Western Alfalfa & Corn Silage Production: Regional Perspective

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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.

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

1 Dot = 2,000 Acres

United States Total
3,547,160

U.S. Department of Agriculture, National Agricultural Statistics Service
Alfalfa Hay, Harvested Acres: 2002

23.6 million acres

United States Total
22,637,984
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

[Bar chart showing the leading states for alfalfa hay production.]
Western Alfalfa Acres, 01-03, 1,000

31 % of US Total
Western Alfalfa, 01-03, 1,000 tons

AZ
CA
CO
ID
MT
NV
NM
OR
UT
WA
WY

40% of US Total
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 YIELD TRENDS

Arizona
y = 0.0824x - 156.6
R² = 0.8935

California
y = 0.0467x - 86.223
R² = 0.9729
CA-AZ Production Trends

CA-AZ PRODUCTION TRENDS

PRODUCTION (tons x 1,000)


California

USDFRC
All Hay – Crop Value

CROP VALUE (US$ All Hay)

- $1.02 billion
- $183 million

Crop Value ($ x 1,000)
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.
Dairy Production - California

**Equation:**

\[ y = 812.7x - 2 \times 10^6 \]

**R²:** 0.9721

**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?

<table>
<thead>
<tr>
<th>Key Markets (California)</th>
<th>Approximate %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy</td>
<td>75-85%</td>
</tr>
<tr>
<td>Beef</td>
<td>5-10%</td>
</tr>
<tr>
<td>Sheep/Goat</td>
<td>&lt;2%</td>
</tr>
<tr>
<td>Horse</td>
<td>5-10%</td>
</tr>
<tr>
<td>Exports</td>
<td>5-8%</td>
</tr>
</tbody>
</table>
Acreage Trends – CA, AZ

CA-AZ ACREAGE TRENDS

ACRES (X 1,000)


California

Arizona
Alfalfa Yield Trends

California

\[ y = 0.0467x - 86.223 \]
\[ R^2 = 0.9729 \]

Arizona

\[ y = 0.0824x - 156.6 \]
\[ R^2 = 0.8935 \]
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

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
- 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 Silage Production, 2003
Western Corn Silage, 01-03, 1000 tons

22% of US Total
Western Corn Silage Acres, 01-03, 1000

AZ
CA
CO
ID
MT
NV
OR
UT
WA
WY

14 % of US Total
Alfalfa Hay Harvested - Change in Acreage: 1997 to 2002

1 Dot = 1,000 Acres Increase
1 Dot = 1,000 Acres Decrease

United States Net Increase
+600,011

U.S. Department of Agriculture, National Agricultural Statistics Service