Drought and Stocking Adjustments on Range and Pasture

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Kansas – 52.4 million acres of land

38.2 % or 17.2 million acres range and pastureland
How has the 2011-2012 drought affected WKARC?

Nov. 1, 2011 - Drought and grass stressed
-reduced cow number from 275 to 235

May 30 - low May precipitation, planned for early wean

June 30 - May and June precipitation 40% of average,
set date to wean, and reduced cow number to 200,
planned for further stocking reduction at early preg
check

July 10 - early weaned, destocked obvious cull cows

Aug 10 - early final preg check, culled opens, culled large
cows and from clean-up bred cows to 150 head, fed
all replacements as fat cattle (no replacements
grazing in 2013)
What We Will Do In 2013

Nov. 1, 2012 - Drought and grass stressed - start in May with 10-15% fewer cows than end of 2012
May 30 - May precipitation 80% or less, plan for early wean, plan for pulling off pasture
June 30 - Low May and June precipitation, early wean and place weaned calves in feedlot, place cows in feedlot for limited feeding trial
Precipitation and Stocking Rate are the two most influential factors on rangeland and livestock production.
Can we predict season forage availability from precipitation records?
### Predictability of End of Year Yield from Precipitation Intervals - 35 Years

The table below summarizes the predictability of end of year yield from precipitation intervals over a 35-year period. The equation for predicting yield is given as:

\[ y = 136.7x + 285 \]

with a correlation coefficient of \( r^2 = 0.61 \).

<table>
<thead>
<tr>
<th>Total Year</th>
<th>OctPY-Sep</th>
<th>OctPY-Apr</th>
<th>Mar-May</th>
<th>May-Jun</th>
<th>Jun-Jul</th>
<th>May-Jul</th>
<th>Apr-Sept</th>
<th>Prior 2 yrs</th>
<th>AprPY-Apr</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.59</td>
<td>0.61</td>
<td>0.11</td>
<td>0.30</td>
<td>0.56</td>
<td>0.25</td>
<td>0.46</td>
<td>0.52</td>
<td>0.00</td>
<td>0.07</td>
</tr>
</tbody>
</table>
Predictability of End of Year Yield from Precipitation Intervals - 35 Years

\[ y = -41.5x^2 + 779.0x + 320.0 \]

\[ r^2 = 0.56 \]
Soil interception

Root growth

Root volume & root depth

Nutrient & water uptake

Leaf growth

Tiller & bud initiation

CH₂O production

CH₂O storage
What can we learn from rangelands during the drought of the 1930’s?
Buffalograss and Blue Grama Cover. Moderate Grazed Pasture

1935 - 72%  1937 - 3%  1939 - 27%

Fig. 24. Quadrat on moderately grazed short-grass type with dense cover. Cover of short grasses in the fall of 1935 (left) was 72.4 percent. A minimum cover of 0.15 percent of buffalo grass (large dots) and 2.8 percent of blue grama (small dots) was reached by 1937 (center). Significant gains were made by these grasses during 1938 and 1939 and, when charted in the fall of 1939 (right), buffalo grass had a cover of 3.1 percent and blue grama grass 24.2 percent.
Native Rangeland Response to 1 Year of Extreme Drought – Kansas 1956

(Launchbaugh, 1967)
2011

Palmer Drought Severity Index
September, 2011

National Climatic Data Center, NOAA
Palmer Drought Severity Index
November, 2012

2012

National Climatic Data Center, NOAA
Droughts are Different-

Are we at the point in this drought where we have, or will have this season, severe plant loss like the 1930’s?

Or do we have modest plant loss with a plant density that can still respond like the 1950’s?
How long will recovery take?
What can I do to manage drought?

Establish moderate recommended stocking rates as a baseline

Manage for greater plant vigor and soil cover

Diversify with stocker cattle

Set critical dates for destocking
  Monitor rainfall
  Monitor range production & utilization
  Early weaning
  Early culling
Looking Forward to Seeing Green Again!