Economics of Drought Management Strategies

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Background

• Summer 2002 I wrote:
  – Since moving to Laramie, I have become concerned with de-stocking recommendations
    • Little or no focus on the economic consequences
  – Decision to de-populate along with de-stocking in where the big economic costs are generated
  – Could ranchers be walking into an economic firestorm??
Definitions

• De-stocking
  – Removing grazing animals from the grasslands

• De-populating
  – Selling animal from ranch ownership

• Re-populating
  – Adding animals back into the grazing herd
2002 Drought Strategies Identified

• Sandhills of NE Rancher
  – 15% reduction in cow numbers year 2002
  – Winters cow on cornstalks
    • Backed off on replacement heifer calves held back
    • Wants to sell large # cows at cattle cycle price peak

• NC Wyoming Rancher
  – Depopulated 30% 2002
  – AI’ing to get maximum calf price
    • Record calf price in 2004!
  – Shipping cows 135 miles to aftermath grazing
  – Raising some AI bulls
  – Invested savings in high-quality non-ag property and plows earnings back into the ranch operating expenses

• SC Wyoming Rancher
  – Started early weaning 2002 – to feedlot – will continue this
    • Cows can be maintained easier
      – Cows on windowed hay and supplement
  – Depopulated 17%
    • Will repopulate by holding back heifers
      – “is a very slow process with high calf prices”
What we learned from North Dakota’s Droughts in the 1980s

• 1980/81 – ranchers moved cattle south 400-500 miles to grass
  – It was a financial disaster!

• 1988 – Did not move cows south to grass
  – De-populated
  – My economic analysis suggested should have moved animals to grass!

• Why the Difference?

• Conclusion:
  – Optimum drought strategy depends on where we are in the cattle cycle!
Economics of De-populating

• Two costs associated with De-populating
  – Visible costs
    • Selling bred cows at fire-sale prices
    • Re-populating with expensive females
  – Invisible (hidden) costs
    • Less calves to sell when it starts raining
    • Less calves to sell when prices go up
  – Invisible costs > Visible costs?
  – Could a rancher’s drought strategy amplify the drought’s negative financial impact?
Economics of Drylotting Beef Cows
(North Dakota State University Research Herd)

• Long-term research trial with drylotting beef cows
  – Tied into irrigated land aftermath feeding
  – Complete control over ration nutrition
  – Economics never quite matched traditional grazing systems – if grass is available

• Drylotting beef cows part of year in a drought can be economically viable
  – Allows you to de-stock
  – But, do not have to depopulate
    • Just keep producing and selling calves
Figure 1. Cattle, slaughter and price cycle relationships

- Rebuilding Stage
- Exhaustion Stage
- Sell-off Stage
- Last Stage

Price

Harvest numbers

Cattle prices

Cattle numbers

No. of head

2012

2020
LET’S LOOK AT EACH DROUGHT INDIVIDUALLY
500-600 Lb Steer Calf Prices
source: PPP-MIS Long Range Prices

Where We Are In The Price Cycle Makes A Difference!
Simulation Results

• Traditional Drought Management Strategy
  – Large negative impact in 2002
    • Low calf prices
    • Low fire-sale price of females
    • High re-population costs
  – Much, much smaller impact in 2006
    • High calf prices
    • Higher fire-sale price of females
    • Lower re-population costs
  – What about 2012 drought?
    • Reasonably good fire-sale prices
    • High calf prices at least through 2014
    • High re-population costs
    • High drought feed costs
  – Where we are in cattle cycle has HUGE impact!
2012 DROUGHT STRATEGY
SIMULATIONS
Projected Purchase Price Of Bred Heifer

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<thead>
<tr>
<th>Years</th>
<th>Price</th>
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<tr>
<td>2011</td>
<td>$1,750</td>
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<td>2019</td>
<td>$1,600</td>
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<tr>
<td>2020</td>
<td>$1,500</td>
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AVG: $1,800
Heifer Discount

<table>
<thead>
<tr>
<th>Year</th>
<th>Discount ($/Cwt)</th>
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<tbody>
<tr>
<td>2011</td>
<td>$18</td>
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<tr>
<td>2012</td>
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<td>2013</td>
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<tr>
<td>2019</td>
<td>$10</td>
</tr>
<tr>
<td>2020</td>
<td>$10</td>
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2012 Drought Strategies Evaluated

• Control
  – 2011 thru 2020 assuming no drought
  – Assumes no increase in feed costs from drought

• Traditional_1 + No Special Repopulation
  – 2012 sold 60 bred cows
  – 2012 held back zero replacement heifers
  – 2013 on back to normal 46 replacement heifers

• Traditional_2 + Buy Back Replacements
  – 2013 – buy 60 bred females to calve in 2014

• Traditional_3 + Raise Back Replacement
  – Raise back 170 heifers: 85 in 2013 and 85 in 2014
ECONOMIC RESULTS
# Cash Flow Summary

## Control: 2012 No Drought

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>Cow Sales</th>
<th>Calf Sales</th>
<th>Cash Costs</th>
<th>Total Herd</th>
<th>Per Cow</th>
<th>Per Cow</th>
<th>Per Herd</th>
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IF YOU DEPOPULATE, THE DROUGHT MAY IMPACT YOU FOR 6-8 YEARS INTO THE FUTURE!
2012 – sold 60 cows
- held back 0 Heifers

10 Yr Invisible Costs = - $346,136
Ave = $27,000/yr

10 Yr Net Cash Flow: -$95,431
2012 – sold 60 cows
- zero
Replacement Heifers
2013 – Bought 60 bred Females

Ave - $27,000/Yr

10 Yr Invisible Costs - $105,706

10 Yr Net Cash Flow: -$102,284
Drought Strategy:
2012 – Sell 60 Cows
   – Zero Hfr Replacement
2013 – 85 Replacement Heifers
2014 – 85 Replacement Heifers

Herd’s Annual Net Cash Flow

10 Yr Invisible Costs - $146,346

10 Yr Net Cash Flow: -$69,767

Years
Conclusions

• Need to break drought management strategies into:
  – De-stocking – removing cattle from grassland
  – Do-populating – Removing cattle from ranch ownership
    • De-stocking is a production decision
    • De-population is an economic decision
      – Each as it owns Management Decision Variables
Conclusions (continued)

• There are two categories of drought costs
  – Visible drought costs
    • Selling cows at fire-sale prices
    • Repopulating with purchased or raised females
  – Invisible drought costs
    • Having less calves to sell in years after the drought

• Optimal drought management strategies have to take both into account!
If you buy feed in 2012/2013, you can take advantage of good calf prices AND maintain your herd’s production capacity into the future.