

**Forages Outlook:
Is the game changing with
drought, high feed and commodity
prices, and ag policy?**

February 22, 2013

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National Alfalfa & Forage Alliance

Credits

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Intrinsic Value of Forages in Production Agriculture

- Major portion of ruminant animal diets
- Perennials provide soil erosion benefits as cover crops, highly suited to erodible land
- Legumes eliminate or reduce fertilizer N requirements in the current and following crop
- Deep-rooted legumes scavenge NO_3^- for reduced NO_3^- leaching and run-off
- Diversification of production practices, farm income sources, and workload timing



The List of Forages is Diverse: Annual, Perennial Row crop, Hay Crop, Pasture, Cover Crop

Legumes

- Alfalfa
- Red Clover
- Birdsfoot Trefoil
- Strawberry Clover
- Kura Clover

Annual Forage Crops

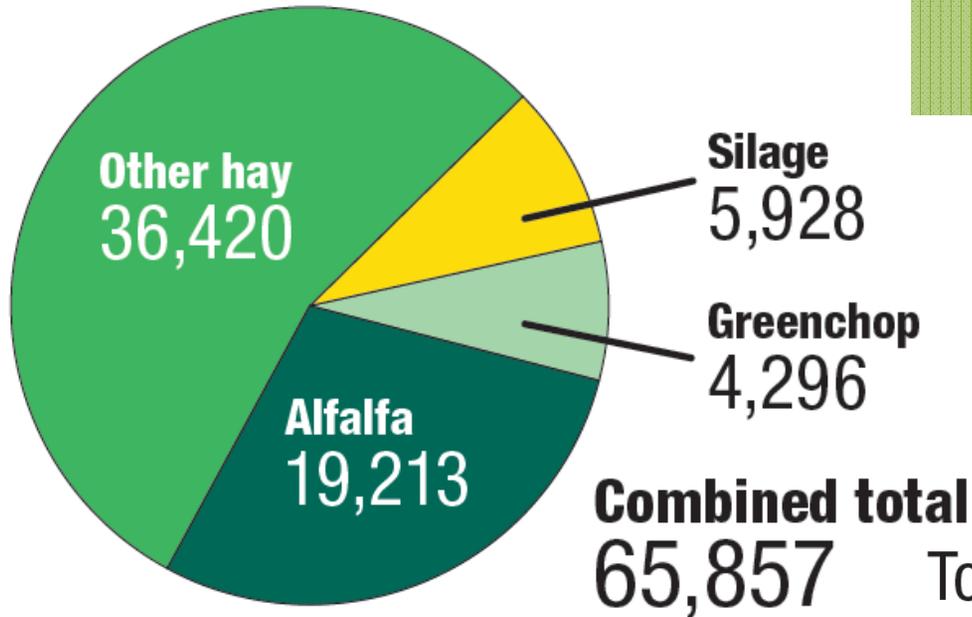
- Corn silage
- Small grain silage
- Sorghum silage
- Forage sorghum
- Sorghum-sudangrass hybrids

Grasses

- Timothy
- Reed Canarygrass
- Orchardgrass
- Fescues
- Festulolium
- Ryegrass
- Brome grass
- Bermudagrass
- Bahiagrass

Total U.S. forage acres, 2011

in thousands of acres

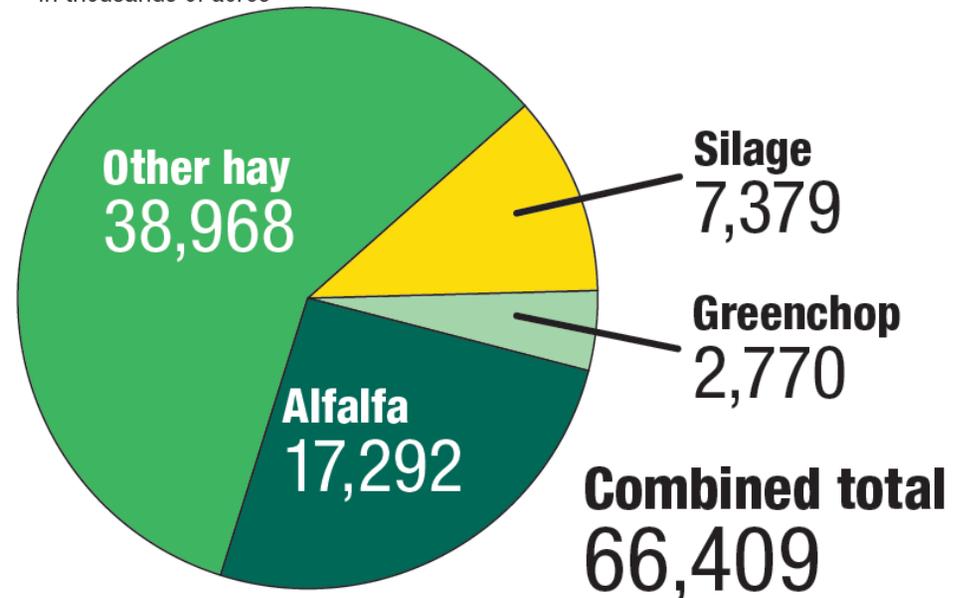


Source: *Crop Production 2011 Summary Report, USDA, NASS*

Harvested Forage Acres in 2012
~1% Increase in Total Acres

Total U.S. forage acres, 2012

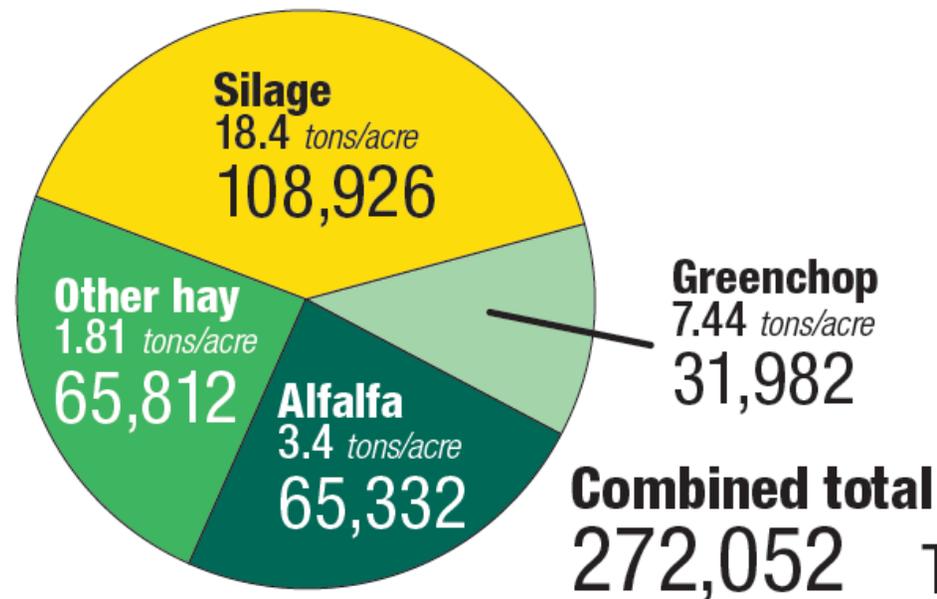
in thousands of acres



Source: *Crop Production 2012 Summary Report, USDA, NASS*

Total U.S. tons harvested, 2011

in thousands of tons

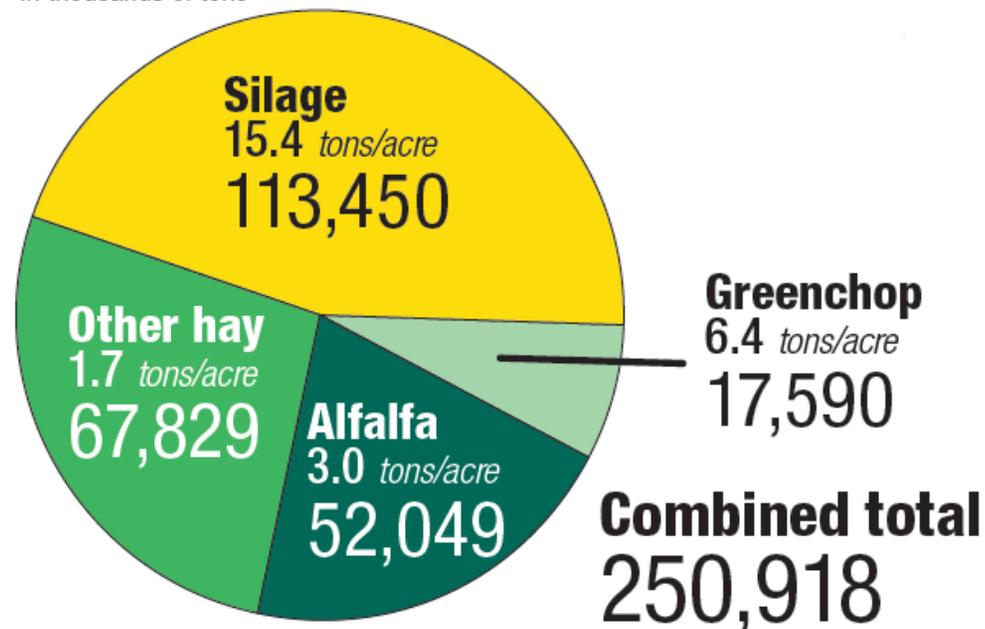


Source: *Crop Production 2011 Summary Report, USDA, NASS*

**5% Decrease in Total Tons
Tons of Harvested Forage in 2012**

Total U.S. tons harvested, 2012

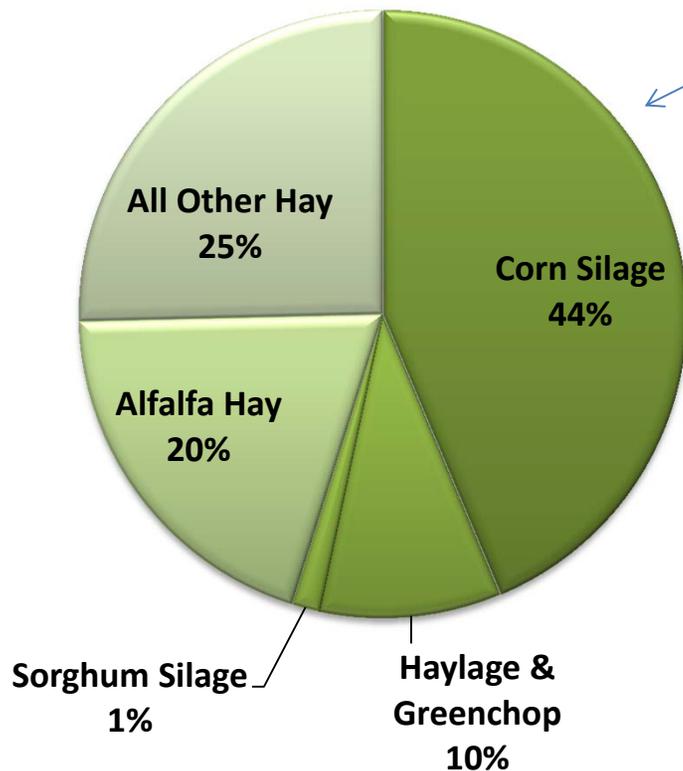
in thousands of tons



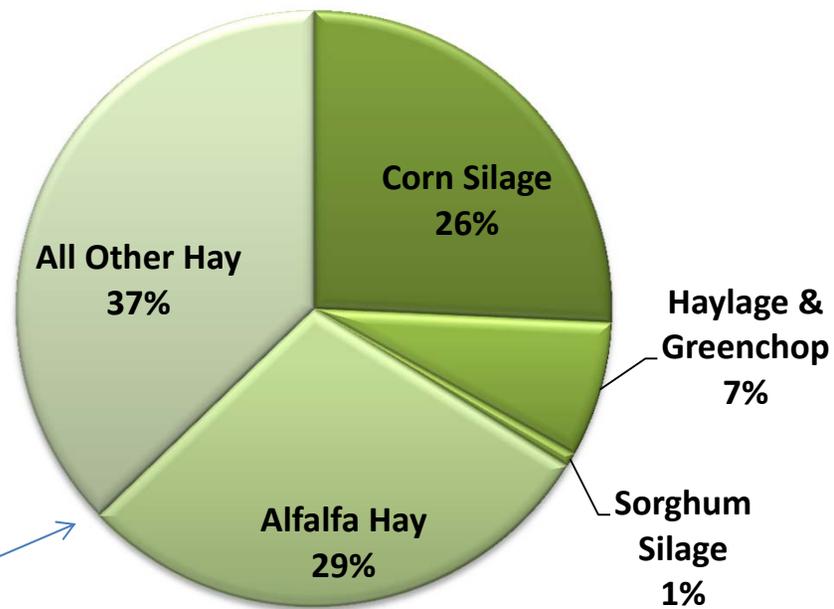
Source: *Crop Production 2012 Summary Report, USDA, NASS*

2012 US Forage Tons 'As Harvested'

Corn silage, Haylage and Greenchop are over half the 'as harvested' tons...



2012 US Forage Dry Matter Tons Harvested



....but hay represents 2/3 of the harvested dry matter!

2012 Drought Effects: US Forage Dry Matter Harvest Declined

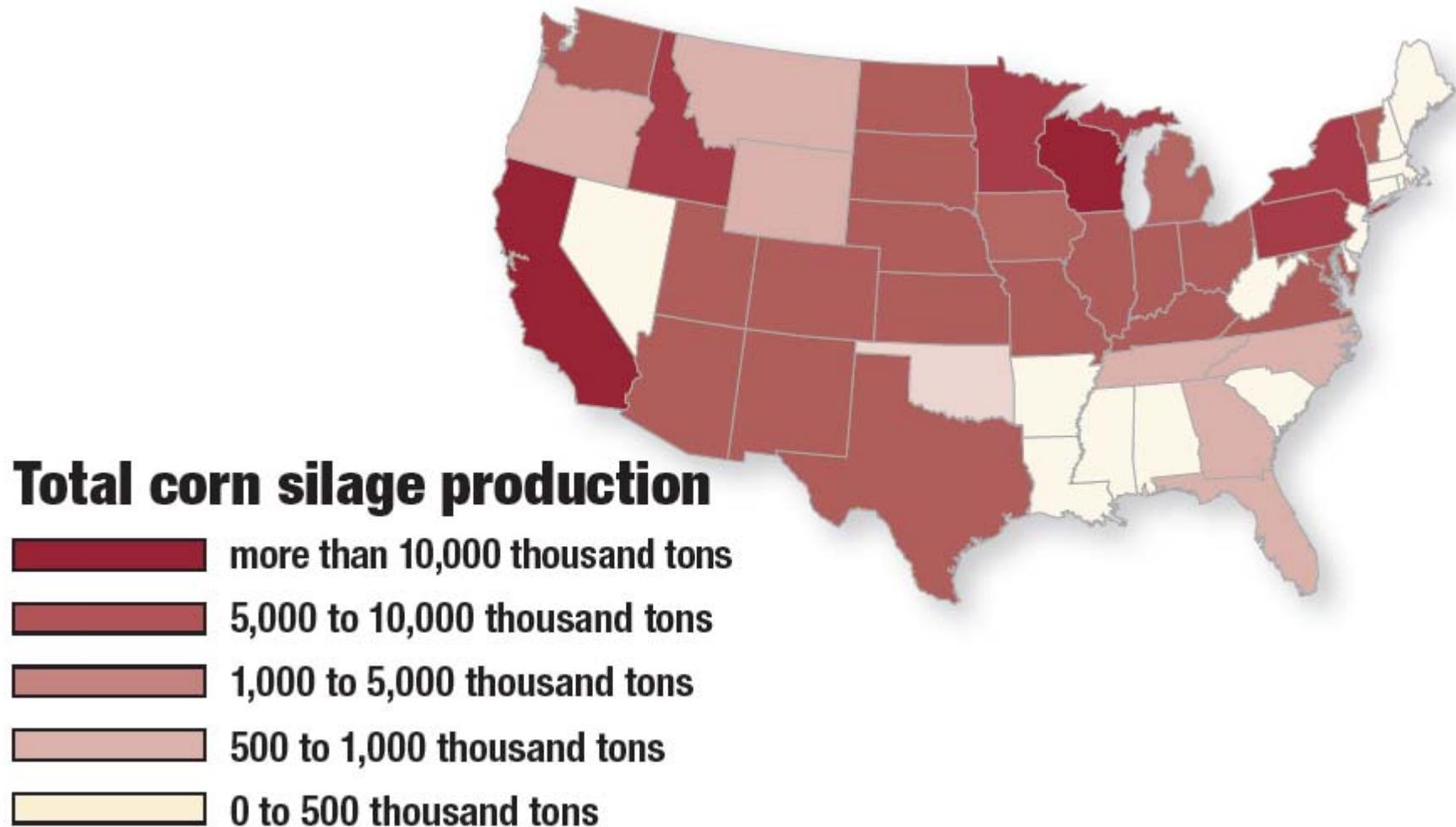
Corn Silage	117 mm tons	+4%
Haylage & Greenchop	26 mm tons	-17%
Sorghum Silage	4 mm tons	+80%
Total Wet Tons	147mm tons	+1%
Total DM estimate	54 mm tons	

Taken together the harvested tons of these high moisture feeds was very similar to the prior year but does not make up for the decline in hay production:

Alfalfa Hay	52 mm tons	-20%
All other hay	68 mm tons	+2%
Total All Hay	120 mm tons	-9%
Total All Hay DM	104 mm tons	
<hr/>		
Total Forage DM	158 mm tons	-6%

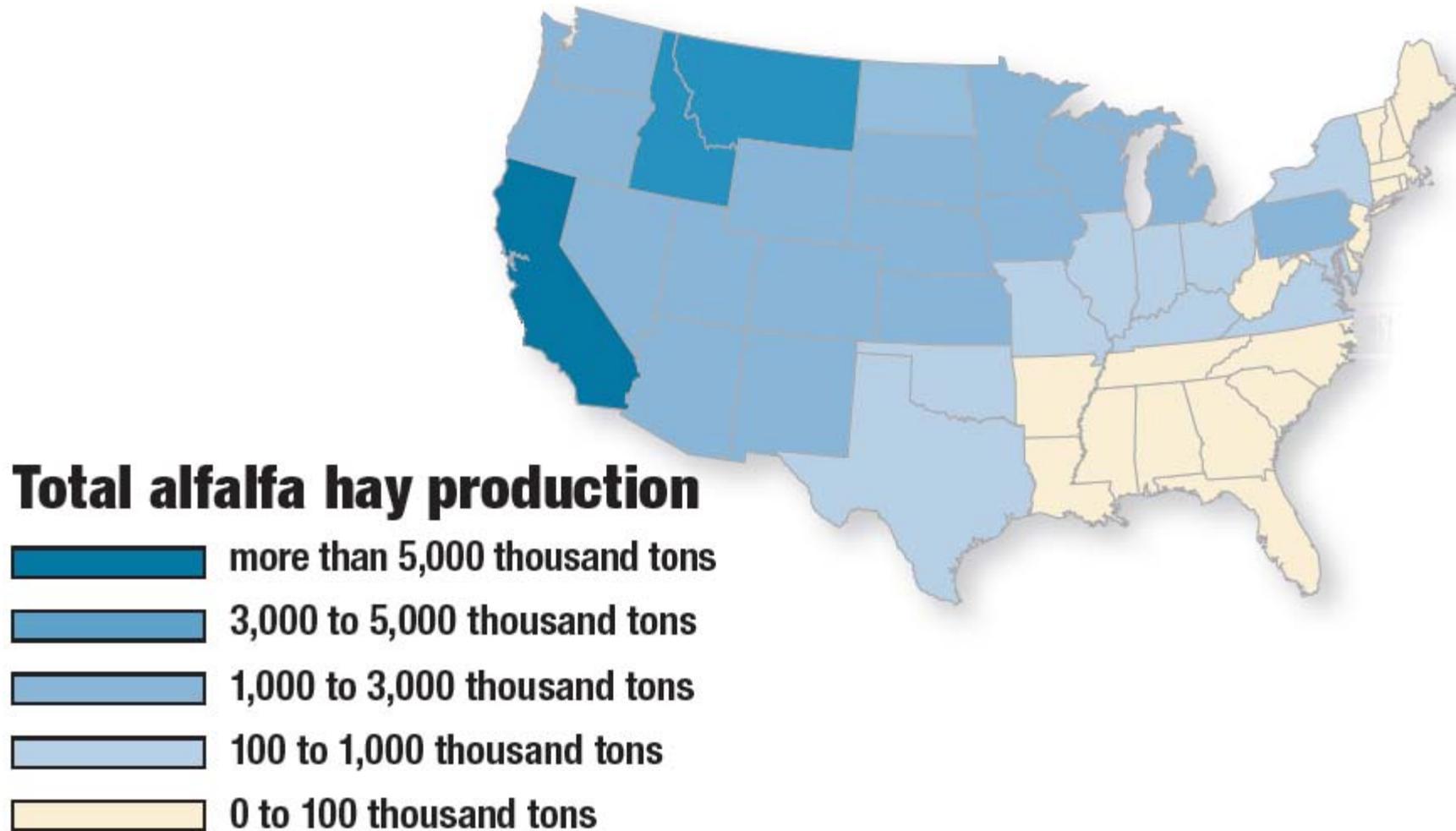
According to USDA, "For alfalfa and alfalfa mixtures, the ag department estimated total 2012 production at 52 million tons. That's down 6% from the Oct. 1 forecast and down 20% from the year-earlier figure. Production has not been this low since 1953. Due in large part to dry weather that resulted in poor yields in the central and northern Great Plains, Midwest and Northern Tier, production decreased by 21% or more in 15 of the 42 reporting states."

Corn Silage Production



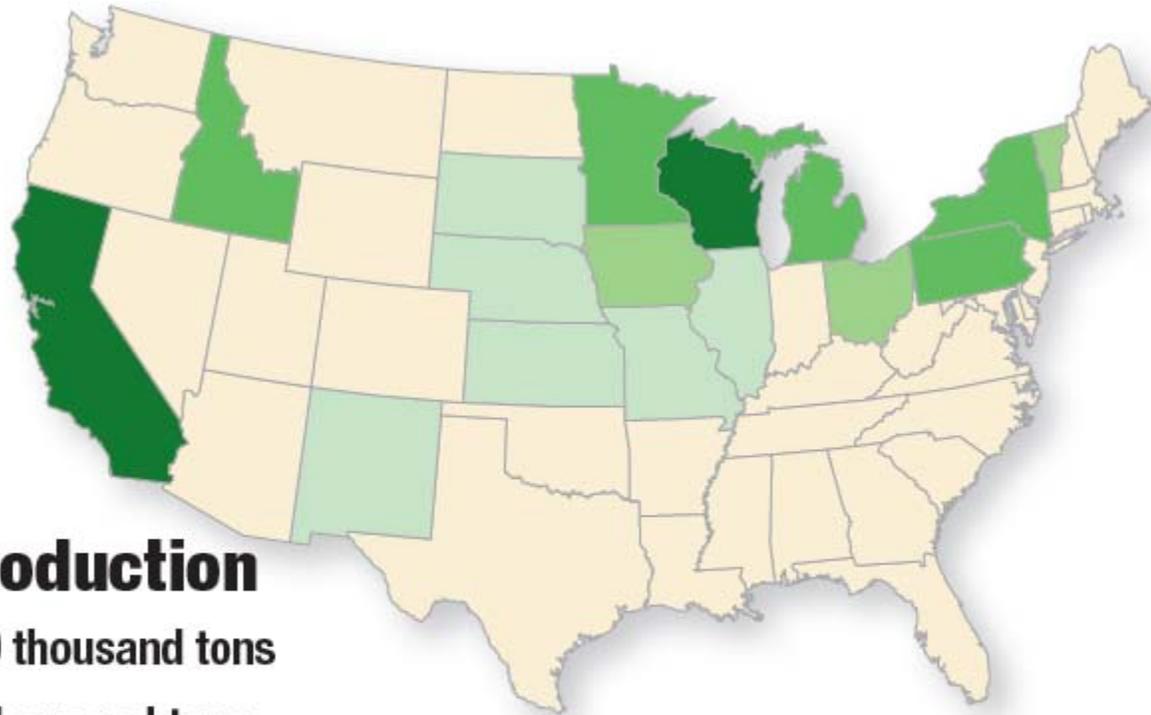
Source: *Crop Production 2012 Summary Report, USDA, NASS*

Alfalfa Hay Production



Source: *Crop Production 2012 Summary Report, USDA, NASS*

Haylage Production

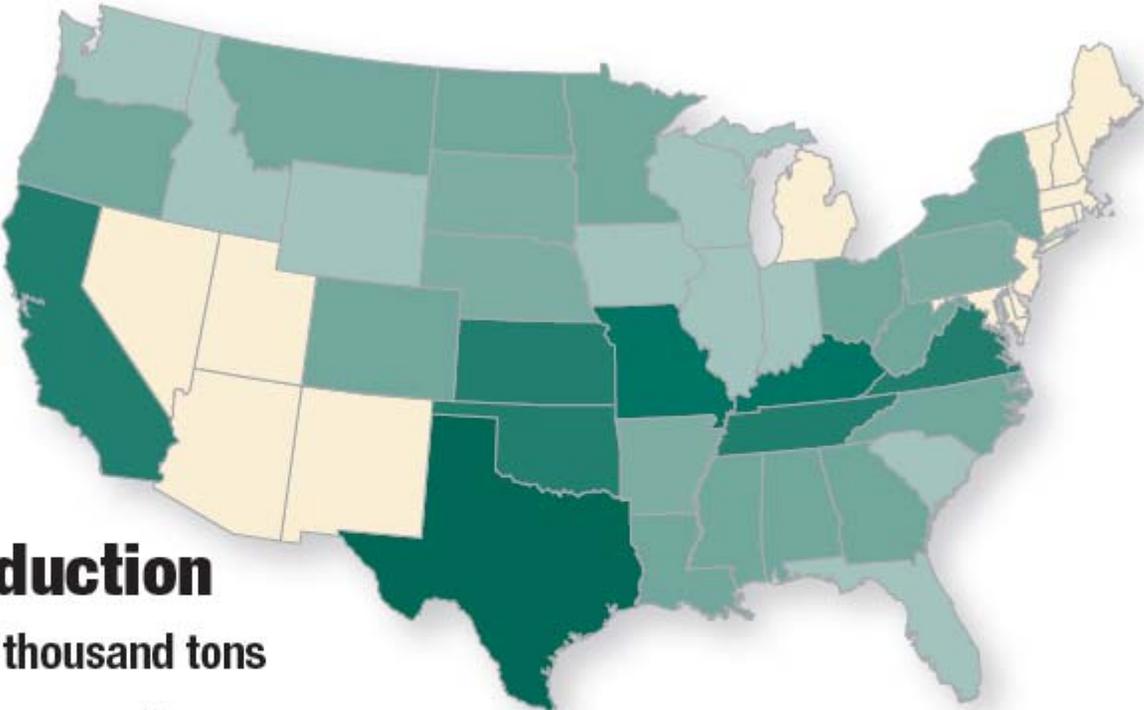


Total greenchop production



Source: *Crop Production 2012 Summary Report, USDA, NASS*

Other Hay Production



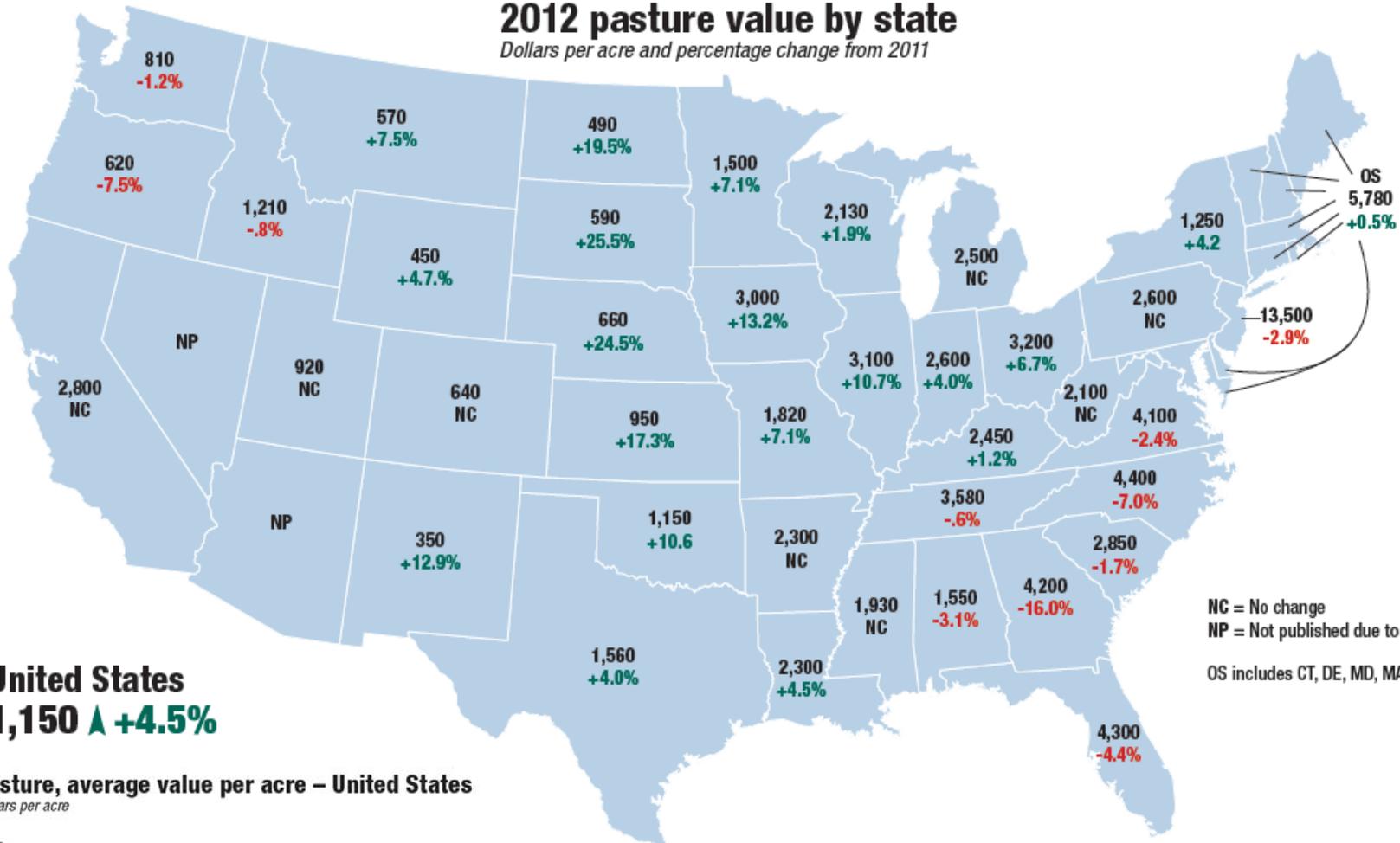
Total other hay production

-  more than 5,000 thousand tons
-  2,000 to 5,000 thousand tons
-  1,000 to 2,000 thousand tons
-  500 to 1,000 thousand tons
-  0 to 500 thousand tons

Source: *Crop Production 2012 Summary Report, USDA, NASS*

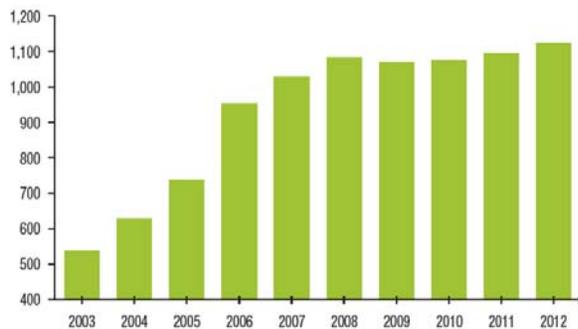
2012 pasture value by state

Dollars per acre and percentage change from 2011



United States
1,150 ▲ +4.5%

Pasture, average value per acre – United States
Dollars per acre



Source: USDA - NASS, August 2012

Forage Production Acreage

National Ranking
State Ranking Among All Field Crops

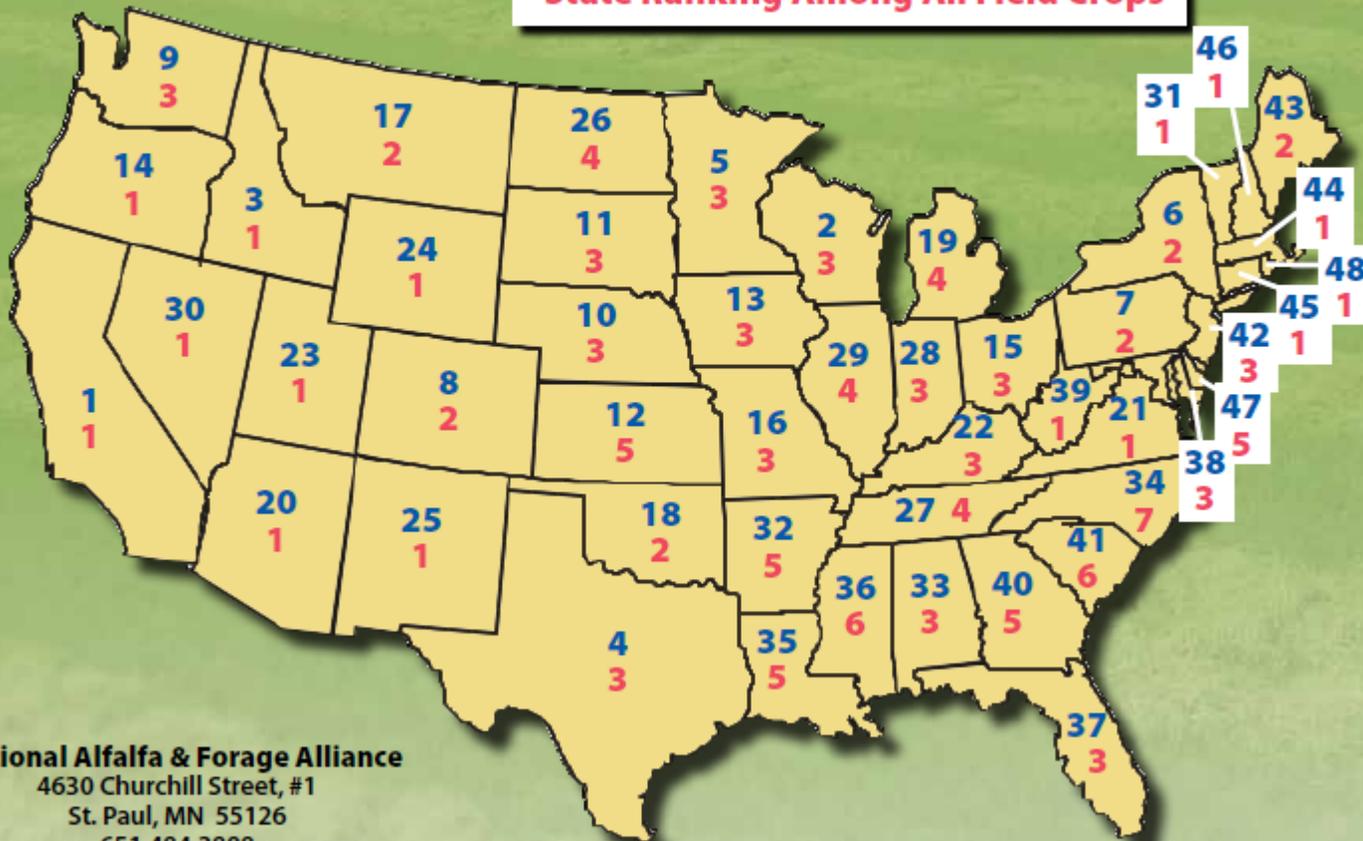


National Alfalfa & Forage Alliance
4630 Churchill Street, #1
St. Paul, MN 55126
651.484.3888
nafa@comcast.net

Source: USDA-NASS 2012 (blue); USDA-NASS 2011 (red)

Value of Forage Production

National Ranking
State Ranking Among All Field Crops

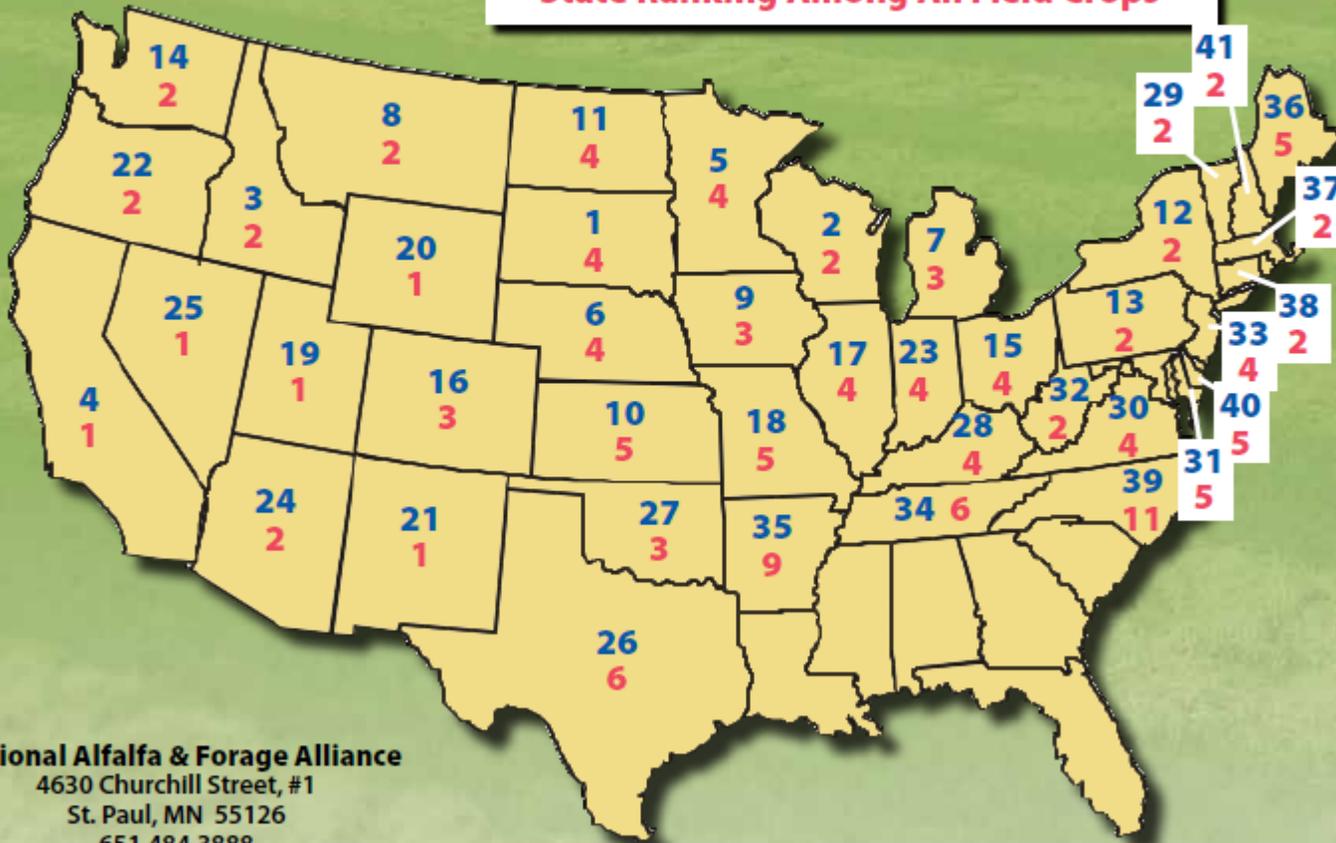


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Source: USDA-NASS 2012 (blue); USDA-NASS 2011 (red)
 (Includes dry hay & haylage for CA, ID, IL, IA, KS, MI, MN, MO, NE, NM, NY, OH, PA, SD, TX, VT, WA, and WI.)

Alfalfa Production Acreage

National Ranking
State Ranking Among All Field Crops

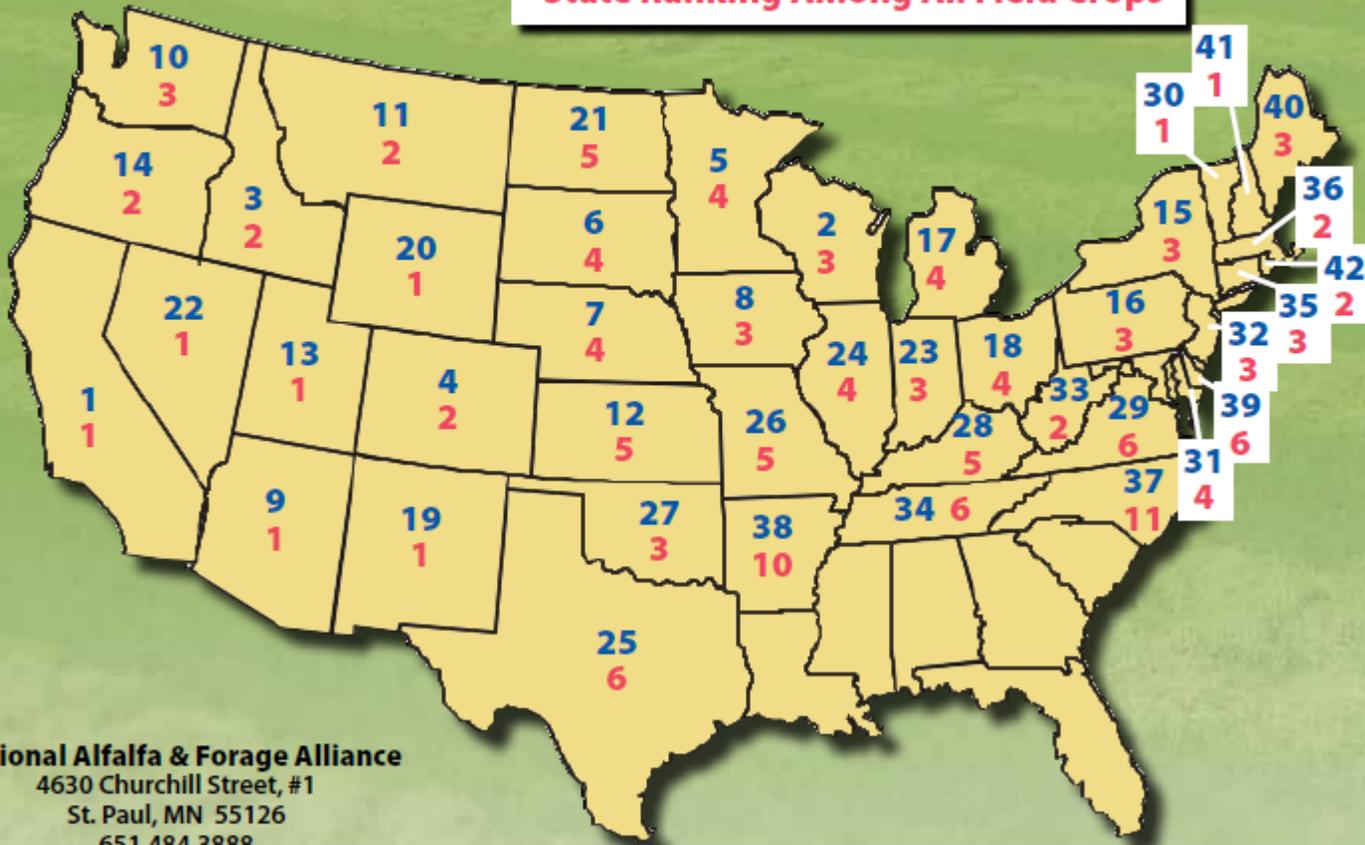


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Value of Alfalfa Production

National Ranking
State Ranking Among All Field Crops



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Source: USDA-NASS 2012 (blue); USDA-NASS 2011 (red)
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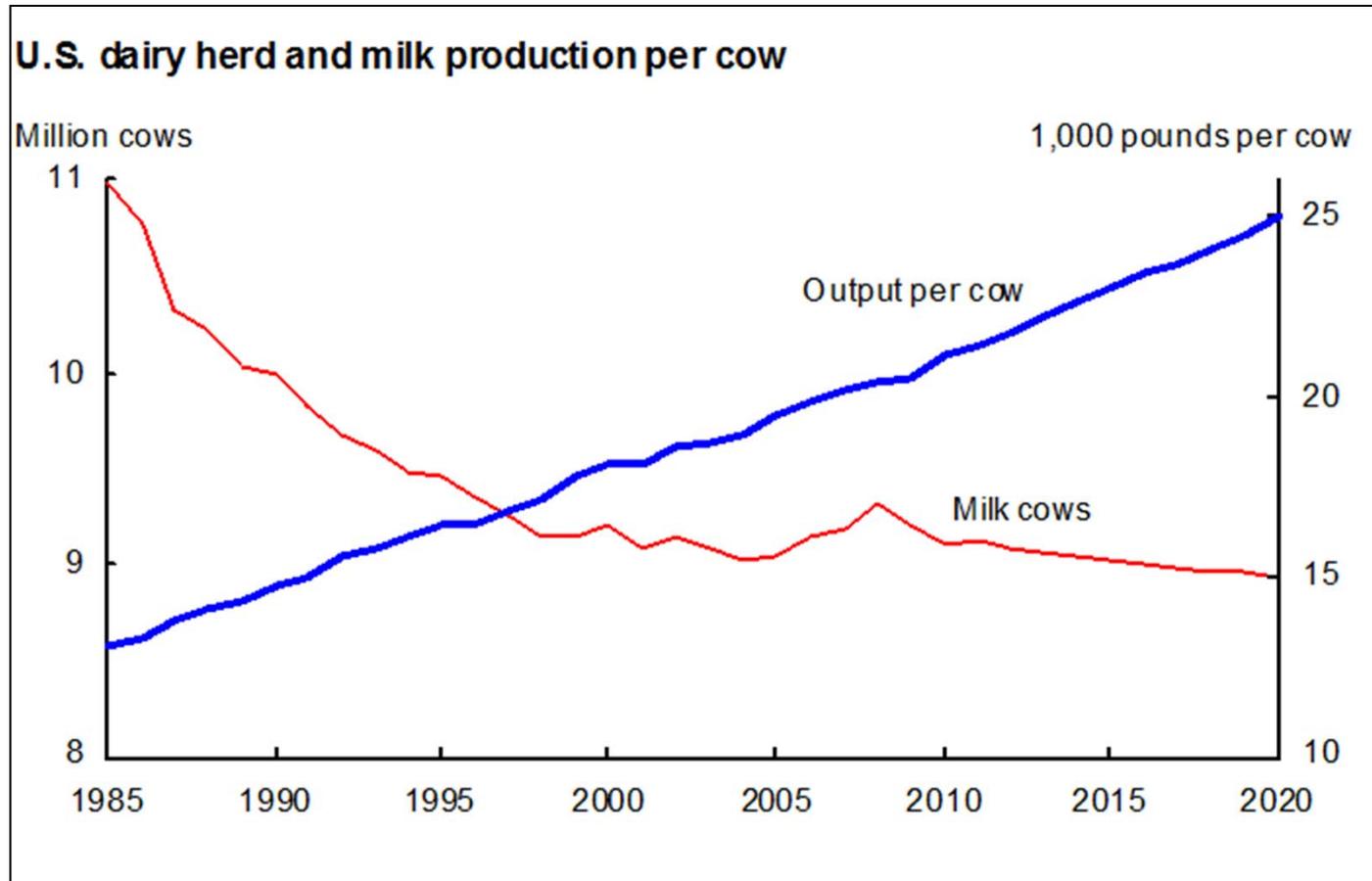


Crop Rooting Depth Comparisons

Forages Role in Dairy and Beef Production

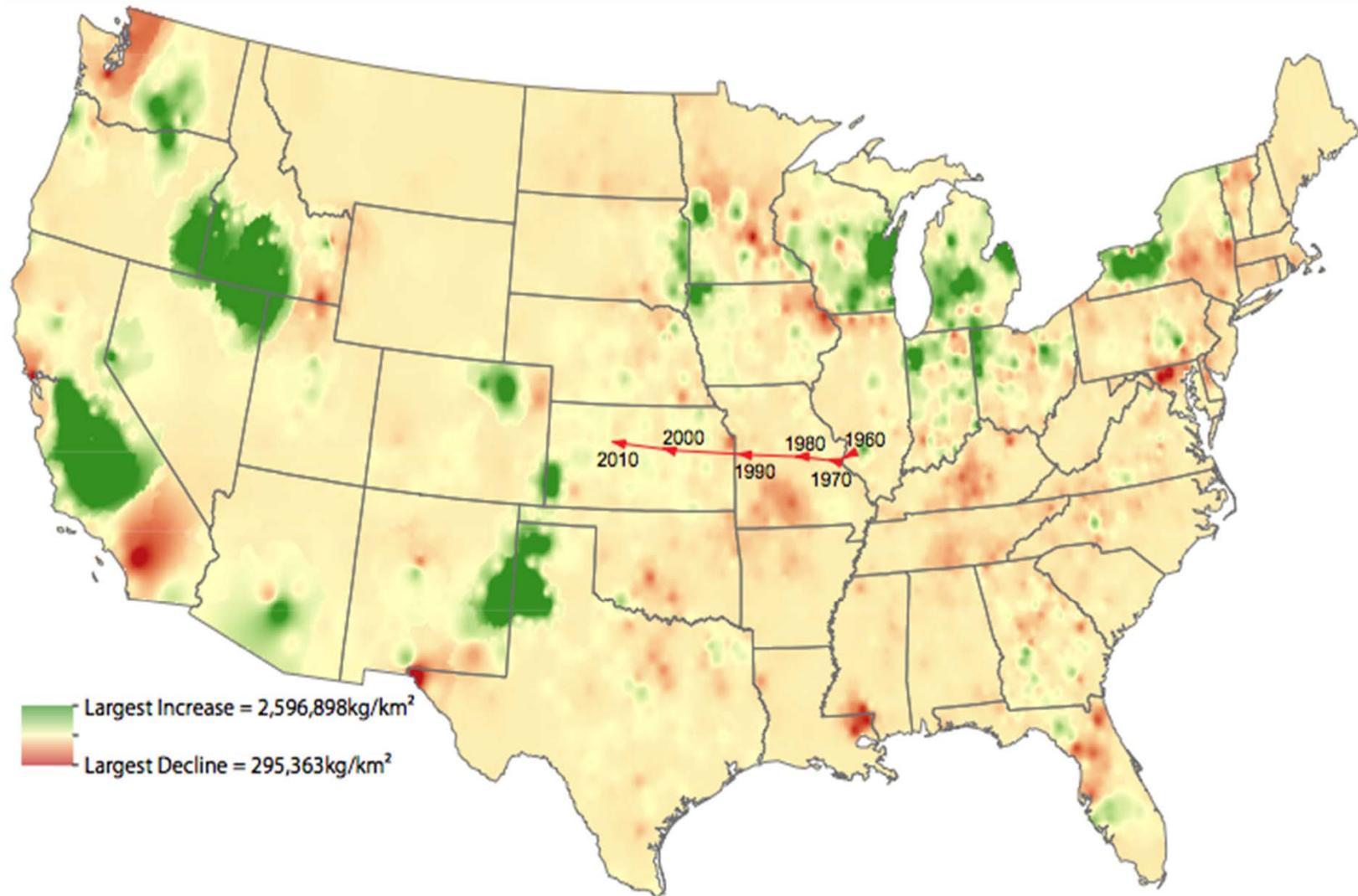
- Pasture and conserved forages
- Forage Quantity vs Forage Quality
- Maintenance, Rate of Gain, Milk Production
- The focus is shifts toward quality (protein, digestibility) when forages are in good supply
- The focus shifts toward yield when supply is tight, such as during drought
- So a trade-off occurs between quality vs yield

**The decline in milk cow numbers has been slowing,
but we still have 9 million “mouths to feed”**



Source: USDA Agricultural Projections to 2020; February 2011. USDA Economic Research Service

Change in U.S. Milk Production



SOURCE: 2013. Von Keyserlingk et al. submitted J. Dairy Science

Feedstuff Value Comparisons--Sesame

- Developed by dairy researchers at The Ohio State University (Normand St. Pierre)
- It is not a ration balancer nor does it provide amounts to be fed to make a nutritionally-optimal diet.
- What it does is **estimate unit costs of nutrients extracted from current prices of all feedstuffs traded in a given market**
- The model estimates if the feedstuff is **under-priced, neutrally-priced, or over-priced** compared to the nutrient contribution of other feeds.

Feedstuff Value Comparisons--Sesame

Name	<i>Calibration set</i>			
	Actual [T]	Predicted [T]	Lower limit	Upper limit
Alfalfa hay RFV 140	200.000	227.802	211.249	244.355
Alfalfa hay RFV 160	230.000	236.619	221.386	251.852
Alfalfa hay RFV 180	260.000	244.363	229.842	258.883
Barley Grain, rolled	304.000	297.803	282.577	313.028
Beet Sugar Pulp, dried	270.000	249.360	231.643	267.077
Canola meal, solvent	360.000	347.740	331.599	363.880
Corn Grain, steam flaked	316.000	331.346	308.484	354.207
Corn Silage, 32-38% DM	75.000	94.727	87.675	101.780
Cotton Seed, Whole w lint	370.000	360.297	335.833	384.762
Distillers Dried Grains w Sol	330.000	373.782	358.871	388.693
Gluten Feed, dry	305.000	306.153	295.356	316.950
Gluten Meal, dry	715.000	672.573	642.308	702.838
Hominy	314.000	291.071	275.775	306.366
Molasses, Sugarcane	240.000	214.478	196.023	232.934
SBM 44% adj.	481.000	452.434	429.669	475.199
SBM 48% adj.	486.000	506.160	485.021	527.299
Soybean hulls adj.	260.000	227.264	201.558	252.970
Wheat Millrun	235.000	260.381	244.942	275.819
expeller SBM, adj.	521.000	575.295	555.539	595.051

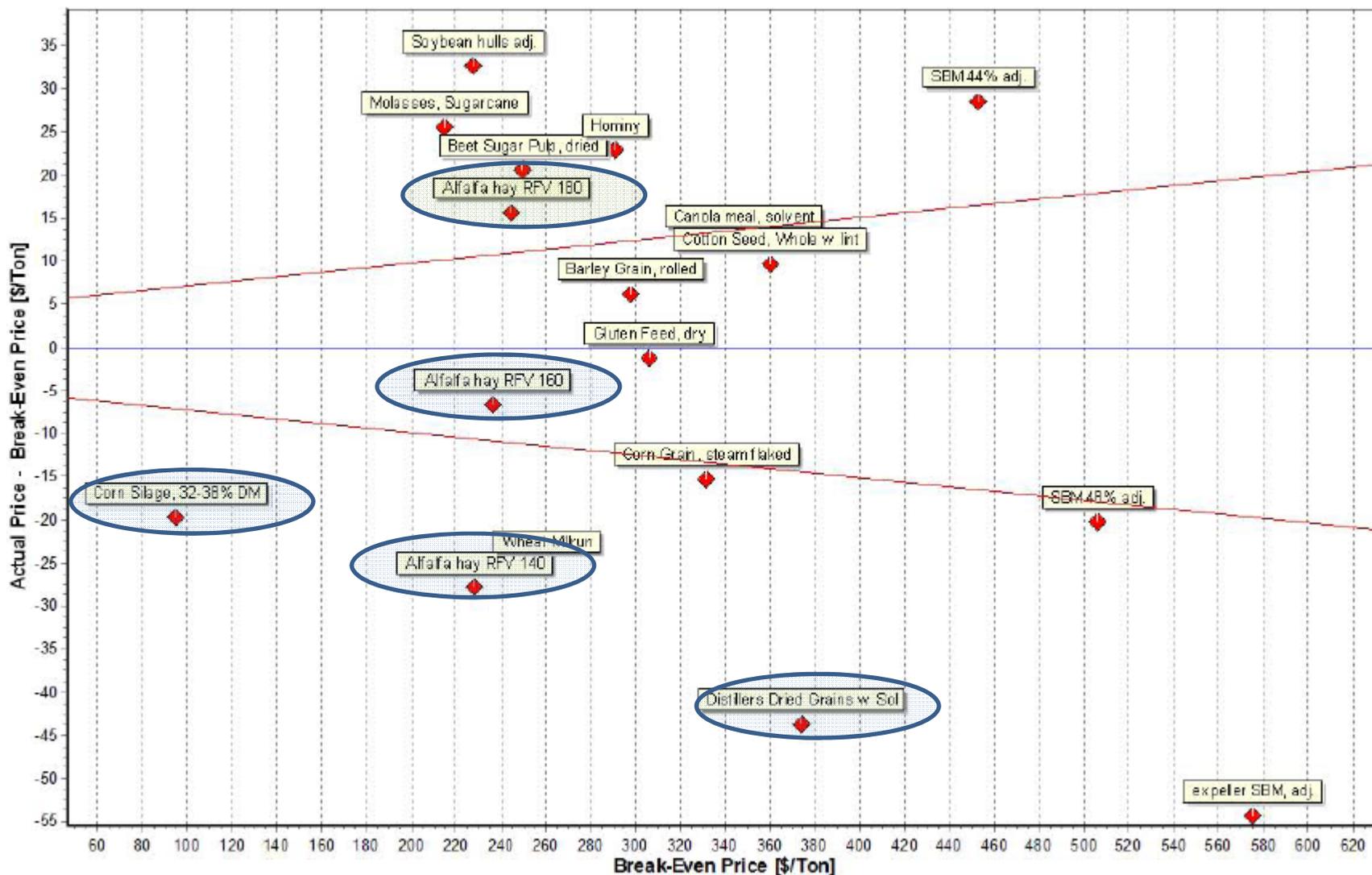
This report was generated with Sesame3.5 developed by Drs. St-Pierre and Cobanov, The Ohio State University, www.sesamesoft.com.

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Feedstuff Value Comparisons--Sesame

Pacific NW 2013



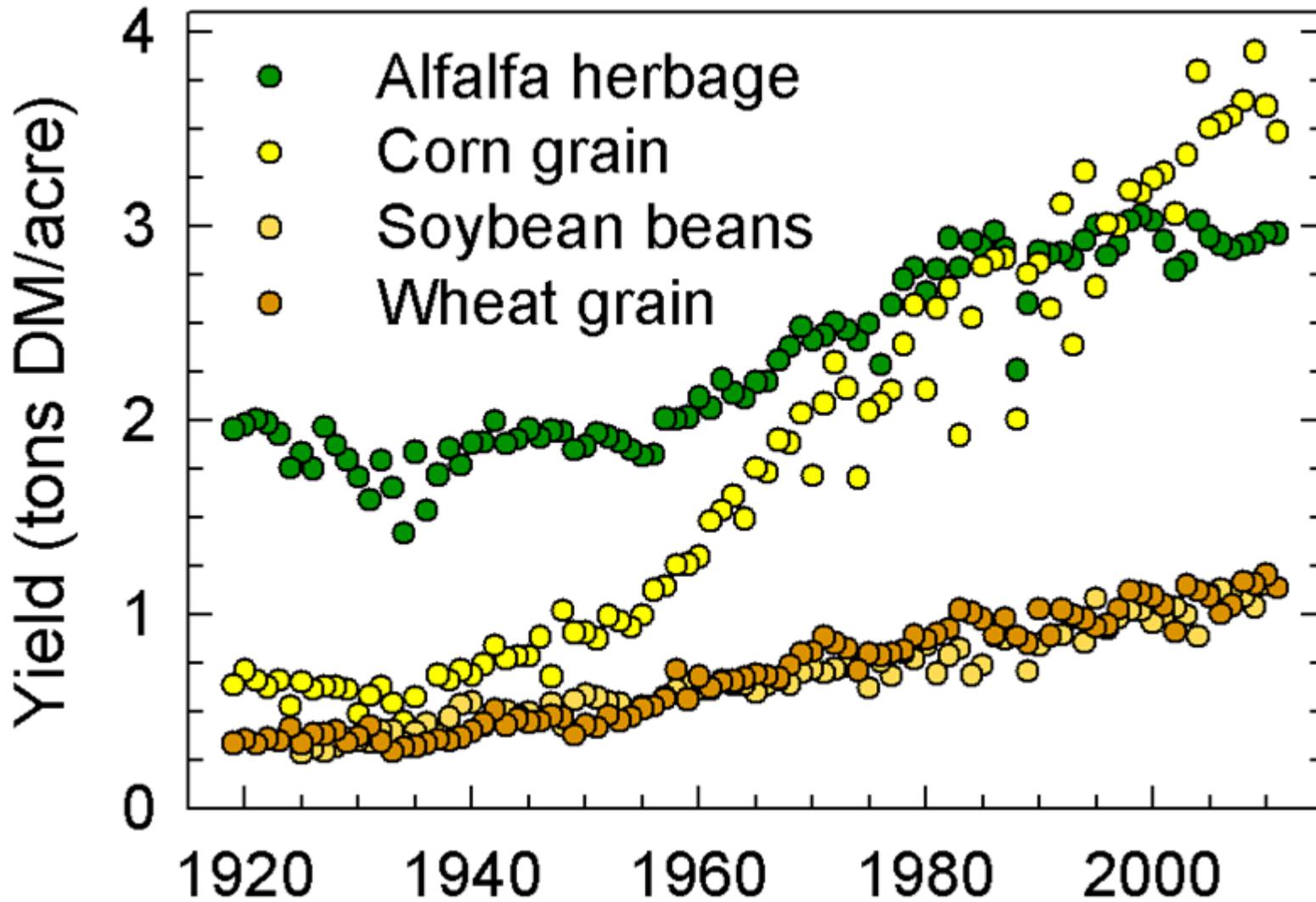
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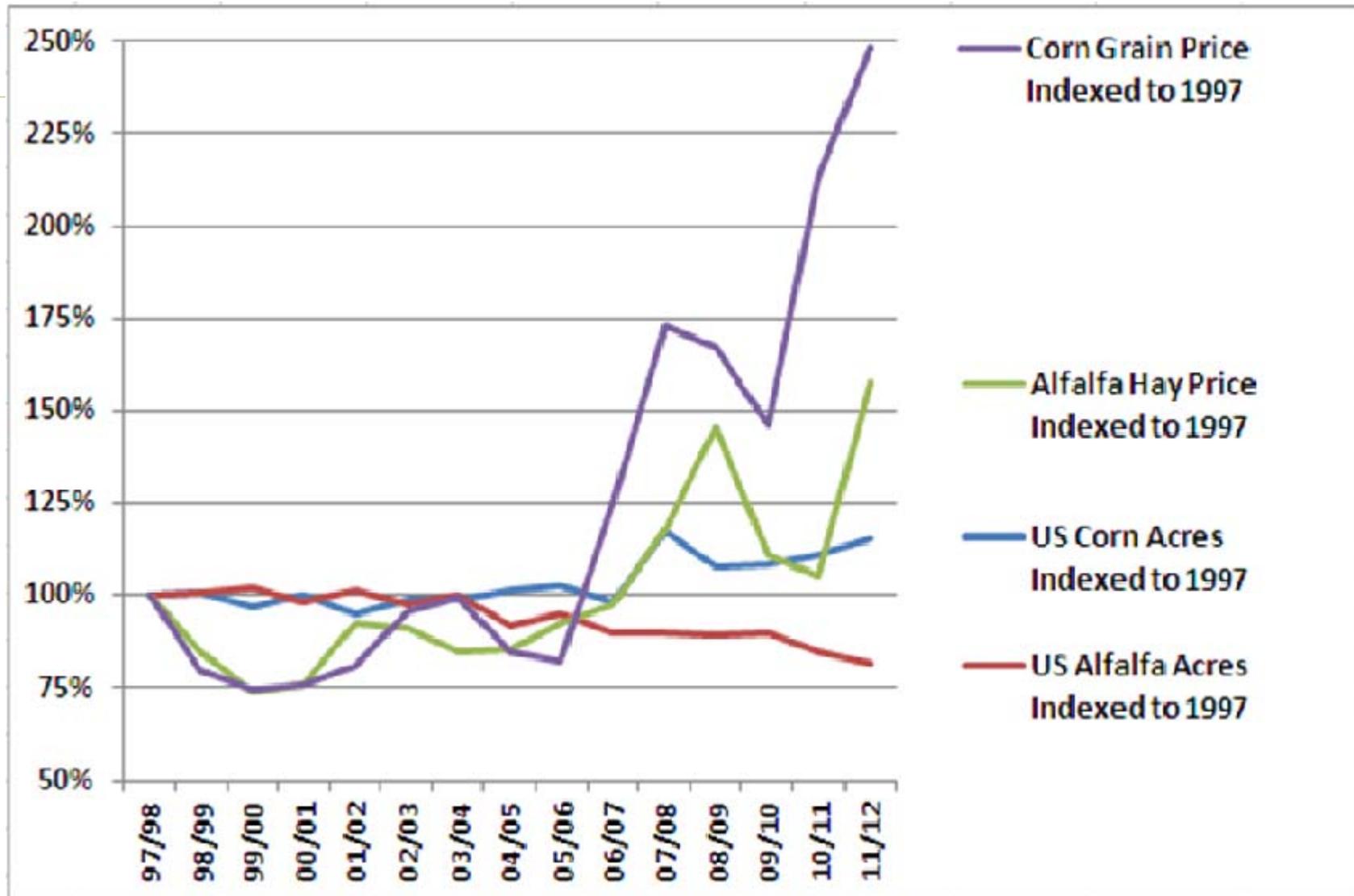
Corn Crop Budget Yield Comparisons

	Rotation	Alf/Corn	Corn/Corn	Alf/Corn	Corn/Corn
	Productivity	Hi	Hi	Lo	Lo
Corn Silage Metrics					
Land Rent per Acre		\$ 260	\$ 260	\$ 125	\$ 125
Pounds N/Acre		0	250	0	175
Tons @ 65% moisture		24	24	15	15
Production Cost/Ton As Harvested		\$ 36	\$ 43	\$ 30	\$ 35
Production Cost/Ton DM Harvested		\$ 103	\$ 122	\$ 86	\$ 100
Alfalfa Metrics					
Production Cost/Ton Hay (15%)		\$ 137		\$ 163	
Production Cost/Ton DM Harvested		\$ 161		\$ 192	
Establishment Yr Tons Yield		3		1	
Establishment Yr # Cuts		3		1	
Established Stand Tons Yield		6		3	
Established Stand # Cuts		4		3	

How wide is the productivity gap?



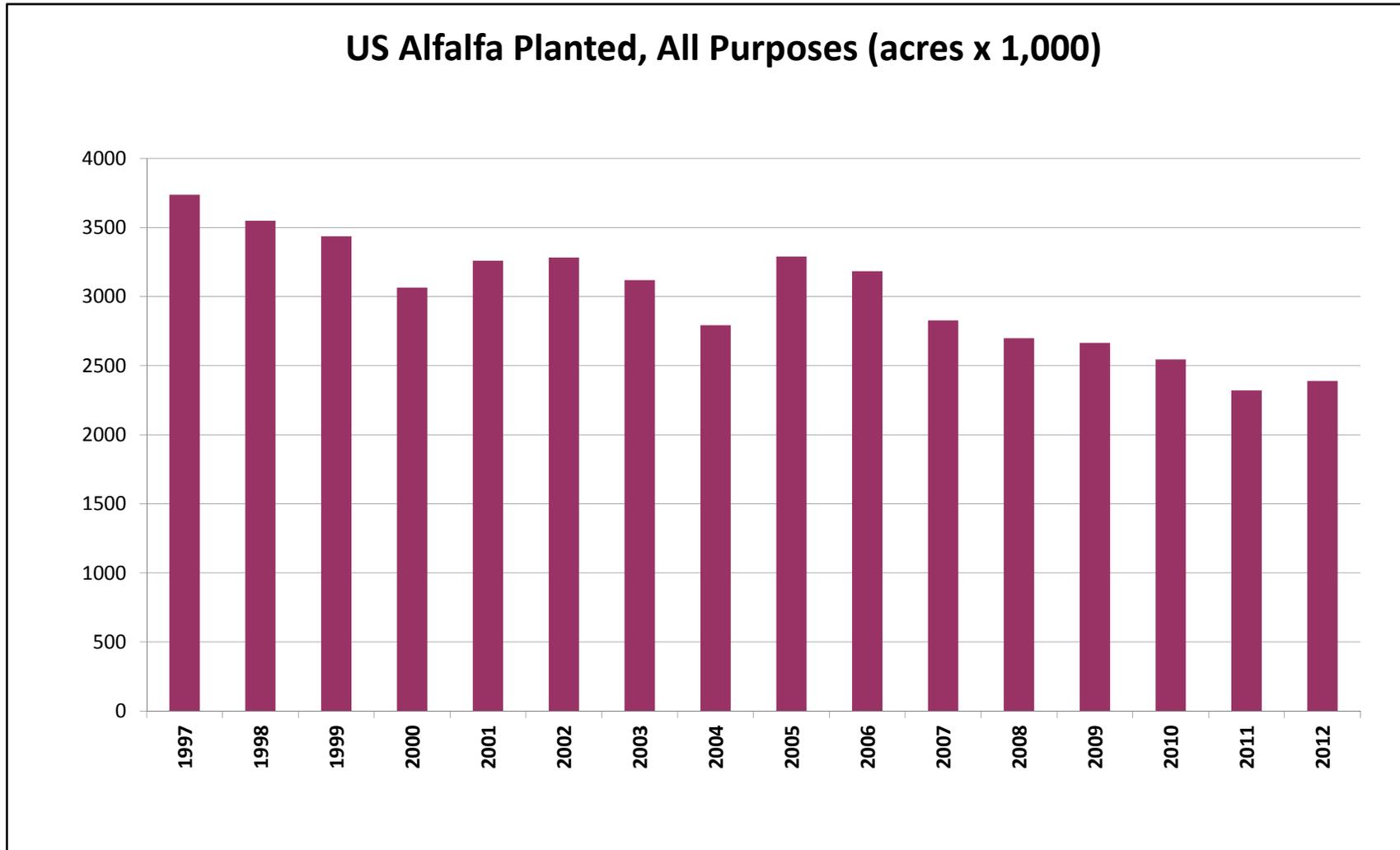
Long-Term Comparison: US Corn and Alfalfa, Acres and Prices



Derived from NASS and USDA data
Based to 1998 commodity prices and acres

Long-term Reduction in Alfalfa New Seedlings

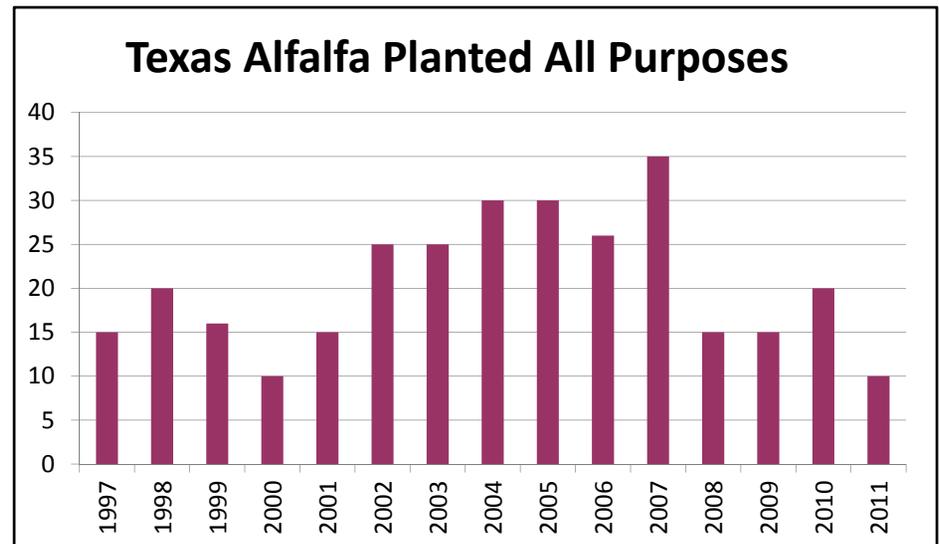
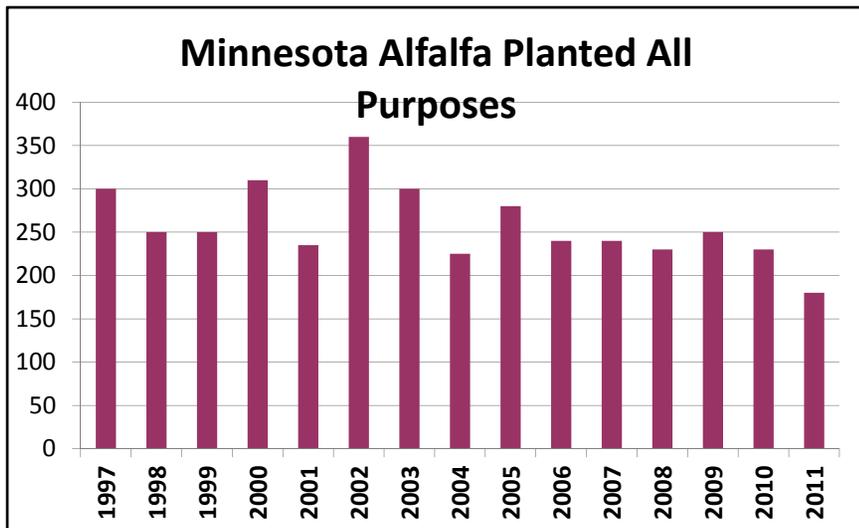
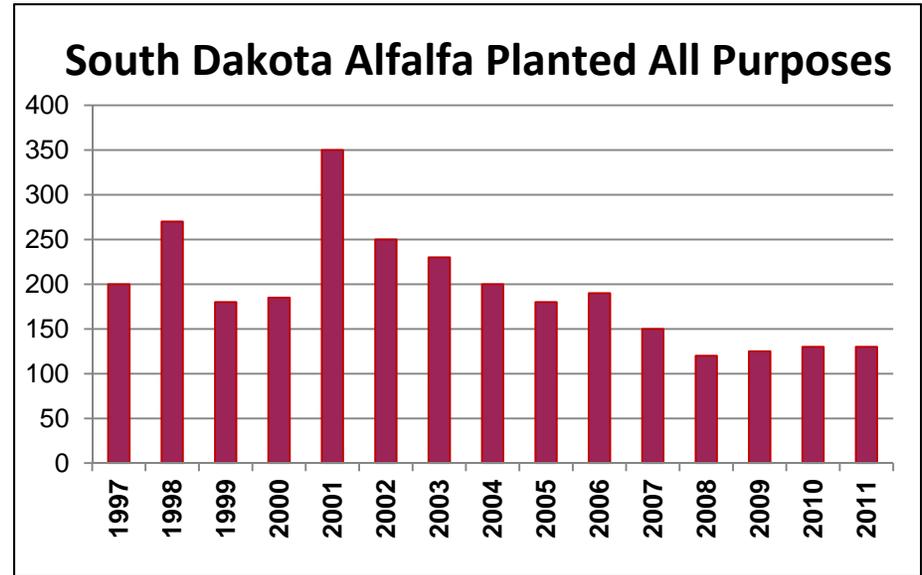
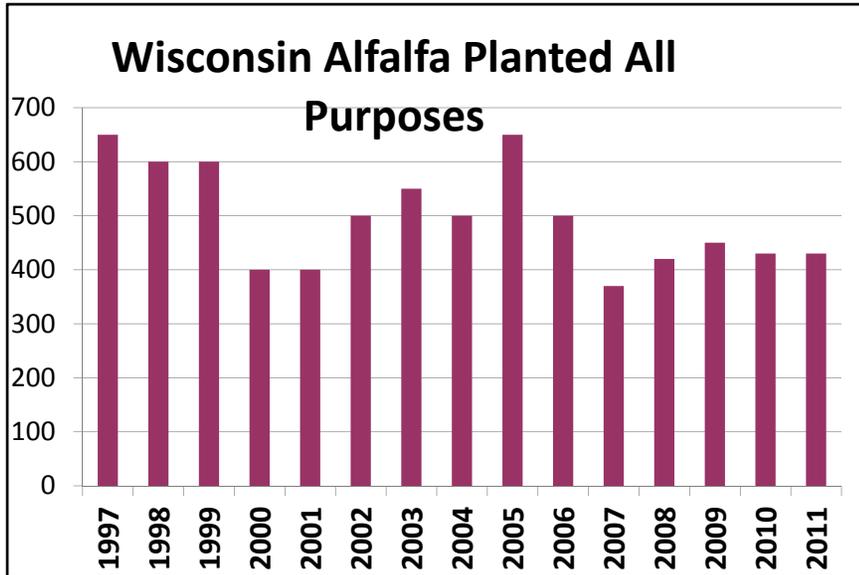
Remember, alfalfa is a perennial crop, total US harvest ~21,000,000 acres



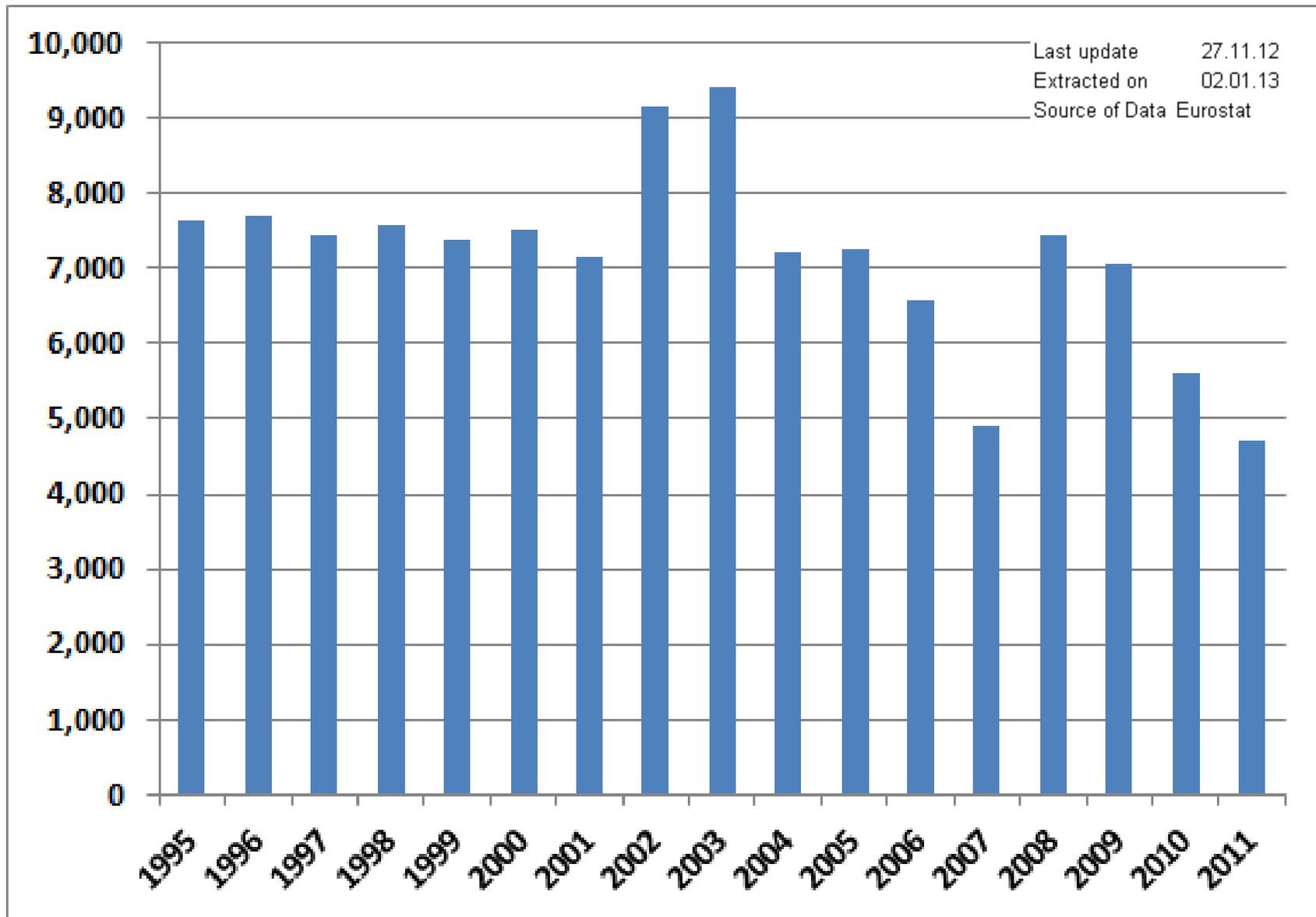
Source: NASS data

Selected State Alfalfa Acreage Trends

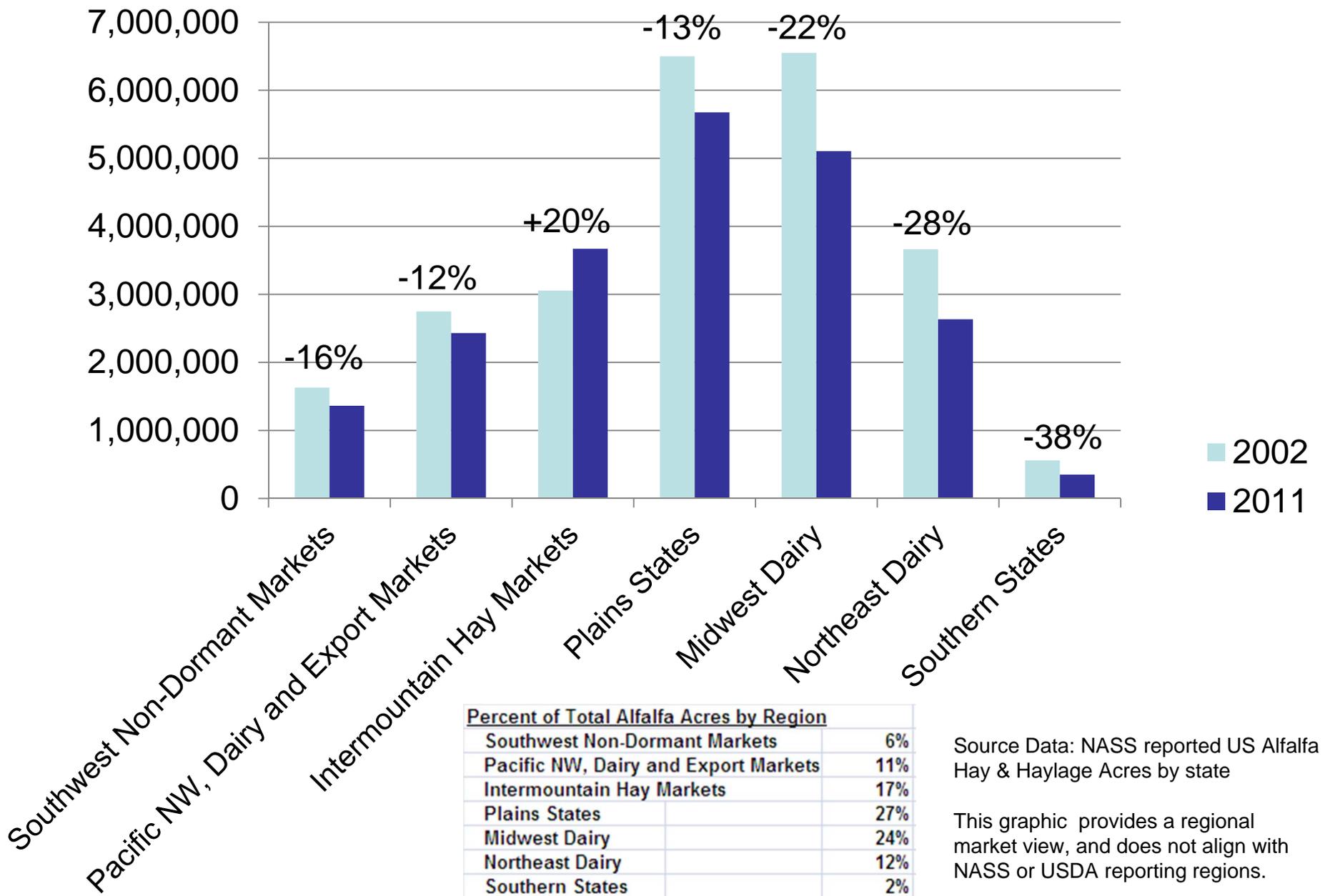
NASS reported alfalfa acres seeded for all purposes



European Countries, Green Fodder (hectares x 1,000)



Regional Change in US Alfalfa Harvested Acres



Source Data: NASS reported US Alfalfa Hay & Haylage Acres by state

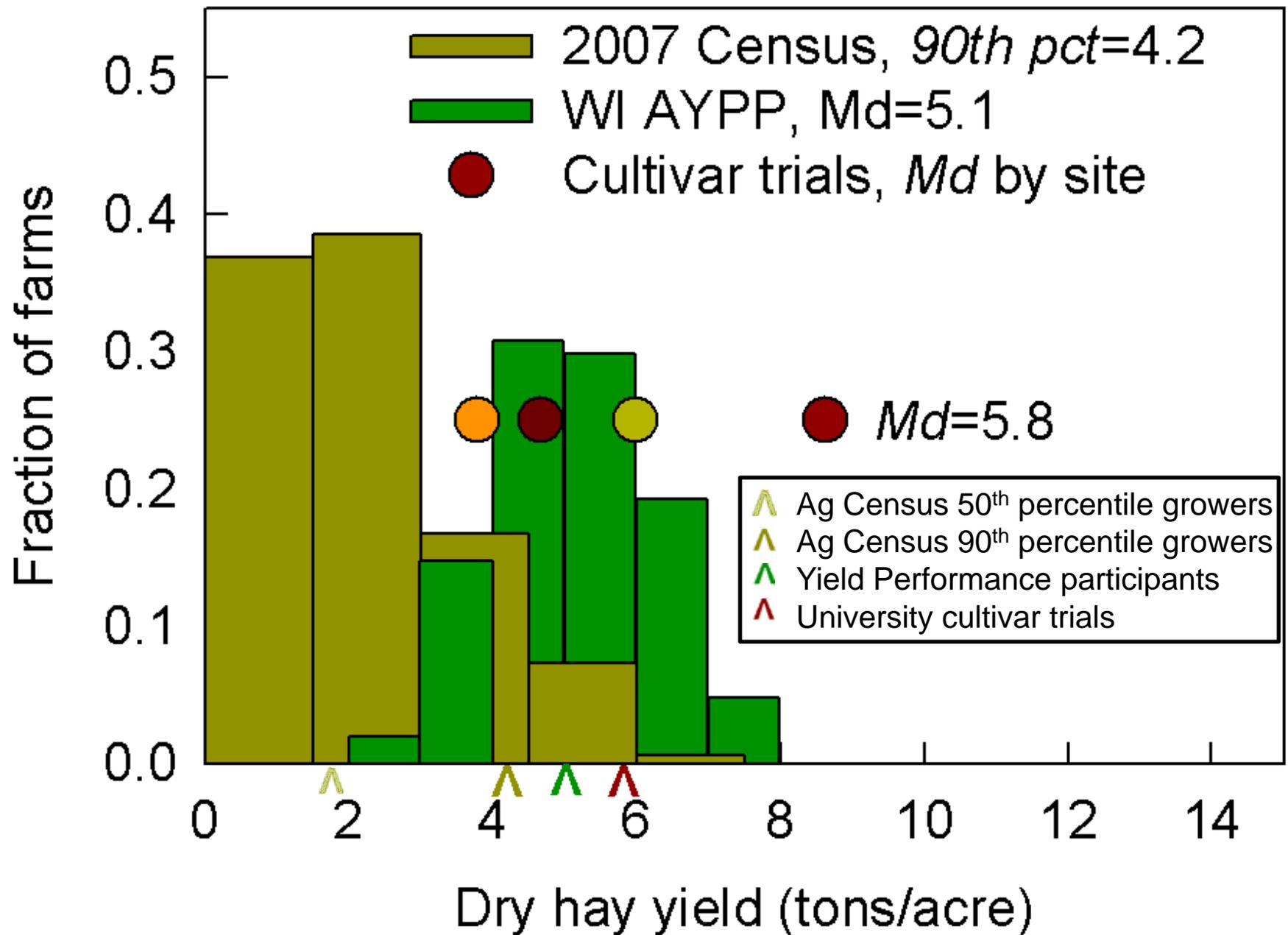
This graphic provides a regional market view, and does not align with NASS or USDA reporting regions.

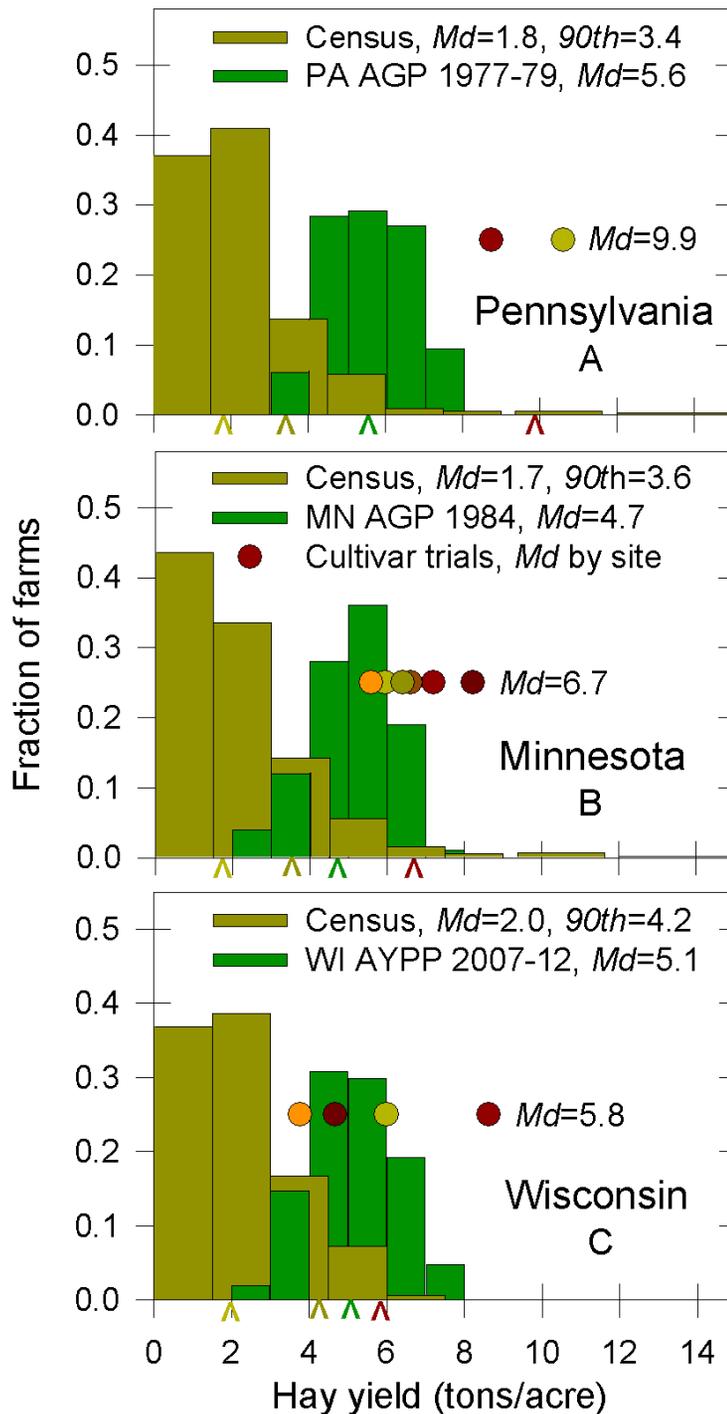
Crop Insurance Participation Rates

- Corn 92%
- Soy 80-82%
- Wheat 98%
- Cotton 99%
- Alfalfa 7% with 3% coverage loss
 - Not available in some areas
- Pasture, Rangeland & Forage (*new* rainfall insurance)
 - Based to county rainfall
 - Not available in some areas

Source: Watts & Associates Inc.

Wisconsin Example of Alfalfa Yield Productivity Gap





Cultivar trials did not reflect on-farm yields in Pennsylvania – high degree of ag soil variability

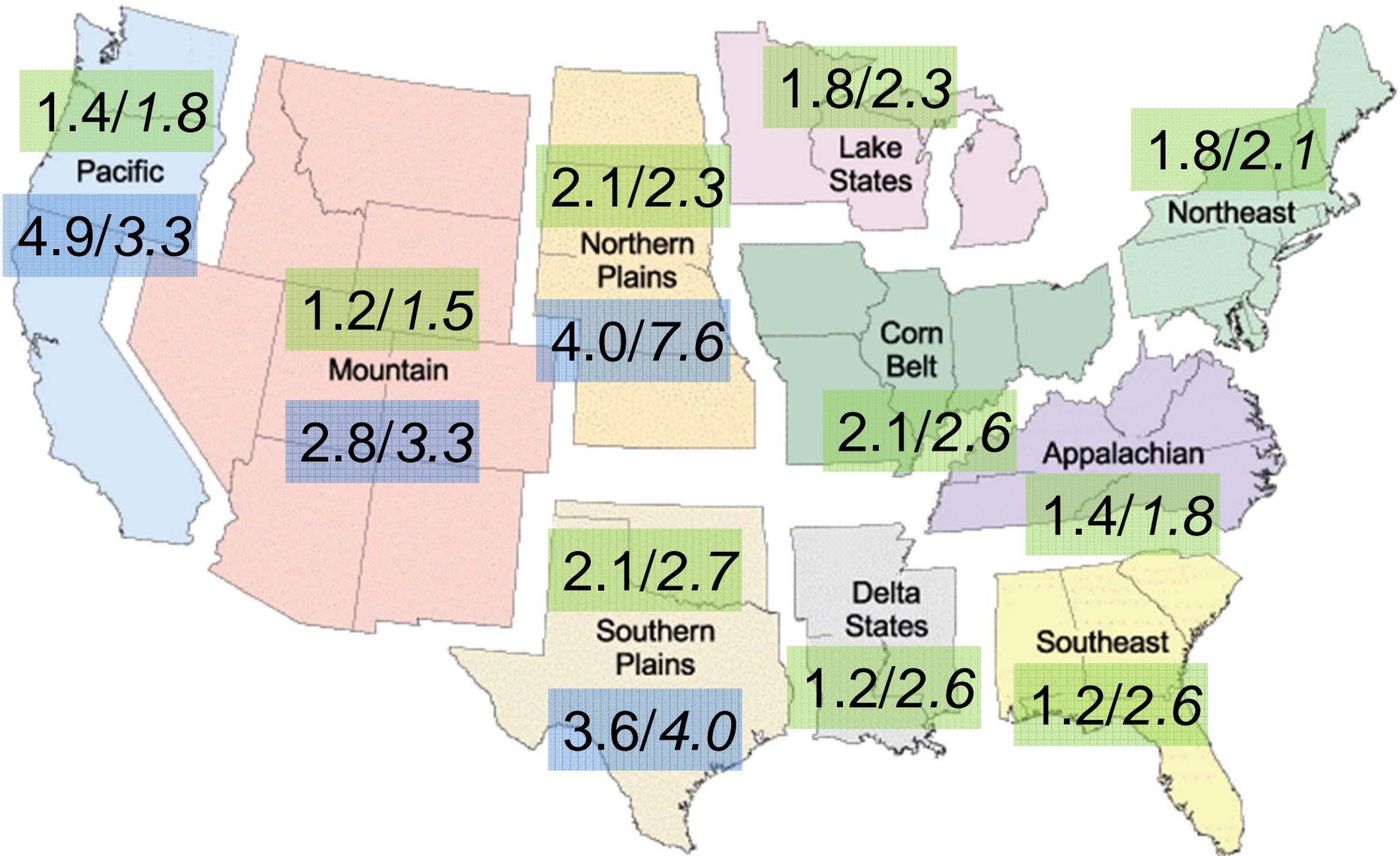
Cultivar trials provide reasonable estimates of yield potential in some states with more uniformly productive soils

Regional aggregation may be appropriate.

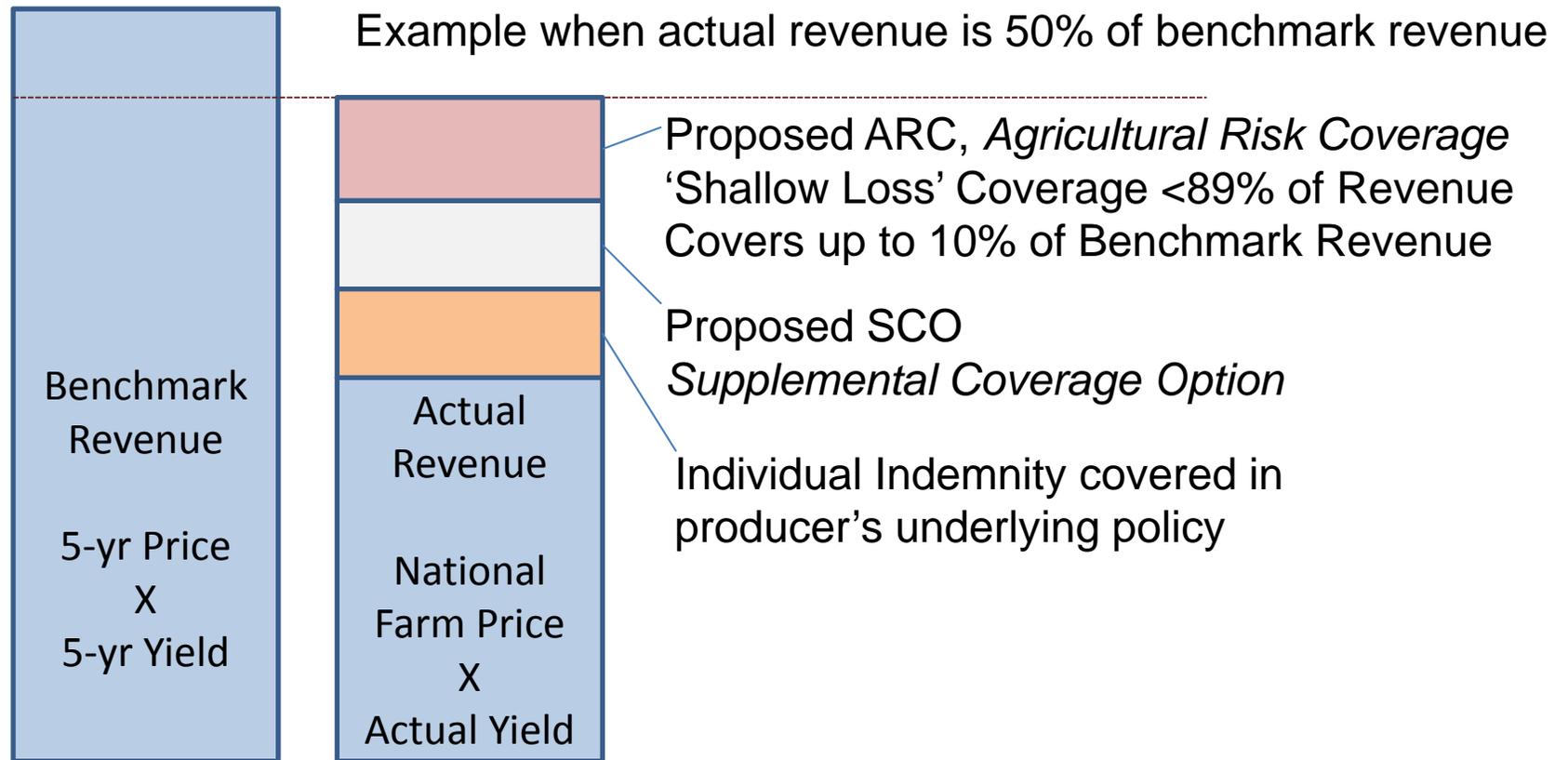
- \blacktriangle Ag Census median grower yield
- \blacktriangledown Ag Census 90th percentile growers
- \blacktriangle Alfalfa Yield Performance participants
- \blacktriangle University cultivar trials

Regional Productivity Gap of Alfalfa Yield (t/a)

median farm yield in 2007 Census / yield gap compared to top 10% of farms



Proposed ARC & SCO in the Senate Version of the Farm Bill



ARC would cover up to 10% of losses against actual crop revenue below 89% of benchmark revenue. Available for same crops as those under direct payment program

SCO is an area wide (county) yield or revenue 'shallow' loss coverage

SCO would pay on losses not covered by ARC and not more than the deductible in the producer's underlying policy

Barriers to Improving Alfalfa Risk Management Coverage

- Lack of Title I crop status
 - Not a disadvantage in the prior era of decoupling
 - Lenders will tell growers to stick to Title I crops if re-coupling occurs under ARC
 - SCO coverage not anticipated
- Poor risk coverage of existing programs
 - No Cost of Production data available from ERS
 - Area/County yield gap is large
- Lack of competitive risk management tools is a factor in reducing alfalfa footprint on the ag landscape

The yield gap for alfalfa is probably very large.

Need improved Census and Survey data:

- avoid combining hay and haylage yields

- separate establishment and production year yields

- records of actual weight and moisture

Need whole-field, on-farm data identified by management level

- example: UW Extension Alfalfa Yield Perf. Program

How are some producers obtaining high yields?

- Mine Census data? Direct survey of the population?

What is constraining yields on other farms?

- Mine Census data? Direct survey of subgroups?

- On-farm data collection (soil tests, diseases, pests...)

Why is alfalfa yield reporting important?

Instructive background data for formulating policy
more directional for productivity research
crop insurance program development & expectations
RFS II status & approval for alfalfa as biomass crop

Understand the yield productivity gap
elite producers' "entitlement" production levels
less productive growers improvement potential
opportunity for large productivity gains still exists

Help maintain alfalfa on the ag landscape with all it's benefits
perennial cover crop protects against soil erosion
legume with benefits to other crops in rotation
unrealized productivity improvement on majority of acres

Keeping Alfalfa on the Ag Landscape

Important Benefits

- High Protein forage crop
- Nitrogen fixation benefits
- Nitrate reduction in groundwater
- Soil Erosion benefits
- Potential Biomass Crop

Closing the Productivity Gap

- NASS & ERS data to understand opportunities to improve
- Grower Education – large productivity range among growers
- Agronomic Practices
- Novel trait development
- Breeding and Biotech

Ag Policy that does not Disadvantage Alfalfa

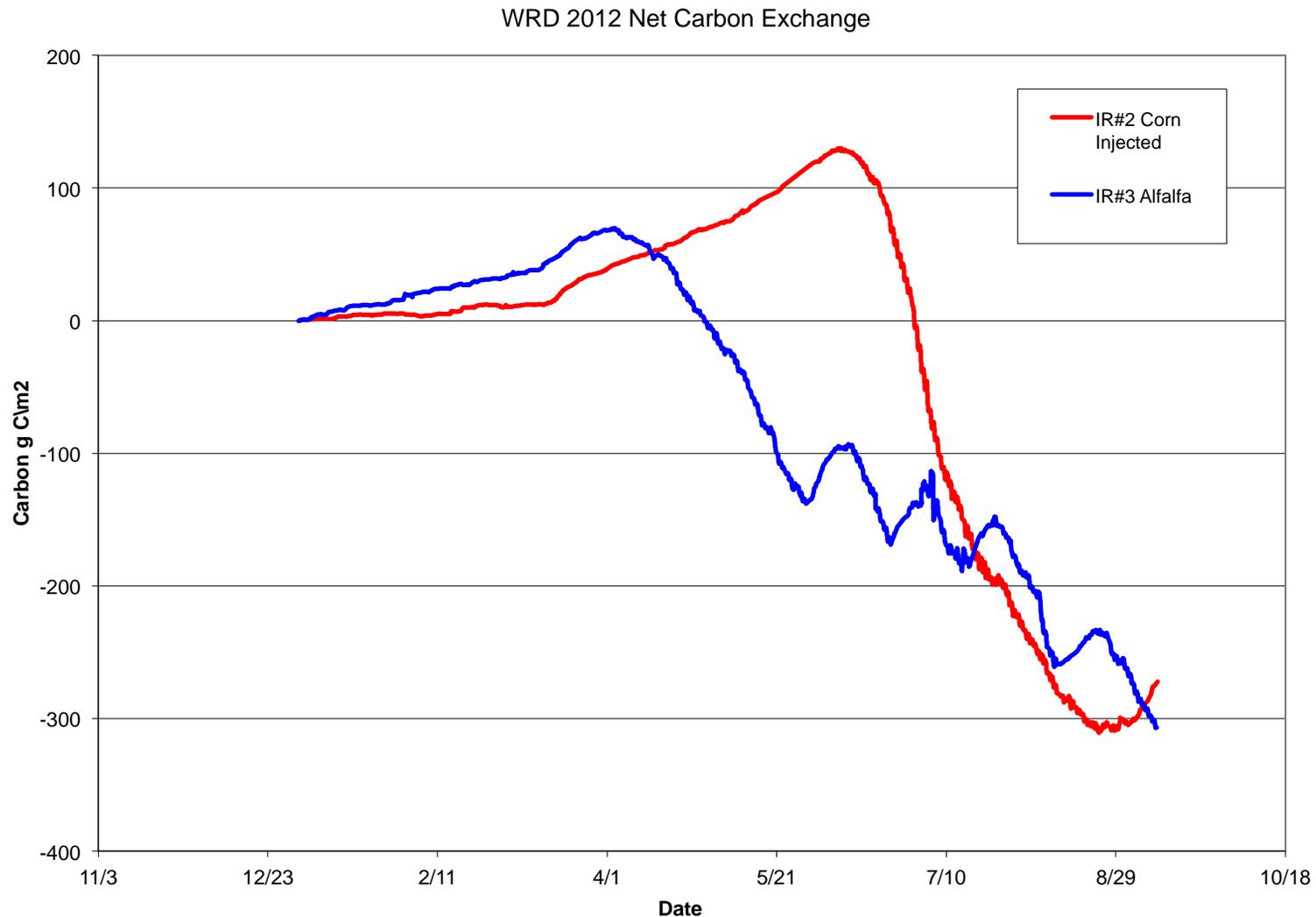
- Improve Risk Management competitiveness with Title I Crops
- Inclusion as an approved crop to meet RFS II
- ARS Research commitment similar to other large acreage crops

Appendix

Alfalfa as a Biomass Crop



Net Carbon Exchange Favors Alfalfa even before considering carbon footprint of applied N in corn



Source: John M. Baker, Research Leader, USDA-ARS St. Paul, MN

Top 15 corn silage production states

2012 State ranking- production	State	2011 Total corn silage production (in thousand tons)	2012 Total corn silage production (in thousand tons)	Percent change from 2011 to 2012
1	Wisconsin	15,698	14,210	-9.48%
2	California	12,350	11,263	-8.80%
3	New York	7,520	8,075	+7.38%
4	Pennsylvania	6,510	7,920	+21.66%
5	Minnesota	6,300	6,650	+5.56%
6	Idaho	6,188	5,940	-4.01%
7	Iowa	4,100	4,875	+18.90%
8	South Dakota	3,100	4,800	+54.84%
9	Nebraska	2,880	4,400	+52.78%
10	Kansas	3,850	4,050	+5.19%
11	Texas	2,640	3,610	+36.74%
12	Michigan	5,400	3,600	-33.33%
13	Colorado	2,415	3,200	+32.51%
14	Ohio	2,520	3,200	+26.98%
15	Virginia	2,145	2,550	+18.88%
Total		83,616	88,343	+5.65%

Source: *Crop Production 2012 Summary Report, USDA, NASS*

Top 15 forage states

State ranking-production	State	Total forage production (in thousand tons)	Total alfalfa rank	Total alfalfa production (in thousand tons)	Total other hay rank	Total other hay production (in thousand tons)	Total corn silage rank	Total corn silage production (in thousand tons)	Total greenchop rank	Total greenchop production (in thousand tons)
1	Wisconsin	24,045	7	2,415	30	600	1	14,210	1	6,820
2	California	20,338	1	6,555	9	2,160	2	11,263	10	360
3	Texas	13,112	27	490	1	9,000	11	3,610	18	12
4	New York	12,959	23	902	14	1,725	3	8,075	2	2,257
5	Pennsylvania	12,464	20	1,040	11	1,938	4	7,920	4	1,566
6	Minnesota	12,325	6	2,465	16	1,530	5	6,650	3	1,680
7	Idaho	11,720	2	4,160	30	600	6	5,940	6	1,020
8	South Dakota	8,963	5	2,590	17	1,500	8	4,800	14	73
9	Nebraska	8,668	8	2,272	12	1,800	9	4,400	12	196
10	Kansas	8,422	13	1,820	7	2,520	10	4,050	17	32
11	Iowa	8,339	9	2,117	28	697	7	4,875	7	650
12	Missouri	7,074	26	494	2	4,760	19	1,760	15	60
13	Colorado	6,961	4	2,625	23	1,136	13	3,200	0	0
14	Michigan	6,837	16	1,386	35	465	12	3,600	5	1,386
15	Kentucky	6,047	25	522	3	4,400	25	1,125	0	0
Top 15 Totals		168,274		31,853		34,831		85,478		16,112
U.S. total		250,918		52,049		67,829		113,450		17,590

Source: Crop Production 2012 Summary Report, USDA, NASS; statistical ties are represented by the same numerical ranking.

Sorghum silage production

2012 State ranking- production	State	2011 Total sorghum silage production (in thousand tons)	2012 Total sorghum silage production (in thousand tons)	Percent change from 2011 to 2012
1	Texas	400	2,080	+420.0%
2	Arizona	330	500	+51.5%
3	Kansas	595	450	-24.4%
4	New Mexico	154	336	+118.2%
5	South Dakota	180	180	NC
6	Georgia	169	150	-11.2%
7	Colorado	182	140	-23.1%
8	Nebraska	130	110	-15.4%
9	Oklahoma	60	96	+60.0%
10	Missouri	55	48	-12.7%
11	Mississippi	11	14	+27.3%
11	Louisiana	11	13	+18.2%
11	Arkansas	10	9	-10.0%
14	Illinois	11	9	-18.2%
Total		2,298	4,135	+79.9%

Source: *Crop Production 2012 Summary Report, USDA, NASS*
 Statistical ties are represented by the same numerical ranking.