Factors affecting milk price and revenues of dairy farms in the central region of Thailand

J.A. Rhone*, R. Ward, A. De Vries, S. Koonawootrittriron, and M.A. Elzo

1University of Florida, Gainesville, 2Kasetsart University, Bangkok

Location

Thailand: Milk Consumption

Thailand and USA per capita fluid milk consumption from 1984 to 2000

Thailand milk market forecast

Datamonitor, 2004

Objectives

- Determine pricing system, month and year, district of farm, and farm size effects on milk price
- Calculate farm milk revenues and losses in farm milk revenue across time, farm location, and farm size
Materials and Methods

- 1034 farms
- Members of Muaklek dairy cooperative ltd.
- Records were collected at Muaklek milk collection centers by cooperative personnel
- Data from February 2004 to June 2006
- 58,575 farm milk price records
- 813,636 farm milk yield records

Materials and Methods

Data

- Pricing system variable
  - Pricing System 1
    - Formula = 11 baht ± additions/deduction for milk fat %, solids non-fat, and bacterial score
    - February 1, 2004 to September 30, 2005
  - Pricing system 2
    - Formula = 11 baht ± same addition/deduction in pricing system 1, including bulk tank somatic cell count
    - October 2005 to June 30, 2006

Pricing systems

<table>
<thead>
<tr>
<th>Factor</th>
<th>Grade</th>
<th>Effect on price</th>
<th>Price (baht/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk fat %</td>
<td>Less than 3.5%</td>
<td>Deduction</td>
<td>0.2</td>
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<tr>
<td>Solid non-fat</td>
<td>Less than 3.4%</td>
<td>Deduction</td>
<td>0.1</td>
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<tr>
<td>Bacterial score</td>
<td>1</td>
<td>Addition</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Addition</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Addition</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Deduction</td>
<td>1</td>
</tr>
<tr>
<td>Previous test was 4</td>
<td>Deduction</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Two previous tests were 4</td>
<td>Deduction</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BTSCC (cells/ml)</td>
<td>Less than 200,000</td>
<td>Addition</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>200,001 to 1,000,000</td>
<td>Addition</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>1,000,001 to 1,500,000</td>
<td>Deduction</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>1,500,001 to 2,000,000</td>
<td>Deduction</td>
<td>1.5</td>
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<tr>
<td></td>
<td>2,000,001 to 3,500,000</td>
<td>Deduction</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>More than 3,500,000</td>
<td>Deduction</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Statistical Analysis

- Farm milk price trait
  - Logistic transformation
  - Linear model
  - GLM procedure of SAS

Farm milk price =
  pricing system + month (year) x by pricing system + farm district x farm size x pricing system + residual

Statistical Analysis

Farm milk revenue
- product of the average farm milk yield and farm milk price

Maximum farm milk revenue
- average farm milk yield of farm x maximum milk price
- maximum milk price
- 11.7 = pricing system 1
- 11.8 pricing system 2

Loss in farm milk revenue
- maximum farm milk revenue – actual farm milk revenue
Results: Least square means of farm milk price by pricing system and across time

- Farm milk prices were higher in pricing system 2 than 1 (11.71 vs. 11.68, P < 0.05)

Results: Least square means of farm milk price by farm size and pricing system

- Milk prices for small farms within each district and pricing system were higher (P < 0.05) than medium and large farms

Results: Least square means of farm milk price by farm size and pricing system

- In Wang Muang, small farms had higher (P < 0.05) milk prices in both pricing systems than medium or large farms
- There was no difference for milk price of farms in Kaeng Khoi

Results: Farm milk revenue by district

- In Muaklek, Pak Chong, and Kaeng Khoi, milk revenue increased over time.
- In Wang Muang, milk revenue remained relatively stable.

Results: Loss in farm milk revenue by farm district

- Loss in milk revenue was highest in Muaklek, followed by Pak Chong and Wang Muang.
- Loss in milk revenue was lower in Kaeng Khoi.

Results: Loss in farm milk revenue by farm size

- Loss in milk revenue for small farms was higher than for medium and large farms.
- Loss in milk revenue for medium and large farms was similar.
Conclusion

- On average farms had higher farm milk prices in pricing system 2 versus pricing system 1 (11.71 vs. 11.68, $P < 0.05$)

- Majority of small farms had higher farm milk prices and lower losses in farm milk revenue than medium and large farms across both pricing systems

Implications

- Results of this study should help motivate farmers to adopt desirable management practices that could lead to higher farm milk prices and lower losses in milk revenue

Questions ??