
Private Management Practices and Public Policies Affecting Agricultural Nitrogen Use: An Overview

Roger Claassen and Stan Daberkow

Economic Research Service, USDA

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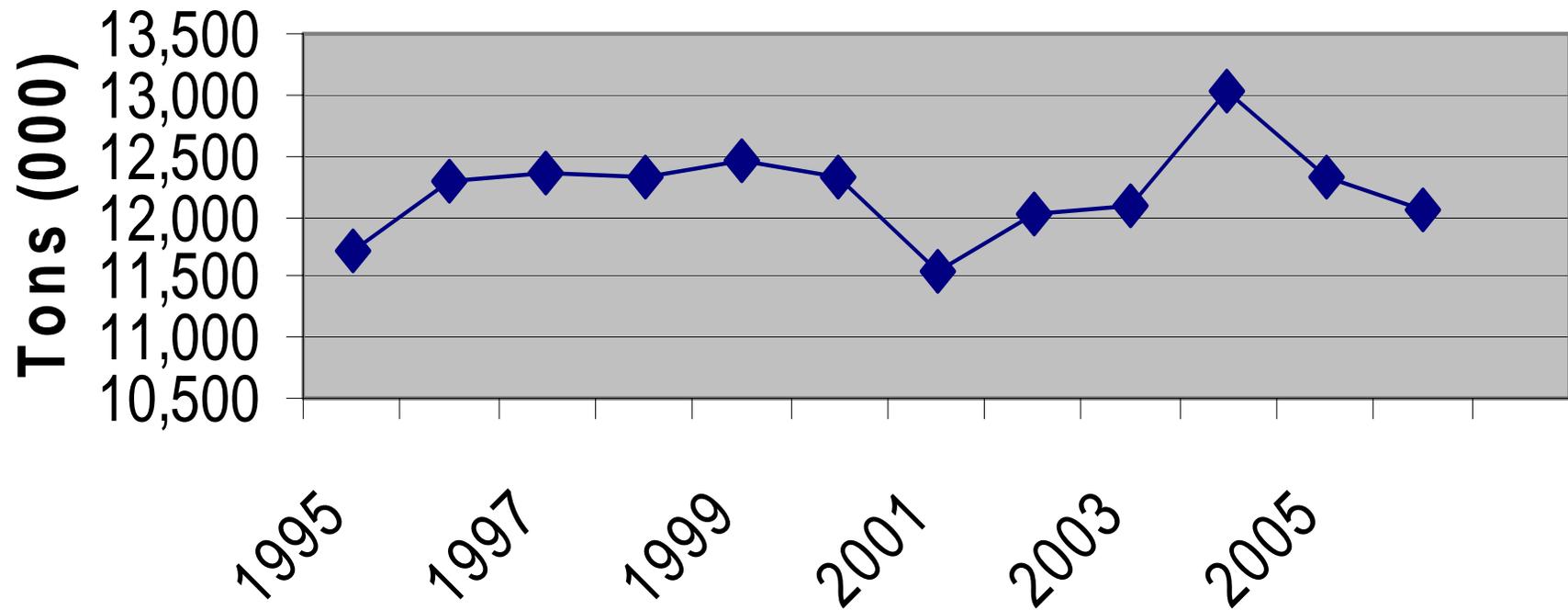
EPA's Integrated Nitrogen Committee meeting

The views expressed are the authors' and may not reflect those of USDA or ERS

Presentation Outline

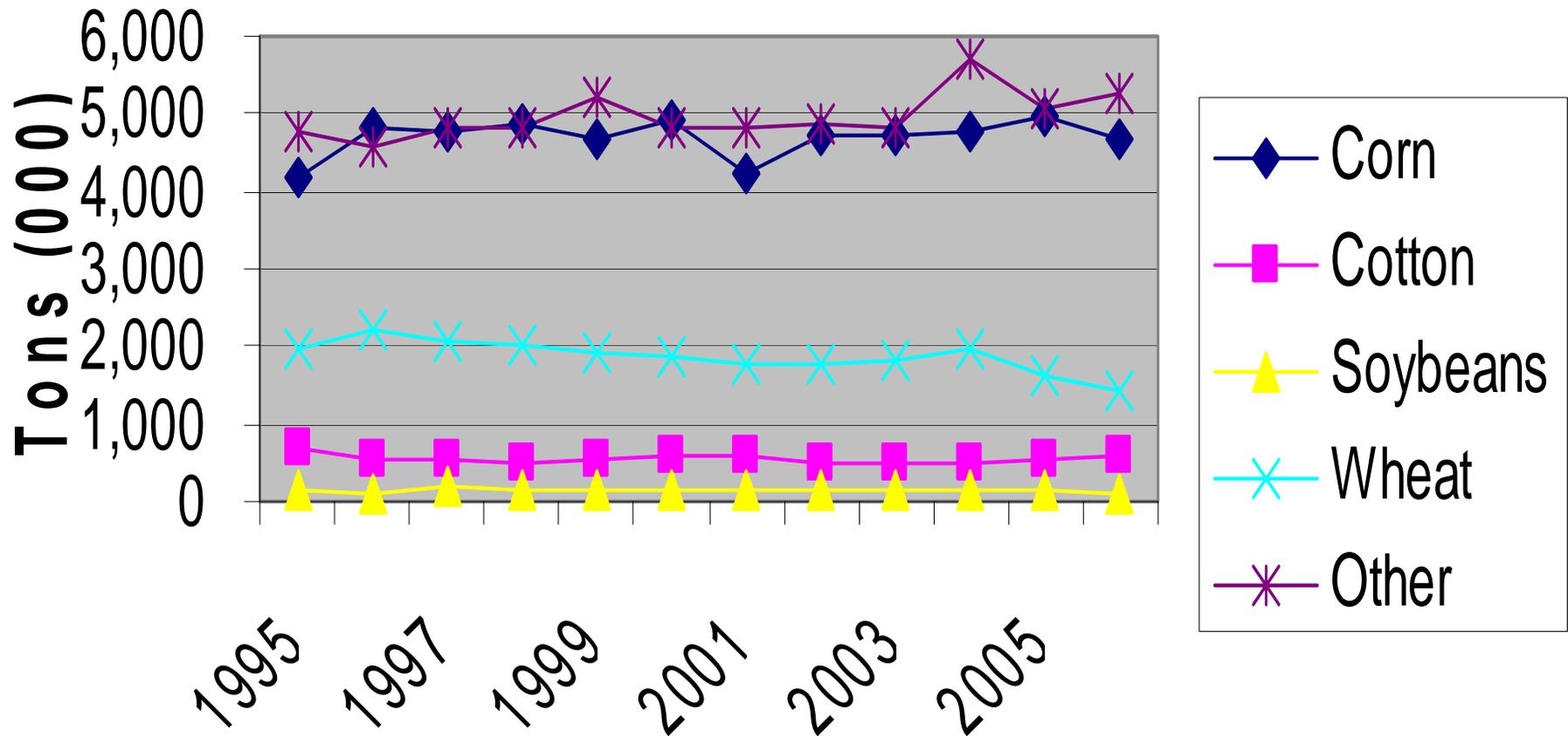
- Commercial nitrogen use in agriculture
- Trends in selected nutrient management practices in corn production
- Policy effects on land use and crop mix—Energy, commodity, crop insurance, conservation
- Factors affecting nutrient management practice adoption—participation in conservation programs/cost-sharing incentives
- Questions & answers

U.S. commercial nitrogen fertilizer use, 1995-2006



Source: Commercial Fertilizers, 2006

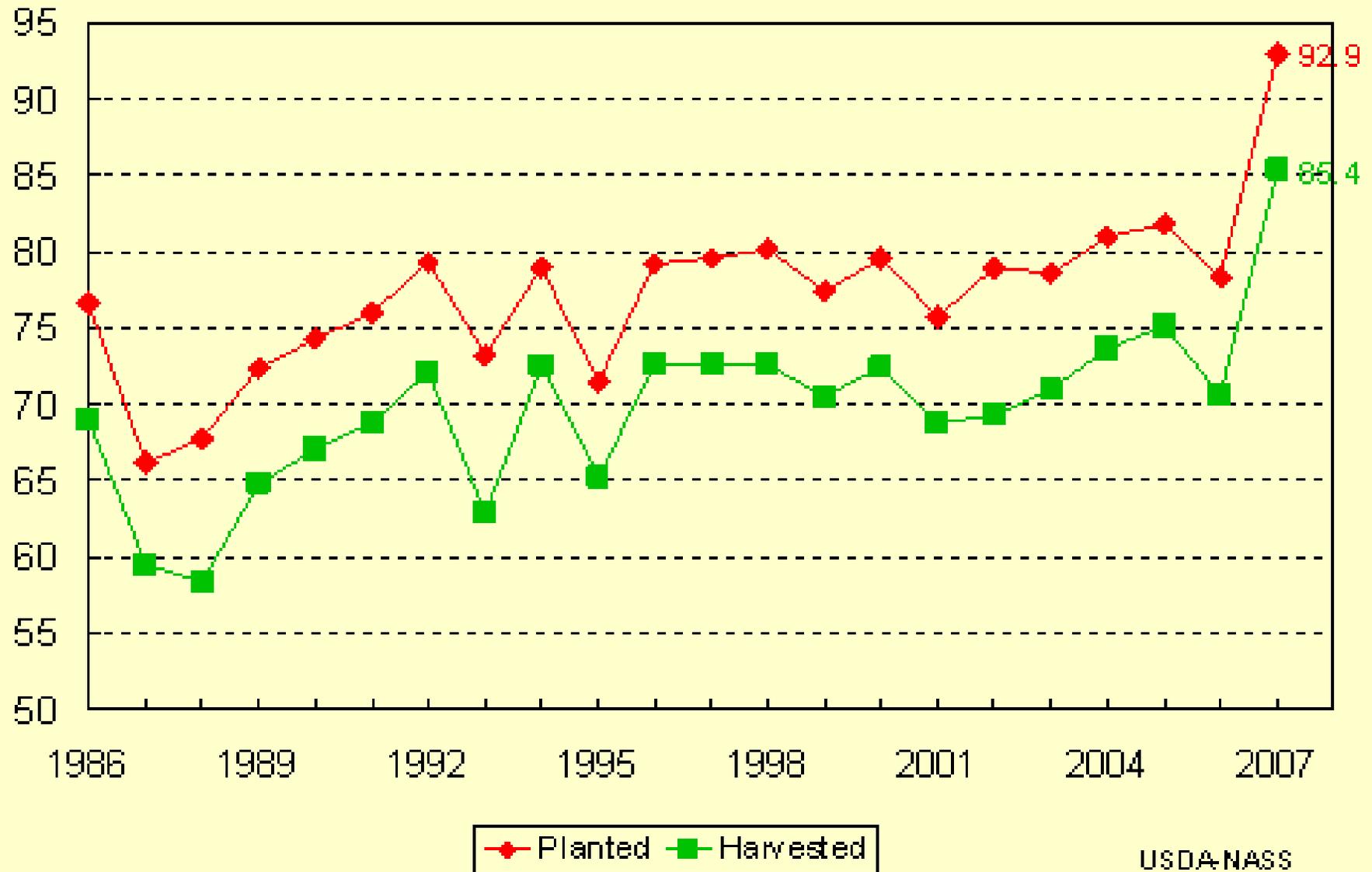
Nitrogen use by major field crops and other crops, 1995-2006



Source: U.S. Fertilizer Use and Prices, ERS

U.S. Corn Acres

Million Acres

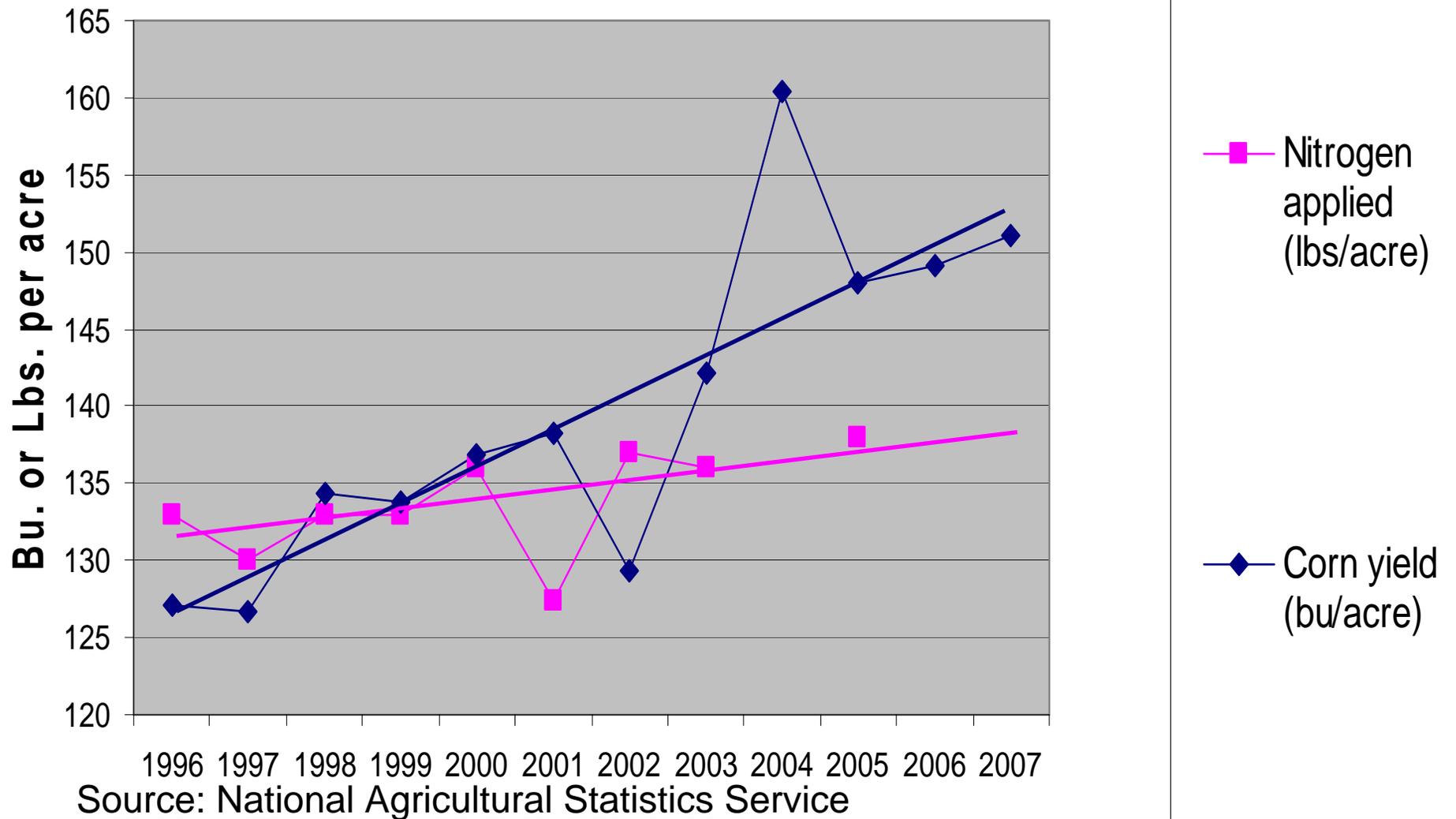


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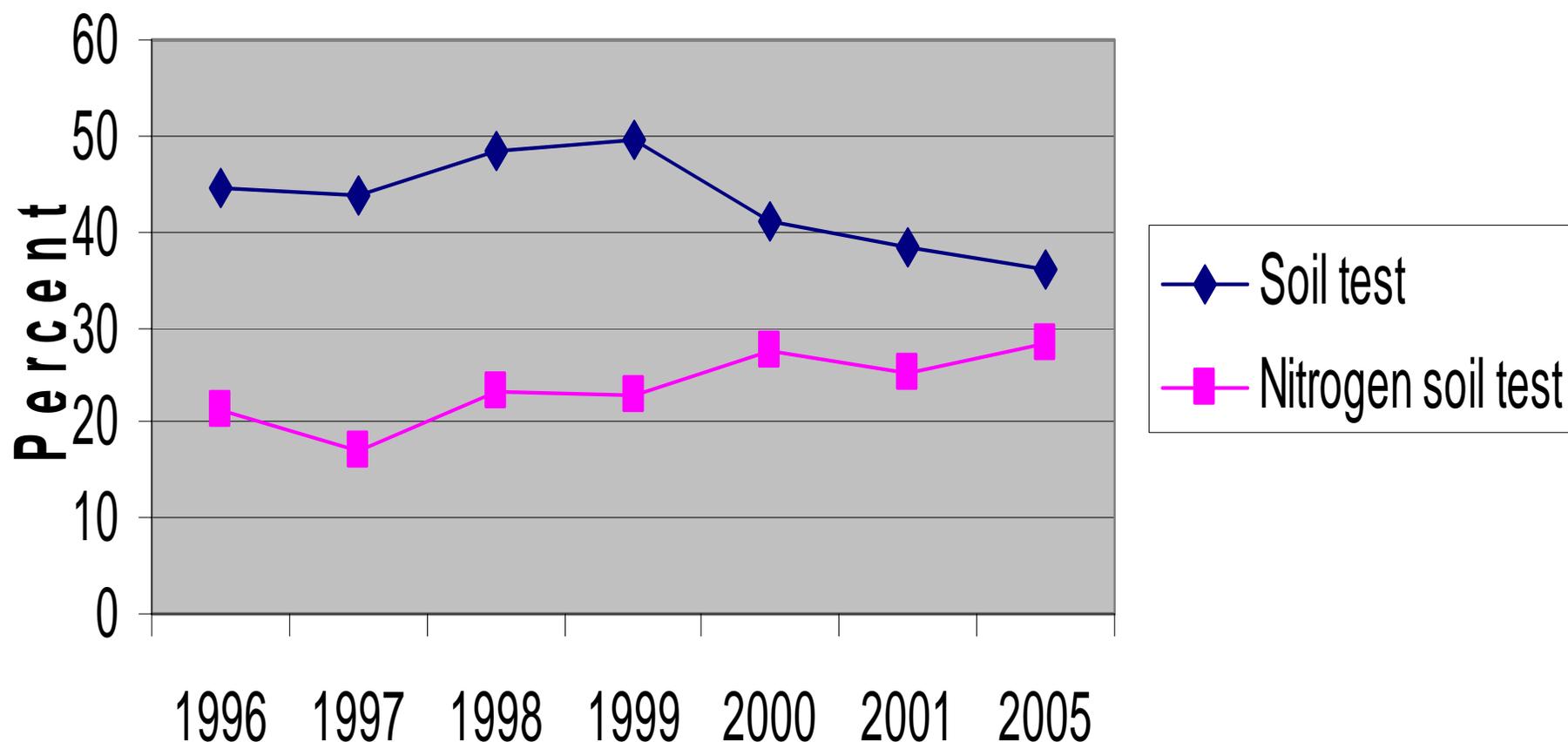
Adoption Levels of Selected Corn Nitrogen Management Practices

- Application rates
- Soil testing
- Crop rotation
- Manure and nitrogen inhibitor use
- Nitrogen broadcasted with and without soil incorporation
- Yield monitors and yield mapping
- Application timing, information sources, and yield goals

Corn yields and nitrogen application rates, 2006-2007

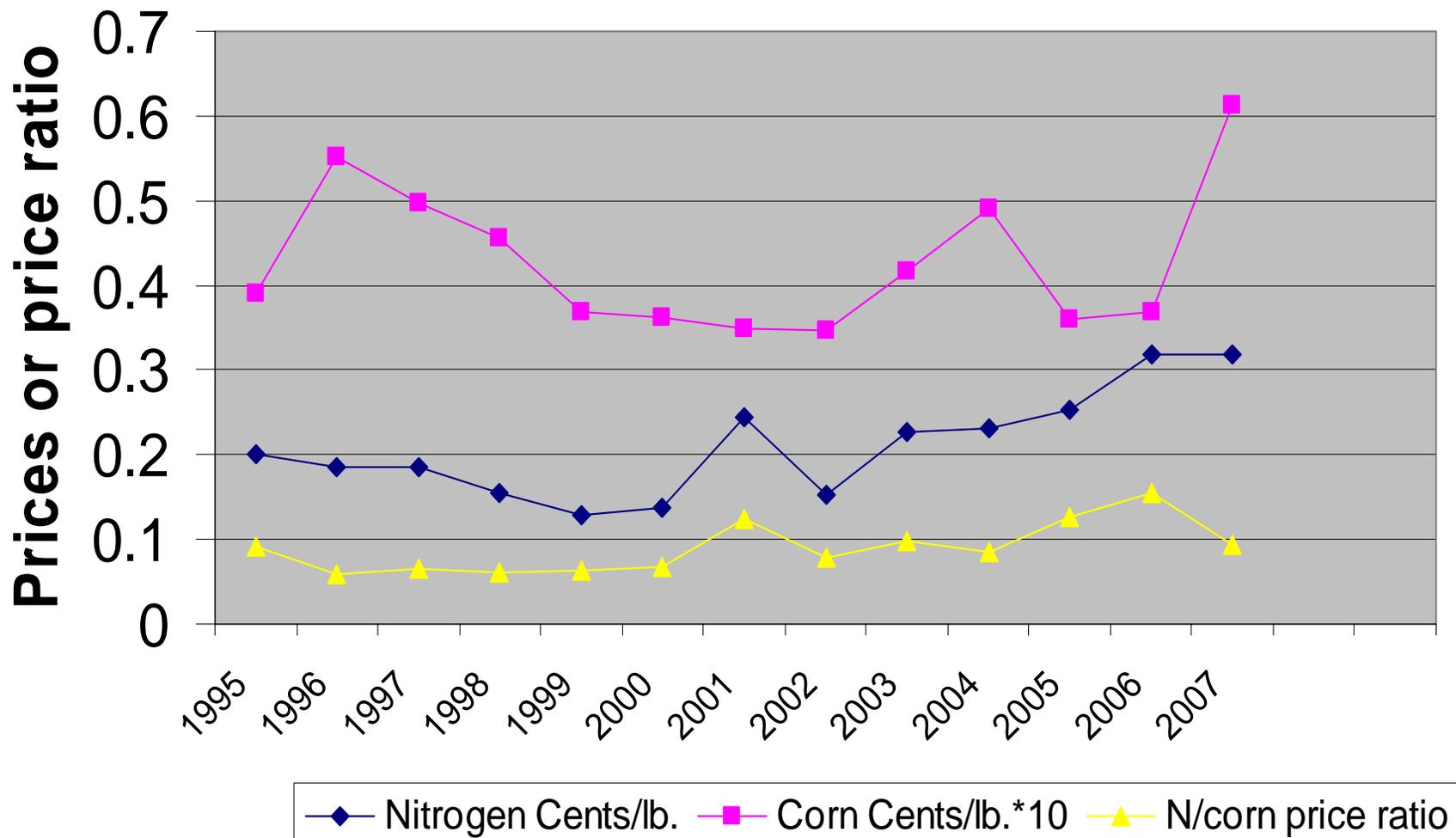


Share of planted corn acreage using a soil test or nitrogen soil test



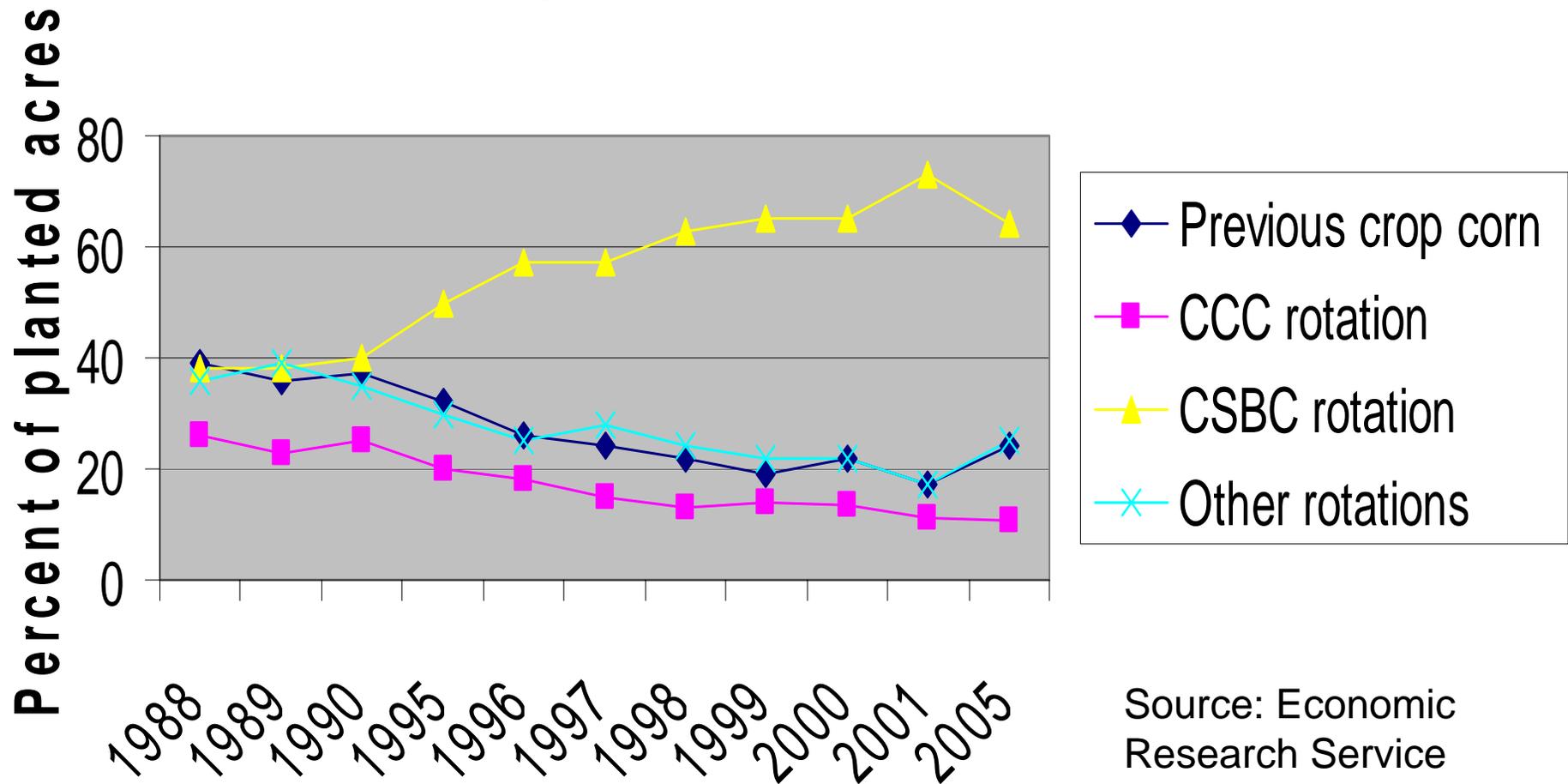
Source: <http://www.ers.usda.gov/Data/ARMS/CropOverview.htm>

March corn price, April nitrogen price, and nitrogen/corn price ratio, 1995-2007

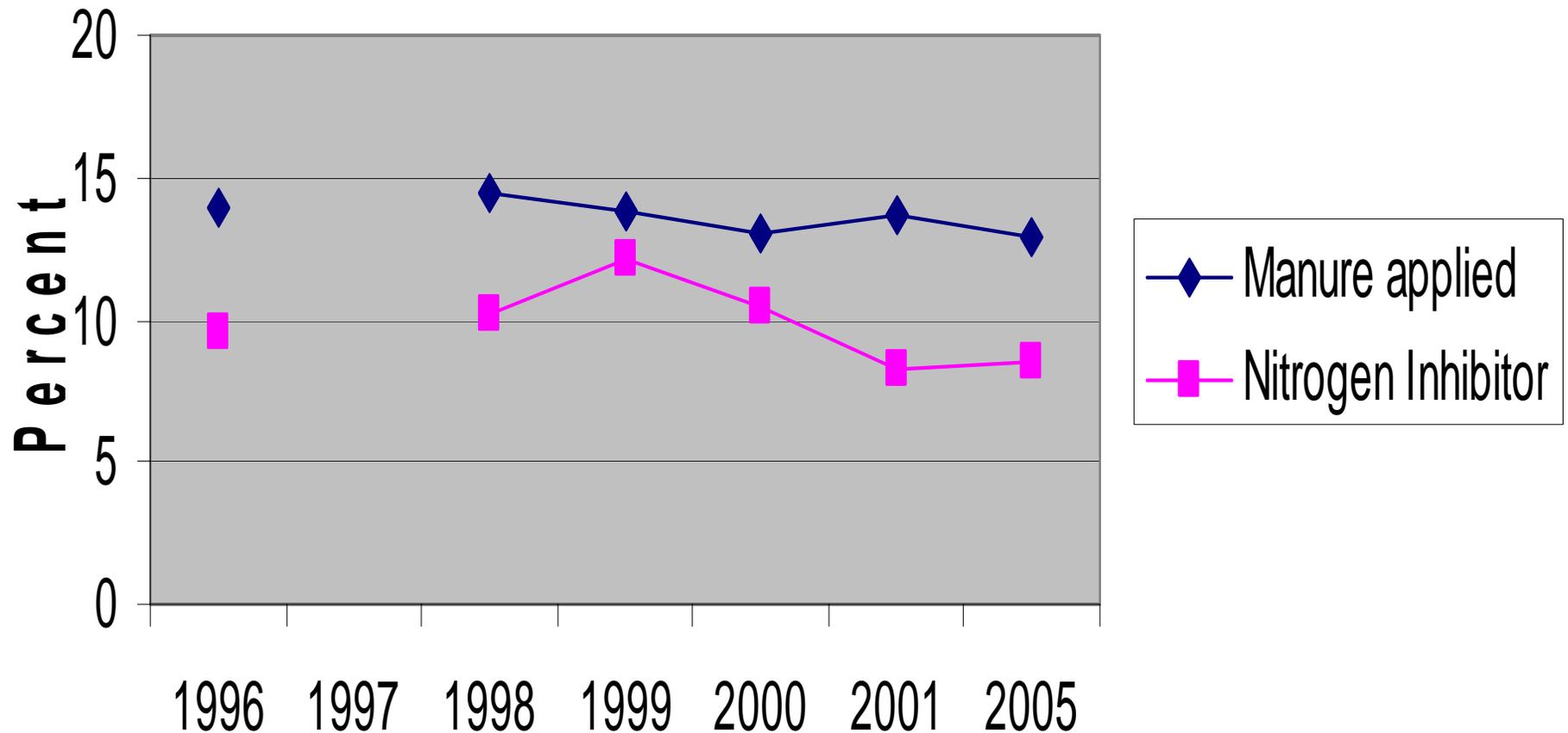


Source: National Agricultural Statistics Service

Major crop rotations on land planted to corn in the ten primary corn states, selected years, 1988-2005

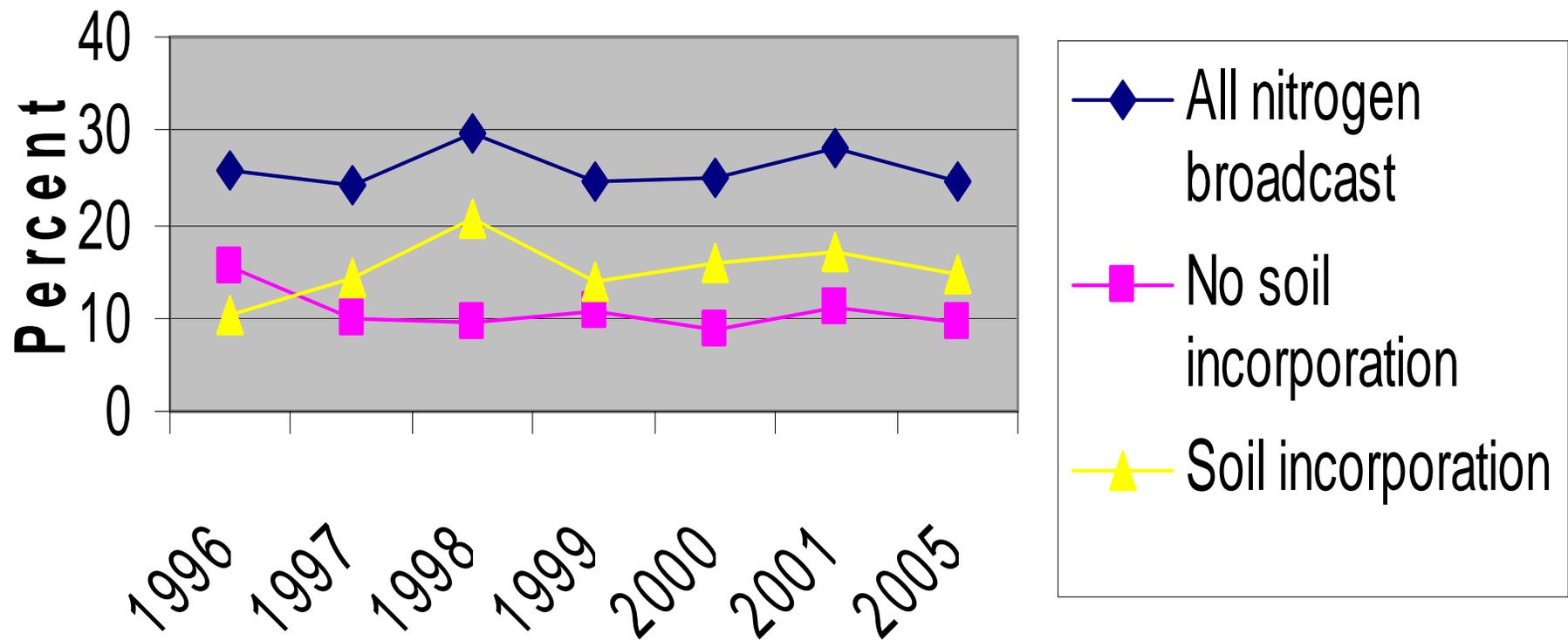


Share of planted corn acreage on which manure was applied or nitrogen inhibitor used



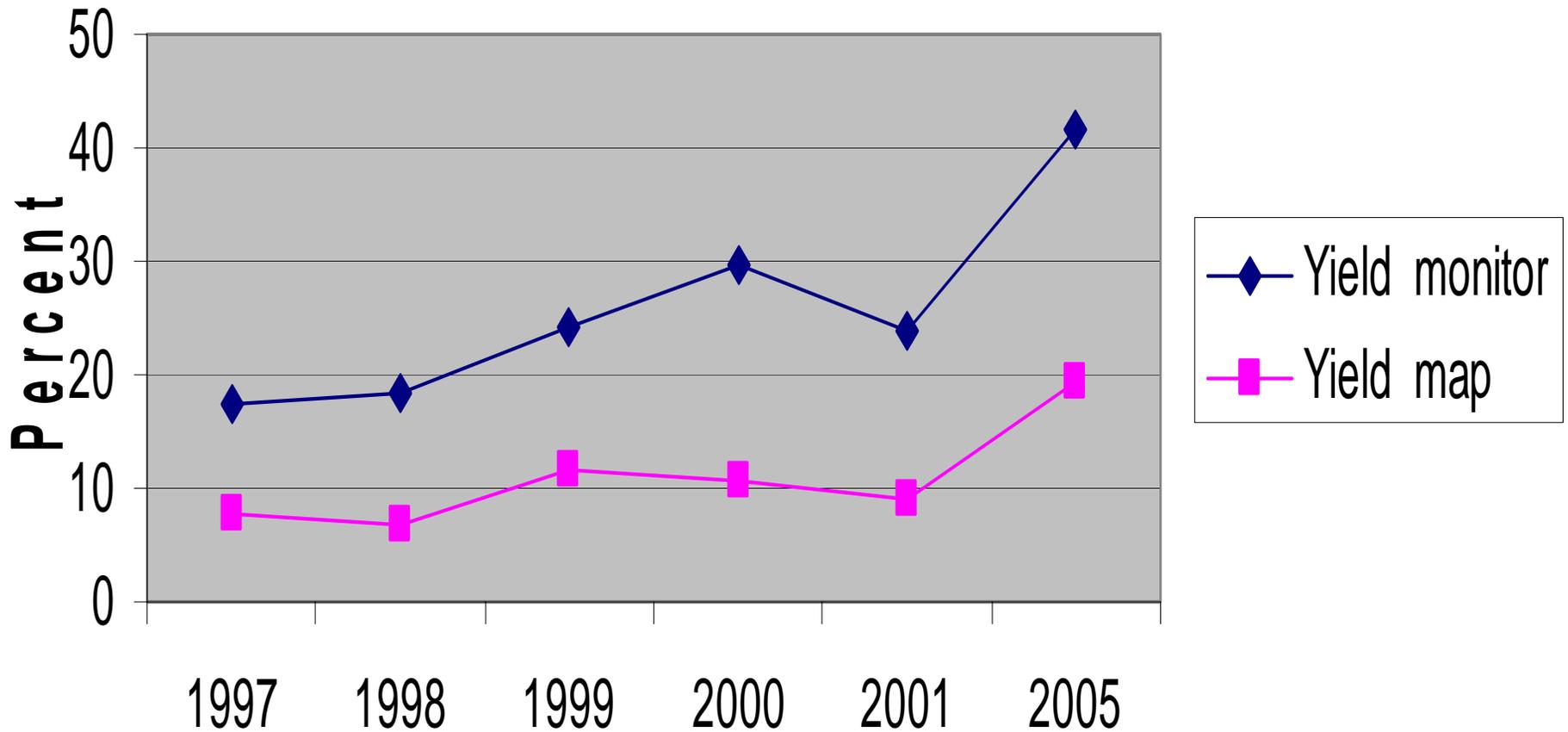
Source: <http://www.ers.usda.gov/Data/ARMS/CropOverview.htm>

Share of corn acreage on which all nitrogen applied was broadcast and share with and without soil incorporation



Source: <http://www.ers.usda.gov/Data/ARMS/CropOverview.htm>

Share of planted corn acreage on which a yield monitor was used or a yield map produced



Source: Economic Research Service

Nitrogen timing, information sources, and yield goals by share of planted corn acres, 2005

Nitrogen application timing

All applied before planting--fall	16
All applied before planting-spring	34
All applied after planting	9
Split applications	36

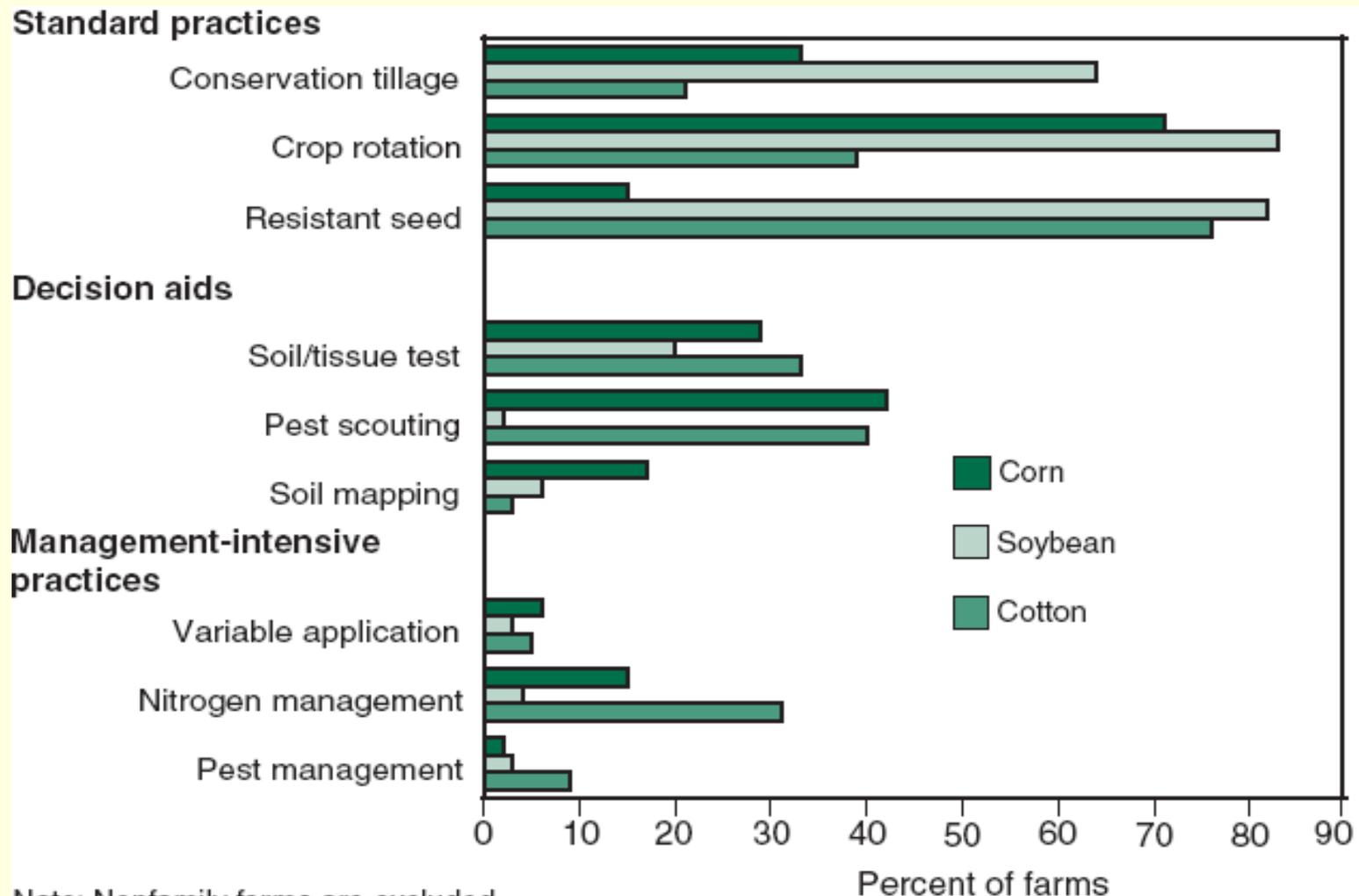
Source of information about nitrogen application rates

Crop consultant	20
Fertilizer dealer	37
Extension service	6

Yield goal 20% > actual yield	22
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Source: Western Economic Forum, forthcoming 2008

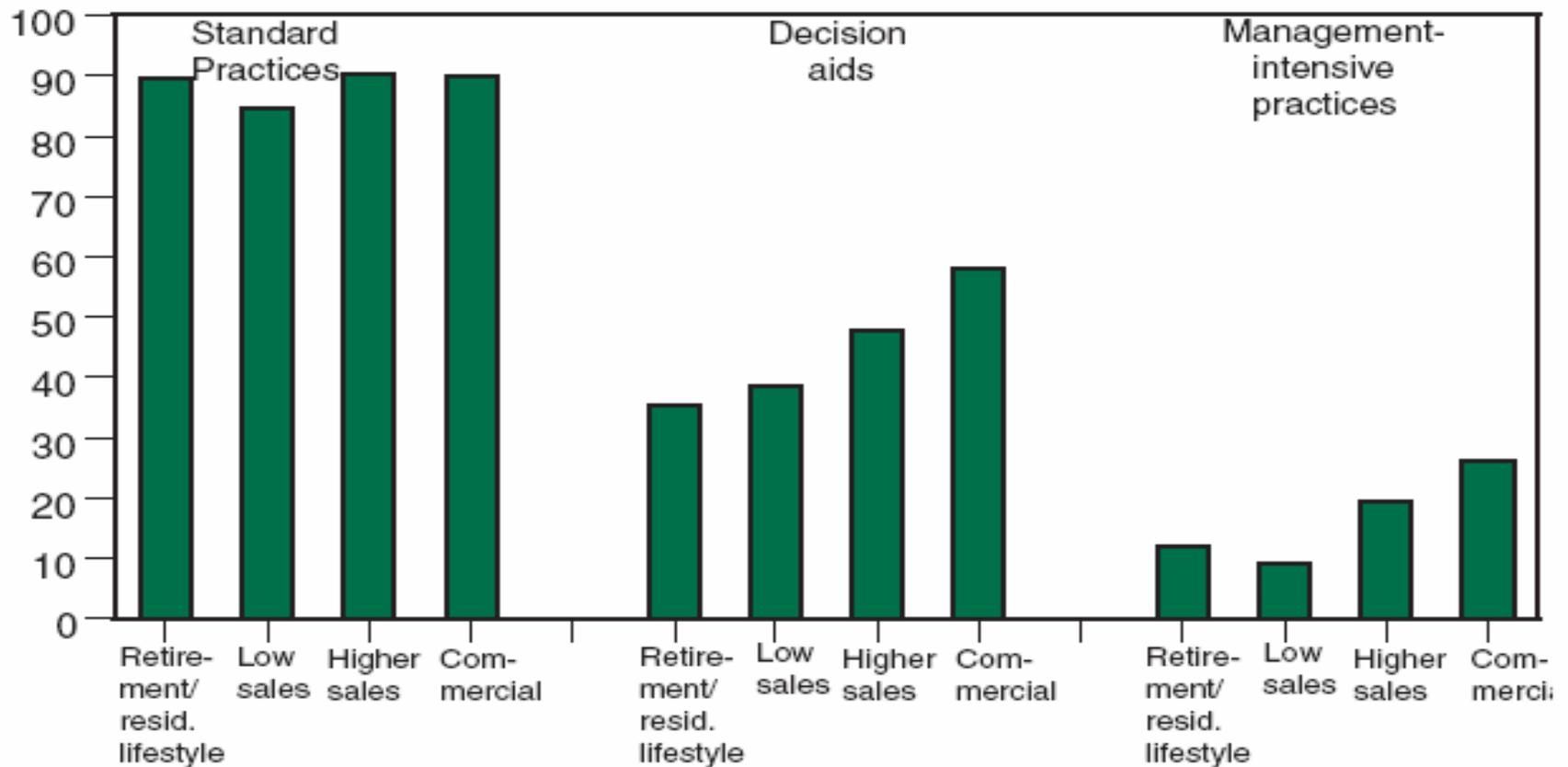
Practice adoption varies across practices and crops, 2001-03



Note: Nonfamily farms are excluded.
 Source: 2001-2003 ARMS, Phase II/III.

Practice adoption reflects farm and operator characteristics

Percent of farms in each type



Note: Nonfamily farms are excluded.
Source: 2001-2003 ARMS, Phase II/III.

Practice adoption reflects farm and operator characteristics

Farm characteristics	Unit	Standard practices	Decision aids	Management intensive practices	No listed practice
Average farm size	Acres	575	648	854	386
Avg. commodity Payment	\$	17,409	24,587	34,833	4,561
Irrigated land	%	4	10	15	3
Average corn yield	Bu/ Acre	119	135	142	60
Farming occupation	%	69	81	84	74
Completed college	%	13	14	20	8
Sought outside advice	%	7	12	28	2

Source: Lambert, Dayton, Patrick Sullivan, Roger Claassen, and Linda Foreman. *Conservation Compatible Practices and Programs: Who Participates?* USDA-ERS

Energy markets and policy are driving forces in commodity markets

- Oil prices; ethanol mandates; tax subsidies
- Ripple effects in commodity markets, input costs

	'04-'06 Average	May Futures 3/26/08
Corn (\$/bu)	2.36	5.52
Soybeans (\$/bu)	5.94	13.52
Wheat (\$/bu)	3.69	10.69
Cotton (cents/lbs)	45.30	71.02

Sources: National Agricultural Statistics Service, USDA, Chicago Board of Trade, and Kansas City Board of Trade

Commodity programs protect some producers against low prices

Crop	Unit	Loan Rate	Target Price	May Futures 3/26/08
Corn	Bu.	1.95	2.63	5.52
Soybean	Bu.	5.00	5.80	13.52
Wheat	Bu.	2.75	3.92	10.69
Cotton	Lbs.	52.00	74.40	71.02

Sources: Farm Service Agency, Chicago Board of Trade, Kansas City Board of Trade, Agricultural Marketing Service, USDA

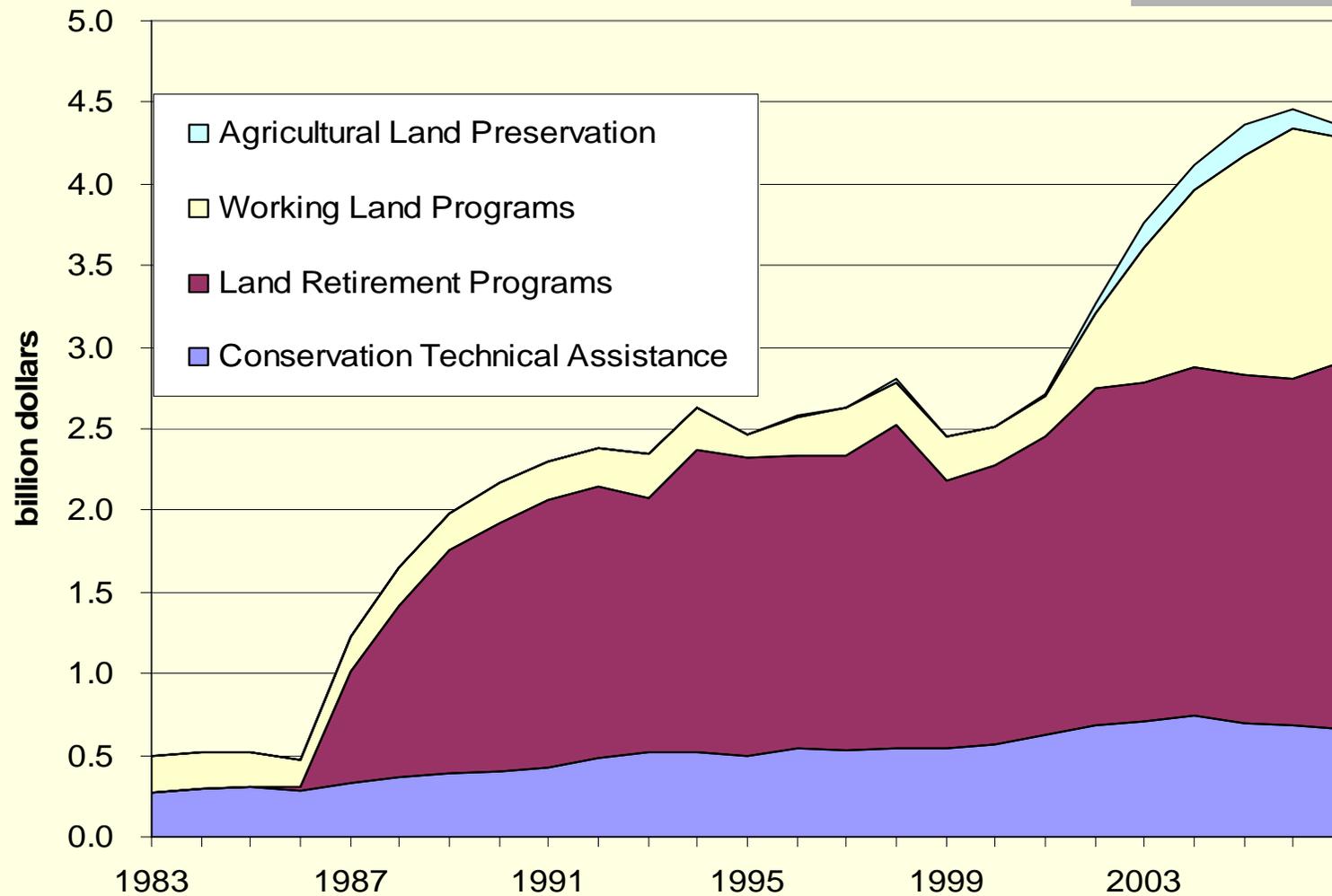
Insurance and disaster programs protect producers against production or revenue loss

- Research suggests crop insurance has small land use effect (2-3 million acres)
 - Subsidy increases beginning in 2000 could mean the effect is now larger
- Ad hoc annual disaster assistance could be adding to that effect

USDA environmental programs retire land and encourage nutrient management

- CRP: 34.7 million acres retired
 - Fields and whole farms
 - High priority practices (mostly buffers, such as grass waterways, filter strips, etc.)
 - CREP targets specific environmental issues
- EQIP: assists with nutrient management and other conservation practices

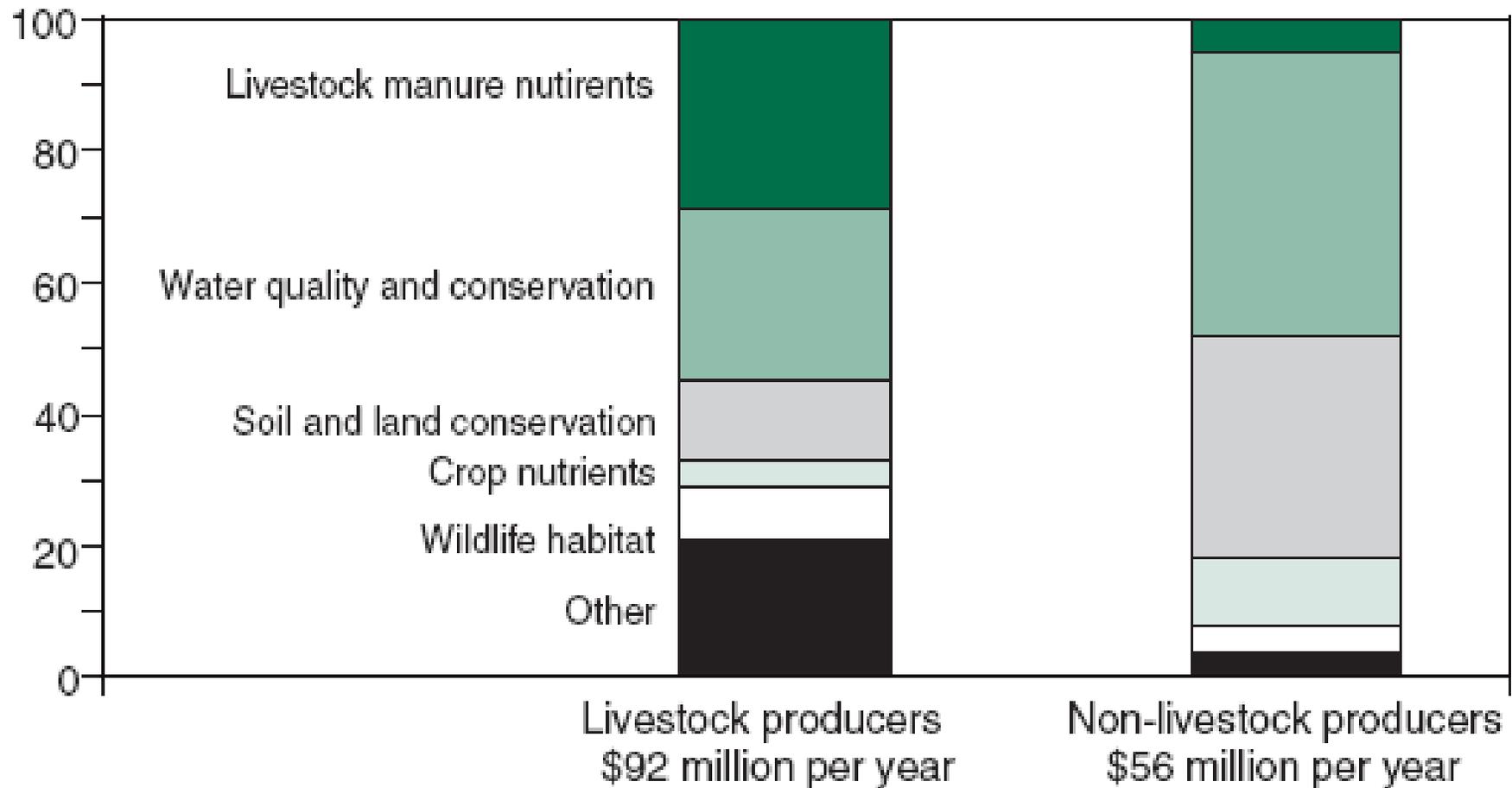
Long Term Trends in Federal Conservation Spending



Source: ERS analysis of Data from Office of Budget and Policy Analysis, USDA

EQIP focuses heavily on livestock and manure nutrients

Percent



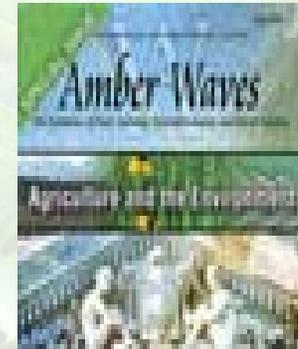
Participation reflects farm and operator characteristics

Farm Characteristics	Unit	EQIP/CRP Working Land	Land Retirement		Non-Partic.
			Partial Farms	Whole Farms	
Average Farm Size	Acres	1,089	1,127	267	374
Average Commodity Payment	\$	26,571	12,698	634	4,430
Farming Occupation	%	85	62	5	40
Average Ratio Owned/Operated	%	57	99	141	93

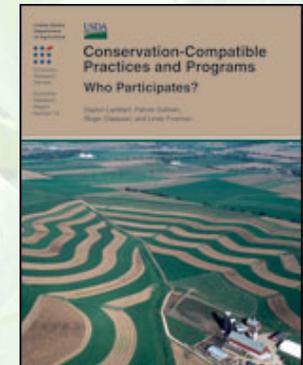
Source: Lambert, Dayton, Patrick Sullivan, Roger Claassen, and Linda Foreman. *Conservation Compatible Practices and Programs: Who Participates?* USDA-ERS

For more information:

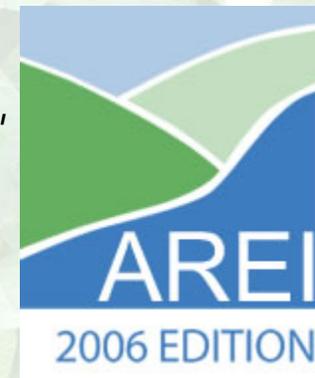
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www.ers.usda.gov/AmberWaves/july06specialissue



Lambert, D., P. Sullivan, R. Claassen, and L. Foreman, *Conservation-Compatible Practices and Programs: Who Participates?* Economic Research Report No. 14 (ERR14), Economic Research Service, USDA, (February 2006), 43 pp.
www.ers.usda.gov/publications/err14



Wiebe, K, and N. Gollehon, Agricultural Resources and Environmental Indicators, 2006 Edition, Economic Information Bulletin No. 16 (EIB5), Economic Research Service, USDA, (July 2006), 79 pp.
www.ers.usda.gov/publications/arei



Customized Data Summaries from ARMS:
<http://www.ers.usda.gov/Data/ARMS/CropOverview.htm>