavores”
 - Environmental impact mixed; ethics is key
 - Increase in lifestyle farms



Thanks!

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sources available

- If the Mayans are right, the good news is we have 254 days to party and get our affairs in order (as of 10 Apr).