

**Drought Management:  
Similar Horizons  
but  
Different Perspectives**

**Justin Derner**  
[Justin.Derner@ars.usda.gov](mailto:Justin.Derner@ars.usda.gov)

USDA-Agricultural Research Service  
Rangeland Resources and Systems Research Unit,  
Cheyenne, WY and Fort Collins, CO



**Road Map**

- Horizons and Perspectives
- Planning
- Operational Flexibility
- Adaptive Management
- Tools for Science-informed Decision-making






Photo credit:  
Darrell Paul from Flickr.com

**Connection with Land**  
Inspiration



**Renewal** **Changing Perceptions**

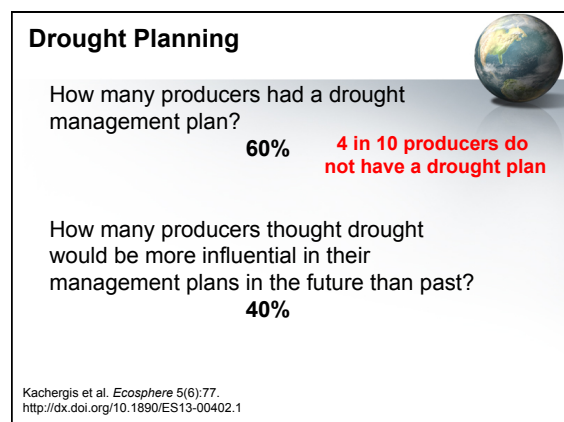
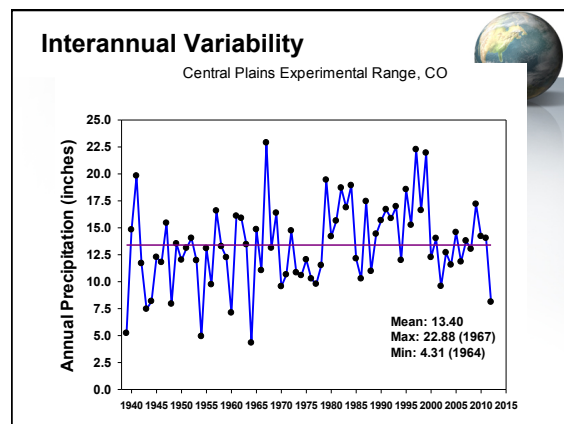
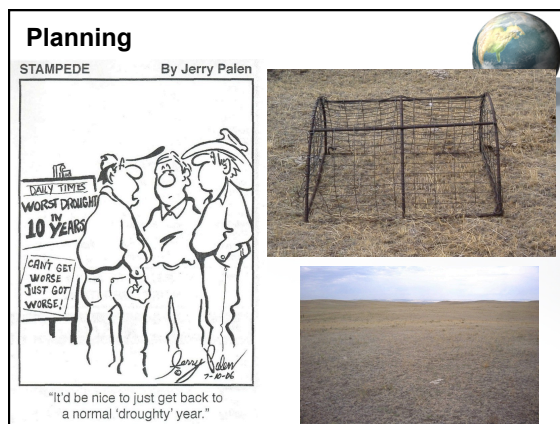
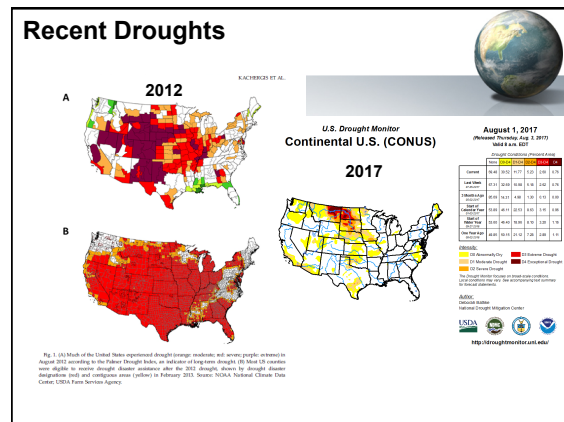
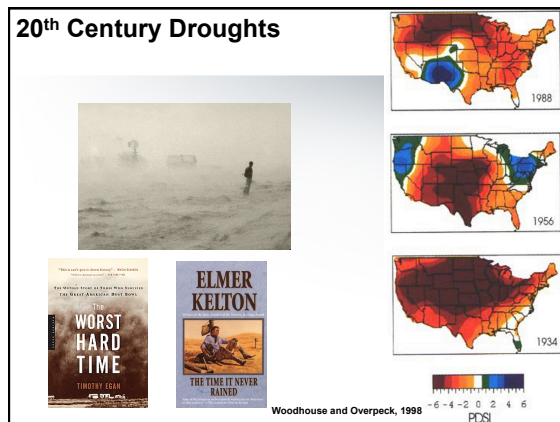


Photo credit:  
Christopermartinphotography.com

**Textures** **Hues and Shades**



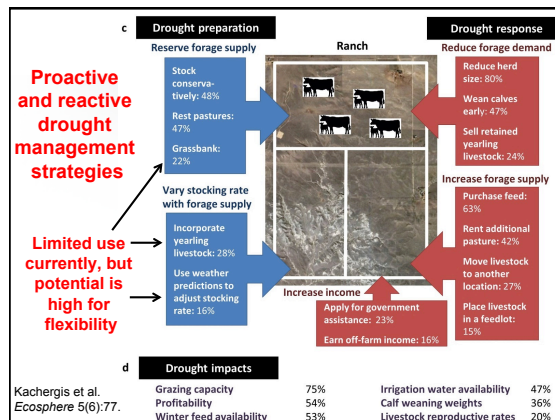
**Fulfillment** **Satisfaction**



## Drought: Preparing?

"...we do have a drought plan, it's kind of pessimistic plan in that you just figure the drought is going to be here periodically and you keep things at a **conservative level**, so when it does come it doesn't hit so hard. Not that we aren't affected, but we aren't affected as much."

"That's why we run a smaller cow herd. That's why we're kind of under stocked."



## Drought: Opportunity?

"..instead of seeing it (drought) as an obstacle, you see it as a catalyst to make changes you might not ordinarily do."

**Drought as a Change Agent**



"So the last drought was just an expensive education to do something different. I think anybody that went through the last drought and didn't do something before this drought is crazy. And I think most people are doing something."

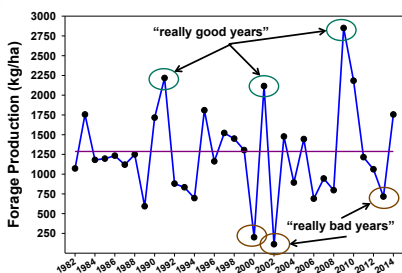


## Operational Flexibility

"...if you have more of a diverse type of livestock (enterprise), your options of being able to de-stock are so much easier so when you have this abrupt drought...when you have a diverse group of cattle... **you're not looking at trying to get rid of pairs, which is hard to do right now. Yearlings are a lot easier to unload**, so that's just another reason I have gone the way I'm going is it makes you more flexible in those decisions."



## Forage Production Variability



**Difficulty for ranchers is matching this forage production variability with animal management flexibility across years.**

Data from USDA-ARS, Cheyenne, WY, Derner et al.



## Possible Flexible Strategies

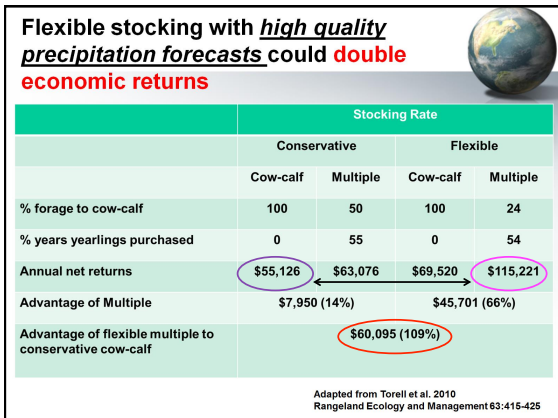
- **Transition from 100% cow-calf to cow-calf-yearling operations**
  - Several operations using 2/3 of long-term forage carrying capacity for cow herd, flex with yearlings on the rest
  - Can markedly reduce selling of cow genetics in dry/drought years
- **Retain more heifer calves in fall**
  - If extra forage, can either breed or send to feedlot after grass
  - If dry, heifers can be sold or sent to feedlot
- **Dry cow grazing in late spring/summer**
  - If extra forage, can keep or purchase dry cows in spring and add weight



Photo credit – David Augustine










### Adaptive Management

Four general strategies for dealing with drought:

- 1) predict it with forecasting tools
- 2) respond by adjusting animal numbers or length of grazing season
- 3) employ conservative stocking
- 4) use inherent spatial variability

Derner and Augustine 2016 *Rangelands* 38:211-215

### Tools for Science-Informed Decision-making

- Current conditions
- Outlooks
- Seasonal forecasts
- Longer-term climatological influences

