2013 Georgia Grazing School: Economics of Improved Grazing Systems

Will Improved Grazing Management Pay??
- It depends!!
- Additional revenue
- Reduced cost
- Additional expense
- Reduced income

Partial Budgeting Form for Analyzing Grazing Profitability

<table>
<thead>
<tr>
<th>Additional Costs</th>
<th>Additional Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional fencing costs</td>
<td>Increased conception</td>
</tr>
<tr>
<td>Increased fertilizer costs</td>
<td>Increased weaning weights</td>
</tr>
<tr>
<td>Increased labor costs</td>
<td>Higher stocking rate</td>
</tr>
<tr>
<td>Additional Cow investment</td>
<td>EQIP/CSP?!!</td>
</tr>
<tr>
<td>Reduced Revenue</td>
<td>Reduced Costs</td>
</tr>
<tr>
<td>Reduced stocking rate</td>
<td>Lower fertilizer costs</td>
</tr>
<tr>
<td>Reduced weaning weights</td>
<td>Reduced equipment costs</td>
</tr>
<tr>
<td>Reduced fixed needs</td>
<td>Reduced feed needs</td>
</tr>
</tbody>
</table>

\[
\text{Total additional costs} + \text{reduced revenue} = A
\]

\[
\text{Total additional revenue} + \text{reduced costs} = B
\]

\[
\text{Total Profit} = B - A
\]

Speaking of costs

Variable Costs
- Aka direct costs → changing these impacts level of production.
  - Fertilizer
  - Seed
  - Feed
  - Vet

Fixed Costs
- Aka indirect costs → changing these has no impact on production.
  - Depreciation/interest or principal and interest payments (prorated establishment costs)
  - Taxes
  - Insurance

The One Question
- How do I figure fixed costs?
  - Depreciation + Interest
  - Principal + interest

Depreciation + Interest
- AKA “Economic” method of determining fixed costs.
- Best way to calculate economic fixed costs.
- Ignores cash position, requirements, and cash-flow.
- Uses:
  - Purchase price
  - Salvage value
  - Useful life
  - Intermediate interest rate
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**Depreciation + Interest on Average Investment**

\[
\text{Depreciation} = \frac{\text{Beginning Value} - \text{Salvage Value}}{\text{Years of Useful Life}}
\]

\[
\text{Interest on Average Investment} = \frac{(\text{Beginning Value} + \text{Salvage Value}) \times \text{Interest rate}}{2}
\]

**Principal + Interest**

- AKA Amortized payments
- Utilized when considering cash flow requirements.
- Uses:
  - Purchase price
  - Down payment
  - Years financed
  - Interest rate

**EXAMPLE FOR FIXED COST**

**Purchase a $35,000 hay baler**

**Economic Method**
- $35,000 purchase price
- $10,000 salvage value
- 7 years useful life
- Interest rate = 6%

**Amortization Method**
- $35,000 purchase price
- $50 down
- 7 year financing
- Interest rate = 6%

**Depreciation + Interest**

\[
\text{Depreciation} = \frac{(35000 - 10000)}{7}
\]

Total depreciation = $25,000
Annual depreciation = $3571

\[
\text{Interest on Dep.} = \frac{(35000 + 10000) \times 0.06}{2}
\]

Average investment = $22,500
Interest on Average Investment = $1350

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Depreciation + Interest
Annual Depreciation + Interest = $3571 + $1350 = $4921
$4921

Amortized Payment
Annual Payment = 35000 * 0.0902
Annual Payment = $6,270

Annual Payments for $1,000 at Various Interest Rates and Payback Periods

Annual Payments for $1,000 at Various Interest Rates and Payback Periods

Replace 100 Acres of Commercial N with Clover

Current Situation
- 1208 N/acre
- N cost $0.70/lbs.
- 2 acres/cow
- 90% calf crop with 500# calf @ $125/Cwt.

Clover
- 38/acre of Durana @ $5.25/ll - good for 3 years
- Additional 108 P/acre required @ $6.50/lb
- Additional 108 K/acre required @ $0.55/lb
- 2.13 acres per cow
- Weaning weights increased 208

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Additional Costs
- Additional 20 pounds on calves from 43
  cows @ 90% calf crop sold for $125/cwt. = $5,613
- Savings on 2 applications of 60#/acre of commercial nitrogen @ $0.70/pound = $8,400
- 7 fewer cows @ $400/cow = $2,800
- 3#/acre of Durana or Patriot @$5.25/pound good for 3 years = $525/year
- Additional 10# phosphorous/acre per year @$0.60/# = $600
- Additional 10# potash/acre per year @$0.55/# = $550

Total additional costs = $1,675

Additional Revenue
- Additional 20 pounds on calves from 43 cows @ 90% calf crop sold for $125/cwt. = $5,613
- Savings on 2 applications of 60#/acre of commercial nitrogen @ $0.70/pound = $8,400
- 7 fewer cows @ $400/cow = $2,800
- 3#/acre of Durana or Patriot @$5.25/pound good for 3 years = $525/year
- Additional 10# phosphorous/acre per year @$0.60/# = $600
- Additional 10# potash/acre per year @$0.55/# = $550

Total additional revenue = $12,168

Total Profit = $6,555

Impacts of Fertilizer Cost & Usage on Profitability

<table>
<thead>
<tr>
<th>Lbs. of N/acre</th>
<th>0.35</th>
<th>0.50</th>
<th>0.75</th>
<th>1.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>390</td>
<td>735</td>
<td>1,375</td>
<td>2,010</td>
</tr>
<tr>
<td>105</td>
<td>391</td>
<td>736</td>
<td>1,376</td>
<td>2,011</td>
</tr>
<tr>
<td>110</td>
<td>392</td>
<td>737</td>
<td>1,377</td>
<td>2,012</td>
</tr>
<tr>
<td>115</td>
<td>393</td>
<td>738</td>
<td>1,378</td>
<td>2,013</td>
</tr>
<tr>
<td>120</td>
<td>394</td>
<td>739</td>
<td>1,379</td>
<td>2,014</td>
</tr>
<tr>
<td>125</td>
<td>395</td>
<td>740</td>
<td>1,380</td>
<td>2,015</td>
</tr>
</tbody>
</table>

1. What happens if we “grow” into more cows?
2. How do I handle shared assets and liabilities?

Growing into more cows
1. Same process as with partial budget.
2. Develop an “average” cash flow projection sheet for years after you reach herd objective.
3. Develop projected annual cash flows for 5-7 years with and without additional cows leading up to the year where you are fully online.
4. Sum the annual cash flows for the two scenarios.
5. Make decision based on potential net income and your risk tolerance.

Shared Assets/Liabilities
- Common question when considering co-grazing.
- Also comes up when land is used for more than one enterprise or purpose.
  - Tractor used for crops, cattle and hay
  - Combination equipment shed/livestock facility
- Same principle applied to allocating overhead expenses.

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Allocating assets/liabilities-the contribution approach

1. Determine the total cost
   1. Fixed
   2. Variable
2. Can you identify specific costs that can be allocated to specific enterprises?
   1. Extra expenses for goat or sheep
3. If not, allocate expenses by percentage of income.
   1. If co-grazing cows and sheep and cows generate 60% of income then charge cows 60% of expenses.
4. Apply enterprise contribution percentage to appropriate variable and fixed costs.

*** If one enterprise will not cover its variable costs, it can't reduce fixed or total costs

Important Considerations

• Include only changes
• Make sure expected production increases are relevant to your scenario
• Take into account the start up period
• Don’t base calf prices on today’s prices
• Think it through!!