A National Perspective on Irrigation Resources

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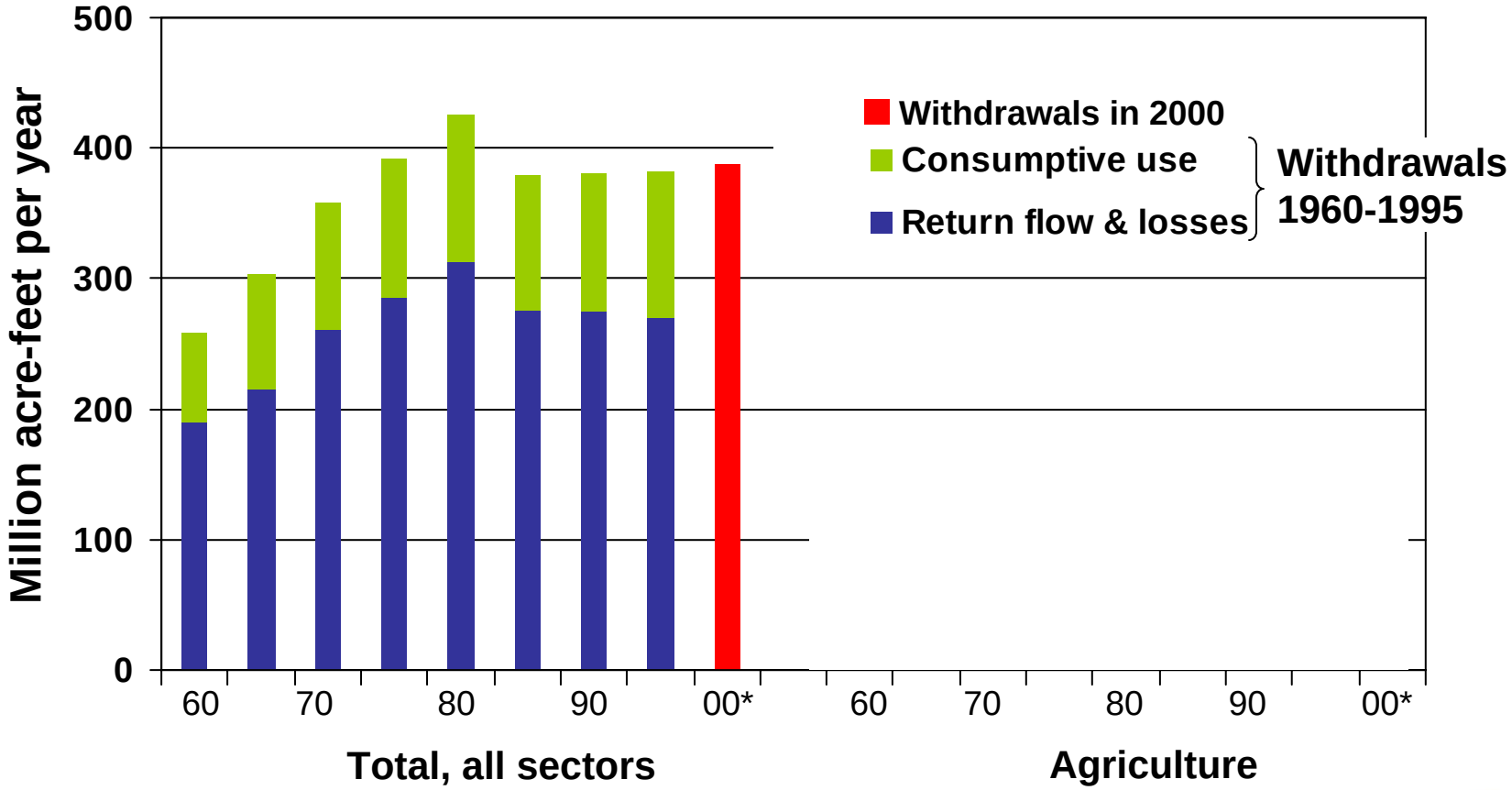
NRCS

Goal of Presentation

- Provide a National perspective on water-related issues impacting irrigated agriculture
  - Historical trends leading to current conditions
    - Water use
    - Irrigated acres
    - Crop applications
- Issues for consideration

Water Withdrawals and Use Estimates, 1960-2000

Total & Agricultural Water Withdrawals in 2000 & Withdrawals With Consumptive Use Estimates, 1960-1995



Source: USDA, NRCS, based on Hutson et al, 2004

* Data limitations do not allow estimation of consumptive use in 2000.

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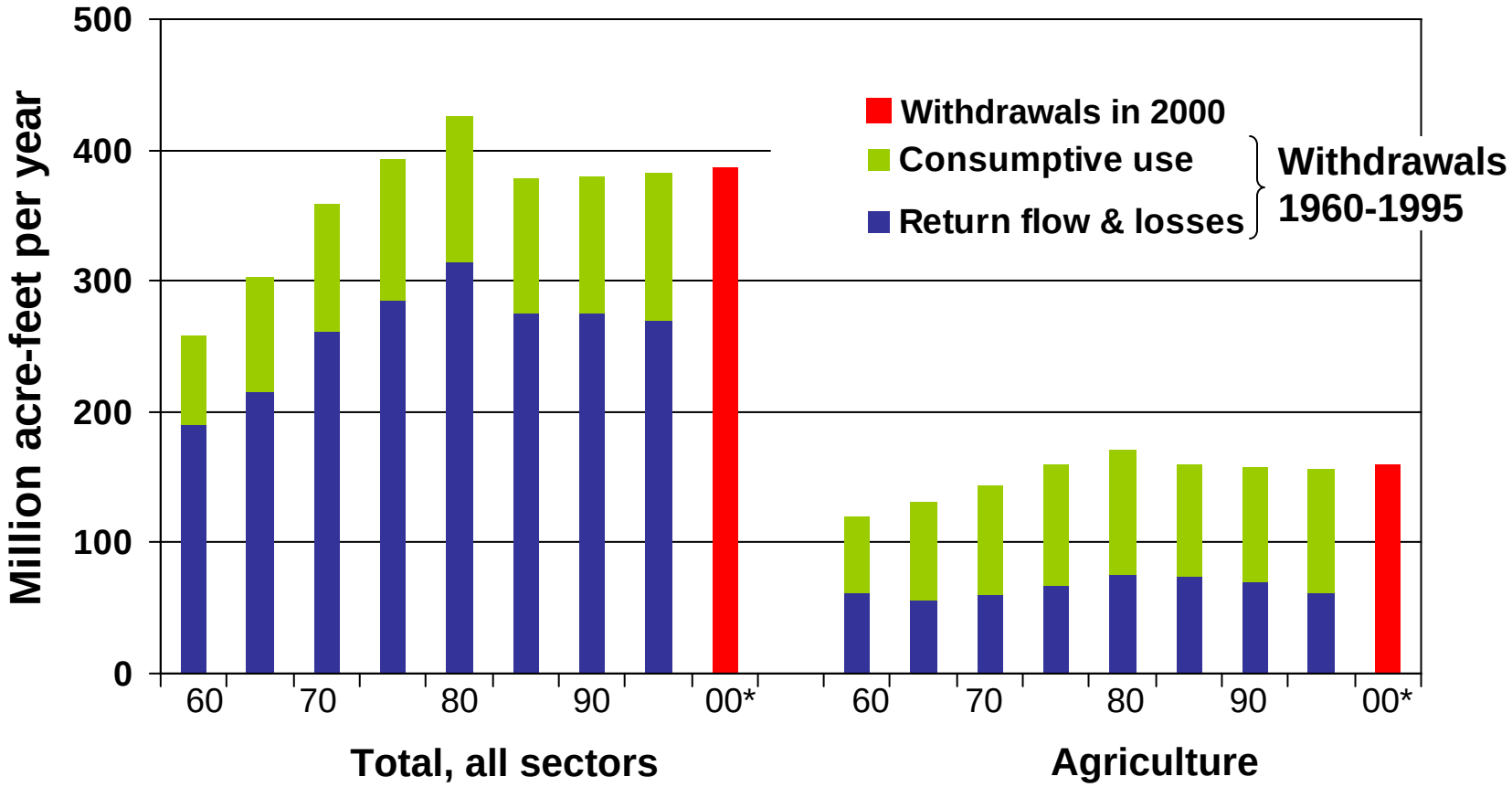

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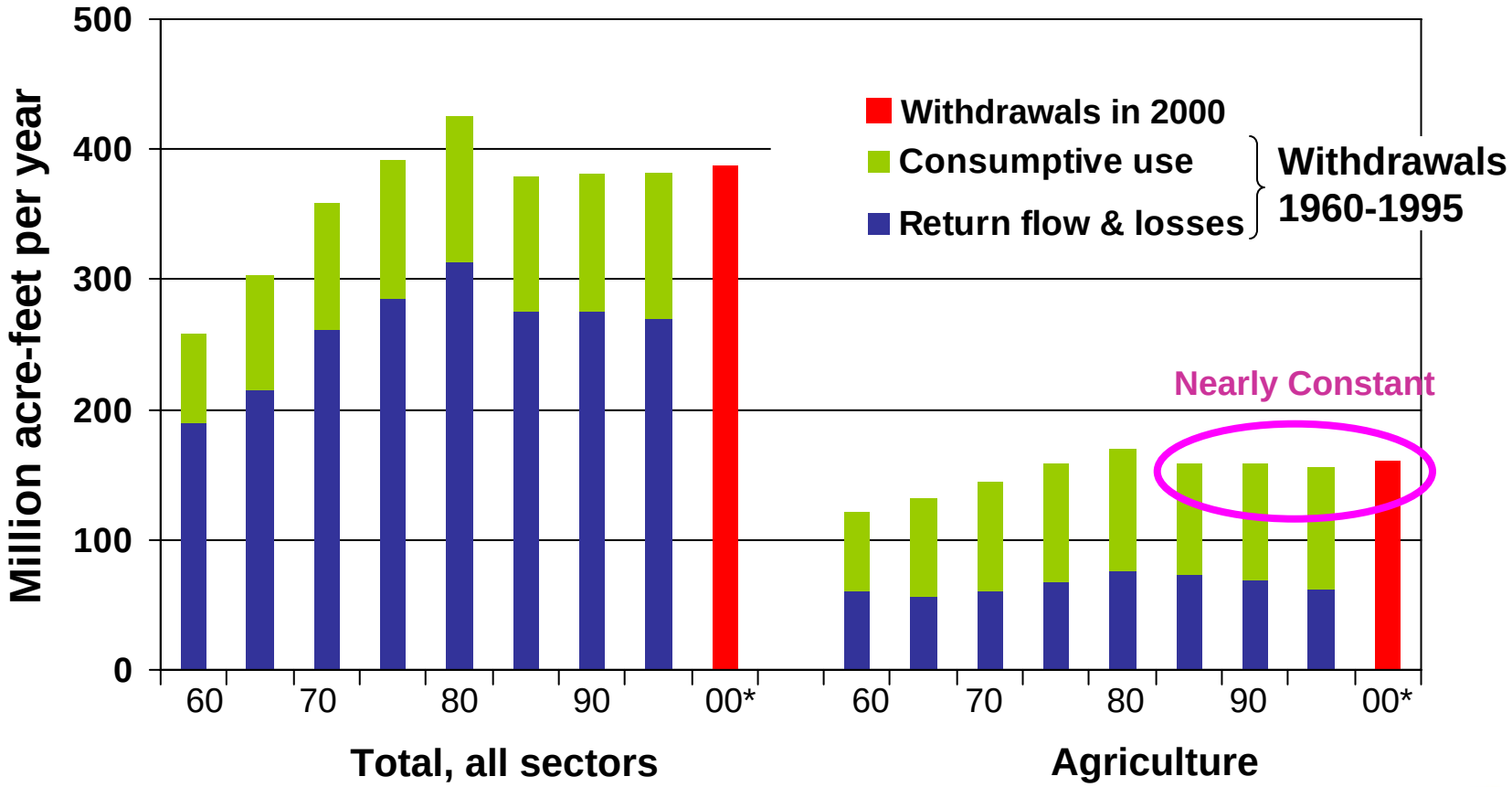

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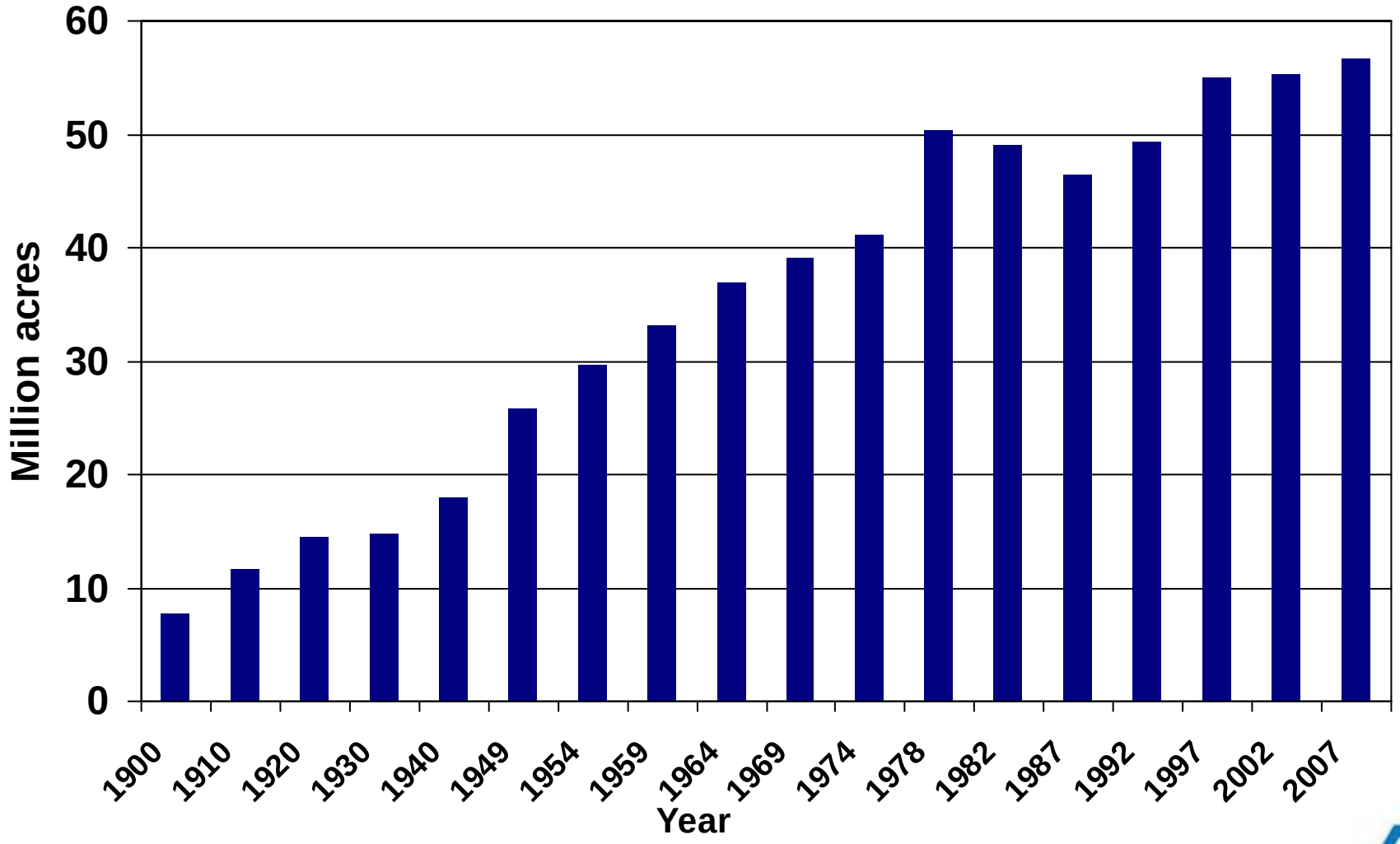
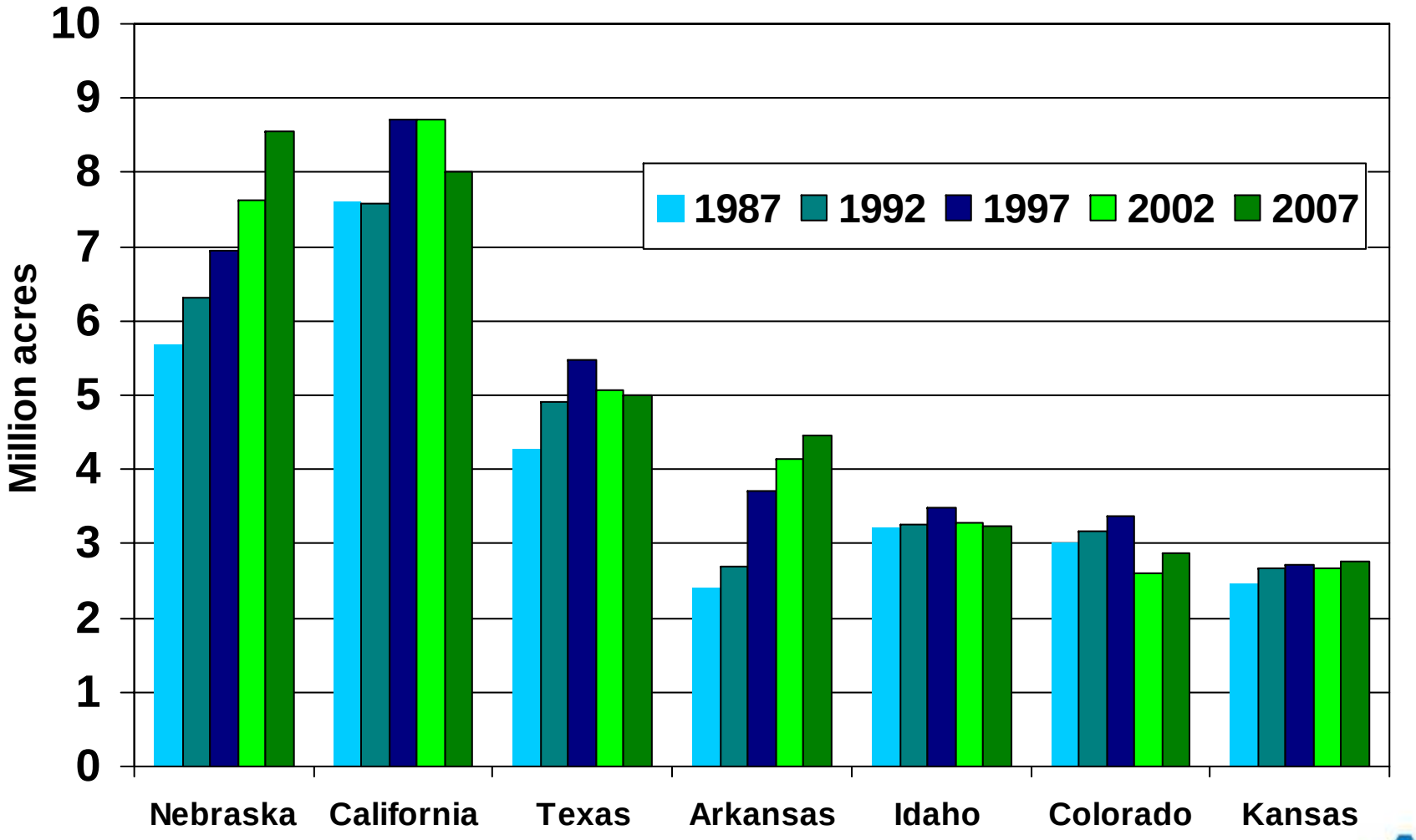
U.S. Irrigated acres



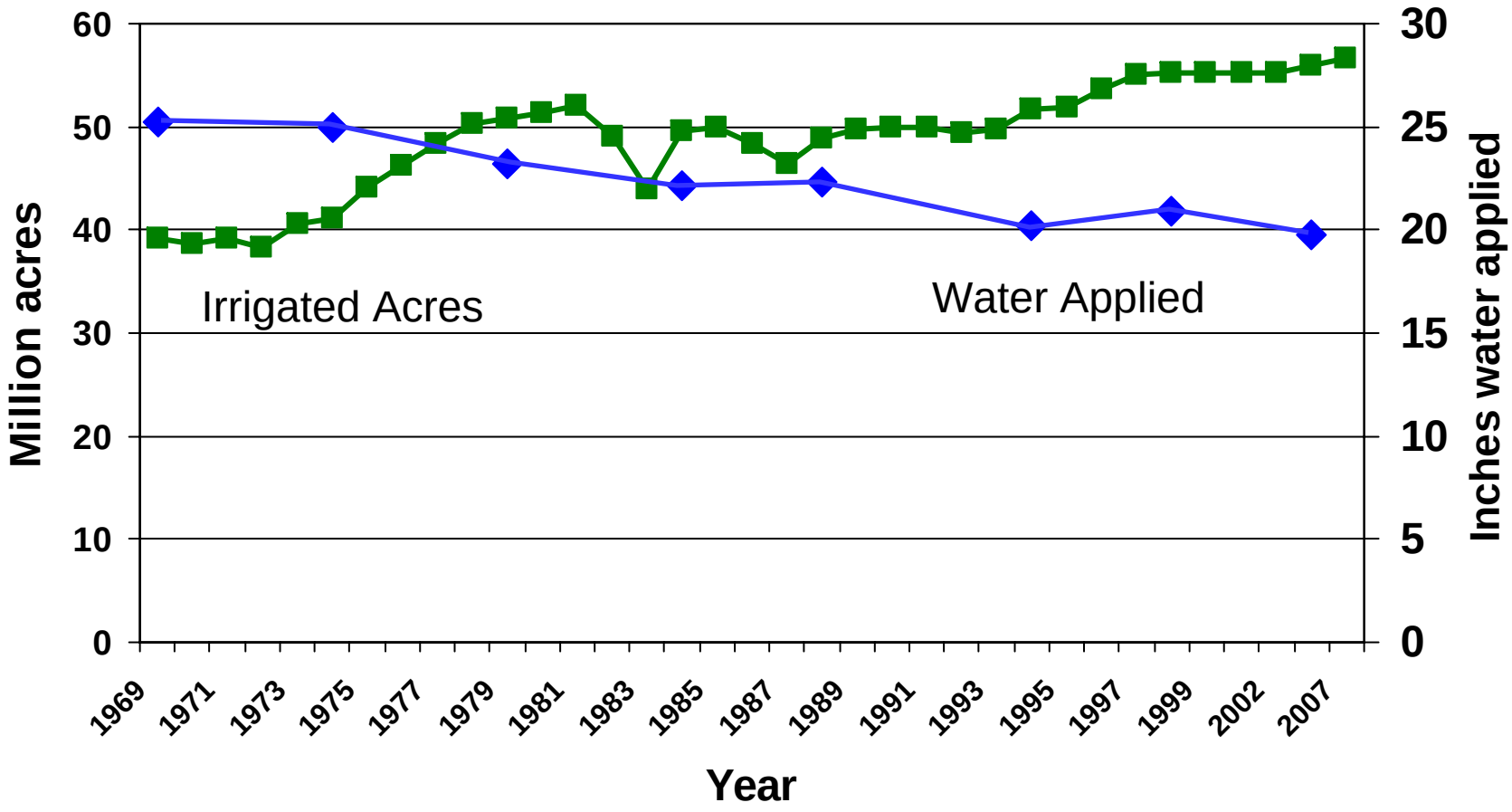
Source: USDA, NRCS, based Census of Agriculture Data

U.S. Irrigated acres, leading states



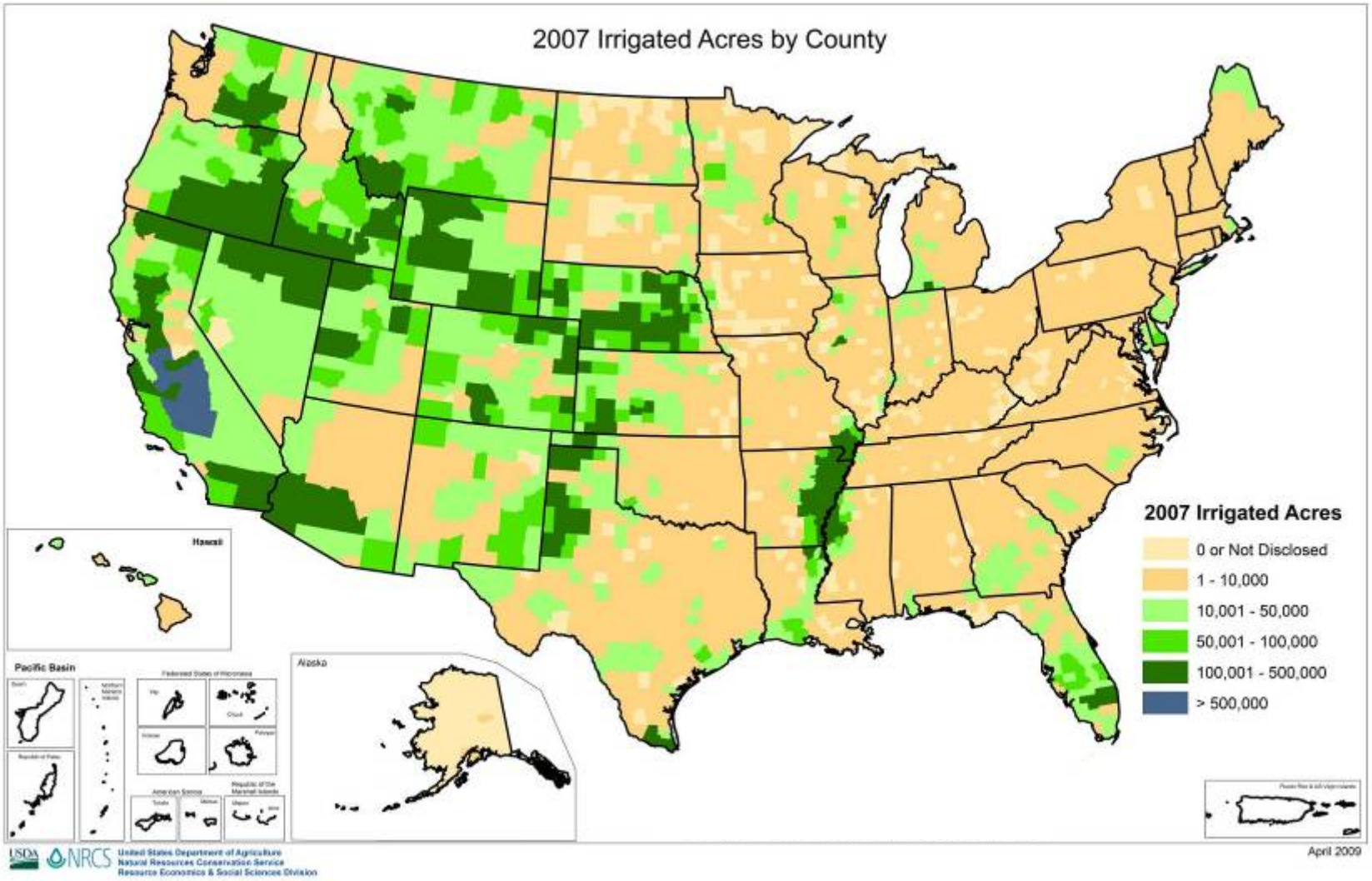
Source: USDA, NRCS, based Census of Agriculture Data

U.S. Irrigated Acres & Water Applications



Source: NRCS, based Census of Agriculture Data and Farm and Ranch Irrigation Survey Data

U.S. Irrigated Acres location

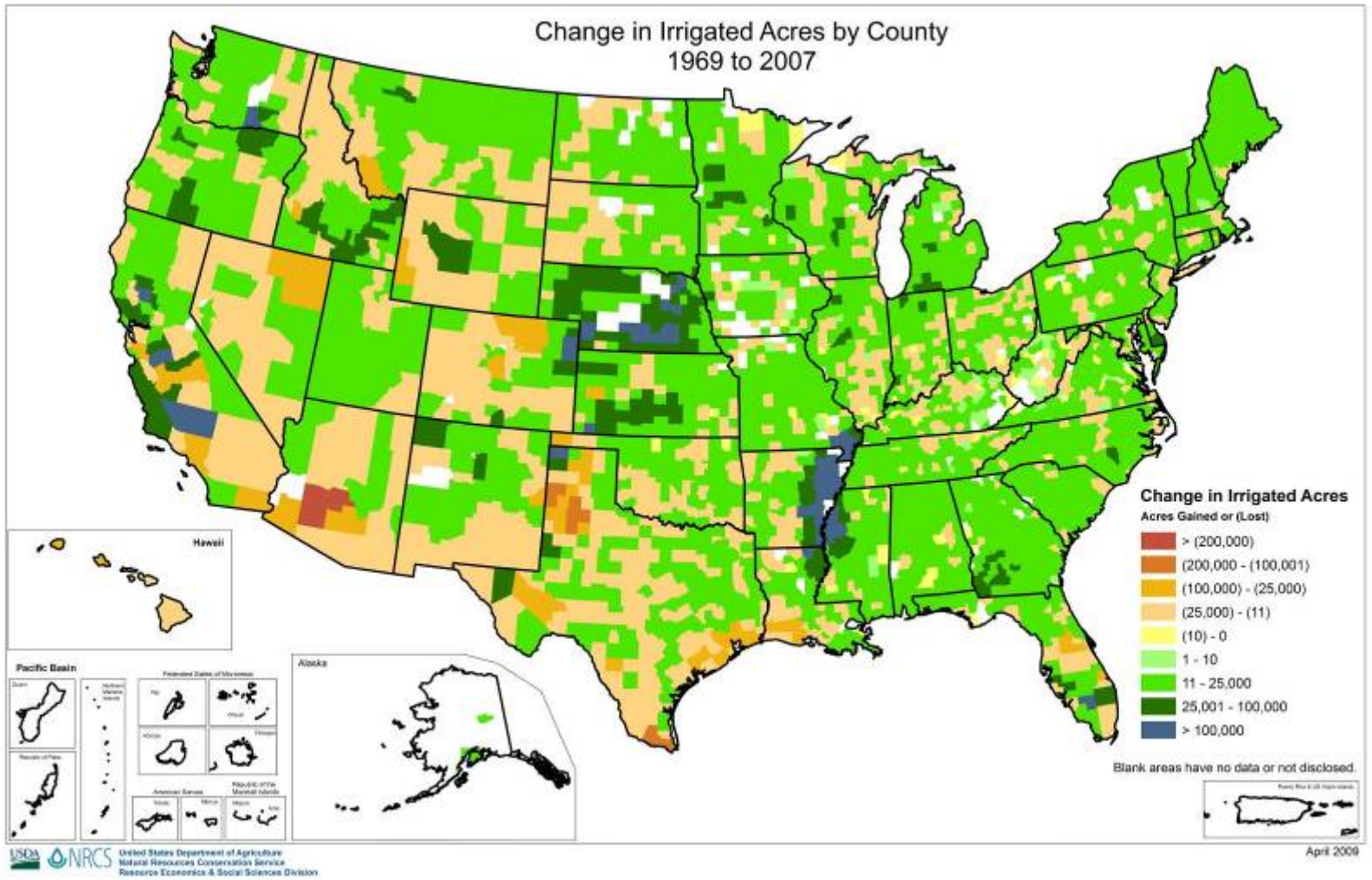


Source: Based on 2007 Census of Agriculture Data

How was reduction in applied water accomplished (part 1)?

- Location, Location, Location
  - Reduced acres in higher application areas (Southwest)
  - Increased acres in lower application areas (Southeast & Northern Plains)

Change in U.S. Irrigated Acres location, 69-07

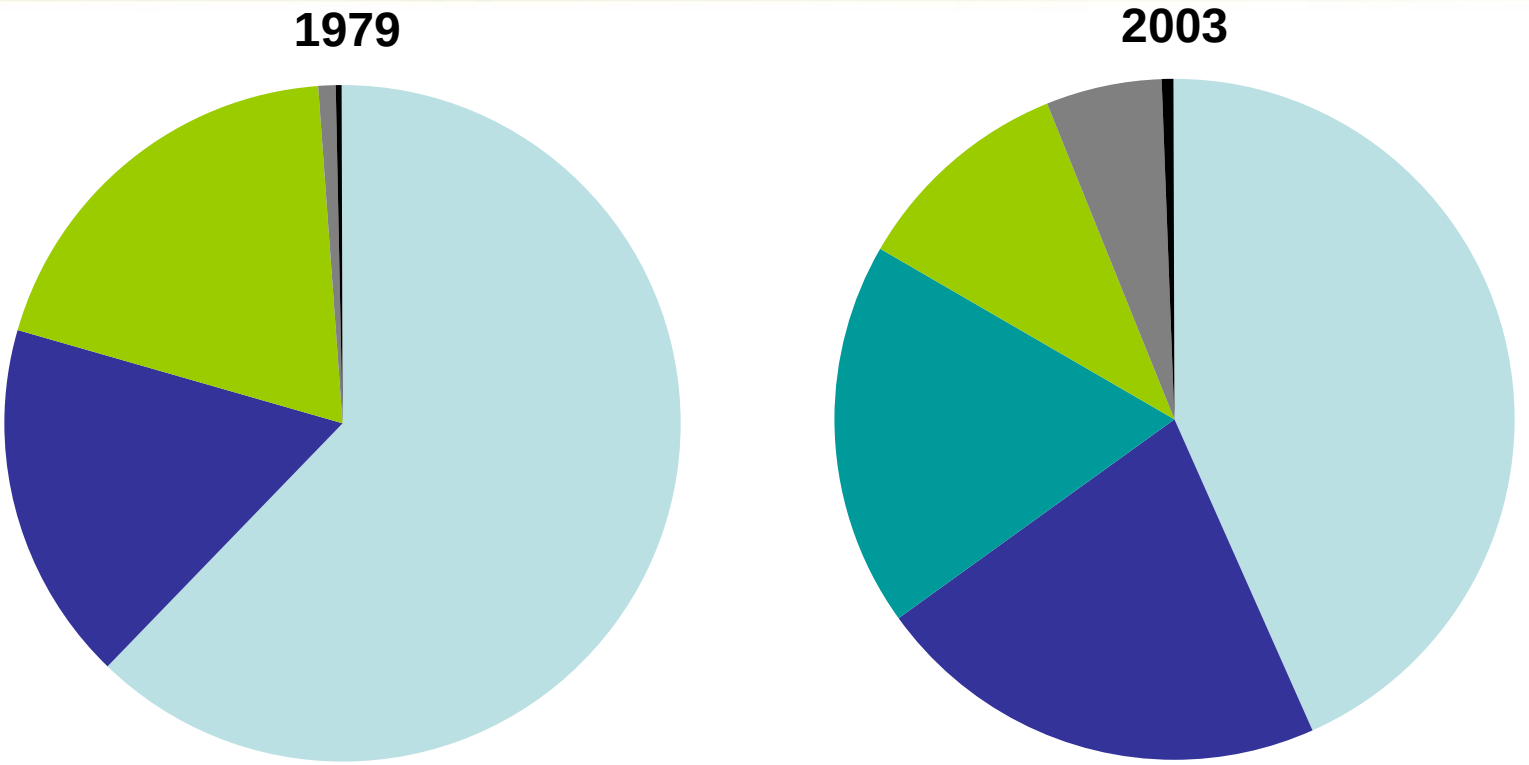


Source: NRCS based on 1969 and 2007 Census of Agriculture data

How was reduction in applied water accomplished (part 2)?

- Location, Location, Location
  - Reduced acres in higher application areas (Southwest)
  - Increased acres in lower application areas (Southeast & Northern Plains)
- Movement to more efficient technology

Changing Irrigation Application Technology



Source: USDA based on Farm and Ranch Irrigation Survey Data

Impact of Improved Efficiency

- Improved accomplishment of target irrigation
  - The infiltration depth for a low-pressure, under-canopy, center pivot (or subsurface drip) approaches the target irrigation level
- Decline in the area of field with over & under irrigation
  - Increase in yield and associated water consumed from reduced saturated soils and reduced water stress
  - Reduction in deep percolation with impact on return flows and groundwater recharge
- Increased water use and reduced deep percolation have created environmental & irrigation externalities because
  - Institutions operate on water withdrawals, diversions, or duty
  - Hydrologic system operates on consumptive use

Considerations for the Future

- Irrigation:
  - the major user of water resources nationally;
  - relatively small user of land resources;
  - consumes a greater share of withdrawals than other sectors;
  - will remain a major water user in the future;
  - has opportunities to conserve water, but at a cost, both dollars and other impacts.
- Water quality descriptions switch between legal and hydrologic frameworks with resulting confusion.
- Solutions to water issues require an integrated approach of economics (including markets), law, and engineering.

Thank you!

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