

# Irrigation Innovations for Pivots and Laterals: LEPA, LESA, LENA, & MDI

**Matt Yost**

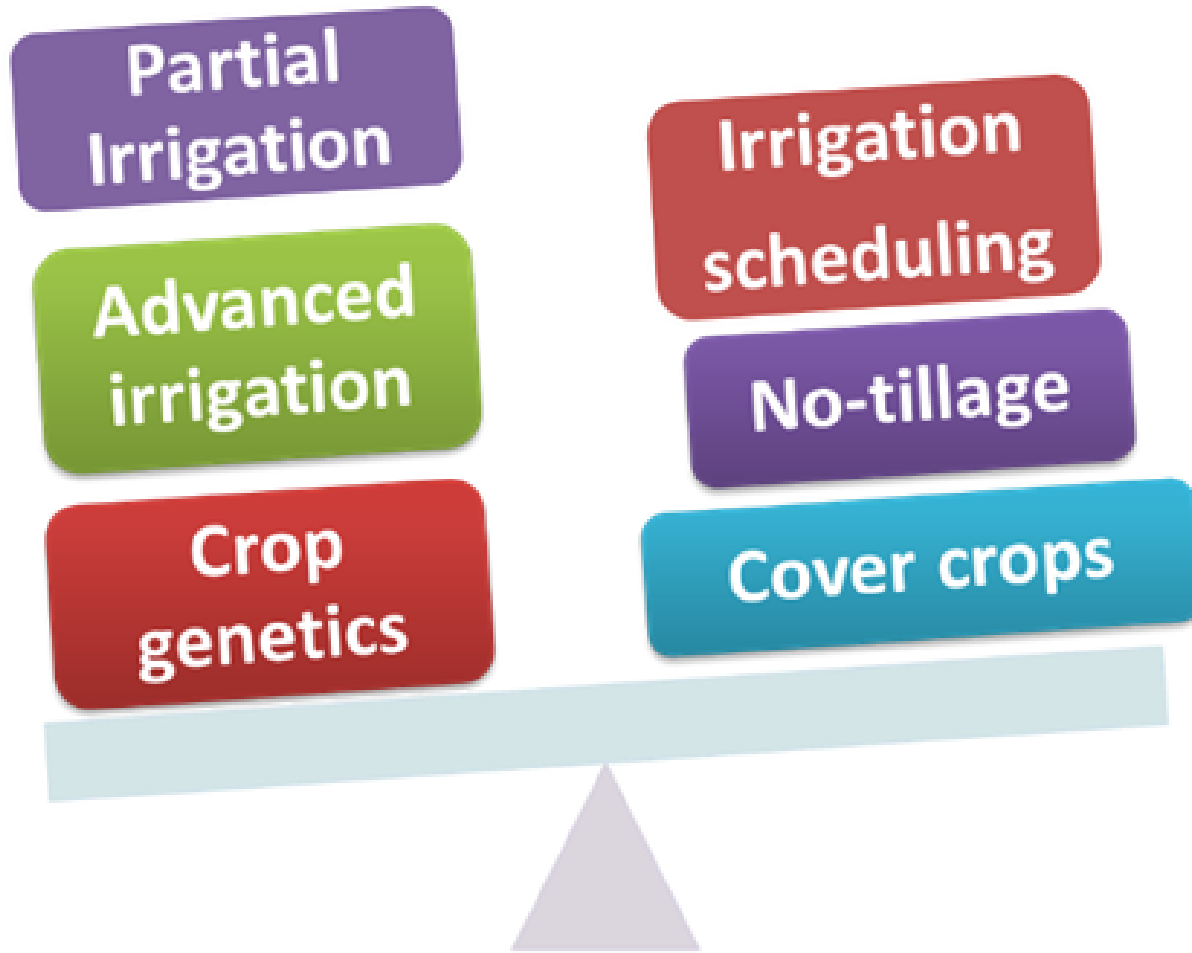
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EXTENSION   
UtahStateUniversity

# Water Optimization in Agriculture



Ag water optimization

# Irrigation Application Efficiencies

**Surface**



15-75%

**Sprinkler**



60-70%

**Mid-elevation (MESA)**



65-80%

**Low-elevation (LESA)**



65-90%

**Low-energy (LEPA)**



75-95%

**Mobile drip**



90-97%

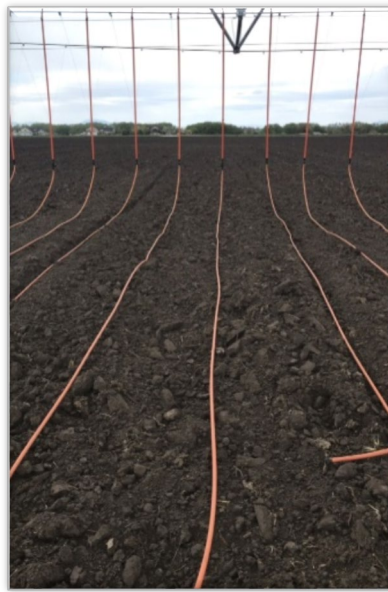
**Subsurface drip**



90-97%



**LESA**



**MDI**



**LEPA**



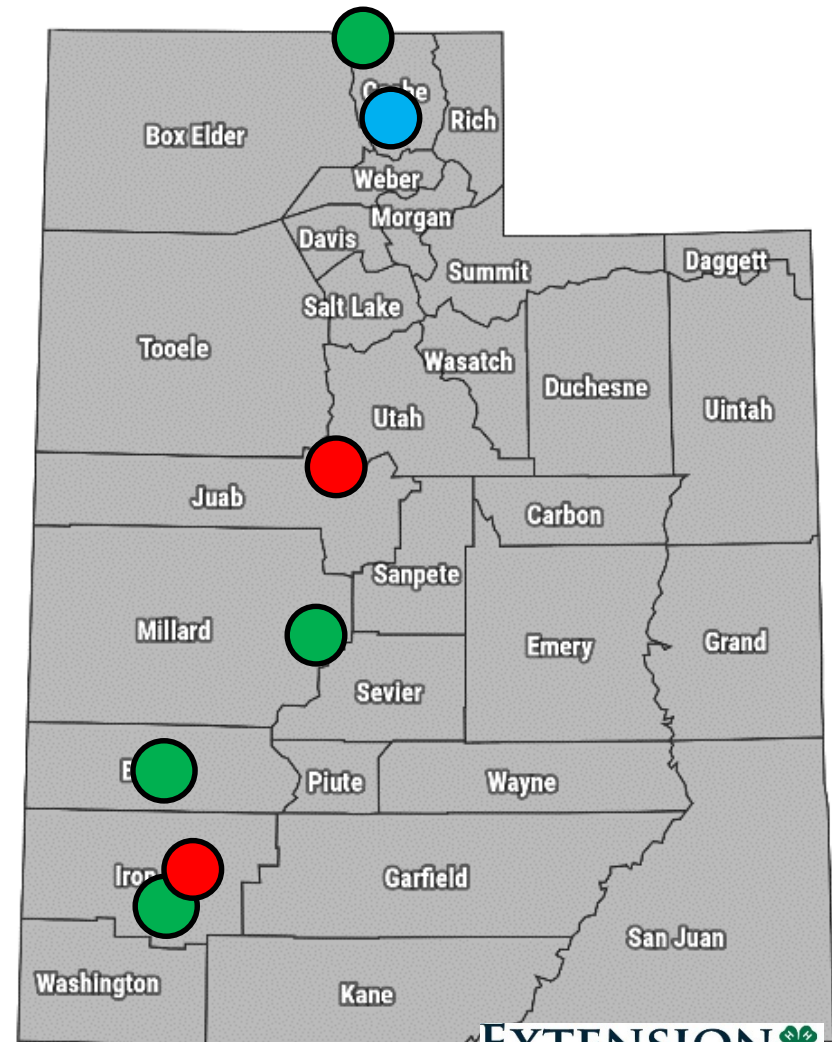
**MESA**



**LENA**

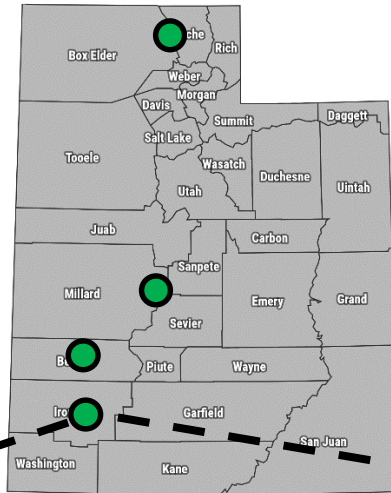
# Testing new irrigation technology

- LEPA vs. MESA
- MESA vs. LEPA, LEPA, MDI
- MESA vs. LEPA, LEPA, LENA, MDI

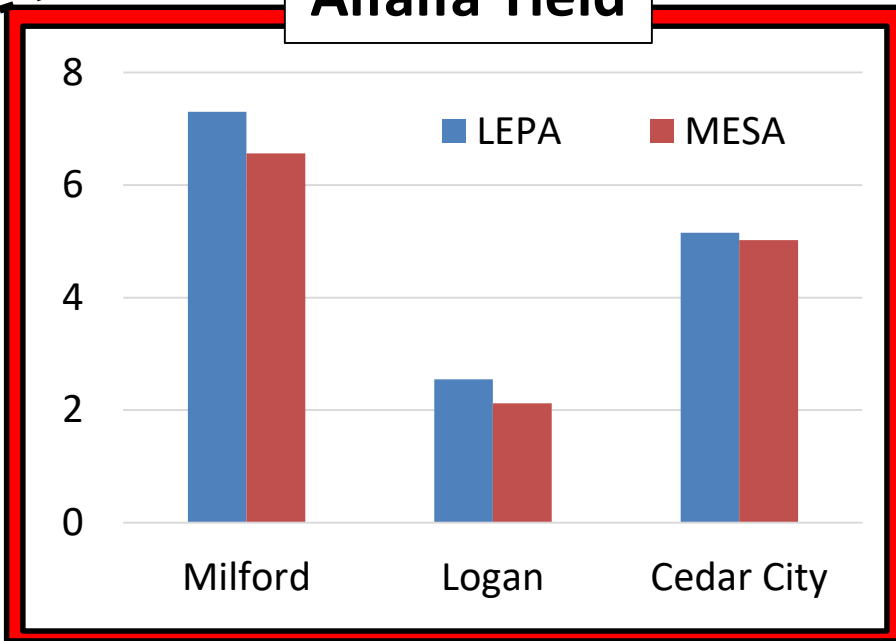


# 2016-18

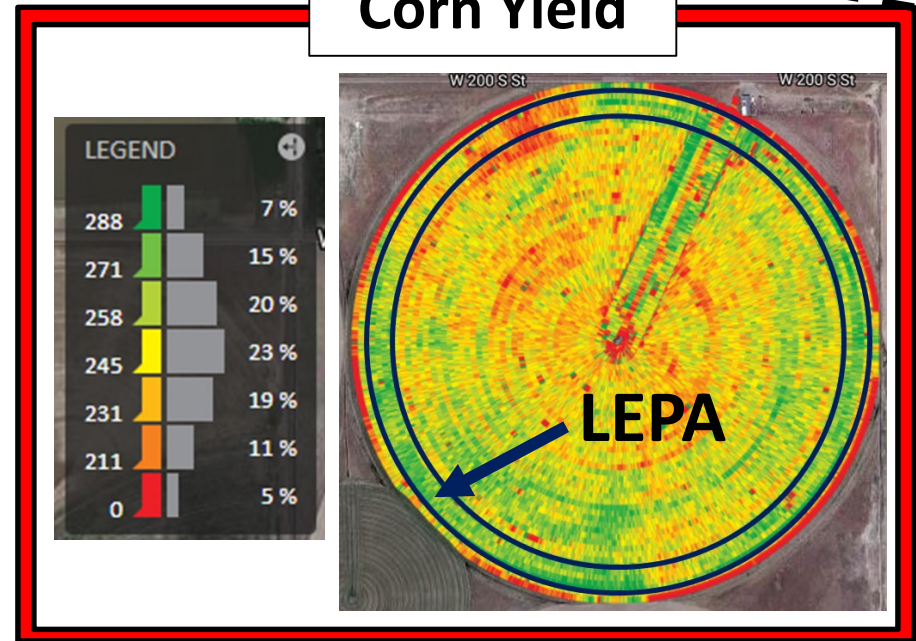
● LEPA vs. MESA



## Alfalfa Yield

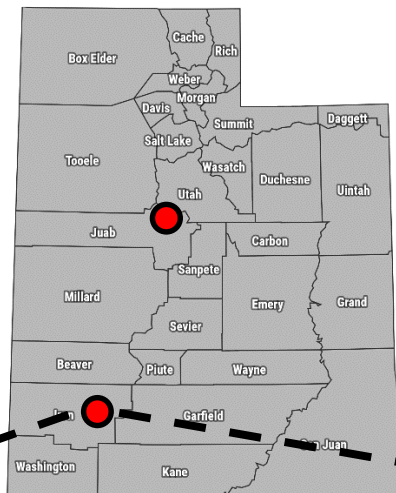


## Corn Yield

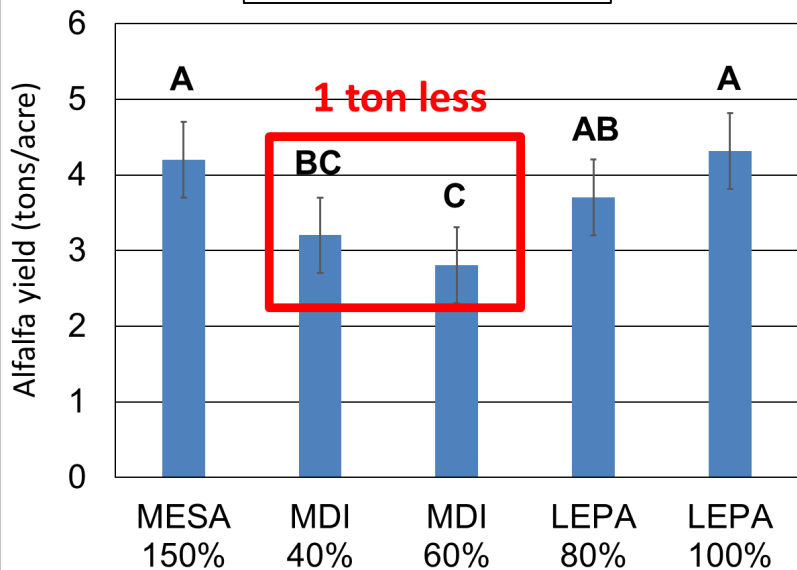


# 2018

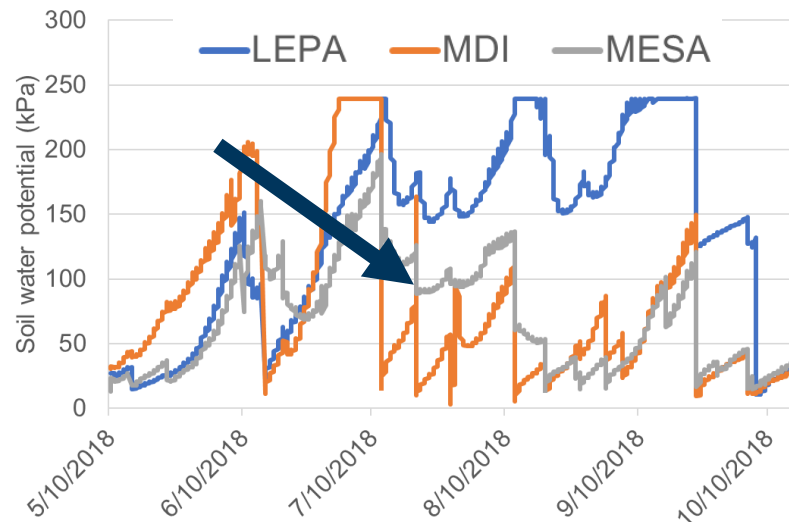
● MESA vs. LEPA vs. Mobile Drip



## Alfalfa Yield



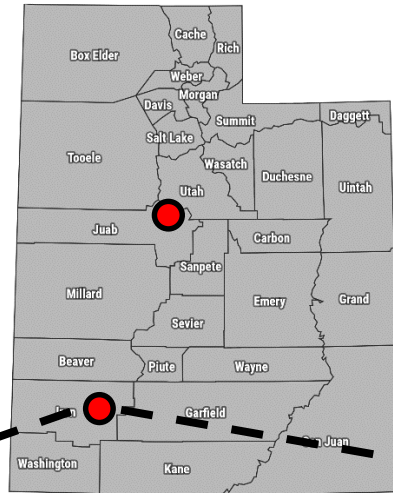
## Soil Moisture – 1 ft



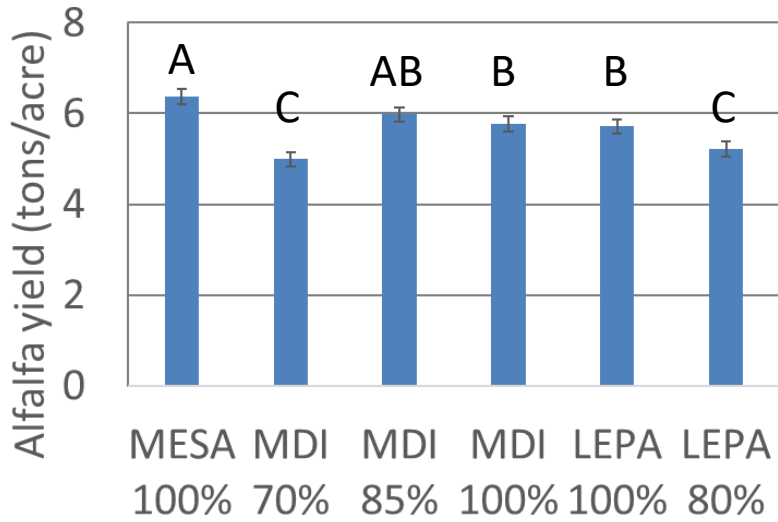
# 2019



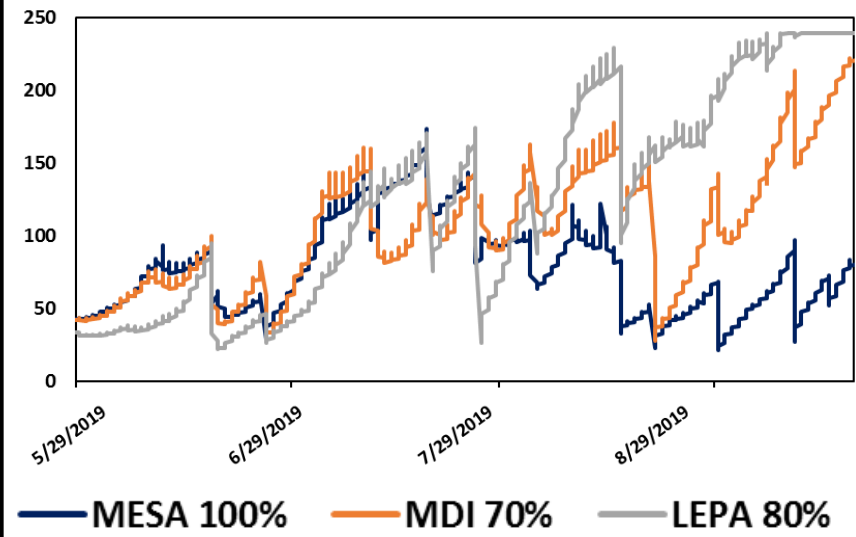
MESA vs. LEPA vs.  
Mobile Drip



## Alfalfa Yield



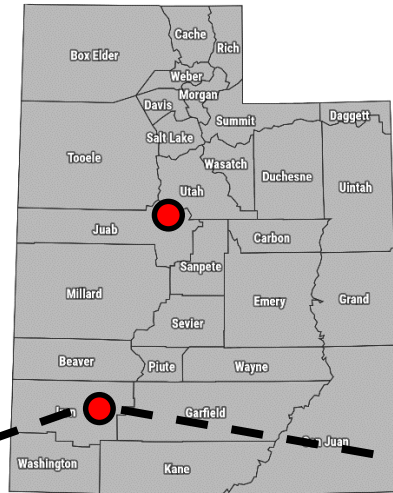
## Soil Moisture – 1 ft



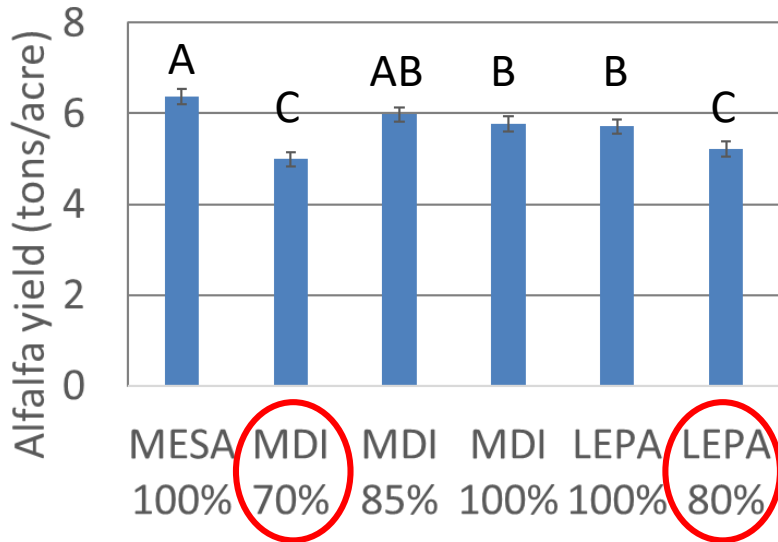
# 2019



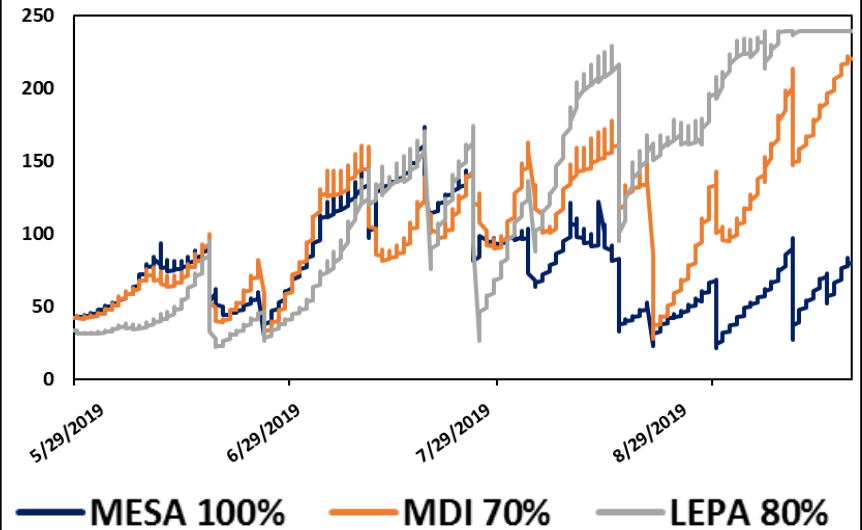
MESA vs. LEPA vs.  
Mobile Drip



## Alfalfa Yield

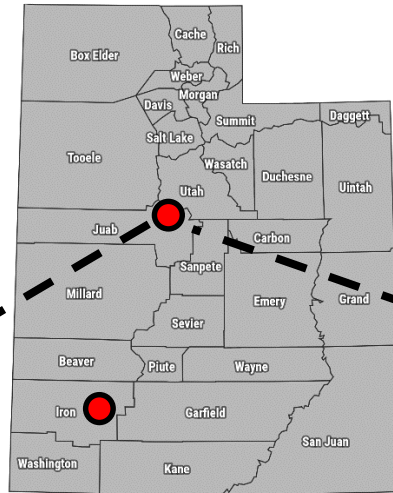


## Soil Moisture – 1 ft

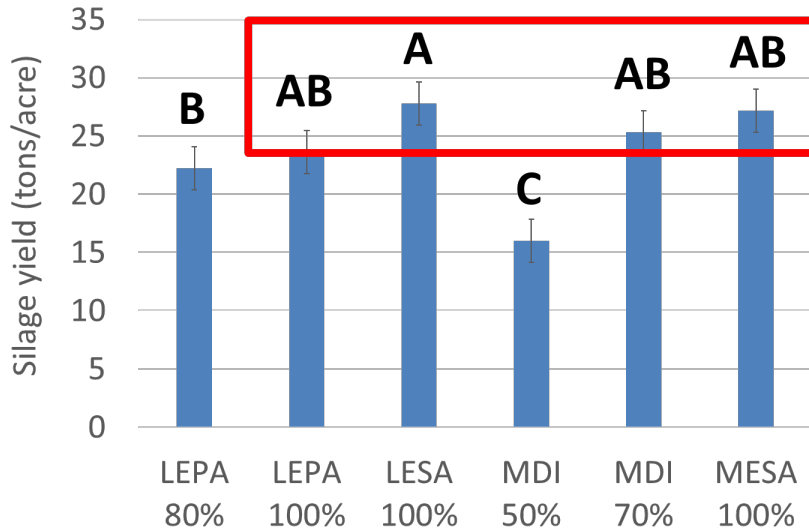


# 2018

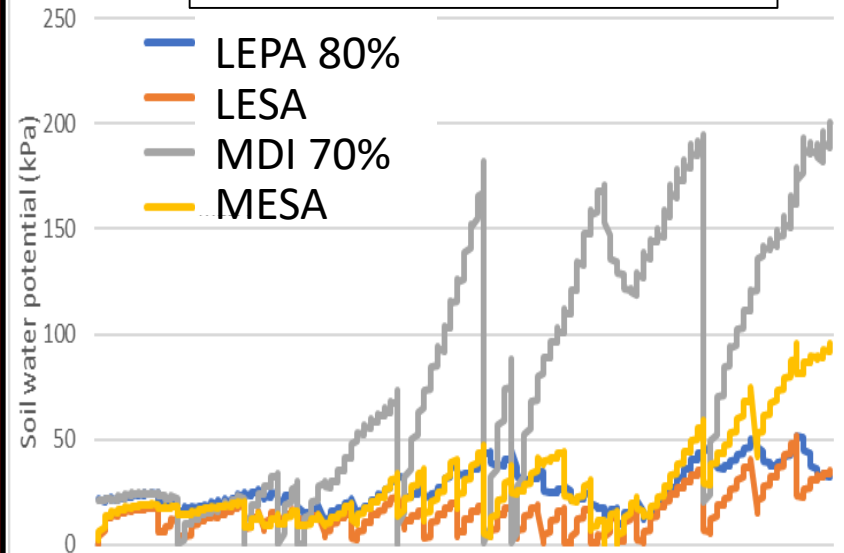
MESA vs. LEPA vs. Mobile Drip



## Silage Yield

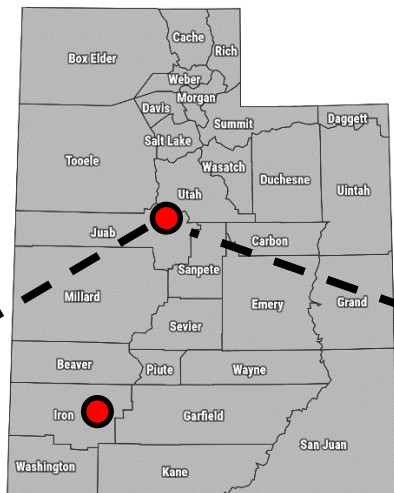


## Soil Moisture – 1 ft

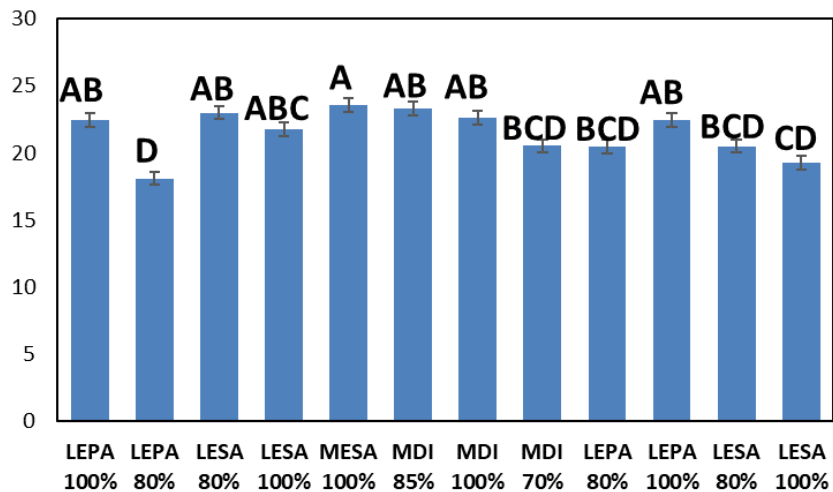


# 2019

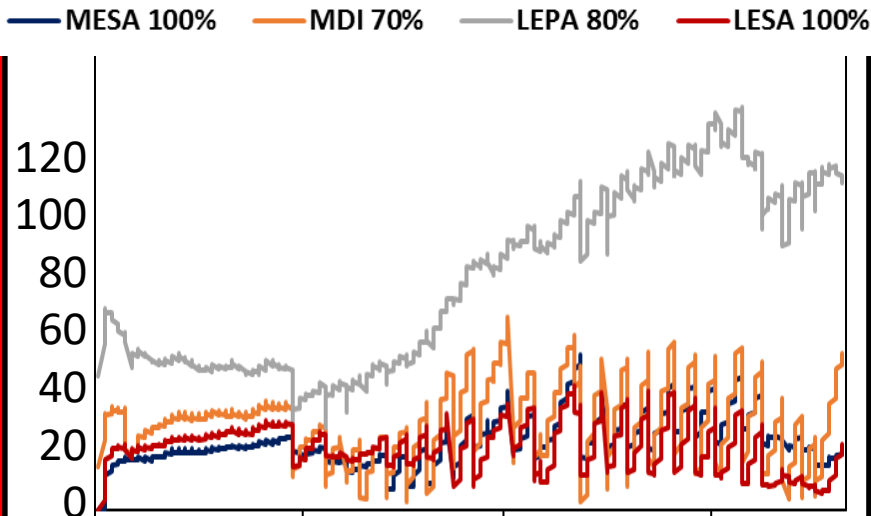
MESA vs. LEPA vs. Mobile Drip



## Silage Yield



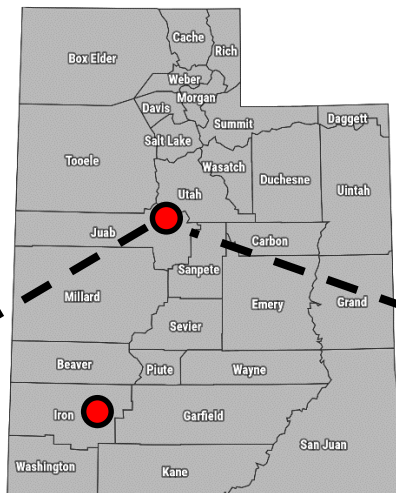
## Soil Moisture – 1 ft



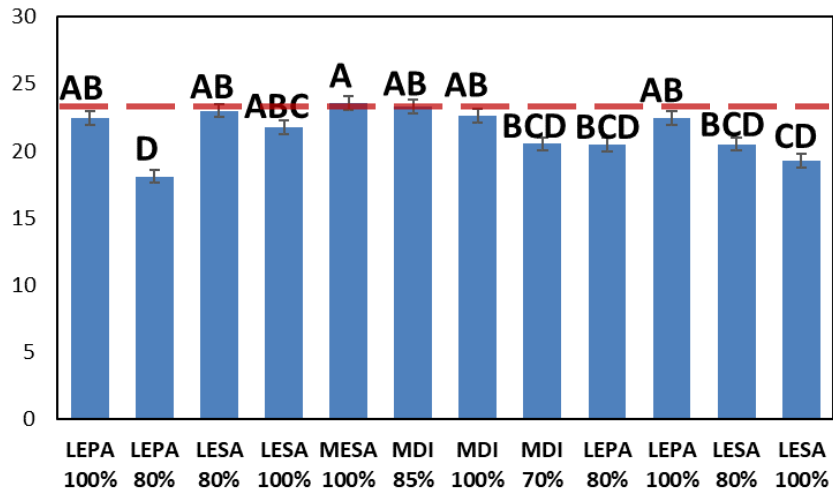
# 2019



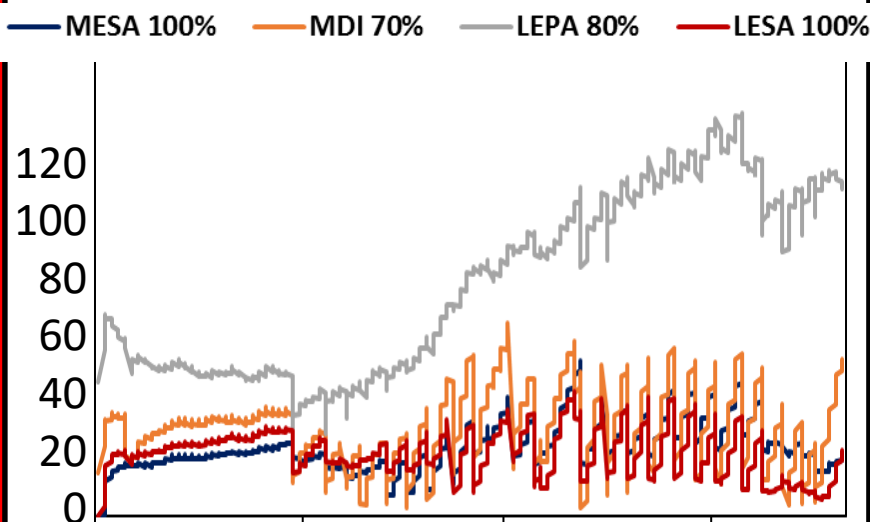
MESA vs. LEPA vs. Mobile Drip



## Silage Yield

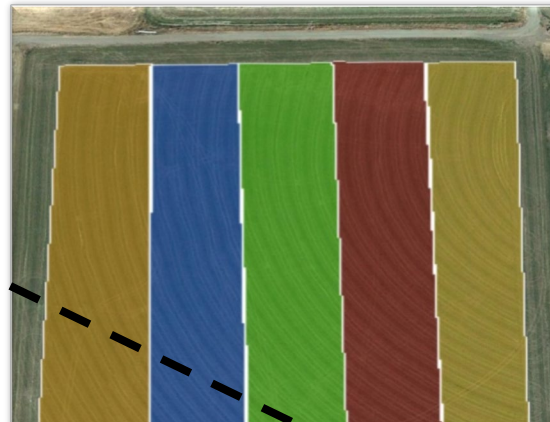
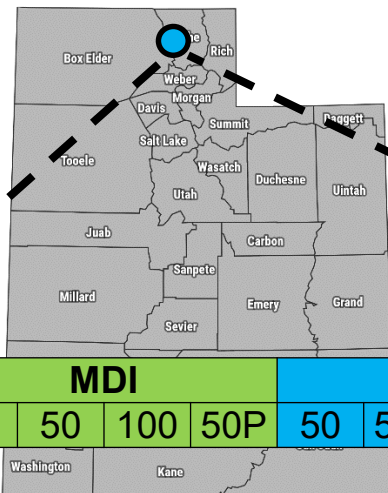


## Soil Moisture – 1 ft



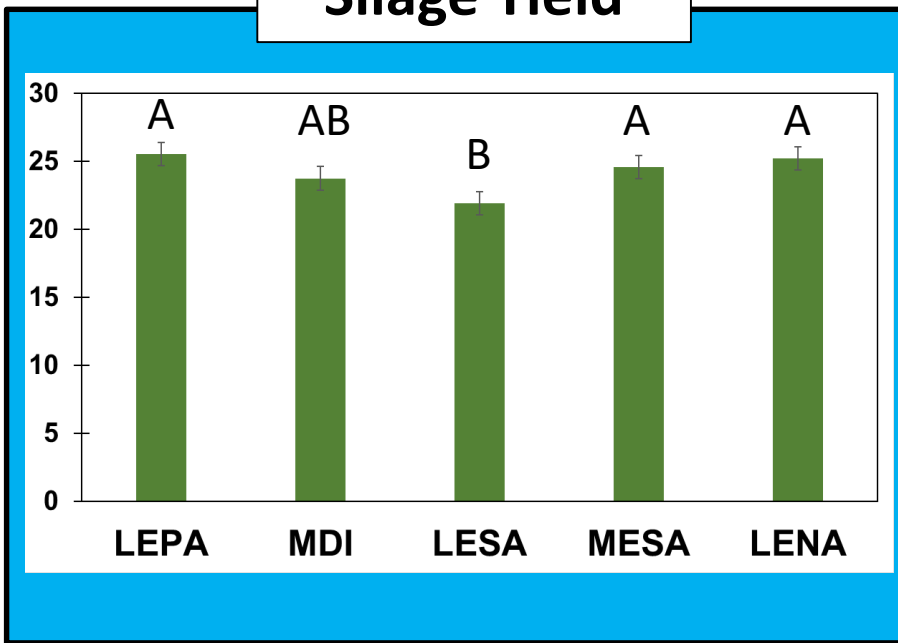
# 2019

● All 5 systems

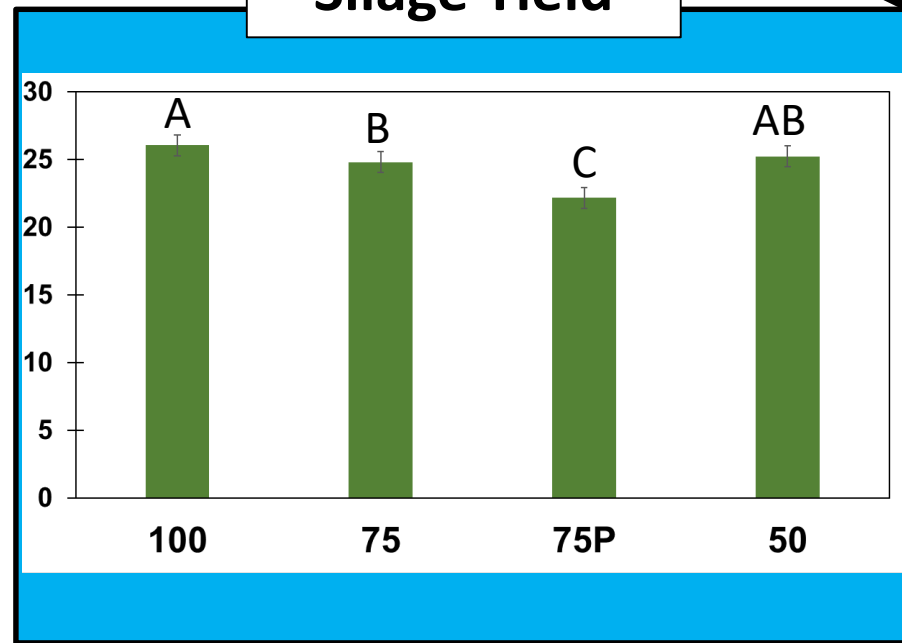


LEPA				MDI				LESA				MESA			LENA				
100	50	75	50P	75	50	100	50P	50	50P	75	100	50P	100	50	75	75	100	50P	50

## Silage Yield



## Silage Yield



# Summary



Alfalfa

LEPA 80% - 2018  
MDI 85% - 2019



Corn silage

MDI 70% - 2018  
LESA 80% - 2019  
MDI 85% - 2019

# Take Home Points

- Pivot irrigation technologies can sometimes reduce diverted water by  $\geq$  20-30% without impacting yield.
- No Silver Bullet - One pivot irrigation technology not best everywhere.
- Data-driven maps to target pivot innovations are needed.

# 5

## Ways to Follow USU Extension Crops

### 1. Website

visit [extension.usu.edu/crops/](http://extension.usu.edu/crops/) to stay current with fact sheets, guides, how-to and educational videos, events, and a directory of state and local experts in field crop production in Utah



### 2. From the Field Newsletter

**SUBSCRIBE** to a **BIANNUAL** crop newsletter (April and September) where Extension experts will deliver timely tips on all aspects of field crop production.



### 3. Social Media

Follow, "Like", and re-share USU Extension Crops on three social media platforms where frequent posts will address a variety of timely pre- and in-season field crop issues and concerns.



### 4. YouTube Channel

Visit the USU Extension YouTube Channel to access a Crops Playlist that will showcase research updates and crop tips.

# You Tube

### 5. Email or Telephone

As always, Extension experts are available by phone, email, text message and are ready to provide answers about more profitable and sustainable field crop production.



# USU Extension Crops

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@UTAHcrops

Utah Division of Water Rights



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# Thank you

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