Fostering Drought Mitigation Strategies through Information Services

Michael Hayes
National Drought Mitigation Center
School of Natural Resources
University of Nebraska-Lincoln

USDA Agricultural Outlook Forum
“Moving Agriculture Forward”
February 23-24, 2012

Photo: NRCS, Western Oklahoma, June 2011
Drought Mitigation

Mitigation: actions and programs done before a drought that would reduce long-term vulnerability to future droughts

- Natural hazards community
- “Adaptation” in climate change vocabulary
The Cycle of Disaster Management

Planning
Monitoring and Prediction
Impact Assessment
Recovery
Mitigation
Protection
Reconstruction
Response
Disaster
Risk management
Crisis management
### Billion Dollar Disasters
#### NCDC, 1980-2011

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Events</th>
<th>Damage$</th>
<th>$/Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricanes</td>
<td>29</td>
<td>375</td>
<td>12.9</td>
</tr>
<tr>
<td>Tornadoes</td>
<td>30</td>
<td>79</td>
<td>2.6</td>
</tr>
<tr>
<td>Droughts</td>
<td>16</td>
<td>195</td>
<td>12.2</td>
</tr>
<tr>
<td>Floods</td>
<td>14</td>
<td>74</td>
<td>5.3</td>
</tr>
<tr>
<td>Fires</td>
<td>11</td>
<td>20</td>
<td>1.8</td>
</tr>
<tr>
<td>Winter-related</td>
<td>13</td>
<td>43</td>
<td>3.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113</strong></td>
<td><strong>786</strong></td>
<td><strong>7.0</strong></td>
</tr>
</tbody>
</table>
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, August 4, 2011
Author: Brad Rippey, U.S. Department of Agriculture
2011 Drought Impacts

- NCDC: total direct losses to crops, livestock, and timber = $10 billion
- Texas: $5.2 billion in agricultural losses through July
  - Livestock $2.1 billion, Crop losses $3.1 billion
  - $13.1 billion in agricultural losses since 1998
- Oklahoma: more than $2 billion in agricultural losses
- Kansas: more that $1.7 billion in agricultural losses
2011 Livestock Impacts

- Oklahoma experienced a 12% cattle inventory decline.
- New Mexico: “2011 the worst year in memory for the range livestock industry.”
- Texas: “Of the 15,500 members of the Texas and Southwest Cattle Raisers Association, 84% have reported reducing herd size by an average of 38%. This translates to a net reduction of 600,000 to 800,000 head, or about 12%-16% of supply. Total impacts on the Texas economy are estimated at $2.2 billion from livestock losses alone.”
Percent Area of the United States in Severe and Extreme Drought

January 1895–January 2012

Based on data from the National Climatic Data Center/NOAA
Characteristics of Crisis Management

- Reactive, post-impact
- Poorly coordinated
- Untimely
- Poorly targeted
- Ineffective
- Decreases self-reliance → greater vulnerability

![Diagram of Crisis Management Cycle]

Risk Management
- Planning
- Mitigation
- Impact Assessment
- Monitoring and Prediction
- Disaster

Crisis Management
- Recovery
- Protection
- Reconstruction
- Response
Risk Management: Planning

- State level
- Local level
  - Municipalities: Drought Ready Communities
  - River Basins
  - Producers: Managing Risk on the Ranch
- International
Managing Drought Risk on the Ranch

Drought planning process and web-based educational resource for forage and rangeland producers

Initiated with RMA funding in 2006

Collaborators include SDSU, TX A&M, UNL, and ranchers and advisors from SD, NE, KS, CO, TX

www.drought.unl.edu/ranchplan
Drought Risk Reduction Framework and Practices:
Contributing to the Implementation of the Hyogo Framework for Action
Preliminary version
May 2007

The Near East Drought Planning Manual:
Guidelines for Drought Mitigation and Preparedness Planning
Risk Management: Mitigation
Categories of Drought Mitigation Actions

- Improved monitoring
- Drought planning
- Communication and coordination
  - Information Services
- Education/public awareness
- Water supply augmentation
- Demand reduction/water conservation
- Water use conflict resolution
- Legislation/policy changes
Mitigation Database Project

- Collaborate with officials and relevant stakeholders to identify appropriate methods for categorizing, reporting, and accessing drought mitigation case studies and news stories
- Develop a user-friendly web interface for improving accessibility
- Based off of the concepts used by the Drought Impact Reporter and UN-ISDR
Risk Management: NIDIS

The National Integrated Drought Information System Implementation Plan

A Pathway for National Resilience

June 2007
Drought and Water Resources: Federal Partnerships (States, Tribes, Urban, other)

Monitoring & Forecasting

Drought and Flood Impacts Assessments and Scenarios

Early Warning Information

Communication and Outreach

Engaging Preparedness & Adaptation

Slide Courtesy of Roger Pulwarty, NOAA/NIDIS
Risk Management Education for Ranchers

Products: Workshops in KS, CO, NE; workbook based on Managing Drought Risk on the Ranch website; archived materials available online

First workshop held January 21st, Emporia, KS
Links to archives (ppt and audio): www.drought.unl.edu/ranchplan
Transforming Climate Variability and Change Information for Cereal Crop Producers in the Midwest

Linda Prokopy, PhD
Purdue University

http://www.AgClimate4U.org
State climatologists
Crop modelers
Agronomists
Economists
Social scientists
RCC staff
NOAA staff
Final Thought

“Moving forward”, drought risk management needs to be placed into the broader context of the issues surrounding water, sustainability, and all natural hazards.
Michael Hayes
National Drought Mitigation Center
mhayes2@unl.edu
http://drought.unl.edu