Pray for Rain – Prepare for Drought

Back to the Basics using Developing Technologies

Jim Thorpe
JT Land and Cattle LLC
Newkirk, NM
“Flyover Country”
JT RANCH
BASE MAP
“Purple Pastures”

Basin and Mesa
12,500 Acres @ 40Ac./Cow
14.5” Average Rainfall
Variable Rainfall = Variable Production

“No year is average!”

“Unfavorable Year”

“Favorable Year”
Our first Year on the Ranch

“Better Take a Picture!”
Romero Homestead, 1915

Drought Strategy: “We fed them cactus!”
Generations of Stewardship
“Since ‘99”
NMSU Extension Resources

Consulting the Owner’s Manual
Seeking Professional Help

Kirk Gadzia

“Always be ready for the next rain!”
NRCS EQIP PROGRAMS

Ranch Make-over Reality Show
NRCS EQIP: Cross-Fencing

1999

2004
NRCS EQIP: Water Development
NRCS EQIP: Brush Control

Suppression of Woody Species: Juniper, Mesquite, Salt Cedar, Cacti
Grazing Management

Timing
Intensity
Frequency

Growing Season Rest
Forage Inventory and Utilization
Building Ranch Resiliency

Mini Exclosure
70 Yards from Windmill

2000

2004
Range Carbon Sequestration
CCX Program: A PES Prototype

2008: Rangeland Soil Carbon Sequestration Offsets
Payment for Performance:
Conservation Stewardship Program
What if it doesn’t rain?

Old Homestead
Drought Strategy in Natural Systems

Leave or Die

Water goes before forage
With improvements like fences and windmills:

We can now STAY and STARVE
Homestead Community of “El Valle”

USDA Drought Strategy: Rifle-Pit De-stocking
Leave or Die:
500,000 Acre Bell Ranch in the 1930’s
Shipped all their cows to Mexico for two years
DROUGHT of ‘06
“Enough Old Grass for a While”

Declining Quality

FRAMS
NUTBAL
GAN FECAL
ANALYSIS:

CP: 8.5
DOM: 60.6
BCS 4.5 - 5

Main Herd: May 2006
Nutritional Stress

FRAMS
NUTBAL
GAN FECAL
ANALYSIS:
CP: 6.7
DOM: 60
BCS 4 – 4.5

First Calf Heifers: Will they rebreed?
Pulling the Trigger
Early Weaning, Cow Culling

- Wean 215 calves 90+ days old
- 20% cowherd reduction
- No Replacements
- Plan further herd reductions
- Lower grazing pressure and nutrient demand

June 22, 2006
SRM OKC Drought Workshop

_Pray for Rain – Prepare for Drought_

Pilot Test Tools and Technologies
_(The Problem with Pilots)_

Risk Management
Drought Decision Calculator (Arnold Norman, Gale Dunn)

Red Area in the Graph Shows Current and Carry Over Effect of Previous Months’ Drought

Drought Calculator Showing Early and Mid-Season Drought

Drought Calculator Showing Early, Mid-, and Late Season Drought
WEB BASED DROUGHT MANAGEMENT?

2006 GLCI Conference
St. Louis, MO

Jim Thorpe
JT Land & Cattle
Newkirk, NM
Forage Risk Assessment Management System (FRAMS) is a dynamic risk management decision tool designed to offer the ranching industry a web-based option for a forage risk assessment that is available 24/7.

The FRAMS system provides the means to monitor and assess the performance of free-grazing animals, the forage conditions in response to site-specific weather, and the potential least-cost feeding or destocking decisions relative to market and weather risk.

Funded By: USDA Risk Management Agency

Developed By: Agrilogic, Inc.
GAMS, Inc.
Texas Agricultural Experiment Station
TAMU - Center For Natural Resources
Information Technology
FRAMS Sites

West Mesa

Basin

East Mesa

(Ability to add or move raingauges)
FRAMS ECONOMIC MODULES
RANCH COST STRUCTURES

Enter Cost Data

To complete an economic risk assessment, you need to enter the following marginal costs. Assume a normal or typical year. You may want to look up Extension Enterprise budgets for your region if you think that such estimates may help you better project your costs.

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Cow-Calf Enterprise</th>
<th>Stocker Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual feed costs per head</td>
<td>120.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Health and vet costs per head</td>
<td>50.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Value or costs of hay per head for the year</td>
<td>55.85</td>
<td>0.00</td>
</tr>
<tr>
<td>Grass lease costs per head incurred per year</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Current interest rate</td>
<td>6.00</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Similar to SPA and IRM
REGIONAL MARKET REPORTS

Forage Risk Assessment Management System

* Price Projection Tool

All prices should be entered on cwt basis - except for cow/calf pairs.

<table>
<thead>
<tr>
<th>ENTER 7-8 CWT FEEDER STEER PRICE (FUTURES MARKET) FOR THE MONTH YOU SELL YOUR CALF CROP:</th>
<th>107.75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows:</td>
<td>58.50</td>
</tr>
<tr>
<td>Cow/calf pairs (per pair):</td>
<td>900.00</td>
</tr>
<tr>
<td>Replacement heifers - 2 yr:</td>
<td>96.50</td>
</tr>
<tr>
<td>Replacement heifers - 1 yr:</td>
<td>99.00</td>
</tr>
<tr>
<td>Weaned replacement heifers:</td>
<td>0.00</td>
</tr>
<tr>
<td>Bulls:</td>
<td>77.00</td>
</tr>
<tr>
<td>Stocker heifers:</td>
<td>0.00</td>
</tr>
<tr>
<td>Stocker steers:</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Supports Keep or Sell Decisions
FRAMS Drought Utilities

Make a Decision
Keep and Feed Option - Cow/Calf
Destock Option - Cow/Calf
Keep and Feed Option - Stockers
Destock Option - Stockers

Not Available at any Price...
### Plant Community Results by Rain Gauge

#### Basin Windmill: 65 % of property

<table>
<thead>
<tr>
<th>Run</th>
<th>Clean</th>
<th>Load Rain</th>
<th>Run Status</th>
<th>Plant Community</th>
<th>Last Run Date</th>
<th>Forage (lb/acre)</th>
<th>Average (lb/acre)</th>
<th>Status</th>
<th>Deviation</th>
<th>30-day</th>
<th>60-day</th>
<th>90-day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run It</td>
<td>Clean Up Run</td>
<td>Load My Rainfall</td>
<td>Done</td>
<td>Blue grama, galieta leamy side slope</td>
<td>2006-11-17</td>
<td>490</td>
<td>752</td>
<td>Warn</td>
<td>-27.9%</td>
<td>-48.2%</td>
<td>-84.3%</td>
<td>-100%</td>
</tr>
<tr>
<td>Run It</td>
<td>Clean Up Run</td>
<td>Load My Rainfall</td>
<td>Done</td>
<td>Galieta bottomland</td>
<td>2006-11-17</td>
<td>851</td>
<td>1181</td>
<td>Warn</td>
<td>-23.5%</td>
<td>-37.7%</td>
<td>-60.2%</td>
<td>-100%</td>
</tr>
</tbody>
</table>

#### East Mesa: 15 % of property

<table>
<thead>
<tr>
<th>Run</th>
<th>Clean</th>
<th>Load Rain</th>
<th>Run Status</th>
<th>Plant Community</th>
<th>Last Run Date</th>
<th>Forage (lb/acre)</th>
<th>Average (lb/acre)</th>
<th>Status</th>
<th>Deviation</th>
<th>30-day</th>
<th>60-day</th>
<th>90-day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run It</td>
<td>Clean Up Run</td>
<td>Load My Rainfall</td>
<td>Done</td>
<td>Blue grama, galieta leamy side slope</td>
<td>2006-11-17</td>
<td>485</td>
<td>751</td>
<td>Warn</td>
<td>-27.9%</td>
<td>-47.9%</td>
<td>-82.7%</td>
<td>-100%</td>
</tr>
<tr>
<td>Run It</td>
<td>Clean Up Run</td>
<td>Load My Rainfall</td>
<td>Done</td>
<td>Blue grama mesa top</td>
<td>2006-11-17</td>
<td>74</td>
<td>164</td>
<td>Alert</td>
<td>-42.5%</td>
<td>-92%</td>
<td>-100%</td>
<td>-100%</td>
</tr>
</tbody>
</table>
Remote Sensing Tools

Normalized Deviation

Vegetation Index

Deviation from 10 Year Averages
JT RANCH
BASE MAP

“Purple Pastures”

Opportunity to
Ground Truth
AUGUST NDVI Week 4

August Rain gauges

1 1.24” 40% Avg
2 1.93” 62% Avg
3 2.4” 77% Avg
4 2.87” 93% Avg

Deviation from 10 Year Mean
Weaning on Dry Grass

Weaned Calves 9/20/07
74% “Normal”

“Let them eat cake!”

Bred Replc. Heifers
71% “Normal”
“Very Spotty”

Revised Main Herd Graze Plan

July – “Week 5”  2007

1st Calf Heifers
87% “Normal”

Isolated 2.25” Rain Floods off Rimrock
8/1/07

96% “Normal”
A Deluge of Drought Insurance?

For Disasters: NAP, LFP
RMA PRF VI

• Drought Risk Management Tool
• Imperfect launch in New Mexico in 2011
• Superior to NAP
Why were many NM VI values so “high” when “exceptional drought” prevailed?

Ranch NDVI shows 75-84% of “Normal”
USDARMA PRF Program

Does it work??
Mar-May Index
147.5
The 2011-2012 DROUGHT

USDA Crop Progress and Condition: Pasture and range in New Mexico, 2012

<table>
<thead>
<tr>
<th>Condition Year</th>
<th>M.</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
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<tbody>
<tr>
<td>2008</td>
<td></td>
<td></td>
<td></td>
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<td>2009</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2011</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>2012</td>
<td></td>
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</table>

Condition (percent)

<table>
<thead>
<tr>
<th>Condition Type</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
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<tbody>
<tr>
<td>Nov. 25</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
NEWS RELEASE
United States Department of Agriculture
NATIONAL AGRICULTURAL STATISTICS SERVICE
New Mexico Field Office
2507 North Tekshor Blvd. Suite 4, Las Cruces, NM 88011

FOR IMMEDIATE RELEASE
February 1, 2013

New Mexico Cattle Numbers Continue to Decline

2013 New Mexico Cattle Inventory drops for the third consecutive year. The U.S. Department of Agriculture’s National Agricultural Statistics Service (NASS) announced today that the January 2013 Cattle Inventory totaled 1,340,000 head, down 4 percent from the previous January. This is the lowest inventory since 1991 and is 50,000 head below last year. Continuing drought conditions in 2012 caused insufficient water moisture for pastures coupled with high feed costs resulted in ranchers reducing herd sizes. Beef Cow inventories have hit a record low for the second consecutive year at 390,000 head.

![New Mexico Cattle Inventory](image)

UNITED STATES HIGHLIGHTS

All cattle and calves in the United States as of January 1, 2013 totaled 89.3 million head, 2 percent below the 90.8 million on January 1, 2012. This is the lowest January 1 inventory of all cattle and calves since the 88.1 million on hand in 1952.

Contact: Longino Bustillos
(800) 530-8810
www.nass.usda.gov/nm
The 2011-2012 DROUGHT

Reduced Livestock = Fewer Land Stewards and Less Vegetation Management?
The Road Ahead

Negligent Management?

Resilient Management?
Pray for Rain – Prepare for Drought
Back to the Basics using Developing Technologies

Tools and Technologies
On SMART DEVICES

Jim Thorpe
JT Land and Cattle LLC
Newkirk, NM
OKC Drought Symposium

Tools and Technologies

On SMART DEVICES
Contrasts in Management
RMA Sign-up: September 2010
April-June Interval: Grid: 13228

8000 insured acres at 75% level
Premium: $3740 (45% of full cost)
April-June Interval VI was 71.7%

Insurance Payment: $3265

Net loss: $475
April-June Rainfall

<table>
<thead>
<tr>
<th></th>
<th>Mesa Pen</th>
<th>HQ</th>
<th>N Middle</th>
<th>Brand Pen</th>
<th>El Valle</th>
<th>Bama</th>
<th>Santa Rosa Averages</th>
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</thead>
<tbody>
<tr>
<td>Apr</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.70</td>
</tr>
<tr>
<td>May</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.20</td>
</tr>
<tr>
<td>Jun has issues</td>
<td>0.05</td>
<td>0.45</td>
<td>0.68</td>
<td>0.00</td>
<td>0.00</td>
<td>0.37</td>
<td>1.70</td>
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<tr>
<td></td>
<td>0.05</td>
<td>0.45</td>
<td>0.68</td>
<td>0.00</td>
<td>0.00</td>
<td>0.37</td>
<td>3.60</td>
</tr>
<tr>
<td>Percent of Avg:</td>
<td>1%</td>
<td>13%</td>
<td>19%</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Average to date of 6 gauges:</td>
<td>0.26</td>
<td>7% of average for interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RMA Pilot: What Went Wrong (or Right)?

February 2011 Dormant Forage: “Greenness” or “Biomass?”
Remote Sensing Applications to Drought Detection

Les Owen
Range Resources & GIS Specialist
New Mexico Department of Agriculture
Agricultural Programs and Resources Division
Does it work??
Mar-May Index
147.5
Forage Risk Assessment Management System

Dept. of Rangeland Security:

Color Coded Alerts!

Overall Ranch Summary

This summary is a weighted average of each of the rain gauges established for your ranch.

Overall outlook for ranch

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>30 days</th>
<th>60 days</th>
<th>90 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warn:</td>
<td>&amp;nbsp-27.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alert:</td>
<td>&amp;nbsp-54.2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Disaster</td>
<td>&amp;nbsp-86.9</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Disaster</td>
<td>&amp;nbsp-1</td>
<td></td>
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</tr>
</tbody>
</table>

Logout of FRAMS
Return to Menu

FRAMS gives “Fair Warning”
Ranch NDVI shows 75-84% of “Normal”
RMA Sign-up: September 2010

April-June Interval: Grid: 13228
8000 insured acres at 75% level
Premium: $3740 (45% of full cost)

July-Sept Interval: Grid: 13228
4000 insured acres at 75% level
Premium: $1364 (45% of full cost)
April 19, 2011 0% Long Term Average Precip
April 17, 2011  0% Average Long Term Precip
RMA: April-June VI Interval at 72% of Long Term Average
May 12, 2011       0% Average Long Term Precip
May-July Interval at 32% of Long Term Average
New Mexico Alpha/Beta Testers
Land Care and Management
Economic and Ecological Impacts

Land Degradation; More Expensive Protein
Bruch Control Juniper
Bruch Control: Mesquite
Swales Produce >50%

Galleta “Hay Meadow”
Pray for Rain – Prepare for Drought

Jim Thorpe
JT Land and Cattle LLC
Newkirk, NM