Economics of Hay Exports Patterns

2014 California Alfalfa and Grains Symposium

Long Beach, California
December 11, 2014

Daniel A. Sumner,
University of California Agricultural Issues Center and
UC Davis Department of Agricultural and Resource Economics
Starting points, Main ideas and Outline

- Exports have become important to the hay business
- Dairy production is key to hay demand in the West and to hay demand to Asia

Here in California, milk production and hay go together; in Asia imported hay imports and dairy production go together

- Hay and dairy production grow when export demand for dairy grows.
- Hay exports and dairy exports are substitutes in the export market.

Review 2014 in the context of western dairy demand and export demand

1. Hay exports grew until the drought made hay less available and more expensive
2. Dairy exports grew until high prices, exchange rates and other drivers kicked in
3. Hay export have declined in 2014 for the first time in a decade, but dairy exports in the first 8 months kept the “hay-equivalent” exports strong until the end of the year.
4. Hay-equivalent exports will likely be down in 2015, but …
Volume of Western Ports Hay Exports, 2000 to 2013

Tons (millions)
Volume of U.S. Dairy Exports, 2000 to 2013

Volume of Exports (million tons of fluid milk equivalents)
1984:
Milk Production = 15.3 billion lbs.
Number of Cows = 978 thou.
Milk per Cow = 15,631 lbs./year

2014 Milk Production = projected 42.3 billion lbs.
2014 Number of Cows = 1,780 thou.
2014 Milk per Cow = 23,791 lbs./year
California Dairy Cost of Production, CDFA 2013

- Feed Costs: 66%
- Hired Labor: 9%
- Replacement Costs: 6%
- Operating Costs: 16%
- Marketing Costs: 3%
## Weighted Average Pounds of Hay Consumed per Cow per Day (CDFA surveys)

<table>
<thead>
<tr>
<th></th>
<th>Jersey</th>
<th></th>
<th>Holstein</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Milk Cows</td>
<td>Dry Cows</td>
<td>Total Jersey</td>
<td>Milk Cows</td>
<td>Dry Cows</td>
<td>Total Holstein</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>6.87</td>
<td>0.92</td>
<td>5.88</td>
<td>9.88</td>
<td>1.80</td>
<td>8.53</td>
</tr>
<tr>
<td>Other Hay</td>
<td>1.72</td>
<td>11.09</td>
<td>3.28</td>
<td>0.67</td>
<td>9.99</td>
<td>2.22</td>
</tr>
<tr>
<td>Total Hay</td>
<td>8.60</td>
<td>12.00</td>
<td>9.16</td>
<td>10.55</td>
<td>11.79</td>
<td>10.75</td>
</tr>
</tbody>
</table>
Milk Production by County, 2014

- Tulare: 27%
- Merced: 15%
- Kings: 11%
- Stanislaus: 10%
- Kern: 10%
- Fresno: 7%
- San Joaquin: 6%
- Madera: 4%
- Rest of State: 10%
California Milk Production, 2008, 2010 and 2014*

- November and December 2014 production numbers are forecasted
All Hay and Alfalfa Export Destinations, Western Ports, 2014 through September

- **All Hay**
  - Japan: 37%
  - China: 30%
  - United Arab Em: 16%
  - Korea: 9%
  - Taiwan: 4%
  - Other: 4%

- **Alfalfa**
  - Japan: 41%
  - China: 23%
  - United Arab Em: 11%
  - Korea: 19%
  - Taiwan: 4%
  - Other: 2%
Monthly Western Ports Hay Exports for 2012 to Oct. 2014

Export Volume (in 1,000 tons)

- Red line: 2012
- Blue line: 2013
- Orange dashed line: 2014

- Jan
- Feb
- Mar
- Apr
- May
- Jun
- Jul
- Aug
- Sep
- Oct
- Nov
- Dec
Dairy Export Destinations, 2014 though September

- China: 16%
- Philippines: 10%
- Korea: 10%
- Japan: 10%
- Indonesia: 7%
- Saudi Arabia: 5%
- Mexico: 4%
- Australia: 4%
- Malaysia: 4%
- Vietnam: 3%
- Other: 27%

Dairy export destinations are dominated by China, followed by the Philippines, Korea, and Japan with equal shares of 10%. Other significant destinations include Indonesia (7%), Saudi Arabia (5%), Mexico (4%), Australia (4%), Malaysia (4%), Vietnam (3%), and the Other category (27%).
## Calculation of Hay Pounds Consumed per Milk Pound Produced

<table>
<thead>
<tr>
<th></th>
<th>Jersey</th>
<th>Holstein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pounds of Milk Produced Per Cow-Per Day</td>
<td>61.54</td>
<td>79.76</td>
</tr>
<tr>
<td>Total Hay Consumed Per Cow-Per Day</td>
<td>9.16</td>
<td>10.75</td>
</tr>
<tr>
<td>Hay Pound/Milk Pound</td>
<td>0.149</td>
<td>0.135</td>
</tr>
</tbody>
</table>

- Hay Exports
- Dairy Eqv Hay Exports
- Total Hay Exports
Western Ports Hay Equivalent Exports via U.S. Dairy Products, Monthly 2012 through October 2014

Export Volume (in 1,000 tons)

- 2012
- 2013
- 2014

January, February, March, April, May, June, July, August, September, October, November, December
West Ports Hay Export Volume, Monthly 2014

Tons (thousands)

- Hay Export
- Milk Equivalent Hay Export
- Total Hay Export
West Ports Alfalfa Hay Export Volume Monthly 2014

- **Milk Equivalent Hay Export**
- **Alfalfa Hay Export**

The chart shows the monthly export volume of alfalfa hay from West Ports, with breakdowns for milk equivalent hay export and alfalfa hay export for each month from January to October 2014.
FINAL REMARKS

• Many factors drive California and other western dairy and hay production and exports
  • competition from other regions,
  • exchanged rates, and
  • market or government-led events as the GMO controversy

• Resource availability and costs, and production constraints limits also drive costs, production and exports
  • Reduced access to surface water reduces supply and raises costs
  • Higher pumping costs and lack of ground water also reduces supply and raises costs
  • Such forces were one part of export declines in 2014.