The Profit Opportunity Analyzer

Ron Curran, MBA; AgSource
Victor Cabrera, Ph.D; UWEX
Key Concepts…

- Why the Profit Opportunity Analyzer (POA) was developed
- What’s behind the calculations
- Inter-relationships we learned about
- How you can use it
Bell shaped income curve

2001 Dairy Operator Net Incomes

Number of Dairies/Income Category

Source: Lakeshore Farm Management Assoc.
Widely divergent incomes, yet

- All farms in same geographical area
- All receiving about the same prices for their products
- All paying about the same price for supplies
- All dealing with about the same weather and soil
“Secrets” to management success

- The most profitable operators…
  - Identify their biggest profit bottlenecks
  - Focus on fixing them

- What the Profit Opportunity Analyzer does…
  - Identifies the biggest profit bottlenecks
  - Focuses the management team on fixing them
Who are customers for this product?

- AgSource members
- Producers who want to control their future
- Producers who want to make more money
- Producers with large or small herds, this product is size neutral
Why the Profit Opportunity Analyzer was developed

- Wanted to make our DHI numbers more meaningful – differentiate AgSource
- When times are hard (summer of 2005) producers invariably cut expenses. Not always the smartest move. We can identify far larger income opportunities.
- Industry input
A few Profit Opportunity Analyzer basics

- Only available for Holstein and Jersey herds
  - Holstein dairies divided by herd size: <100 cows, 100-250, 251-500 and >500 cows
- Order on the AgSource website or handouts
- Results e-mailed out, generally within 24 hours
- $75.00 per report
What’s behind the calculations?

- Management areas focused on…
- Use of benchmarks
  - Compares to 80th percentile peer group performance
  - Benchmarks are like the Pirate’s Code (more like a set of guidelines). Not the Law
What are “Profit Opportunities”

- Not exactly “profit”
- More like “income opportunities”
  - Why?
- Made up of income from production increases
- Other income sources & lowering expenses
Production increases

- Reproduction
- Udder health
- Transition & dry period
- Genetics
- Nutrition & management
- Not – Turnover mgmt.
Turnover Management

Your dairy’s turnover management profit opportunity from lowering annual turnover and death loss to 30% and 5.1% respectively. $23,900

(Annual turnover does not include dairy sales)

<table>
<thead>
<tr>
<th>AgSource Benchmarks for Herds Over 500 Cows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual turnover percentage (Excluding dairy)</td>
</tr>
<tr>
<td>80th Percentile</td>
</tr>
<tr>
<td>29%</td>
</tr>
<tr>
<td>Annual death rate percentage</td>
</tr>
<tr>
<td>6.8%</td>
</tr>
</tbody>
</table>

Over the past year...

<table>
<thead>
<tr>
<th>Your herd percent</th>
<th>Your herd No. of cows over 80th percentile</th>
<th>Your herd Profit Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>9.6</td>
<td>$15,200</td>
</tr>
<tr>
<td>6.2%</td>
<td>9.5</td>
<td>$4,700</td>
</tr>
</tbody>
</table>

Your dairy’s trend...

(Early lactation turnover is an indicator of annual turnover trend)

Cows Leaving the Herd at Less Than 60 DIM

- % Cows Leaving < 60 DIM
- Period Calved

First Lactation
- Early lactation removal (culls and deaths) are summarized in 60-day periods. Each bar represents the percent removed by 60 days in milk out of the group of cows that calved in that 60-day period.
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Let’s stop for a minute…

- Is the 80th percentile the “ideal” turnover rate? (No, it’s a guideline)
- Why are sales for dairy removed from turnover? Sales from dairy help maximize income – a good thing
- What question are we trying to answer?
  - Individual culling decision? - No, we are looking at the bigger question of overall turnover. Is there an opportunity to raise profits?
Do herds with higher turnover have higher production?

Turnover vs RHA Milk (Minus Sales for Dairy)

\[ y = -8 \times 10^{-7}x + 0.3418 \]

\[ R^2 = 0.0009 \]

Source: AgSource 06-2008
Holstein herds > 100 cows
What about low turnover herds?

Turnover, <20% vs RHA Milk

\[ y = 1E-06x + 0.1294 \]

\[ R^2 = 0.0094 \]

All AgSource Holstein herds > 100 cows; June 2008
Let’s forget about sales for dairy

Unadjusted Turnover vs RHA Milk

y = -1E-06x + 0.3907
R² = 0.0012

Different parameters – same message
So, what can we learn?

1. Higher turnover does not appear to be related to higher production
2. Higher turnover has costs (either opportunity or actual)
3. Higher than 80th percentile turnover (adjusted for dairy sales) should be avoided
Whoa!! Where did this number come from?
Effect of Pregnancy Rate on Reproductive Turnover

Cows Pregnant at Each 21 Day Increment at Different Pregnancy Rates

<table>
<thead>
<tr>
<th>Pregnancy Rates</th>
<th>25%</th>
<th>20%</th>
<th>15%</th>
<th>10%</th>
<th>5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIM</td>
<td>25%</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>66</td>
<td>25.0</td>
<td>20.0</td>
<td>15.0</td>
<td>10.0</td>
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<tr>
<td>87</td>
<td>18.8</td>
<td>16.0</td>
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<td>4.4</td>
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<td>2.5</td>
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<td>2.8</td>
</tr>
<tr>
<td>Open Cows Culled</td>
<td>3.2</td>
<td>6.9</td>
<td>14.2</td>
<td>28.2</td>
<td>54.0</td>
</tr>
</tbody>
</table>

What was the 80th percentile turnover for herds >500 cows?

A herd with a 20% Pregnancy Rate (PR) can replace 23% of their herd for reasons other than reproduction and stay under 30% turnover. A 10% PR herd cannot do this.
The DIM column is the midpoint of each 21 day cycle. For example, 66 days in milk is the mid-point of a 21 day cycle starting at 55 DIM which is the assumed voluntary waiting period (VWP). Reading down the chart, 100 cows are eligible to be bred at the 66 DIM cycle. With a 25% pregnancy rate, 25 become pregnant in the first 21 day cycle leaving 75 eligible cows for the next 21 day cycle in which 18.8 (0.25 X 75) are pregnant. At the end of the 297 day cycle, 3.2 cows (3.2%) are still open and will be culled. With a 5% pregnancy rate, 54% of the cows will be culled for reproductive failure.

The following assumptions are made in using this chart...
The VWP is 55 days
All open cows after 308 DIM are culled - based on the following research...

Survey of Management Practices on Reproductive Performance of Dairy Cattle on Large US Commercial Farms
D. Z. Caraviello,* K. A. Weigel,*1 P. M. Fricke,* M. C. Wiltbank,* M. J. Florent,* N. B. Cook,†
K. V. Nordlund,‡ N. R. Zwald,‡ and C. L. Rawson‡
*Department of Dairy Science, and
†School of Veterinary Medicine, University of Wisconsin, Madison 53706
‡Alta Genetics, Inc., Watertown, WI 53094
How about milk loss due to poor reproductive performance?

Calculations…

- <17 K RHA
- 17-21 K RHA
- 21-25 K RHA
- 25-30 K RHA
- >30K RHA

User inputs milk, replacement, cull, calf and interest price

- 64% 2nd & > lactation cows, 36% 1st lactation
- Value of milk and calf calculated for present lactation and 305 days of subsequent lactation
- Surrogate cows
- Adjusted using NPV
- Annualized
Veerrrrry interesting...

Income at Different Conception Days (25-30,000 RHA)

<table>
<thead>
<tr>
<th>DIM Pregnant</th>
<th>Total Days</th>
<th>Per Day</th>
<th>Annualized</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>652</td>
<td>$15.62</td>
<td>$5,700</td>
</tr>
<tr>
<td>87</td>
<td>673</td>
<td>$15.45</td>
<td>$5,641</td>
</tr>
<tr>
<td>108</td>
<td>694</td>
<td>$15.29</td>
<td>$5,581</td>
</tr>
<tr>
<td>129</td>
<td>715</td>
<td>$15.13</td>
<td>$5,521</td>
</tr>
<tr>
<td>150</td>
<td>736</td>
<td>$14.96</td>
<td>$5,461</td>
</tr>
<tr>
<td>171</td>
<td>757</td>
<td>$14.80</td>
<td>$5,401</td>
</tr>
<tr>
<td>192</td>
<td>778</td>
<td>$14.63</td>
<td>$5,342</td>
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<td>213</td>
<td>799</td>
<td>$14.47</td>
<td>$5,283</td>
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<td>234</td>
<td>820</td>
<td>$14.32</td>
<td>$5,225</td>
</tr>
<tr>
<td>255</td>
<td>841</td>
<td>$14.16</td>
<td>$5,170</td>
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<tr>
<td>276</td>
<td>862</td>
<td>$14.01</td>
<td>$5,115</td>
</tr>
<tr>
<td>297</td>
<td>883</td>
<td>$13.87</td>
<td>$5,062</td>
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<tr>
<td>Open Cows Culled</td>
<td>644</td>
<td>$14.83</td>
<td>$4,019</td>
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</table>

Same trend regardless of production level.
# Details

## Inputs

<table>
<thead>
<tr>
<th>Input</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>Replacement cost</td>
<td>$2,100</td>
</tr>
<tr>
<td>Cull cow price</td>
<td>$700</td>
</tr>
<tr>
<td>Calf value</td>
<td>$650</td>
</tr>
<tr>
<td>Milk Price/pound</td>
<td>$0.185</td>
</tr>
<tr>
<td>Interest Rate</td>
<td>0.079</td>
</tr>
</tbody>
</table>
So...

- We don’t care what your VWP is
- For the model to work, everything is converted to a VWP of 55 days
- If your VWP is 80 days and we convert it to 55, watch your Pregnancy Rate drop from 21% to 17%
- All Pregnancy Rates are not equal!

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Open Cows Culled: 3.2 6.9 14.2 28.2 54.0
If we don’t have reproductive data…

We use “Average Days In Milk” as our reproductive performance measure.
Heifers Age at First Calving Management

Your dairy’s heifer reproductive management profit opportunity $18,900

AgSource Benchmarks for Herds Over 500 Cows

<table>
<thead>
<tr>
<th></th>
<th>80th Percentile</th>
<th>Average</th>
<th>20th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Heifers Freshening &lt;23 Months Old</td>
<td>5%</td>
<td>24%</td>
<td>41%</td>
</tr>
<tr>
<td>Percent Heifers Freshening &gt;25 Months Old</td>
<td>7%</td>
<td>19%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Over the past year...

<table>
<thead>
<tr>
<th>Your herd</th>
<th>No. of hefrs over 80th percentile</th>
<th>Profit Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heifers freshening &lt;23 months old</td>
<td>50%</td>
<td>190</td>
</tr>
<tr>
<td>Heifers freshening &gt;25 months old</td>
<td>9%</td>
<td>5</td>
</tr>
</tbody>
</table>

Estimated RHA milk increase (lbs) if attain 80th percentile heifer age at first calving performance 130

Your dairy’s trend...

Age at First Calving Distribution

We don’t use averages!

Revenue Opportunities Based On the Following Research:
Impact of Age at Calving on Lactation, Reproduction, Health, and Income in First-Parity Holsteins on Commercial Farms, J.F. Ettema and J.E.F. Santos, Veterinary Medicine Teaching and Research Center, University of California-Davis
J. Dairy Sci. 87:2730–2742
Converting a herd’s Wtd. Average SCC to LSCR does not work!

Profit opportunities calculated on Wtd. SCC and LSCR
Udder Health Management

Your Dairy’s Udder Health Management Revenue Opportunity $27,000

Expected Revenue Increase From Lowering Linear Score to 80th Percentile (This revenue will come from increased production) $0

Expected Revenue Increase From Lowering Weighted SCC to 80th Percentile (This revenue will come from increased premiums) $27,000

<table>
<thead>
<tr>
<th>AgSource Benchmarks for 250-600 Cow Herds</th>
<th>80th Percentile</th>
<th>Average</th>
<th>20th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear Score, First Lactation</td>
<td>2.3</td>
<td>2.8</td>
<td>3.1</td>
</tr>
<tr>
<td>Linear Score, Second Lactation</td>
<td>2.6</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>Weighted Average Somatic Cell Count</td>
<td>174</td>
<td>257</td>
<td>324</td>
</tr>
</tbody>
</table>

Your Dairy’s 12 Month Linear Score (1st Lactation) 2
Your Dairy’s 12 Month Linear Score (2nd Lactation and Greater) 2.5
Your Dairy’s 12 Month Weighted Average Somatic Cell Count (000s) 295

Average Annual Milk Gain Per 1.0 LSCR Drop Pounds Per Cow
First Lactation Cows 275
Second and Greater Lactation Cows 585

Your dairy’s trend...

Interesting example
Transition Cow & Dry Period Length Management

Fresh cow and dry period length management profit opportunity* $370,500

<table>
<thead>
<tr>
<th>AgSource Benchmarks for Herds Over 500 Cows</th>
<th>80th Percentile</th>
<th>Average</th>
<th>20th Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition Cow Indexes</td>
<td>241</td>
<td>-271</td>
<td>-310</td>
</tr>
<tr>
<td>Percent of Herd Having &lt;30 Day Dry Period</td>
<td>2%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Percent of Herd Having 70-90 Day Dry Period</td>
<td>4%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Percent of Herd Having &gt;90 Day Dry Period</td>
<td>3%</td>
<td>6%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Over the past year...

<table>
<thead>
<tr>
<th>Transition Cow Index</th>
<th>Potential Change</th>
<th>Profit Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>-130%</td>
<td>1500</td>
<td>$274,400</td>
</tr>
<tr>
<td>Decreased turnover (Percent)</td>
<td>4.1%</td>
<td>$60,300</td>
</tr>
</tbody>
</table>

*The Transition Cow Index’s economic impact is likely underestimated since TCIs are not calculated for first lactation cows; however, the opportunities found in the mature cow TCI probably apply to the first lactation cows as well.

Dry Period Length Management

Over the past year...

<table>
<thead>
<tr>
<th>Dry periods, &lt;30 days</th>
<th>percent</th>
<th>No. cows over 80th percentile</th>
<th>Profit Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.8%</td>
<td>65.5</td>
<td></td>
<td>$20,900</td>
</tr>
<tr>
<td>4.3%</td>
<td>3.2</td>
<td></td>
<td>$2,100</td>
</tr>
<tr>
<td>3.3%</td>
<td>2.9</td>
<td></td>
<td>$2,300</td>
</tr>
</tbody>
</table>

Dry period management, increased production (RHA/cow) 208

Your dairy’s trend...

"Annual per cow milk loss per dry period" calculated from lifetime production losses reported in "Dry Period Length to Maximize Production Across Adjacent Lactations and Lifetime Production" divided by the quotient of one divided by your herd’s annual turnover rate.

M. T. Kuhn, J. L. Hutchison, and H. D. Norman
Animal Improvements Program Laboratory, Agricultural Research Service, USDA, Beltsville, MD 20705
J. Dairy Sci. 86:1713–1722
Net Merit is a lifetime figure and is adjusted to an annual number here.

In February 2007 every unidentified sire went from being a null to getting that breed’s unidentified sire’s NM$.
A treasure trove of information on this page!

Serious money

What happened here?

1st lactation cows should be 5-600 lbs above older cows

This herd’s TCI was around the 10th percentile. Does that make sense?
All equations are provided, the herd’s own values are shown in the calculations and pertinent research is identified.
So, how do we use this thing?

- Where do you start?
Steps to Problem Resolution...

1. Recognize that there is a problem
2. Quantify the problem
3. Devise a solution/plan
4. Implement the solution/plan
5. Monitor progress – re-evaluate if necessary
What I hear from consultants, “I knew there was a problem in the milking, but I could never get their (client’s) attention until I showed them this report.”
AgSource can identify opportunity areas, but we can’t…

- Evaluate if reaching 80th percentile performance is profitable
- Evaluate if reaching 80th percentile performance is achievable
- Identify what the problem is
- Develop and implement a plan
What the Profit Opportunity Analyzer can do for you…

- Make you more than just “the feed guy/gal” or “the vet”
- Makes you part of the management team
  - Ability to affect the real issues on a dairy
- Draws you closer to your customer
- Makes price (service or product) less of a factor in their (client) buying decision
How AgSource members use the Profit Opportunity Analyzer…

- Identify bottlenecks and focus their efforts
- At team meetings, gives everyone a standard set of information – all can then focus on solutions
- As centerpiece of financing proposals to lenders
Big contributors…

- Kent Weigel, PhD, UWEX
- Ron Visser - Genex
- Ken Nordlund, DVM - UWSVM
- Dick LaCroix - AgSource
- Pete Giacomini - AgSource
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Questions?

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