

Perennial Grass Variety Trial

Grace Woodmansee, Livestock and Natural Resources Advisor, UCCE Siskiyou

Giuliano Galdi, Agronomy Advisor, UCCE Siskiyou

Dr. Charlie Brummer, UC Davis



Project goals

- 1) Identify most persistent and most productive pasture grass under (mostly) dryland conditions in Scott and Shasta Valleys
- 2) Demonstrate valley-specific outcomes
 - Results must be applicable to the unique goals/needs of ranchers in Shasta and Scott valley. Therefore, project managed by current ranch manager's protocol (i.e., no specific management variables tested).
 - Key component: Adaptive management based on available resources

This research will serve as a jumping off point for future research trials

Data to be collected

- Establishment
 - Germination percentage
- Yield
 - Total biomass at peak production
- Persistence
 - Monitor survival of individual plants over years (at least 3)
- Quality
 - UCD testing

Methods: Location

Location 1: Shasta Valley, Old Hwy 99 S just North of Grenada



Methods: Location

Location 2: Scott Valley, Eastside Road just East of Etna



Methods: Species/Varieties

- Orchardgrass (10 varieties)
- Tall Fescue (10 varieties)
- Other (4 varieties)

Methods: Plots

Row>>>		1	2	3	4	5	6	7	8	9	10	11	12	
Range	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8	B	18	10	5	22	8	15	13	17	19	24	4	7	B
	B	8	9	24	25	40	41	56	57	72	73	88	89	B
7	B	20	11	2	12	3	16	9	23	21	6	14	1	B
	B	7	10	23	26	39	42	55	58	71	74	87	90	B
6	B	5	11	3	6	19	2	7	12	15	10	18	8	B
	B	6	11	22	27	38	43	54	59	70	75	86	91	B
5	B	16	20	4	23	22	14	17	13	9	21	24	1	B
	B	5	12	21	28	37	44	53	60	69	76	85	92	B
4	B	16	13	9	12	14	7	19	11	8	15	4	22	B
	B	4	13	20	29	36	45	52	61	68	77	84	93	B
3	B	21	17	1	5	10	2	23	18	3	6	20	24	B
	B	3	14	19	30	35	46	51	62	67	78	83	94	B
2	B	9	23	18	4	2	19	16	13	20	21	12	3	B
	B	2	15	18	31	34	47	50	63	66	79	82	95	B
1	B	24	22	14	6	8	10	11	5	17	15	1	7	B
	B	1	16	17	32	33	48	49	64	65	80	81	96	B
	B	B	B	B	B	B	B	B	B	B	B	B	B	B

- 70' x 180' trial
- 96 plots
 - 4 reps/variety (24 varieties)

Methods: Planting

- September 26, 2022
- Small plot planter – calibrated for $\frac{1}{4}$ in.
 - 8 rows/plot
- Seeding rate
 - Irrigated: 15-25 lbs PLS/acre
 - Dryland: 3-5 lbs PLS/acre



Methods: Irrigation

- Shasta Valley trial: no irrigation water applied
 - Germinated mid March (observed 3/22)
- Scott Valley trial: partial irrigation
 - Worked with RWQCB rep
 - 10/5-10/6, 1 pass with wheeline (~ 6 hours, ~1/2 inch)
 - 10/17-10/21, 2 passes with wheeline (~ 12 hours, ~1 inch)
 - Germinated mid October (observed 10/17)

Summer 2023 timeline

- 2023 data collection
 - Establishment
 - Yield
 - Persistence
 - Quality
- Current challenge: weed control/herbicide application

Drought Decision Support Tool

Survey vs. interviews

2011 Survey

Goal: management structure, motivations, challenges and values of CA ranchers

2016 Interviews

Goal: What drought management practices worked best for CA ranchers under historic drought conditions?

What questions were similar/repeated?

- Drought impacts
- Drought management strategies (type and number)
- Drought perception

Management strategies

- TYPES of management strategies appeared to be consistent
 - Proactive & reactive
- NUMBER of drought management practices used per operation appeared to increase between 2011 and 2016.
 - Particularly for proactive strategies



Results: Number of strategies

2011 (n= 443)

- 64% of surveyed ranchers reported using proactive management strategies
- 99% reported using **at least one** management strategy to respond to drought

2016 (n=48)

- 98% of interviewed ranchers were using **at least one** proactive practice
- 98% of interviewed ranchers were using **at least three** reactive practices

Apparent increase in proactive practice use and individual practice adoption.

Our take-home...



Ranch level:

- Written drought management plan in place
- Key: diverse portfolio of both **proactive** and reactive drought management strategies
- Future research: effectiveness of proactive strategies
 - *Reduce risk and tradeoffs*



Community level:

- Peer networks
- Support organizations



Policy level:

- Drought plans are not “one size fits all”
- Supporting manager flexibility leads to range resilience

Decision-support tool

There is no “right way” to plan for drought!

Goal: provide a starting point

- worksheet for yourself
- conversation-starter with family and/or management team
- opportunity to consider or revisit questions

Decision-support tool

- Purpose of a drought plan:
 1. Sets deadlines—or “critical dates”—for making important decisions
 2. Helps prioritize objective (rather than emotional) decision-making during a time when many difficult decisions must be made
 3. Pairs proactive and reactive strategies to help you avoid sunk costs
- FLEXIBILITY is key!
 1. Flexibility in forage demand
 2. Flexibility in supply

Part 1: goal setting and inventory

- Do you already have a written drought plan?
 - Who needs to be involved in establishing a plan/given a copy?
- What outcome would make this plan a success?
- Current proactive strategies?
- What impacts are you most concerned about?
- Have your current proactive practices helped mitigate your most concerning drought impacts?

What data are you already collecting?

- Production records (i.e., details of key events)
- Production calendar (i.e., timing of key events)
- Precipitation data/outlook
- Forage calendar

Part 2: planning calendar

- Write down your forage/production calendar in advance- where are the “gaps”?
 - Flexibility- more options to pivot to depending on circumstances

Operation Name: _____ Current Date: _____

12-month Projections

Month	# of Head	Livestock Class	Stage of Production <ul style="list-style-type: none"> • Maintenance • Gestation • Lactation • Growth 	Forage Source Annual range <ul style="list-style-type: none"> • Perennial range • Irrigated pasture • Mtn meadow • Other: 	Forage Projection* <ul style="list-style-type: none"> • Adequate / inadequate • Percent of "normal" forage 	Land Type / Ownership** <ul style="list-style-type: none"> • Public or private? • Owned or leased? 	Limiting Factor(s) <ul style="list-style-type: none"> • Forage quantity • Forage Quality • Stock water 	Potential Action: will forage be short this month? <ul style="list-style-type: none"> • Yes/Now • Potential options? Consider economics → 	Economic Considerations (see spreadsheets) What impact will this decision have on revenue and expenses? Other sources of funding (savings, FSA payments, loan, etc.)
1	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____					
2	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____					
3	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____	_____ _____ _____ _____					

Part 3: Avoiding sunk costs, pairing strategies

Supply flex ←



→ Demand flex

Proactive strategies:						
Stockpile forage at end of growing season	Conservative stocking rate	Incorporate pasture rest into grazing system	Forage insurance (both)	Incorporate feeders or stockers	Identify animals that could be sold	Multi-species grazing
Reactive Strategies to Consider:						
<ul style="list-style-type: none"> <input type="checkbox"/> Provide supplemental protein <input type="checkbox"/> Haul stock water <input type="checkbox"/> Keep more hay grown on ranch (or graze hay fields) 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide supplemental feed <input type="checkbox"/> Haul stock water <input type="checkbox"/> Cull females <input type="checkbox"/> Rent additional pasture 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide supplemental feed <input type="checkbox"/> Haul stock water <input type="checkbox"/> Cull females 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide supplemental feed <input type="checkbox"/> Provide full feed (i.e., feed only hay) <input type="checkbox"/> Haul stock water 	<ul style="list-style-type: none"> <input type="checkbox"/> Sell feeders or stockers 	<ul style="list-style-type: none"> <input type="checkbox"/> Develop priority list of animals to be sold <input type="checkbox"/> Wean early 	<ul style="list-style-type: none"> <input type="checkbox"/> Cull females of species least suited to forage resources

Part 4: Economic analysis

- What will your preferred strategies cost? What will your preferred strategies save?
 - *Partial budgets – evaluate specific strategies*
- What are your critical dates for your selected strategies?
- When will you reevaluate this plan?

Part 5: Recovery and reflection

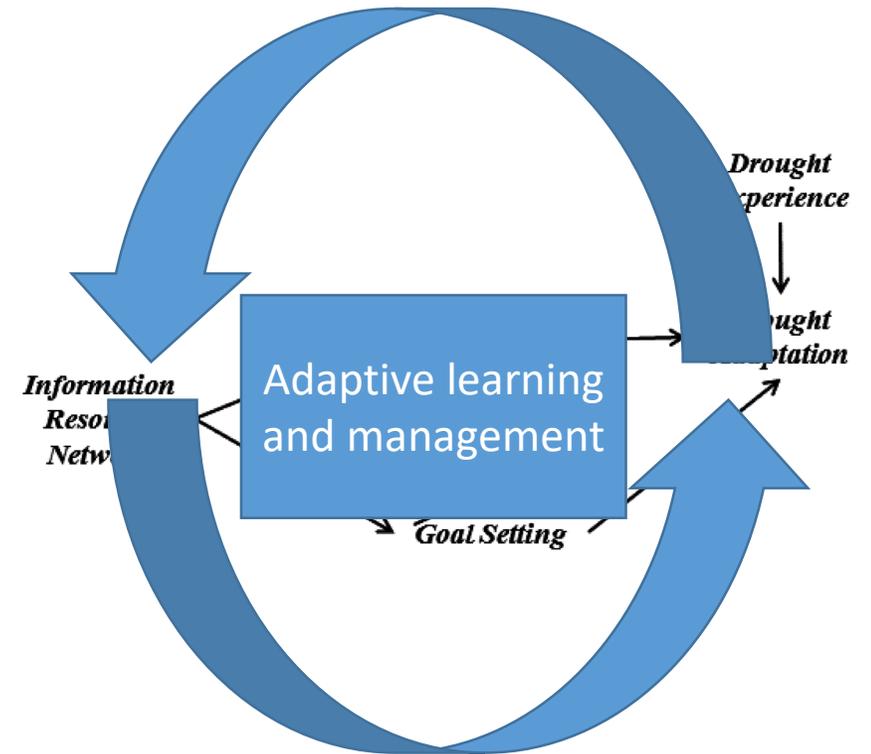
- What worked? What didn't work?

Drought recovery and reflection:

What is your drought recovery plan?

- Rebuild operation (the same as it was before drought)
- Modify operation structure
- Retire and/or end career in ranching
- Help transition someone else into ownership of ranch
- Other: _____

Have the proactive practices you implemented helped mitigate your most concerning drought impacts? Yes No



Links

- Tool:
https://ucanr.edu/sites/Siskiyou_County_Coop_Extension/files/362154.pdf
- Partial budget, beef cattle:
https://ucanr.edu/sites/Siskiyou_County_Coop_Extension/files/362152.xlsx