Livestock Marketing Decisions

◆ What to sell
  • Live, carcass, grid
◆ Where to sell
  • Type of market
  • Location
◆ When to sell
  • Weight, grade, costs

WHAT TO SELL

Live weight
  • One average price for all live pounds
  • Negotiated price before delivery or at auction
  • Weighing conditions important
    » Mud, shrink (fill, time, stress)
  • Was most common for hogs but not now
  • Still common in large cattle feedlots, less in Iowa
  • Used for feeder cattle and feeder pigs

Carcass weight (“in-the-meat”)
  • One average price for all carcass pounds
  • Negotiated price before delivery
  • Dressing percent (also called yield)
    » Important to compare bids
    » Not important in determining value
  • Farmer stands risk of trimming and condemnation
  • Common for fed cattle in Midwest
What to sell

◆ Dressing percent
  • DP = carcass weight / live weight
  • DP hogs approximately 73-76%
  • DP cattle approximately 61-64%
◆ DP impacted by:
  • Weighing conditions
  • Shrink
  • Fat thickness
  • Genetics

What to sell

◆ Value-based marketing
  • Each carcass evaluated and priced individually
  • Premiums and discounts determined ahead of delivery
  • Base price may be negotiated or come from formula
  • Carcasses are graded and values assigned
  • Farmer stands grading risk
  • Different buyers have different systems
  • Nearly all hogs
  • Increasingly popular for fed cattle

Value-based Hog Marketing

◆ Two factors impact premiums
◆ Carcass weight and leanness
  • Fixed premiums (known dollar amount)
  • Relative premiums (percent adjustment)
◆ Not USDA graded
  • Packer employee measures
  • Objective measures
    » Fat-O-Meter, ruler, ultra-sound
## Hog Carcass Weight Discounts

<table>
<thead>
<tr>
<th>Carcass Weight</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>145#</td>
<td>-27.70</td>
</tr>
<tr>
<td>155#</td>
<td>-27.70</td>
</tr>
<tr>
<td>165#</td>
<td>-10.39</td>
</tr>
<tr>
<td>175#</td>
<td>-3.40</td>
</tr>
<tr>
<td>185#</td>
<td>-1.36</td>
</tr>
<tr>
<td>195#</td>
<td>-0.68</td>
</tr>
<tr>
<td>205#</td>
<td>0.00</td>
</tr>
<tr>
<td>215#</td>
<td>-3.00</td>
</tr>
<tr>
<td>225#</td>
<td>-5.26</td>
</tr>
</tbody>
</table>

## Hog Carcass Price by Backfat and Loin Eye Area

<table>
<thead>
<tr>
<th>Backfat</th>
<th>4.0/1.4</th>
<th>5.0/1.7</th>
<th>6.0/2.0</th>
<th>7.0/2.3</th>
<th>8.0/2.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.40</td>
<td>62.00</td>
<td>75.00</td>
<td>63.50</td>
<td>75.00</td>
<td>60.60</td>
</tr>
<tr>
<td>0.50</td>
<td>59.50</td>
<td>75.00</td>
<td>62.00</td>
<td>75.00</td>
<td>56.00</td>
</tr>
<tr>
<td>0.60</td>
<td>59.50</td>
<td>75.00</td>
<td>62.00</td>
<td>75.00</td>
<td>56.00</td>
</tr>
<tr>
<td>0.70</td>
<td>59.50</td>
<td>75.00</td>
<td>62.00</td>
<td>75.00</td>
<td>56.00</td>
</tr>
<tr>
<td>0.80</td>
<td>57.50</td>
<td>75.00</td>
<td>59.50</td>
<td>75.00</td>
<td>56.00</td>
</tr>
<tr>
<td>0.90</td>
<td>57.50</td>
<td>72.10</td>
<td>59.50</td>
<td>72.10</td>
<td>56.00</td>
</tr>
<tr>
<td>1.00</td>
<td>56.50</td>
<td>72.10</td>
<td>59.50</td>
<td>72.10</td>
<td>56.00</td>
</tr>
<tr>
<td>1.10</td>
<td>55.50</td>
<td>72.10</td>
<td>59.50</td>
<td>72.10</td>
<td>56.00</td>
</tr>
<tr>
<td>1.20</td>
<td>55.50</td>
<td>67.90</td>
<td>59.50</td>
<td>69.05</td>
<td>59.50</td>
</tr>
<tr>
<td>1.40</td>
<td>52.00</td>
<td>64.00</td>
<td>55.34</td>
<td>64.70</td>
<td>55.34</td>
</tr>
</tbody>
</table>

## Value-Based Cattle Marketing

Three factor impact premiums

1. Carcass Weights
2. Quality Grade Distribution (USDA Grader)
   - Based on marbling, proxy for eating experience
3. Yield Grade Distribution (USDA Grader)
   - Based on lean meat yield
4. Other specs:
   - Product safety & quality assurance
   - Acceptable color
   - Youthfulness
Value-Based Cattle Marketing

Common Ground for Targets
1. Carcass Weights 550 - 950 lbs
2. Quality Grade \( \geq \text{Se}^+ \) or \( \geq \text{Ch}^b \)
3. Yield Grade 1's and 2's

Carcass Merit Grid and Premium Trends

<table>
<thead>
<tr>
<th>Quality</th>
<th>Yield Grade</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4 &amp; 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime</td>
<td>+$$$$$$</td>
<td>+$$$$</td>
<td>+$$</td>
<td>-$$</td>
<td></td>
</tr>
<tr>
<td>Choice(^{+}) and Choice(^o)</td>
<td>+$$$$</td>
<td>+$$$$</td>
<td>+$$</td>
<td>-$$</td>
<td></td>
</tr>
<tr>
<td>Choice(^-)</td>
<td>+$$$$</td>
<td>+$$</td>
<td>Base</td>
<td>-$$$$</td>
<td></td>
</tr>
<tr>
<td>Select</td>
<td>-$</td>
<td>-$</td>
<td>-$$$</td>
<td>-$$$$</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>-$$$$</td>
<td>-$$$$</td>
<td>-$$$$</td>
<td>-$$$$</td>
<td></td>
</tr>
<tr>
<td>Out Cattle</td>
<td>-$$$$$$</td>
<td>-$$$$$$</td>
<td>-$$$$$$</td>
<td>-$$$$$$</td>
<td></td>
</tr>
</tbody>
</table>

Comparing Bids ($/carcass cwt)

<table>
<thead>
<tr>
<th>Price in appropriate $/cwt</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base bid price</td>
<td>122.00</td>
<td>121.00</td>
</tr>
<tr>
<td>Prime</td>
<td>3%</td>
<td>---</td>
</tr>
<tr>
<td>Top 2/3 Ch</td>
<td>45%</td>
<td>---</td>
</tr>
<tr>
<td>Select</td>
<td>30%</td>
<td>---</td>
</tr>
<tr>
<td>Yield 1&amp;2</td>
<td>60%</td>
<td>---</td>
</tr>
<tr>
<td>Off weight</td>
<td>3%</td>
<td>---</td>
</tr>
<tr>
<td>Transportation</td>
<td>-65</td>
<td>-1.25</td>
</tr>
</tbody>
</table>

Net farm gate price 120.35 120.16

*Bid A is a straight in the meat bid, Bid B is a valued-based bid.*
### Where are the Grid Rewards & Discounts?

**Iowa Quality Beef Grid 2005**

<table>
<thead>
<tr>
<th>Base: NE Wt Avg 65-80% Choice</th>
<th>Yield Grade</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Par: Ch YG3 = Base + $2.00 or Plant clean up which ever is greater</td>
<td>1:</td>
<td>$4.00</td>
</tr>
<tr>
<td>Par: Ch YG3 = Base + $2.00 or Plant clean up which ever is greater</td>
<td>2:</td>
<td>$3.00</td>
</tr>
</tbody>
</table>

**Quality Grade $/cwt**

- Prime: $6.00
- Certified Angus: $3.50
- Select USDA
- Standard: -$15.00
- Commercial: -$30.00
- Dark Cutters: -$30.00
- Other: -$30.00

**Par: Ch YG3 = Base + $2.00 or Plant clean up which ever is greater**

**Quality Grade $/cwt**

- Prime: $6.00
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- Select USDA
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**Par: Ch YG3 = Base + $2.00 or Plant clean up which ever is greater**

<table>
<thead>
<tr>
<th>Yield Grade</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:</td>
<td>$4.00</td>
</tr>
<tr>
<td>2:</td>
<td>$3.00</td>
</tr>
<tr>
<td>3:</td>
<td>Par</td>
</tr>
<tr>
<td>4:</td>
<td>-$20.00</td>
</tr>
<tr>
<td>5:</td>
<td>-$25.00</td>
</tr>
</tbody>
</table>

**Base: NE Wt Avg 65-80% Choice**

**Yield Grade $/cwt**

- $4.00
- $3.00
- Par
- -$20.00
- -$25.00

**Carcass weights $/cwt**

- Under 500: -$40.00
- 500-549: -$15.00
- 950-999: -$8.00
- 1000 & up: -$35.00

### Where to sell

- Terminal markets have declined
- Auction markets important when assembly is needed
  - Feeder cattle and cull cows
  - Growing interest in fed cattle in fringe areas
- Direct sales
  - Slaughter cattle and hogs
  - Feeder pigs
  - Growing in feeder cattle where source verification is important

### Slaughter Cattle and Hogs

- Direct sales most common
  - Animals are delivered directly to the packing plant
- Spot or cash market
  - Seller contacts buyer when ready to sell
  - Negotiate price and terms on each group
- Contract market
  - May be for one group or an ongoing agreement between buyer and seller
  - Terms and pricing method determined ahead of marketing date
### Producer Sold Hogs: Percent of Hogs Bought by Purchase Type

<table>
<thead>
<tr>
<th>Year</th>
<th>Negotiated</th>
<th>Other Mkt Formula</th>
<th>Swine/pork Mkt Formula</th>
<th>Other Purchase Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>18%</td>
<td>18%</td>
<td>52%</td>
<td>12%</td>
</tr>
<tr>
<td>2002</td>
<td>13%</td>
<td>14%</td>
<td>51%</td>
<td>22%</td>
</tr>
<tr>
<td>2003</td>
<td>13%</td>
<td>10%</td>
<td>49%</td>
<td>27%</td>
</tr>
<tr>
<td>2004</td>
<td>11%</td>
<td>14%</td>
<td>52%</td>
<td>23%</td>
</tr>
<tr>
<td>2005</td>
<td>11%</td>
<td>16%</td>
<td>53%</td>
<td>21%</td>
</tr>
</tbody>
</table>

2001: May-Dec, 2005: Jan-Aug

### Producer Sold Hogs: Price by Purchase Type Relative to the Average Price

<table>
<thead>
<tr>
<th>Year</th>
<th>Negotiated</th>
<th>Other Mkt Formula</th>
<th>Swine/pork Mkt Formula</th>
<th>Other Purchase Arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>100%</td>
<td>95%</td>
<td>100%</td>
<td>98%</td>
</tr>
<tr>
<td>2002</td>
<td>96%</td>
<td>103%</td>
<td>96%</td>
<td>112%</td>
</tr>
<tr>
<td>2003</td>
<td>98%</td>
<td>102%</td>
<td>97%</td>
<td>105%</td>
</tr>
<tr>
<td>2004</td>
<td>104%</td>
<td>91%</td>
<td>102%</td>
<td>99%</td>
</tr>
<tr>
<td>2005</td>
<td>104%</td>
<td>95%</td>
<td>101%</td>
<td>98%</td>
</tr>
</tbody>
</table>

2001: May-Dec, 2005: Jan-Aug

### National Daily Direct Hog Prior Day Report - Slaughtered Swine

Slaughter Data for Wednesday, August 24, 2005
**Feeder cattle sales**

- Live weight sales
  - Various weight classes
  - In general, lower $/# and heavier weights
- Auction is major market
  - Assembly function important
- Video auctions
- Direct trade
- Premium paid for
  - Large uniform lots
  - Certification/verification ????

**Feeder pig sales**

- Price/head or live weight
  - 40-60 pound classes
  - Weaned pigs (10-12 pounds)
- Primarily direct trade
  - Rapidly declining auctions
  - Health and stress concerns
- Premiums for
  - Large uniform, single source
  - Genetic history

**Share of Reported Pig Sales by Weight**

![Graph showing distribution of reported pig sales by weight from 2000 to 2004.](image-url)
Feeder pig sales

- Spot market price
  - Often through a broker
  - USDA report
- Formula pricing
  - Based on observable price
  - Spot market
  - Hog futures maybe corn and SBM

USDA Reported Pig Sales by Formula or Cash Prices

USDA Reported Cash and Formula Prices for 40# Pigs
When to sell

- Classic production function
  - Optimal selling weight is where MC=MR
  - The cost of the next pound = the price of the next pound
- Cost per pound decrease then increase with weight
  - Costs are a function of
    » Genetic potential
    » Cost of diet
    » Opportunity costs of future production
- Price per pound increases then decreases
  - Weight discounts outside optimal range
  - Fatter carcasses are discounted
  - Adding extra weight

\[
\text{MR} \quad \text{MC}
\]

$ \quad \text{Weight}$

When to sell

- Marginal Revenue
  - Uncertain about price if you wait to sell (price trends)
  - Typically animals increase the portion of fat relative to muscle produced as they get heavier.
  - There is an optimal weight range by packers
    » Discounts if too light or too heavy
  - Optimal degree of “finish”
    » Different for hogs versus cattle
    » Both can be too fat
When to sell

- **MC increases at an increasing rate as the animal nears the optimal market time**
  - Function of animal efficiency related to genetics
  - Is impacted by feed prices
    - For the same efficiency the MC is higher if feed is 10 cents per pound than when feed is five cents per pound.
When to sell

- Marginal Revenue
  - MR increases then decreases due to premiums and discounts associated with grades
  - Is also a function of seasonal price trends that could be higher or lower

![Hog Carcass Weight Discounts ($/cwt)](chart)

Average of the reported range of price discount for carcass weights.

![Hog Carcass Upper and Lower Price by Backfat Thickness in Inches for 7.0 sq in Loin Eye, ISM, Aug 26, 2005](chart)

5-Day Rolling Average Market Hog: 193.50 lb carcass, 0.75 inch back-fat, 6.90 square inch loin/2.30 inch loin depth, FFLI: 51.28%
Hog Carcass Upper and Lower Prices by Loin Eye Area for 0.7 Inches of Backfat, ISM August 26, 2005

5-Day Rolling Average Market Hog: 193.50 lbs carcass, 0.75 inch back-fat, 6.90 square inch loin/2.30 inch loin depth, FFLI: 51.28%

Seasonal Price Index for Iowa Fed Cattle and Hogs

Optimal marketing weigh example
Livestock Marketing Summary

◆ When to sell decisions
  • Non-storable
  • Increasing cost from waiting
  • Seasonal and cyclical price patterns
◆ What to sell
  • Live, carcass, or grid
  • Grid premiums and discounts
◆ Cost of production
  • Margin cost – marginal revenue
  • Cost of feeder animal

Cost of Production

◆ Raised livestock
  • Farrow to finish, Cowherd to finish
  • Accumulate cost from birth through finish
  • Relatively stable cost over time
  • Impacted by input prices and production
    » Feed is typically 60-70% of cost
    » Low productivity increases the cost of those that make it to finish because the fixed costs are divided by a smaller number.

Cost of Production

◆ Purchased feeder livestock
  • Derived demand for feeder animal
  • Highly variable price
  • Depends upon
    » Expected selling price for finished animal
    » Feed costs
Price Objectives

- Express cost and profit in $/cwt terms
  - Same units as price
- Start with cost of production
  - Variable cost
  - Total costs
- Set multiple objectives
  - Return over variable cost
  - Return over total cost
  - Desired profit margin

<table>
<thead>
<tr>
<th>Objective Based Pricing Strategy</th>
<th>Cost/hd</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder &amp; Financing</td>
<td>729.24</td>
<td>60.77</td>
</tr>
<tr>
<td>+ Feed Costs</td>
<td>186.71</td>
<td>76.33</td>
</tr>
<tr>
<td>+ Operating Costs</td>
<td>30.46</td>
<td>78.87</td>
</tr>
<tr>
<td>+ Labor Costs</td>
<td>36.55</td>
<td>81.91</td>
</tr>
<tr>
<td>+ Fixed Costs</td>
<td>24.63</td>
<td>83.96</td>
</tr>
<tr>
<td>+ Desired Return</td>
<td>25.00</td>
<td>86.05</td>
</tr>
</tbody>
</table>

550# steer calf fed to 1200 slaughter weight
Objective Based Pricing

- Compare price objectives to price offered
  - Basis adjusted futures
  - Basis adjusted options floor price
  - Forward contract price from packer
  - Price forecast of cash prices

How much to pay for feeder animal

- Work back from total revenue

<table>
<thead>
<tr>
<th>Cost/hd</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>$30</td>
<td>0.30</td>
</tr>
<tr>
<td>$50</td>
<td>3.20</td>
</tr>
<tr>
<td>$89</td>
<td>8.72</td>
</tr>
</tbody>
</table>

550# steer calf fed to 1200 slaughter weight

Breakeven Purchase Price for 550# Steers

<table>
<thead>
<tr>
<th>FCOG</th>
<th>Fed Cattle Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$81</td>
</tr>
<tr>
<td>24.72</td>
<td>119</td>
</tr>
<tr>
<td>26.72</td>
<td>117</td>
</tr>
<tr>
<td>28.72</td>
<td>114</td>
</tr>
<tr>
<td>30.72</td>
<td>112</td>
</tr>
<tr>
<td>32.72</td>
<td>110</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Corn</th>
<th>WDGS</th>
<th>hay</th>
<th>Int</th>
<th>yard</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1.75</td>
<td>$32.00</td>
<td>$50</td>
<td>7%</td>
<td>$0.30</td>
<td>$30</td>
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</tbody>
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Assignment

- Homework due in class next Thursday
- Show your work