



U.S. Dairy Forage Research Center

USDA, Agricultural Research Service



Western Alfalfa & Corn Silage Production: Regional Perspective

Neal Martin, Dan Putnam,
Glenn Shewmaker and Dan
Undersander

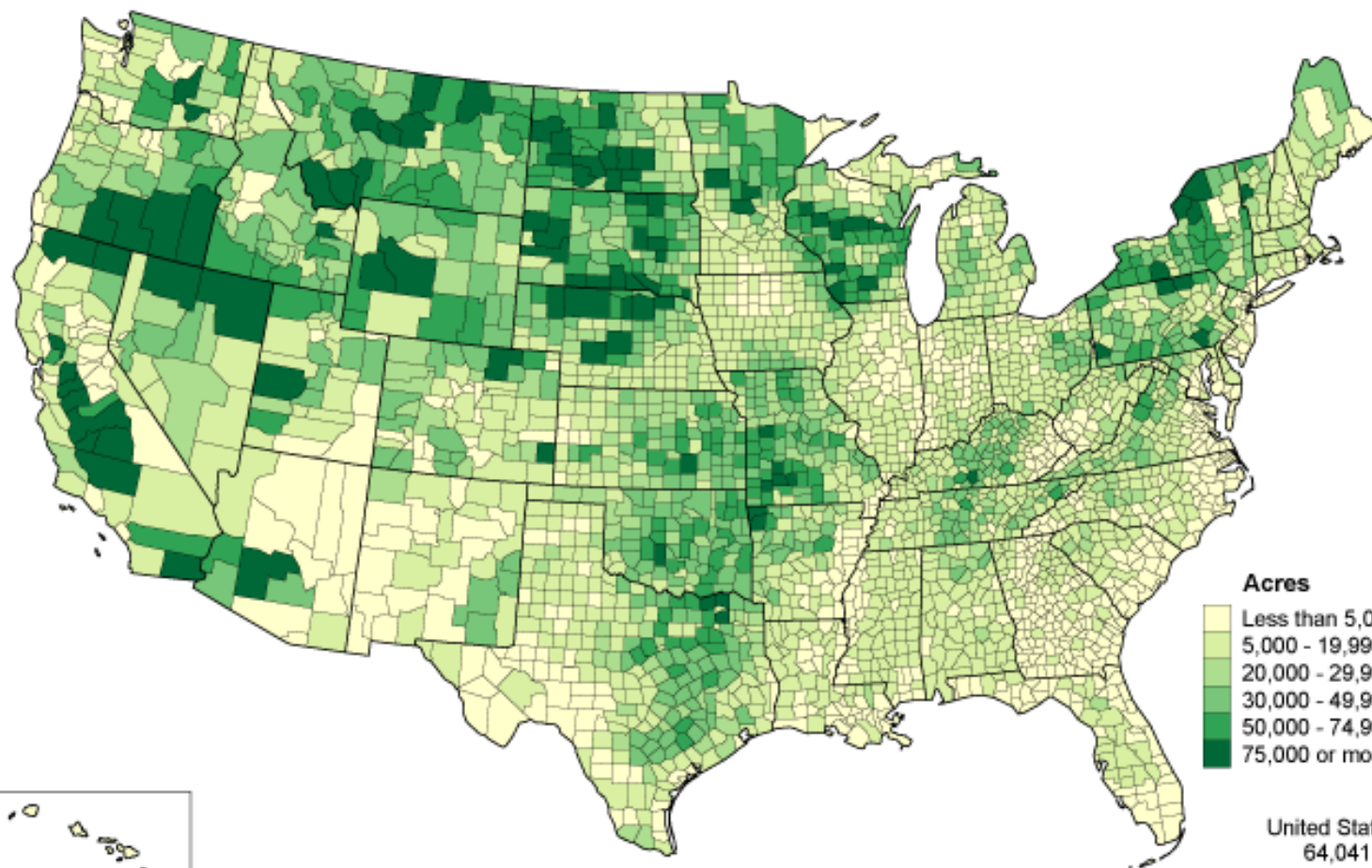
Worlds Forage Analysis Superbowl-2004
Seminar, Madison, WI

Seminar Outline

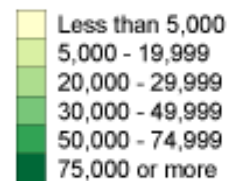
- Alfalfa production
- Corn silage production
- Emerging issues
 - Emerging Issues for Alfalfa in California and Arizona, Dan Putnam and Mike Ottman
 - Emerging Issues with Alfalfa in the Pacific Northwest, G. E. Shewmaker et al.

<http://alfalfa.ucdavis.edu/subpages/2002Symposium/2002WAC.htm>

Forage - Land Used for All Hay and All Haylage, Grass Silage, and Greenchop, Harvested Acres: 2002



Acres

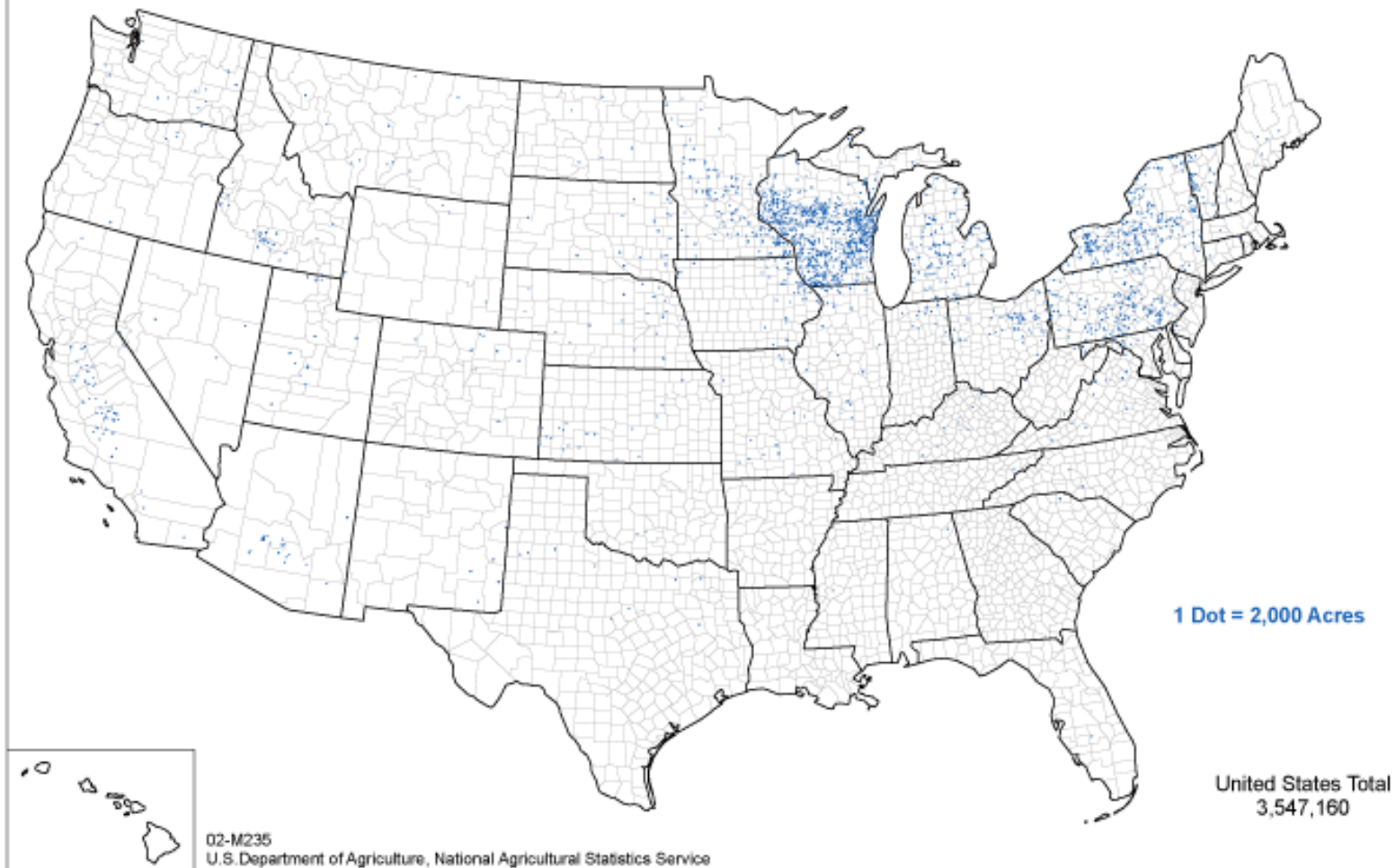


United States Total
64,041,337



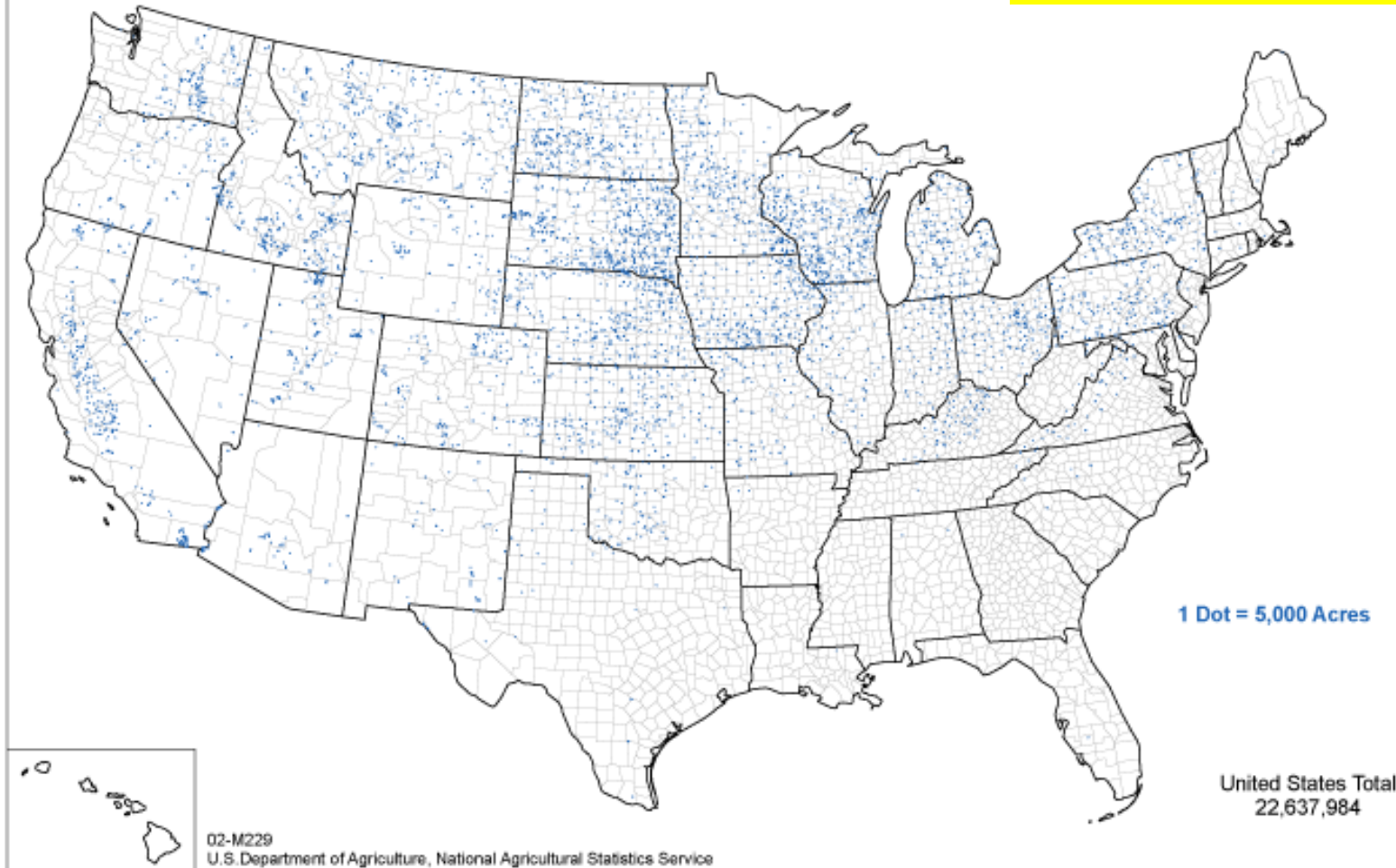
02-M224
U.S. Department of Agriculture, National Agricultural Statistics Service

Haylage or Greenchop from Alfalfa or Alfalfa Mixtures, Harvested Acres: 2002

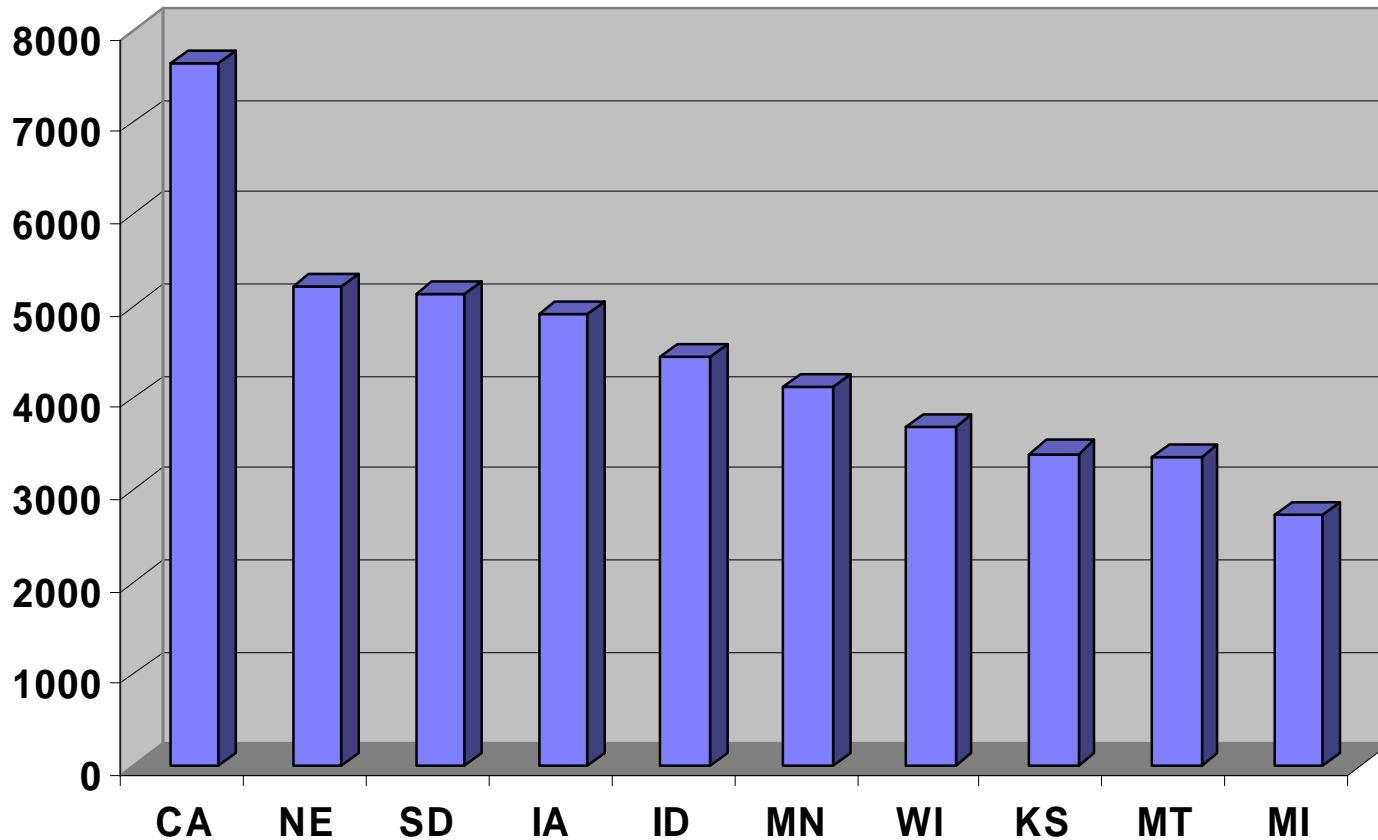


Alfalfa Hay, Harvested Acres: 2002

23.6 million acres

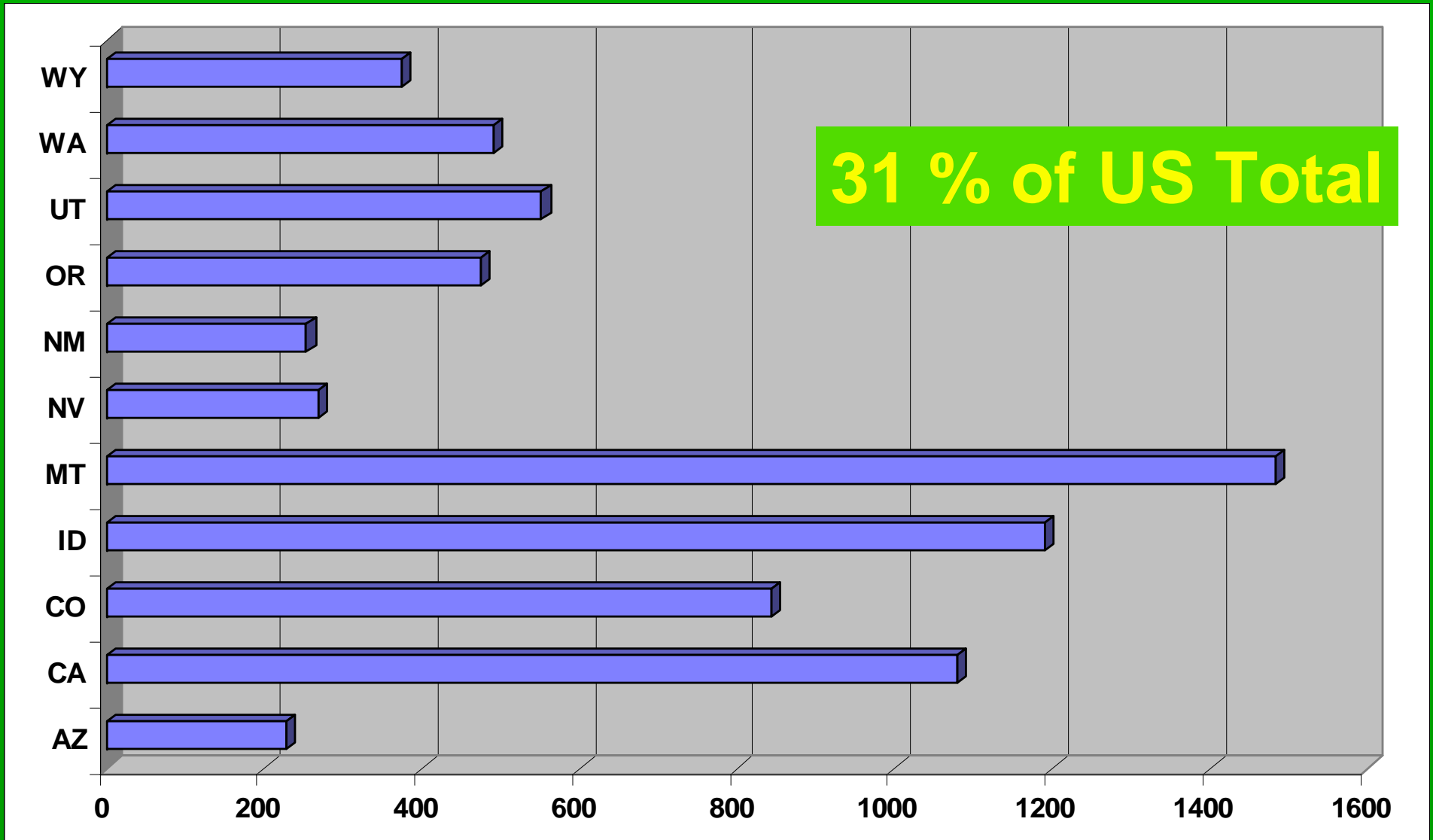


Leading Alfalfa Hay Production States, 1,000 tons, 2003

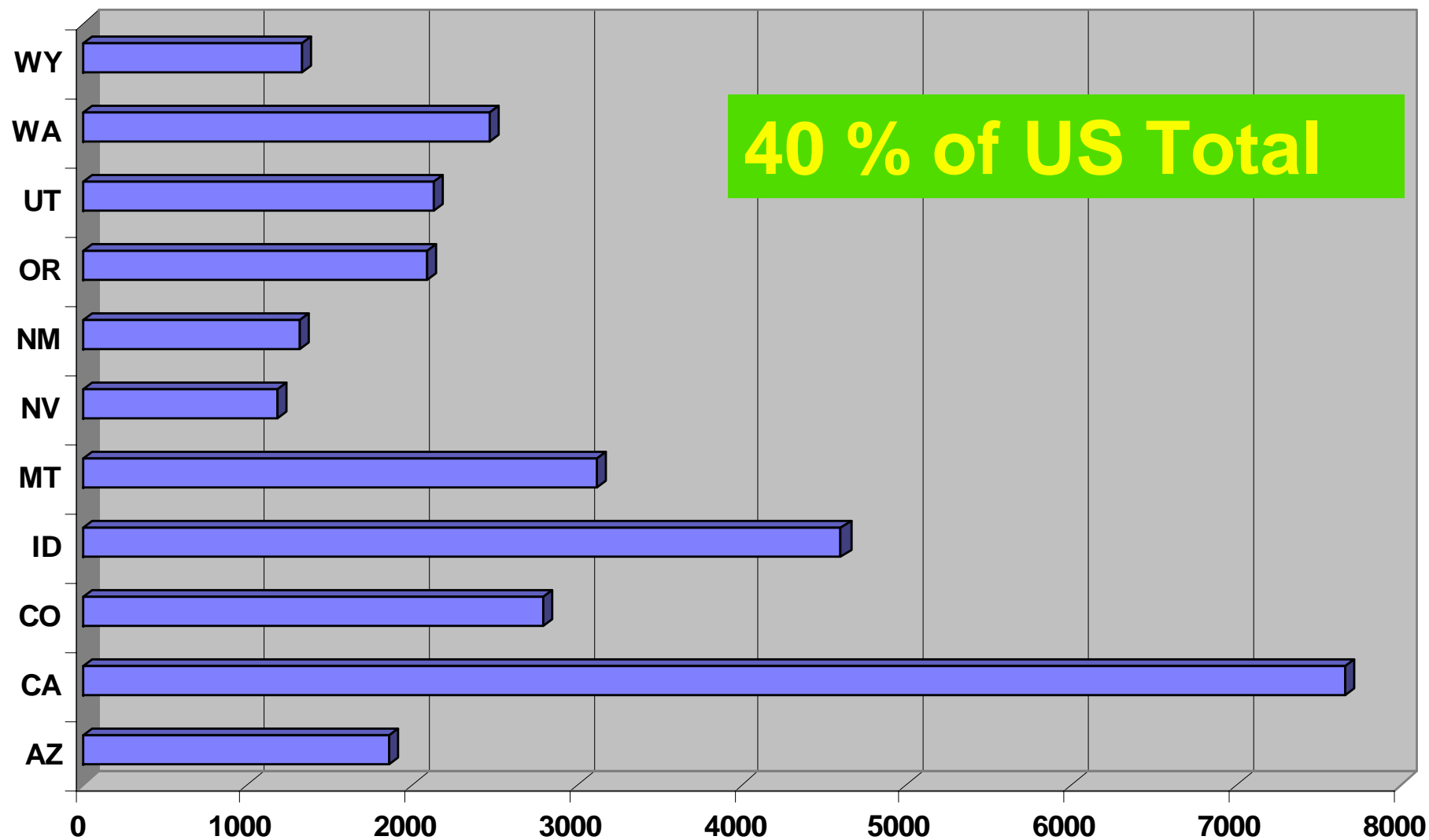


- **Top 10 States**
 - 58 % of U. S.
 - 60 % of Acre
 - 4 states NC
 - 6 states West
 - 5 Lead Dairy

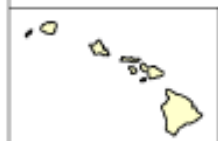
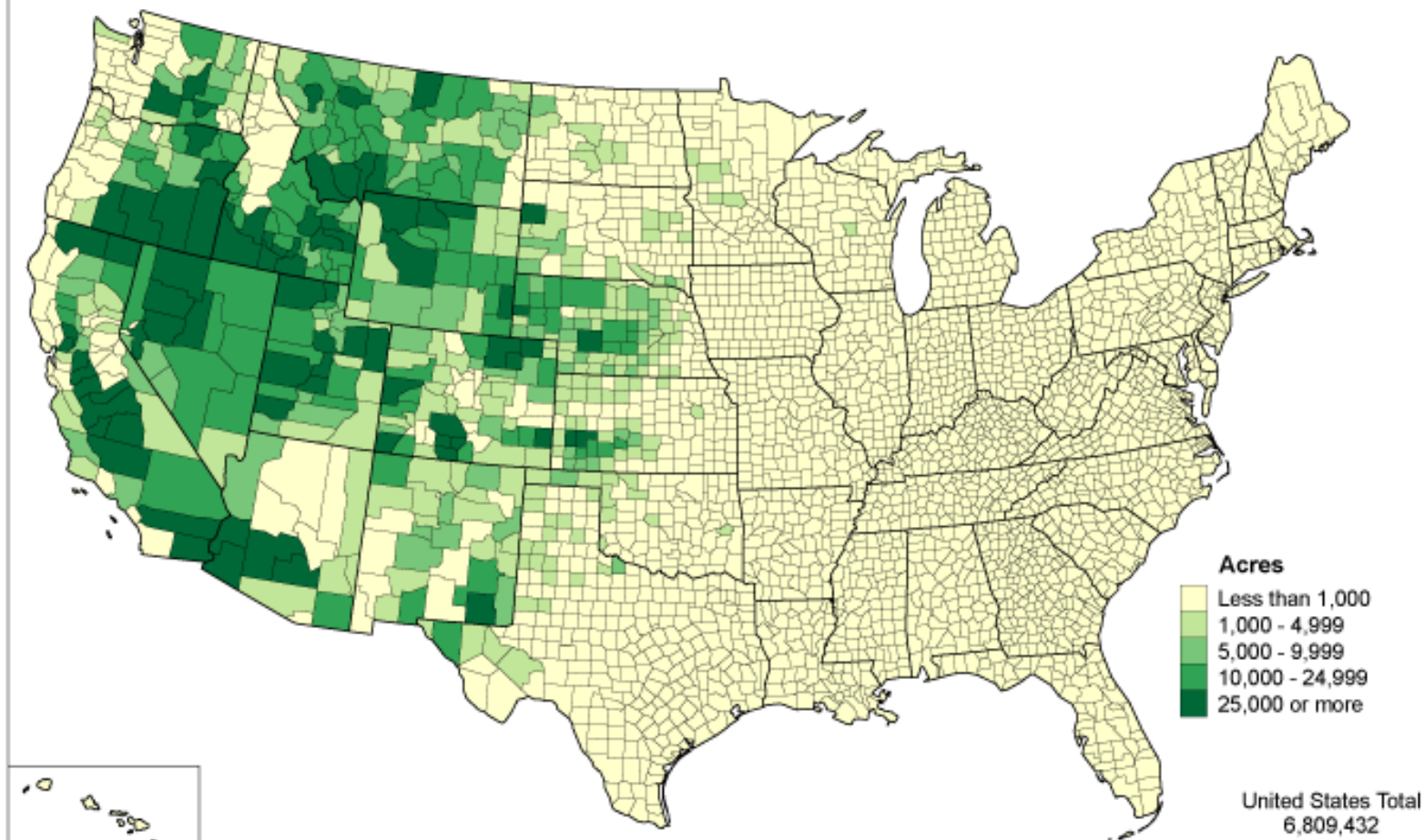
Western Alfalfa Acres, 01-03, 1,000



Western Alfalfa, 01-03, 1,000 tons



Irrigated Alfalfa Hay, Harvested Acres: 2002



02-M230
U.S. Department of Agriculture, National Agricultural Statistics Service

Overview...

- Industry Trends
 - Acreage
 - Demand
 - Price
- Emerging Issues
 - Water
 - Environmental
 - Markets
- Conclusions



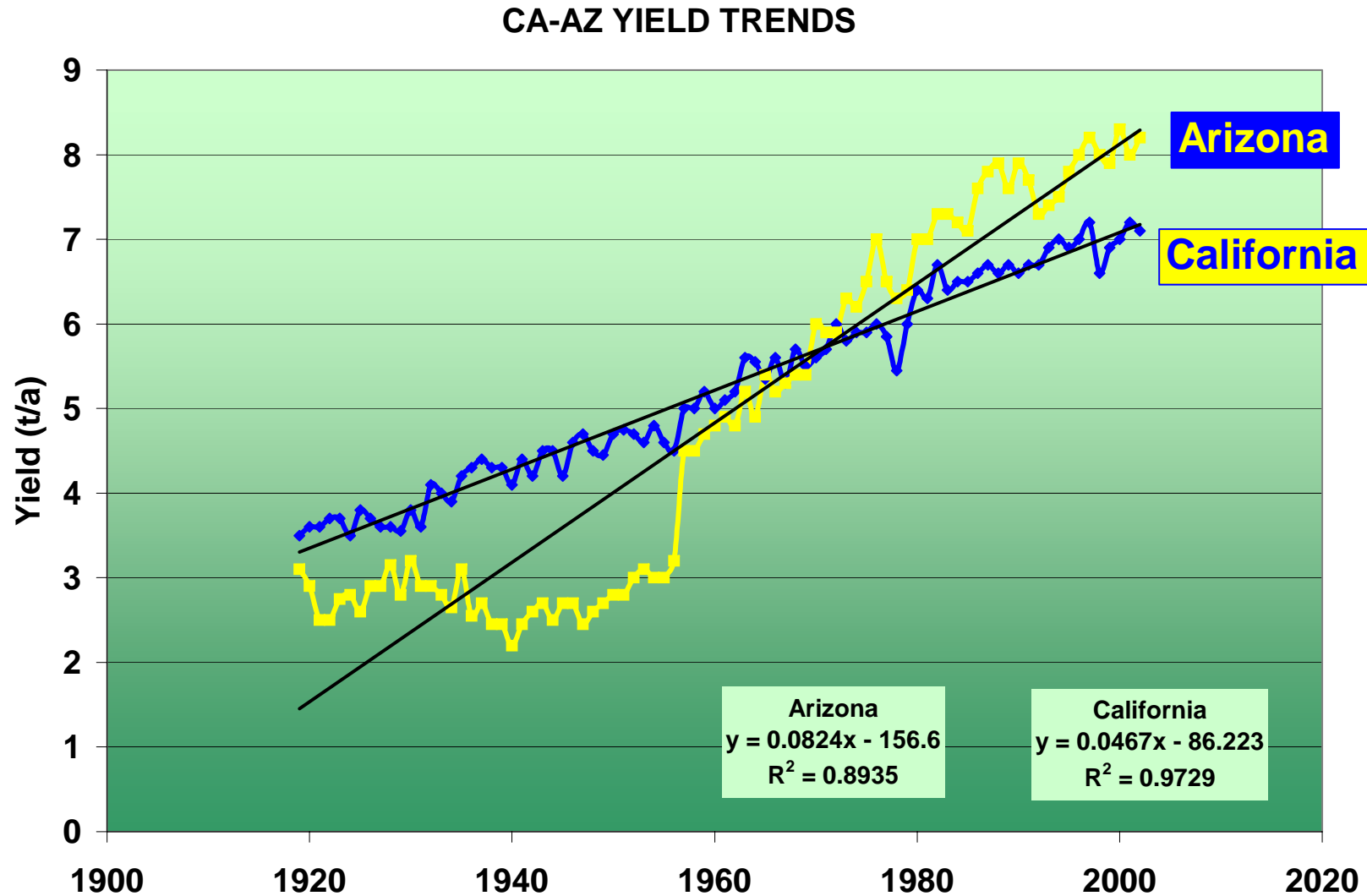
Alfalfa—Queen of Forages!

Longer Term Trends – CA, AZ

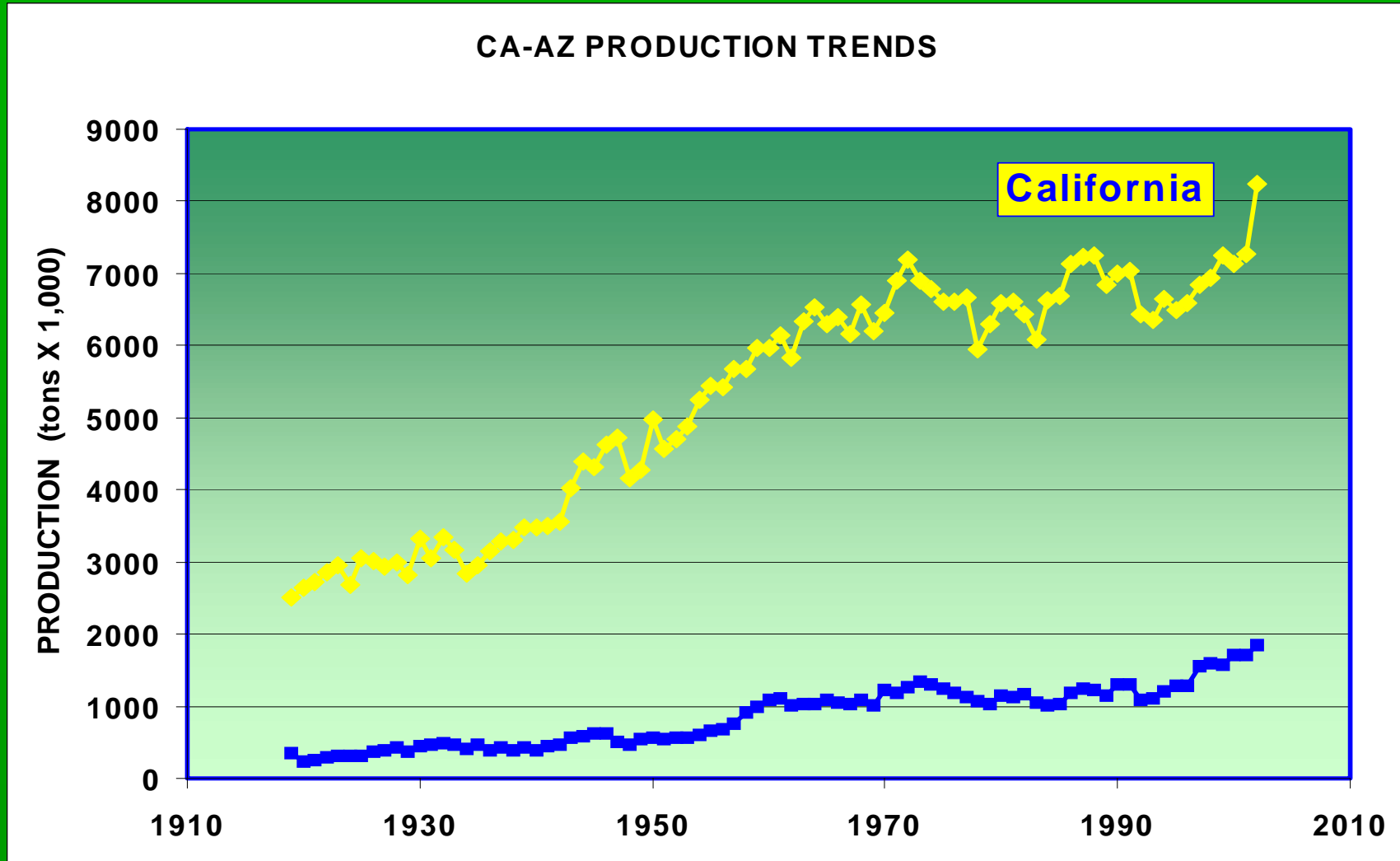


Swainson's Hawk

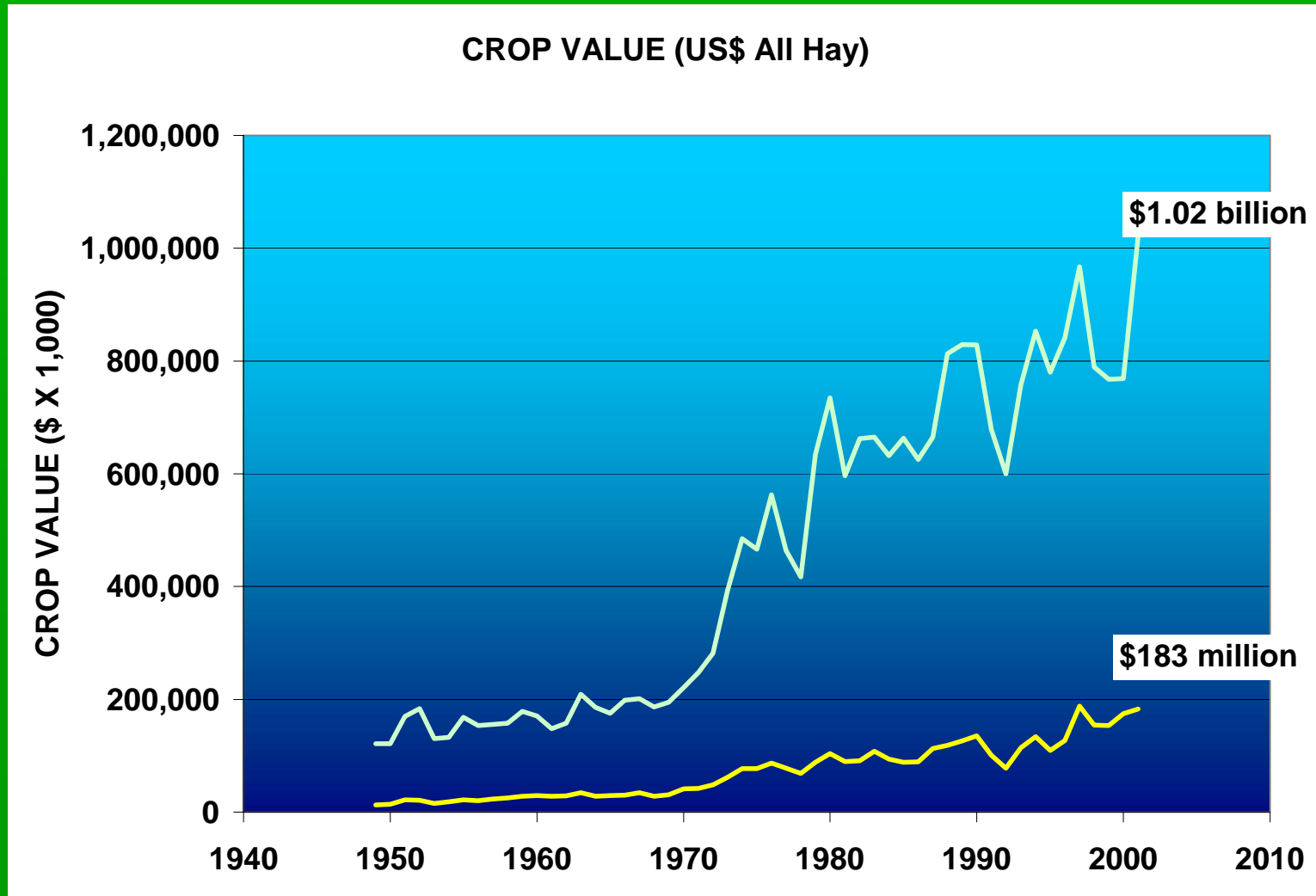
Alfalfa Yield Trends



CA-AZ Production Trends



All Hay – Crop Value



Long-Term Trends – CA, AZ

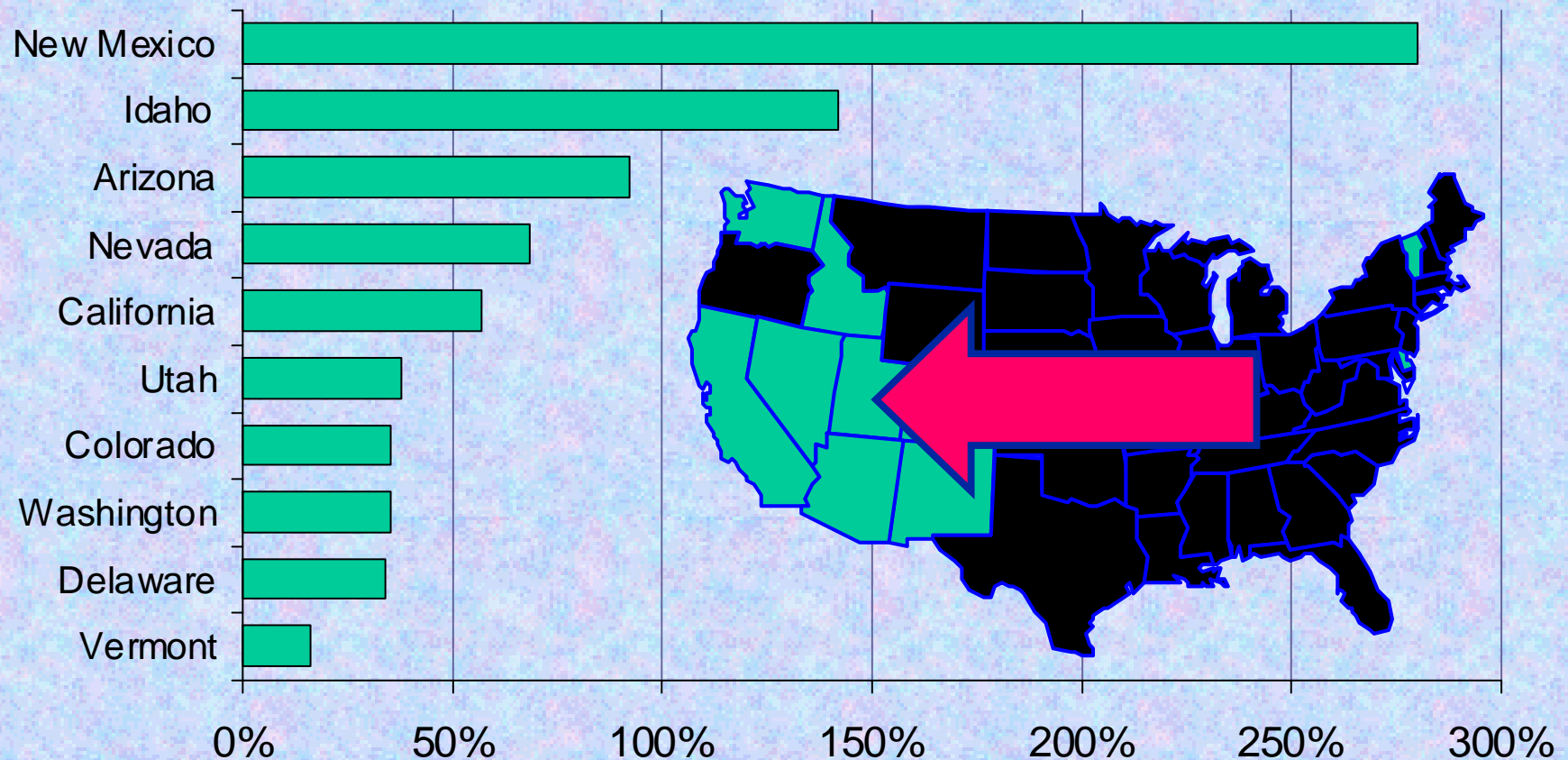
- Likely to remain around 1.2-1.4 M acres (2 states), +/- 100,000 acres
- Key 'Megatrends'
 - Cow Numbers/Dairy Demand
 - Horse Numbers
 - Population Boom, Urbanization
 - Increased Regulation
 - Water Availability/Transfers

Short Term Trends – CA, AZ

- **Huge Jump in Acreage 2001-2002**
- **“Moderation” in Price (not crash)**
- **Ascendancy of Forage Quality (typical of lower priced-years)**
- **Acreage likely to remain near this in '03**
- **Dairy Price**

Changing U.S. Milk Production

U.S. Milk Production: Largest Production Increases, 1989-1999*

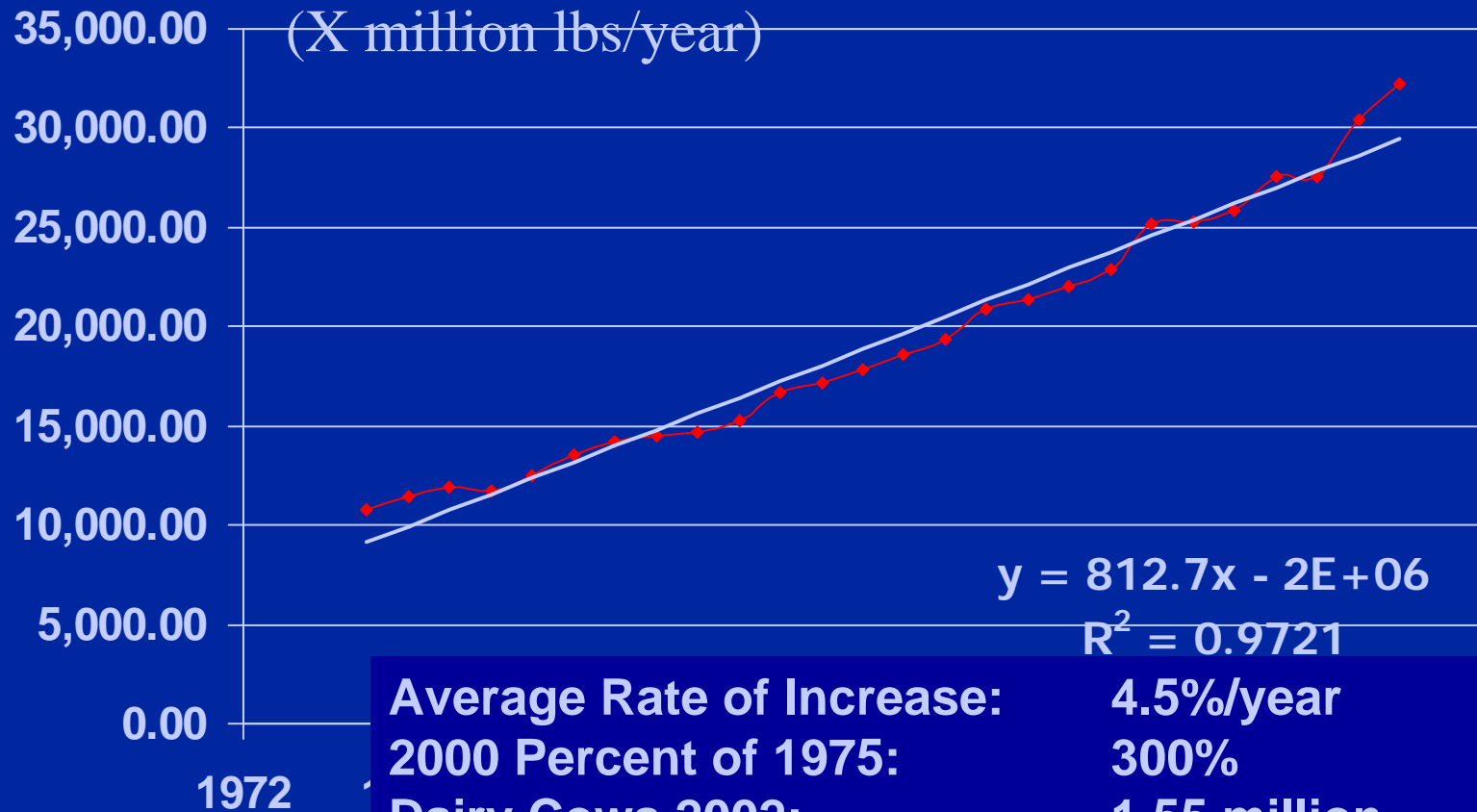


*Preliminary estimate.

Source: USDA/NASS, Milk Production.

WMMB

Dairy Production-California



Average Rate of Increase:	4.5%/year
2000 Percent of 1975:	300%
Dairy Cows 2002:	1.55 million
Additional Milk each year:	813 million lbs
That's equal to:	10 million gal/year

Growth of Western Dairying:

- **Phenomenal Expansion-likely to continue**
- **Dairy-forage Continuum: Clearly the leading agricultural industry in >\$5 billion/yr**
- **Impetus: population increases/low cost of production in California**
- **Key flash points:**
 - **Waste Management/Environmental**
 - **World Price/Competition/Consolidation**
 - **Cost of Feed-Western dairies are vulnerable**
 - **Water**
- **Sustainability?**

Where does the Alfalfa Go?

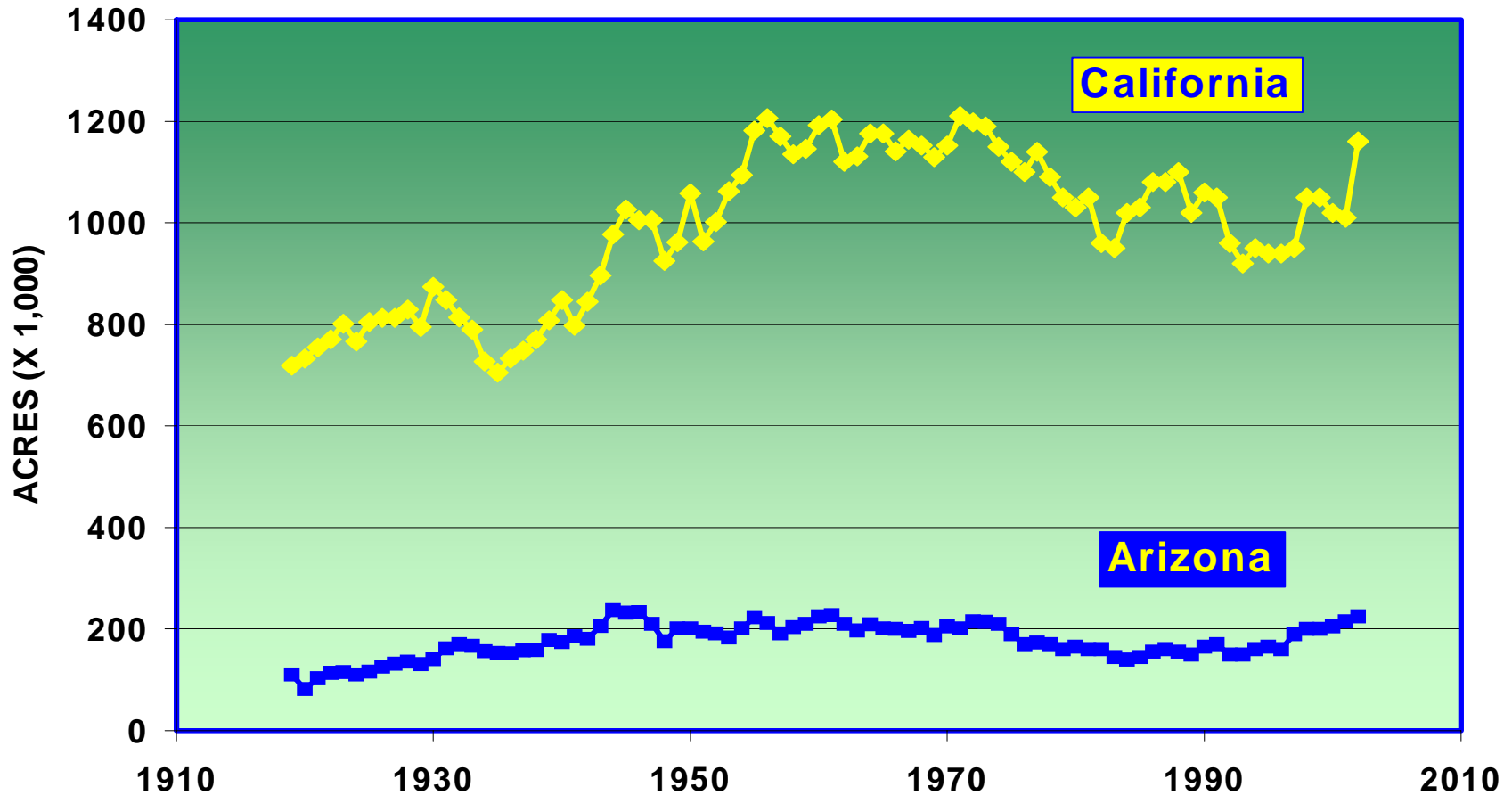
Key Markets (California)

Approximate %

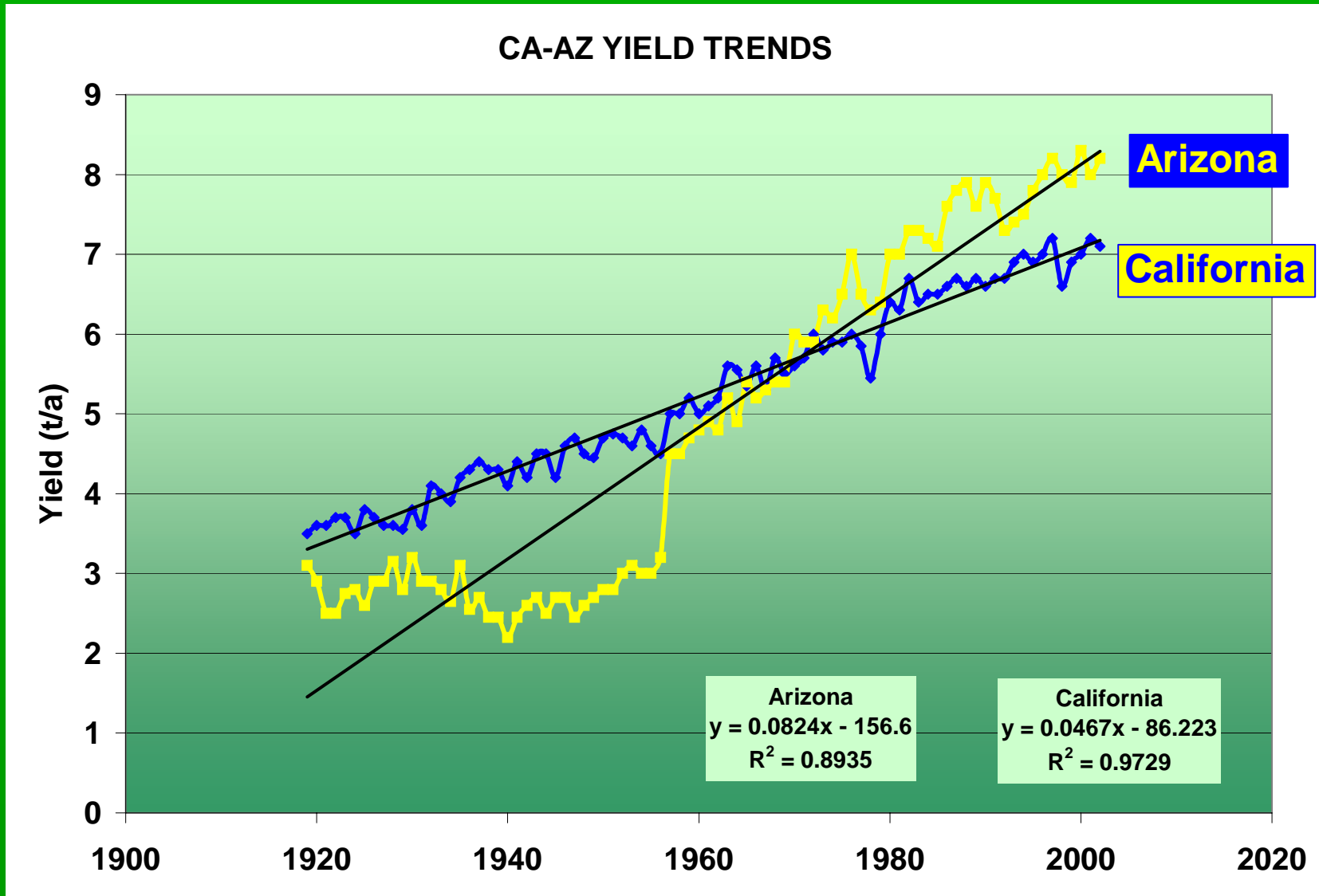
■ Dairy	75-85%
■ Beef	5-10%
■ Sheep/Goat	<2%
■ Horse	5-10%
■ Exports	5-8%

Acreege Trends – CA, AZ

CA-AZ ACREAGE TRENDS

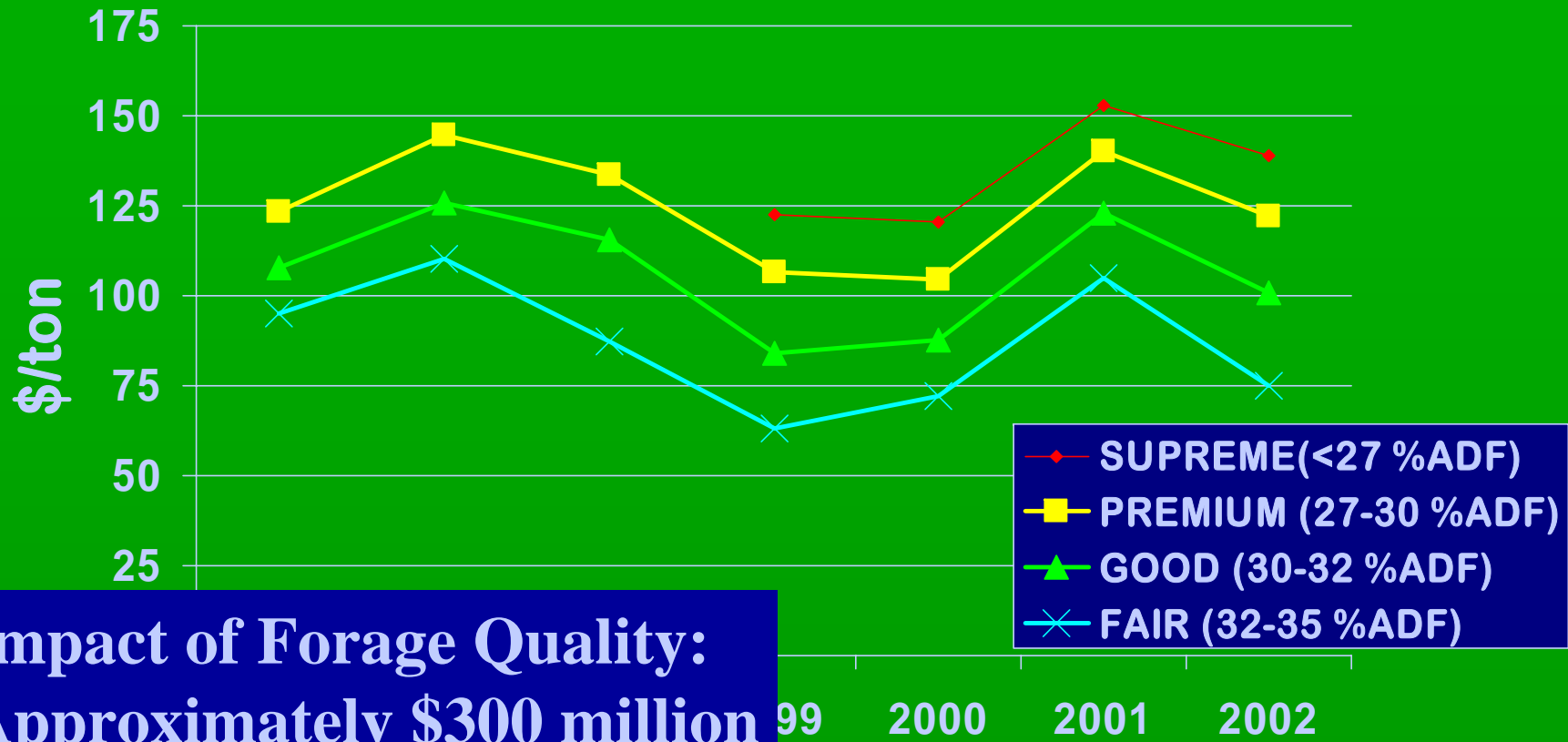


Alfalfa Yield Trends



Effect of Forage Quality on Price

(average of all California Markets)



**Impact of Forage Quality:
Approximately \$300 million
In CA alone.**

Influence of Quality on Intake & Milk

Figure 7. Relationship of alfalfa hay TDN and predicted dry matter intake (DMI) and Milk yield on dairy 1 in Table 1.

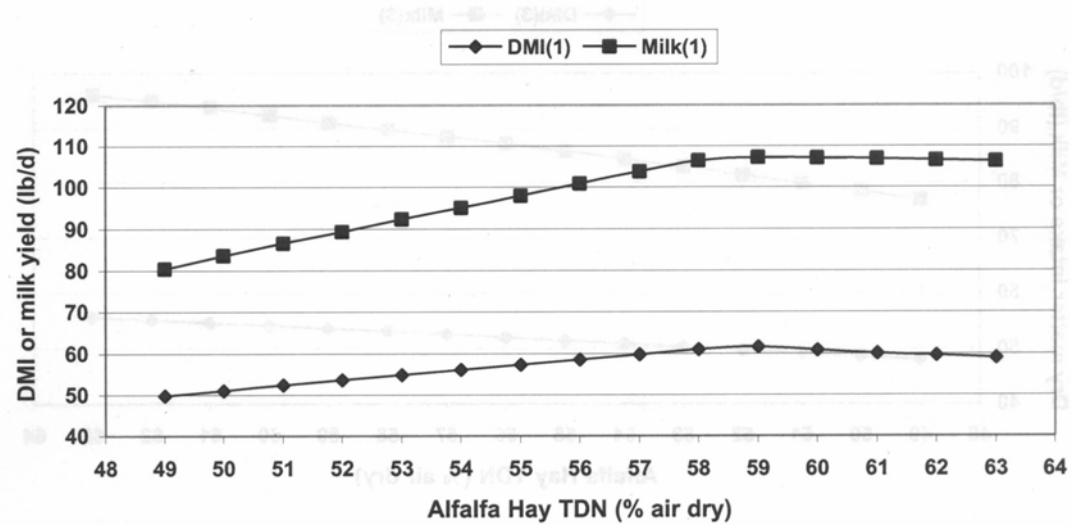
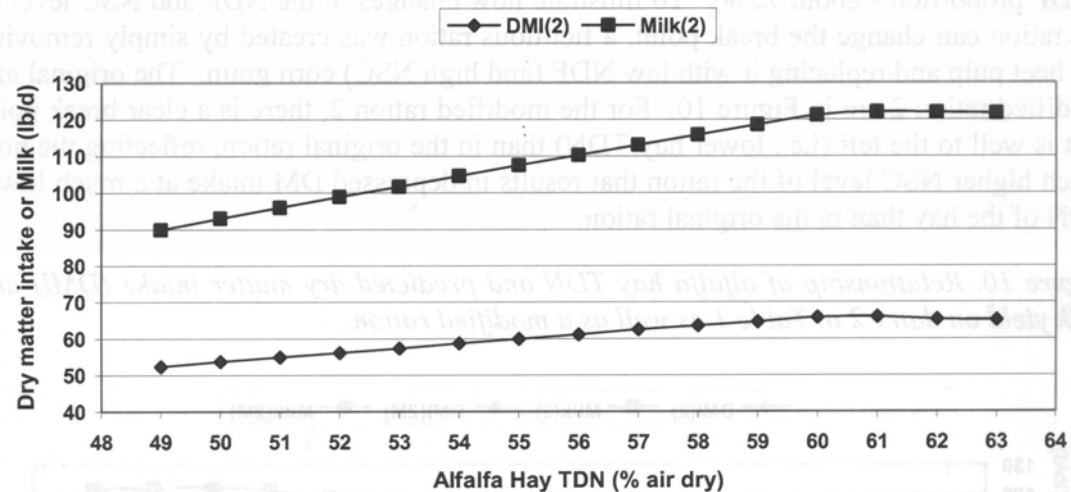


Figure 8. Relationship of alfalfa hay TDN and predicted dry matter intake (DMI) and Milk yield on dairy 2 in Table 1.



SOURCE: Robinson and DePeters, 2000. UC-Davis

Emerging Issue:

WATER

Quantity, Availability, Price



**Without a doubt....
The major issue for Alfalfa**

Water and Alfalfa

- **2 to 7 Acre Feet Per year Applied**
- **Probably about 5-5.5 AF/year average in CA**
– more in AZ, Southern CA
- **Approx. 15% of California's Agricultural Water – single highest demand crop**
- **Lack of Flexibility – Perennial**
- **Difficult to reduce total water use without reducing yield**

Water and Alfalfa...

Not such as dismal story:

■ High water use related primarily to

- Acreage
- Length of Season
- High Yield

(Alfalfa water use is comparable to most herbaceous crops when these are factored)

■ Alfalfa High in Water-Use Efficiency

■ Deep roots assure recovery of residual water

Key Arizona Water Issues

- 1980 Arizona Groundwater Code—to reduce groundwater overdraft - Central part of state
- Bones of contention – rights of farmers, method of calculating water duties - irrigation efficiency.
- Water diversion from rivers by agriculture and effect on endangered species (e.g. Gila River)
- Quality (EC) of water delivered to Mexico in Colorado River
- Indian water rights and effect on other water uses

Key Water Issues in CA:

(PARTIAL LIST, South to North)

- **200,000 AF Transfer from IID to SD—largest Ag-Urban transfer in history – 1998 but still pending.**
- **Environmental surrounding the Salton Sea (keep agricultural drain water)**
- **CA's Commitment not to exceed 4.4 million AF AF/year from Colorado River (usually over by 800,000 AF or 20%) Key issue for both AZ/CA.**
- **Pending Long term commitment to transfer 29% of Palo Verde water to Los Angeles**

CA Pending Water Concerns/Constraints:

(PARTIAL LIST, South to North CONTINUED)

- **Adjudication of Mojave Desert Groundwater in conflict with urban demand**
- **Purchase of water to restore wildlife habitat in the S. San Joaquin Valley**
- **CALFED proposals to convert 200,000 acres of Delta farmland to restoration of habitat**
- **Fallowing on the West Side due to drainage and cost issues**

CA Pending Water Concerns/Constraints:

(PARTIAL LIST, South to North CONTINUED)

- **Economic Transfers between Sacramento Valley and S. California Cities**
- **Water purchases maintenance of high reservoir levels for CA energy generation**
- **Restoration of stream flows, meander of Sacramento/San Joaquin Rivers by moving levies, absorbing farmland**

CA Pending Water Concerns/Constraints:

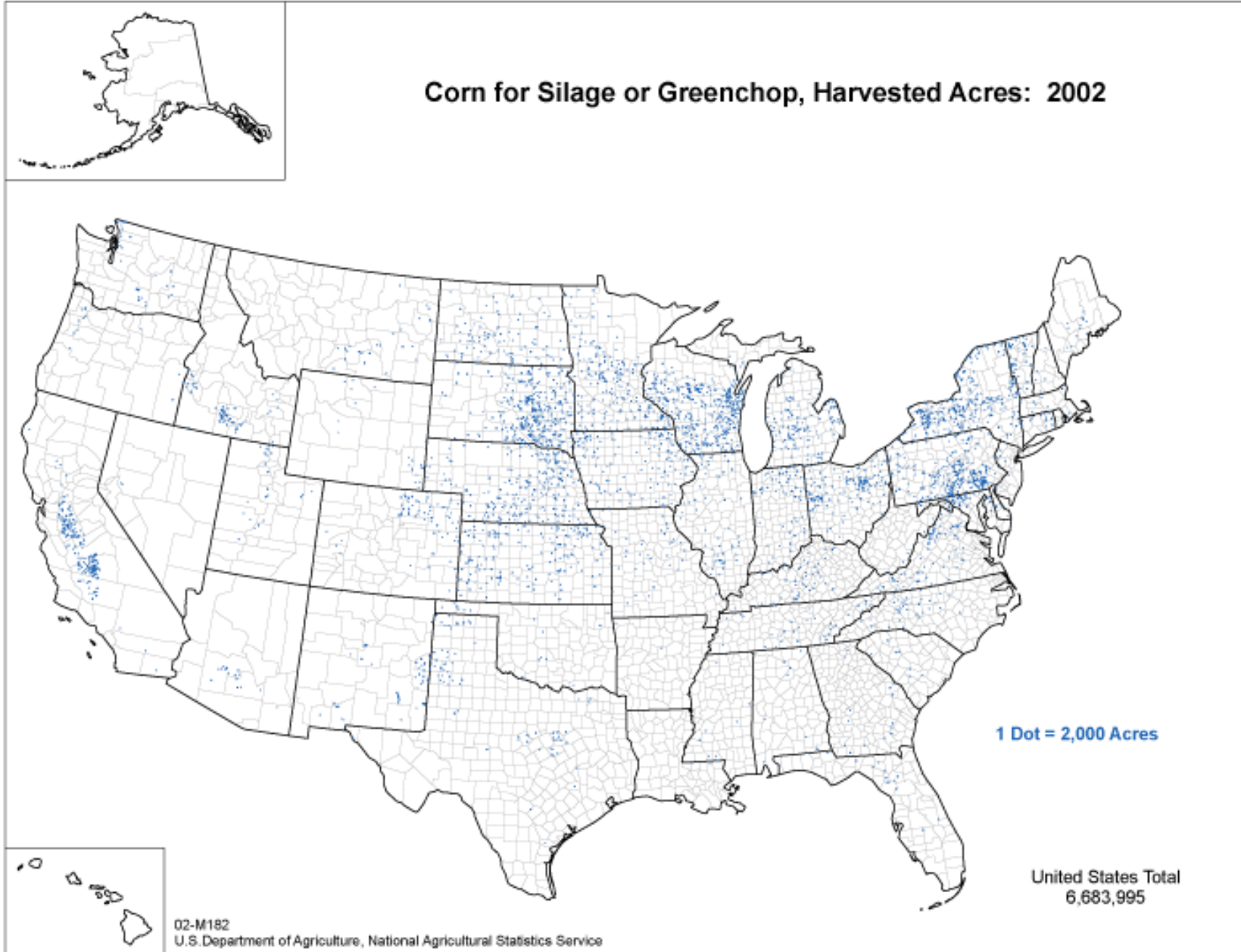
(PARTIAL LIST, South to North CONTINUED)

- **Trinity Lake Diversions questioned due to Endangered Species Act.**
- **Klamath Basin Uncertainty due to Endangered Species Act (suckerfish and salmon) ruling to maintain lake and stream levels.**
- **Possible listing of Coho salmon as endangered in California. Potential impact upon both pumping supplies and many Intermountain and Sacramento River watersheds.**

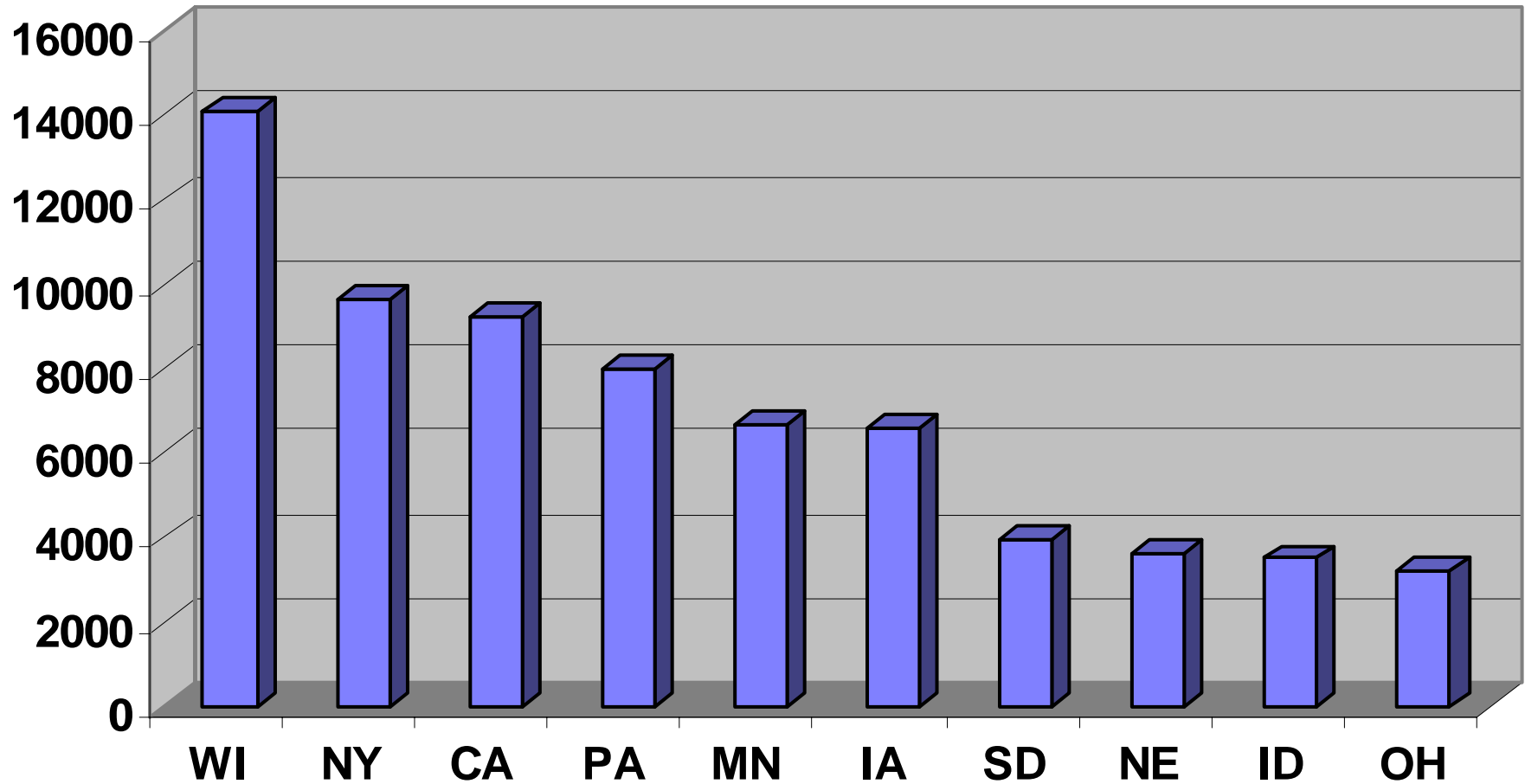
Alfalfa Summary

- **Water Constraints, Competitive Crops, Urbanization Approximately Counteracts tremendous increase in cow numbers to determine acreage**
- **Forage Quality to become more important as % in ration declines**
- **Water Transfers of various types in our future**
- **Water Quality issues interact closely with water supply issues**

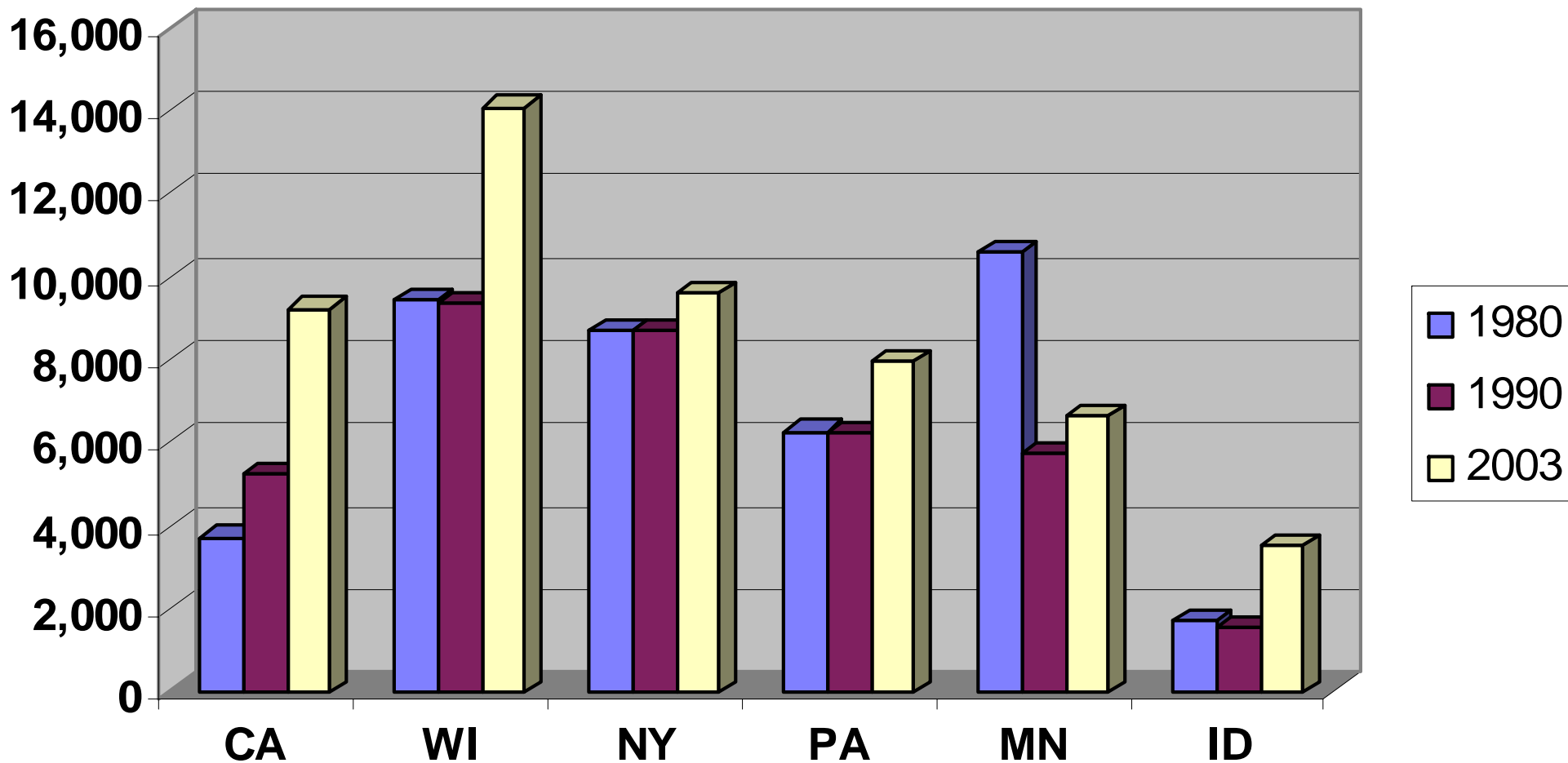
Corn for Silage or Greenchop, Harvested Acres: 2002



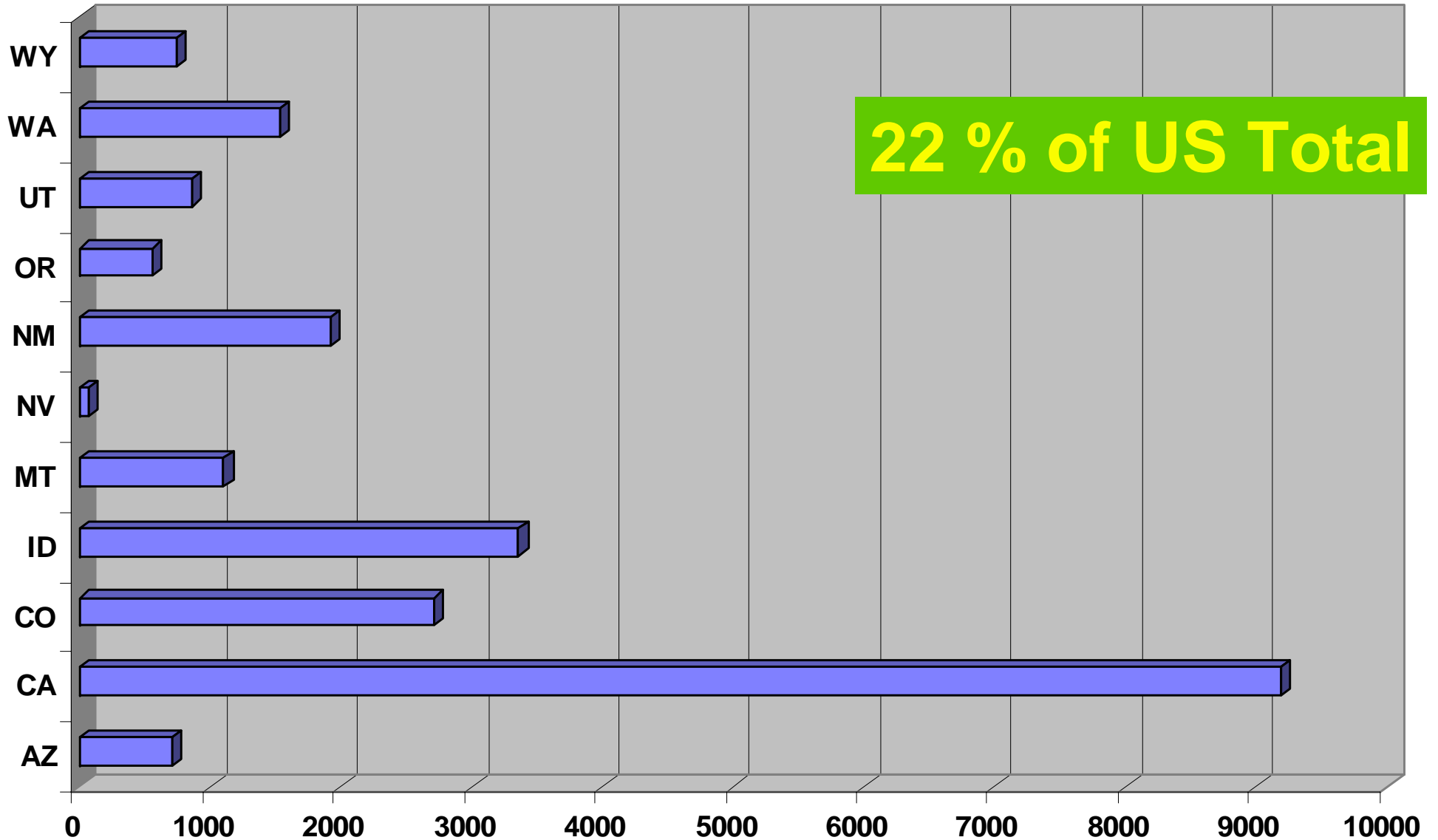
Corn Silage Production, 2003



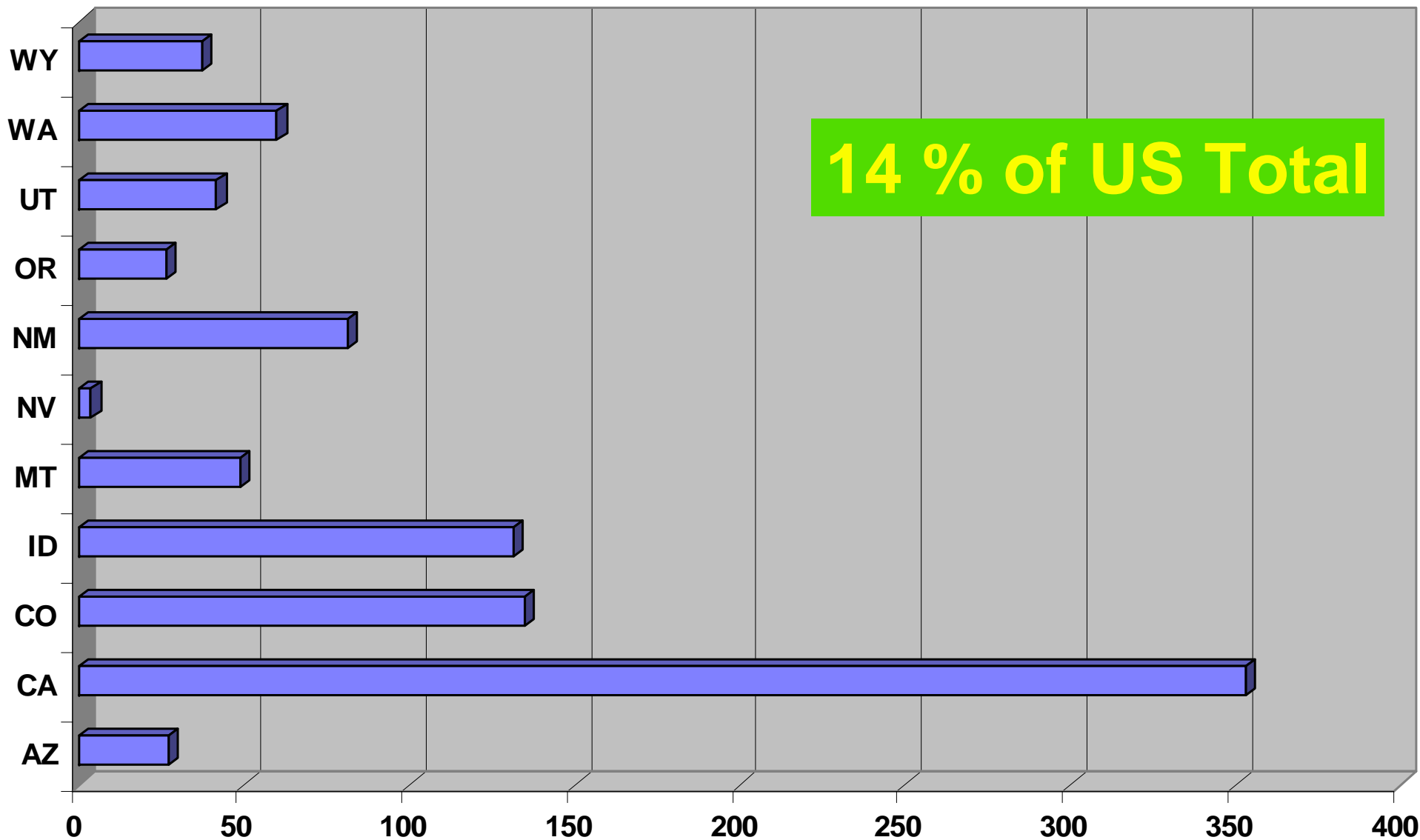
Corn Silage Production in Leading Dairy States



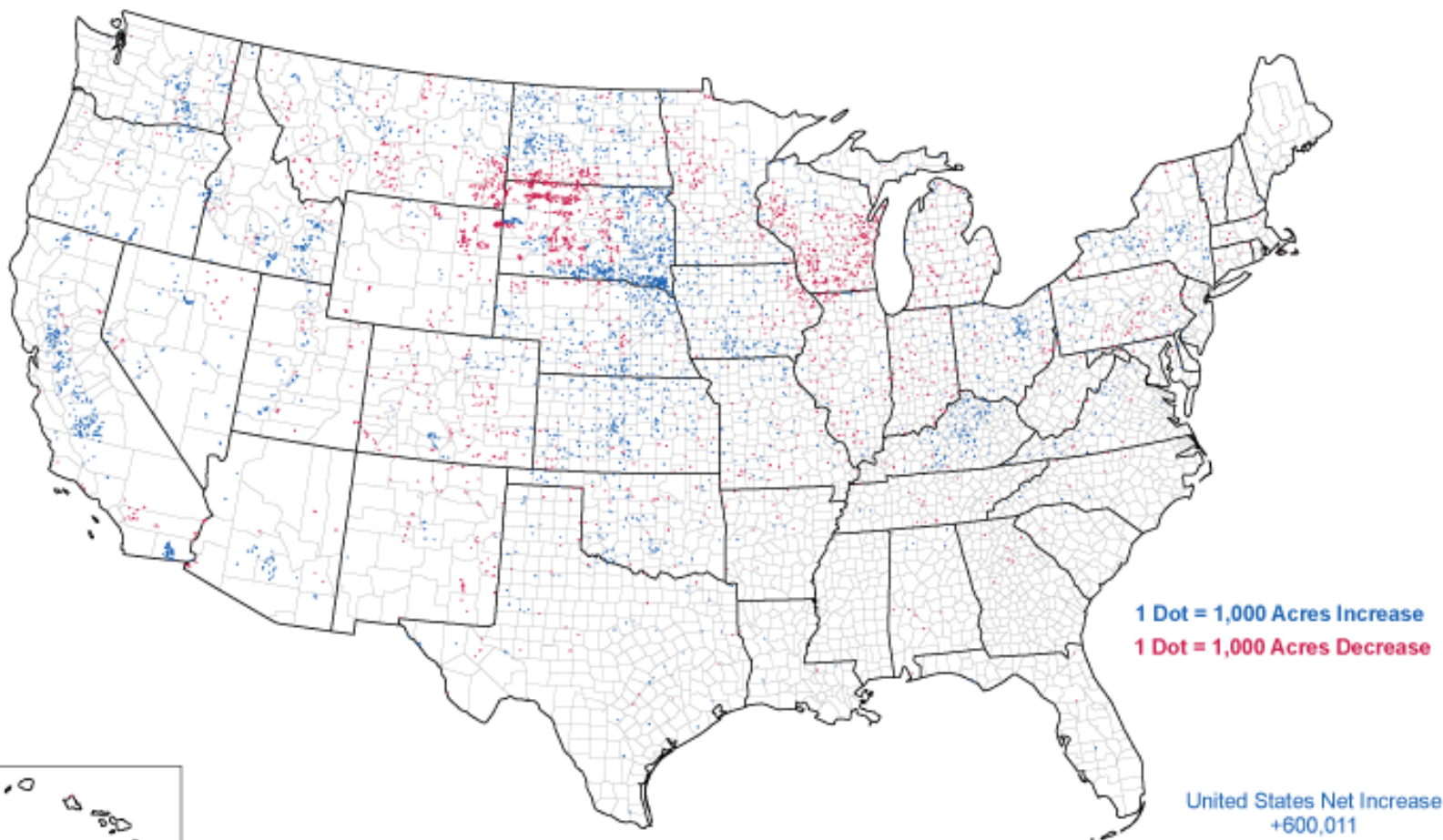
Western Corn Silage, 01-03, 1000 tons



Western Corn Silage Acres, 01-03, 1000



Alfalfa Hay Harvested - Change in Acreage: 1997 to 2002



02-M231
U.S. Department of Agriculture, National Agricultural Statistics Service