Topics

- What is heifer worth?
- Heifer raising strategies
  - Cost of raising heifers
  - Time matters
- Issues in contract raising heifers
1. What is a Heifer Worth?

3 Situations:

- Add a heifer when your facility can handle more cows than you have now
- Replacing a low producer
- Expanding the herd and dairy facility
3 Situations

1. Net$ = Milk income + calf & cull value
   - out-of-pocket cost only

2. Net$ = Difference in milk income –
   difference in out-of-pocket cost -
   heifer “depreciation”

3. Net$ = Milk income + calf & cull value
   - out-of-pocket cost - cow
depreciation - annual charge for
capital investment cost

Farmer in situation 1 can afford to pay the
most for a heifer, other things equal
1. Have Space, Need Cows

- Need to figure out the most we can afford to pay
- If we can find them for less, great
- If the going price is more, walk away
1. Have Space, Need Cows

- Revenue & costs of buying a heifer or cow:
  - Milk income
  - Cull value
  - Calf value
  - Out-of-pocket costs
  - No fixed costs or farm overhead

- Productive life in the herd
- Losses – death & illness
US All Milk Price and Trend, 1989-2003

\[ y = 0.0015x + 13.268 \]
Have Space, Need Cows

- Use a 5- to 10-year average milk price
- Estimate milk production based on past herd performance & allow for discarded milk
- Use average of week-old calf values for bulls & heifers
- Estimate cull value based on past history for weight & price. Allow for death losses and thin cows.
What Costs Will We Incur?

- Purchased feed
- Home grown feed -- seed, fertilizer, chemicals, equipment operation, labor
- Milking, feeding labor – how do you pay your employees?
- Vet, supplies, milk hauling & marketing, repairs, utilities
What About Your Profit?

- Set a minimum return for your time, management, & risk
- Add something as a contribution to farm fixed costs and overhead
- Time value of money-- A purchased heifer generates income over her productive life, but the investment is made today
“Present Value”

- We need to discount future income, especially when interest & inflation rates are high.
- The longer we must wait, the more we discount the income.
Example

- Bought heifer lasts 3 years in my herd
- 5% of bought heifers don’t make it into the herd
- Average cull value of $350
- My desired return = $365/year
- Discount rate of 9%
Example

3-year average:

- Milk – 22,300 lb. at $15 = $3,345/year
- Calf = 0.8 @ $200/head
- Total Income = $3,505/year
Example

3-year average:

- Out-of-pocket costs of $2,221/year
- No added labor cost
- Net income of $1,284/year
Example

- Present Value of added income is $3,633
- Breakeven price for heifer, after costs & losses, is $3,460
- Maximum I am willing to bid = $2,365
NC Farm Data

- 11 NC dairy farms in 2000:
  - One farm generated $3,341 in livestock income over feed costs per cow
  - Another farm made $1,780
  - Difference was $1,561/cow
### Annual Net Income

<table>
<thead>
<tr>
<th></th>
<th>Income</th>
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<tbody>
<tr>
<td></td>
<td>- 10%</td>
<td>Base</td>
<td>+ 10%</td>
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<tr>
<td>Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- 10%</td>
<td>$1,156</td>
<td>$1,506</td>
<td>$1,857</td>
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<tr>
<td>+ 10%</td>
<td>$712</td>
<td>$1,062</td>
<td>$1,413</td>
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</tbody>
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## Maximum Bid

<table>
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<tr>
<td></td>
<td>-10%</td>
</tr>
<tr>
<td>-10%</td>
<td>$2,044</td>
</tr>
<tr>
<td>Base</td>
<td>$1,490</td>
</tr>
<tr>
<td>+10%</td>
<td>$936</td>
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</tbody>
</table>
Risk

- Sensitivity analysis:
  - 10% change in income, + or -
  - 10% change in cost, + or -
- Most concerned about downside risk -- less income or higher cost
Example

- 10% drop in income cuts bid price by $875/head to $1,490
- 10% increase in costs cuts bid price by $554 to $1,811
- Both changes together cut bid by $1,429, to $936!
Conclusion

- What is a heifer worth -- Depends
- Each farm has a different maximum bid price, based on farm costs and herd performance
- Analyze your costs and returns before you buy
Conclusion

- Figure your maximum bid
- Spreadsheet is available: http://www.ag-econ.ncsu.edu/faculty/benson/benson.html

Click on “Publications/Presentations”
2. Heifer Raising Strategies

- The goal is NOT to raise heifers at 24-months or at minimum cost – it is maximum lifetime profit.
- Calves are born year round but month heifer calves affects income Impact on rearing costs.
- Age at calving affects rearing costs.
Effect of Calving Season on Lactation Production

- **Lactation 1**
- **Lactation 2**
- **Lactation 3+**

Season of Calving:
- Jan-Feb
- Mar-Apr
- May-Jun
- Jul-Aug
- Sep-Oct
- Nov-Dec

Production in lb. per cow:
- 0
- 5,000
- 10,000
- 15,000
- 20,000
- 25,000
Effect of Season of Calving on Total Lactation Revenue

Season of Calving

Lactation 1  Lactation 2  Lactation 3+

Jan-Feb  Mar-Apr  May-Jun  Jul-Aug  Sep-Oct  Nov-Dec

$0  $500  $1,000  $1,500  $2,000  $2,500  $3,000  $3,500

$ per cow
Cumulative Milk Production and Value over 3 Lactations for 6 Heifer Calving Seasons with a 14-month Calving Interval

Pounds of Milk

Jan-Feb Mar-Apr May-Jun Jul-Aug Sep-Oct Nov-Dec

$8,000 $8,200 $8,400 $8,600 $8,800 $9,000

Milk Value Milk Prod.
Scheduling

Rearing stages:
- Birth to weaning
- Weaning to 6 months
- 6 mo. to pre-breeding
- Breeding to close-up
- Target weight of 1,350 lb. pre-calving for Holsteins
Scheduling

- Flexibility is in the 6 month to pre-breeding stage:
  - Fast – 2.2 lb. average daily gain over 7 mo. to calve at 22 mo.
  - Moderate – 1.8 lb. ADG over 9 mo. to calve at 24 mo.
  - Slow – 1.25 lb. ADG over 12 mo. to calve at 27 mo.
Rearing Cost - Holstein

- 24 month calving on a pasture, silage, hay diet
  - Feed cost = $573
  - Other operating = $299
  - Labor = $239
  - Fixed cost = $150
  - Total = $1,261
- Add value of calf to this total
### Feed Costs/Head - Holstein

<table>
<thead>
<tr>
<th>Age at Calving</th>
<th>Corn Silage</th>
<th>Past + CS</th>
<th>Past + Hay</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 mo.</td>
<td>$729</td>
<td>$550</td>
<td>$554</td>
</tr>
<tr>
<td>24 mo.</td>
<td>$758</td>
<td>$573</td>
<td>$577</td>
</tr>
<tr>
<td>27 mo.</td>
<td>$840</td>
<td>$611</td>
<td>$615</td>
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</tbody>
</table>
## Rearing Cost – Holstein*

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</thead>
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<tr>
<td>22 mo.</td>
<td>$1,471</td>
<td>$1,204</td>
<td>$1,161</td>
</tr>
<tr>
<td>24 mo.</td>
<td>$1,546</td>
<td>$1,261</td>
<td>$1,212</td>
</tr>
<tr>
<td>27 mo.</td>
<td>$1,715</td>
<td>$1,361</td>
<td>$1,304</td>
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</tbody>
</table>

*Does not include calf value
Scheduling

- Jan-Feb – Fast growth
- Mar-Apr – Fast growth
- May-Jun – Moderate growth
- Jul-Aug – Slow growth
- Sep-Oct – Moderate growth
- Nov-Dec – Fast growth
Issues in Contract Raising

- Advantages to dairy farmer are improved heifers and effective use of freed up resources rather than cost savings
- Both parties need to know their individual cost of production and heifer performance
- Dairy farmer needs to set targets for animal performance and calving dates when negotiating
- There is no single or “fair” price for contract raising – it depends....
Remember the Economics
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