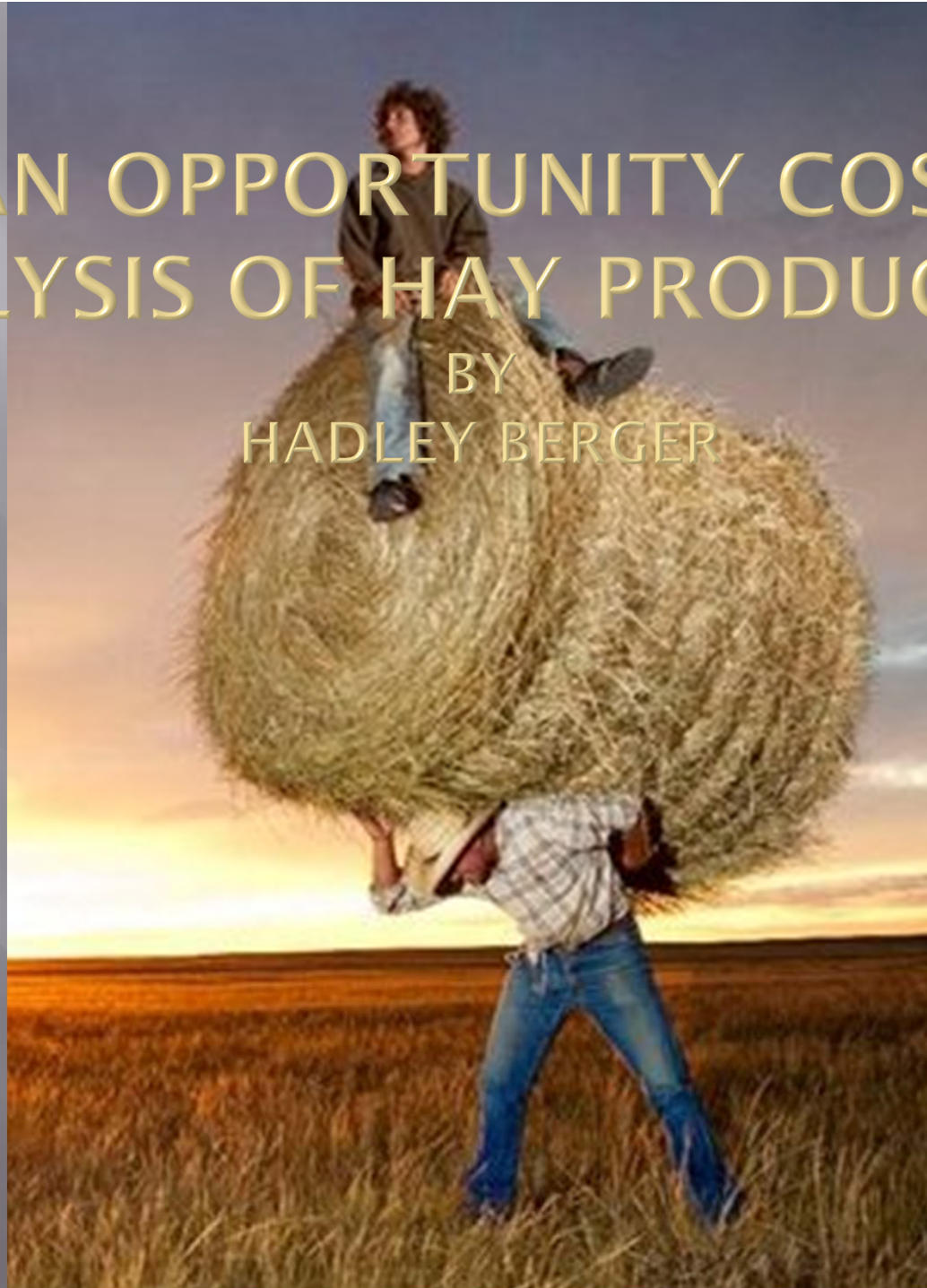


AN OPPORTUNITY COST ANALYSIS OF HAY PRODUCTION

BY
HADLEY BERGER



Introduction

- ▣ Study based on 2009/2010 records
- ▣ Berger Ranches
- ▣ Pancost Hay Auctions

Berger Ranches

- ▣ Located in Saratoga, WY
- ▣ 20,000 total acres
- ▣ 10,000 deeded acres
- ▣ 1000 harvestable acres
- ▣ Yielding 1.5 tons per acre
- ▣ 1,325 head of wintered cattle
- ▣ 1.25 ton required per cow

Pancost Hay Auctions

- ▣ Located Fort Lupton, CO
- ▣ Work in Northern Co, and Southern WY
- ▣ Employs full time custom hay crew
- ▣ Holds monthly hay sales

Hay Requirements for Wintered Cattle

| | |
|---|-------------|
| | |
| Harvestable Acres | 1000 |
| Tons per acre | 1.5 |
| Total hay Production | 1500 |
| Total number of Cattle | 1,325 |
| Tons per Cow | 1.25 |
| Total Hay Requirement/tons | 1656.25 |
| Less tons produced | 1500 |
| Tons needed | 156.25 |
| Ave. cost per ton | 94.5 |
| Total purchase necessary After Hay production | \$14,765.63 |

(Berger)

Two Major Methods

- ▣ Ranch Production
 - Ranch resources
 - Land
 - Labor
- ▣ Custom/Contract Harvesting
 - Ranch resources
 - Land
 - Pay for full harvest
 - Give percentage of hay
 - 30%-70% or 40%-60%
 - Depending on quality
 - Sell for \$30/acre standing

Hay Budgets Ranch Production vs. Custom Harvesting

| | Total Costs | | Cost/Acre @ 1000 acres | |
|-------------------------------------|--------------------|--------------------|------------------------|----------------|
| | Ranch Production | Custom Harvest | Ranch Production | Custom harvest |
| Fertilizer/420 acres | \$19,518.00 | \$19,518.00 | \$46.47 | \$46.47 |
| Machinery Repair | \$2,500.00 | \$0.00 | \$2.50 | \$0.00 |
| Depreciation/Swather | \$8,000.00 | \$0.00 | \$8.00 | \$0.00 |
| Depreciation/Baler-rake | \$3,000.00 | \$0.00 | \$3.00 | \$0.00 |
| Depreciation/Tractor | \$8,000.00 | \$0.00 | \$8.00 | \$0.00 |
| Labor/Fuel-Swathing | \$5,436.00 | \$15,000.00 | \$5.44 | \$15.00 |
| Labor/Fuel-Baling | \$6,579.00 | \$18,000.00 | \$6.58 | \$18.00 |
| Labor/Fuel-Stacking | \$3,150.00 | \$4,000.00 | \$3.15 | \$4.00 |
| Hay Purchase | \$14,765.63 | \$14,765.63 | \$14.77 | \$14.77 |
| Total Cost | \$70,948.63 | \$71,283.63 | \$70.95 | \$71.28 |
| Total Production @ 1.5 Tons/acre | 1500 | 1500 | 1.5 | 1.5 |

(L. Pancost)(Berger)

Major Differences

- ▣ Equipment costs
 - Depreciation
 - Repair

| | (RP) Total Costs | (CH) | (RP) Cost/Acre | (CH) |
|-------------------------|------------------|--------|----------------|--------|
| Machinery Repair | \$2,500.00 | \$0.00 | \$2.50 | \$0.00 |
| Depreciation/swather | \$8,000.00 | \$0.00 | \$8.00 | \$0.00 |
| Depreciation/baler-rake | \$3,000.00 | \$0.00 | \$3.00 | \$0.00 |
| Depreciation/Tractor | \$8,000.00 | \$0.00 | \$8.00 | \$0.00 |

(L. Pancost)(Berger)

| Equipment Depreciation @ 10% per year | | | | | | |
|---------------------------------------|----------------|-------------|-------------|-------------|-------------|-------------|
| Year | Original value | 1 | 2 | 3 | 4 | 5 |
| Swather | \$80,000.00 | \$72,000.00 | \$64,800.00 | \$58,320.00 | \$52,488.00 | \$47,239.20 |
| Baler/rake | \$30,000.00 | \$27,000.00 | \$24,300.00 | \$21,870.00 | \$19,683.00 | \$17,714.70 |
| Tractor | \$80,000.00 | \$72,000.00 | \$64,800.00 | \$58,320.00 | \$52,488.00 | \$47,239.20 |

(Barkhurst)

Major Differences

- ▣ Labor
- ▣ Fuel

| | (RP) Total Cost | (CH) | (RP) Cost/Acre | (CH) |
|---------------------|-----------------|-------------|----------------|---------|
| Labor/Fuel-Swathing | \$5,436.00 | \$15,000.00 | \$5.44 | \$15.00 |
| Labor/Fuel-Baling | \$6,579.00 | \$18,000.00 | \$6.58 | \$18.00 |
| Labor/Fuel-Stacking | \$3,150.00 | \$4,000.00 | \$3.15 | \$4.00 |

| Ranch Labor/fuel @ 6 weeks, 6days per week | | | | | |
|---|----------------------|-------------------------------|------------------------|---------------------|------------------|
| | Hrs/day @ \$12/hr | Labor Cost per day | Labor Cost per week | Total labor cost | |
| Swather | 8 | \$96.00 | \$576.00 | \$3,456.00 | |
| Baler/rake | 9.5 | \$114.00 | \$684.00 | \$4,104.00 | |
| Stacking | 5 | \$60.00 | \$360.00 | \$2,160.00 | |
| Total | 22.5 | \$270.00 | \$1,620.00 | \$9,720.00 | |
| | Fuel/day | Fuel Cost per day @ \$2.75 | Fuel Cost Per week | Total fuel cost | Total Labor/Fuel |
| Swather | 20 | \$55.00 | \$330.00 | \$1,980.00 | \$5,436.00 |
| Baler/rake | 25 | \$68.75 | \$412.50 | \$2,475.00 | \$6,579.00 |
| Stacking | 10 | \$27.50 | \$165.00 | \$990.00 | \$3,150.00 |
| Total | 55 | \$151.25 | \$907.50 | \$5,445.00 | \$15,165.00 |

(Berger)

Possible Third option

- ▣ Purchasing necessary hay for wintered cattle
 - Only pasture ground
 - No hay to harvest

Wyoming Hay Prices vs. Production Cost on per ton Basis

| | Jan | Feb | Mar | Apr | May | Jun |
|-------------------|--------------|--------------|--------------|------------------------|--------------|---------------------|
| Price/Month | \$93.00 | \$85.00 | \$80.00 | \$78.00 | \$83.00 | \$117.00 |
| Cost of 1500 Tons | \$139,500.00 | \$127,500.00 | \$120,000.00 | \$117,000.00 | \$124,500.00 | \$175,500.00 |
| | Jul | Aug | Sep | Oct | Nov | Dec |
| Price/Month | \$117.00 | \$105.00 | \$97.00 | \$93.00 | \$93.00 | \$93.00 |
| Cost of 1500 Tons | \$175,500.00 | \$157,500.00 | \$145,500.00 | \$139,500.00 | \$139,500.00 | \$139,500.00 |
| | | | | Ave. price/Month | | \$94.50 |
| | | | | Ave. Cost of 1500 Tons | | \$141,750.00 |

(USDA NASS)

Hay Costs Per Ton Basis

| | Total Costs | | Cost/Ton @ 1500 tons | |
|-------------------------|--------------------|--------------------|----------------------|----------------|
| | Ranch Production | Custom Harvest | Ranch Production | Custom Harvest |
| Fertilizer/420 acres | \$19,518.00 | \$19,518.00 | \$13.01 | \$13.01 |
| Machinery Repair | \$2,500.00 | \$0.00 | \$1.67 | \$0.00 |
| Depreciation/swather | \$8,000.00 | \$0.00 | \$5.33 | \$0.00 |
| Depreciation/baler-rake | \$3,000.00 | \$0.00 | \$2.00 | \$0.00 |
| Depreciation/Tractor | \$8,000.00 | \$0.00 | \$5.33 | \$0.00 |
| Labor/Fuel-Swathing | \$5,436.00 | \$15,000.00 | \$3.62 | \$10.00 |
| Labor/Fuel-Baling | \$6,579.00 | \$18,000.00 | \$4.39 | \$12.00 |
| Labor/Fuel-Stacking | \$3,150.00 | \$4,000.00 | \$2.10 | \$2.67 |
| Total Cost | \$56,183.00 | \$56,518.00 | \$37.46 | \$37.68 |

Results

- ▣ Ranch Production and Custom Harvest have very similar total costs
- ▣ The difference is opportunity costs given a particular ranch.
 - Ranch resources
 - Man hours
 - Equipment costs
 - Time
- ▣ Purchasing hay is expensive, and not an option for most ranches

Custom Hay Advantages

- ▣ Set price
- ▣ Man Hours
- ▣ Time
- ▣ Equipment Costs
 - Repairs
 - Depreciation

Ranch Production Advantages

- ▣ Quality control
- ▣ Labor utilization
- ▣ Pride of ownership

Conclusion

- ▣ Ranch production most cost effective method
- ▣ Custom harvesting not much different
 - Limited ranch labor
- ▣ Purchasing the full amount of necessary hay is not a reasonable method.

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Questions?