



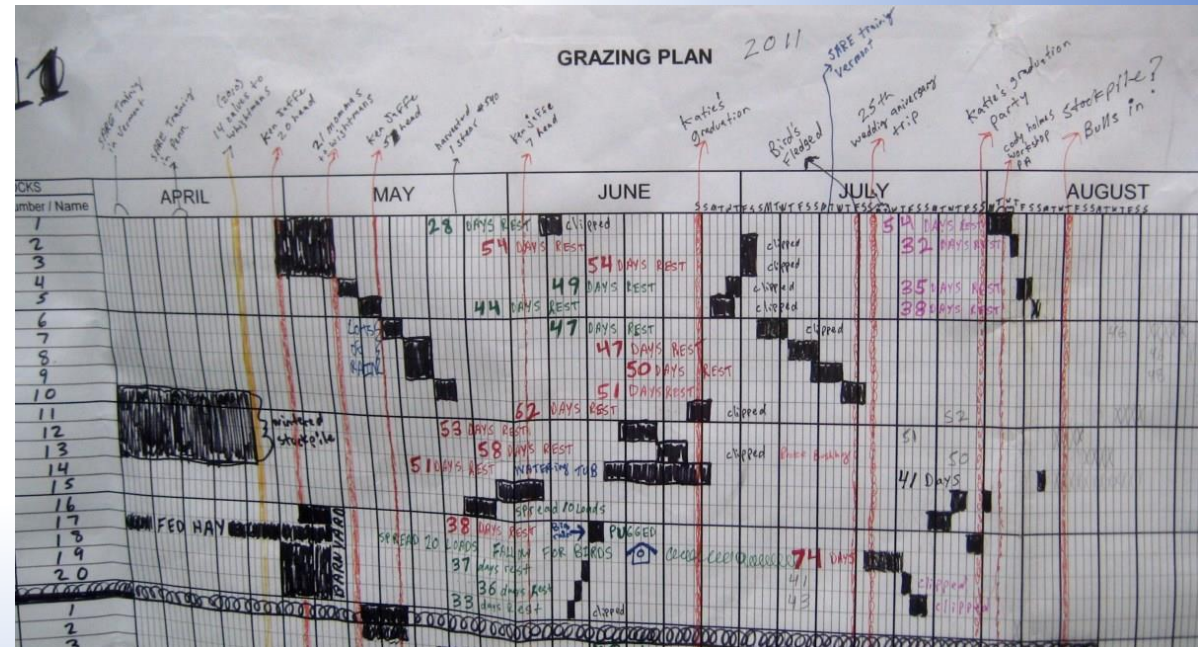
# **Feed Budgeting and Drought Management**

**2018 California Cattle Grazing School**

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UCCE – Placer/Nevada/Sutter/Yuba**

# Overview

- What is a feed budget?
- Estimating supply and demand
- Tracking consumption
- Drought Planning



# What is a feed budget?



- Looking behind
  - Forage consumption
- Looking ahead
  - Expected forage production
    - Precipitation or irrigation
    - Temperature (air and soil)
    - Photo period
    - *Each of these impact growth – need to have all 3 for rapid growth!*
  - Recovery rate
    - Rapid vs. slow growth

# What is a feed budget?

## Forage Supply

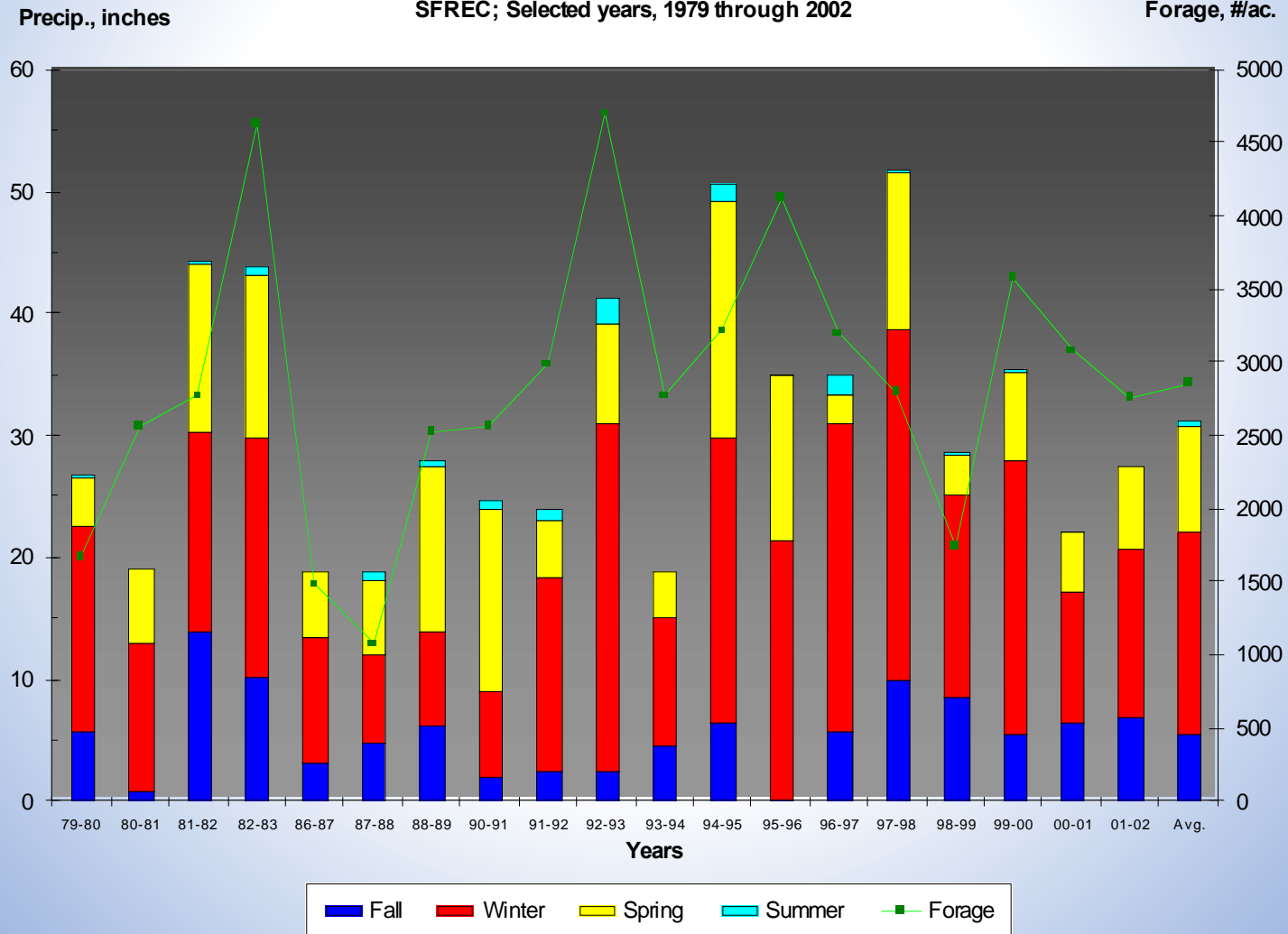
- Rangeland
  - Annual vs. perennial
  - Palatability
  - Quality
  - Recovery rate (rest)
- Irrigated Pasture
  - Species (warm season vs. cool season, grass vs. legumes, etc.)
  - Recovery rate

## Forage Demand

- Species and class of livestock
  - Cows vs. heifers vs. steers
  - Weaned calves vs. yearlings
- Production calendar/system
  - Lactating cows vs. dry cows
  - Stockers
  - Finishing grass-fed steers
- **Critical: Track inventory by class of animal and stage of production by month!**

# Forage Supply - SFREC

PRECIPITATION & FORAGE YIELD  
SFREC; Selected years, 1979 through 2002



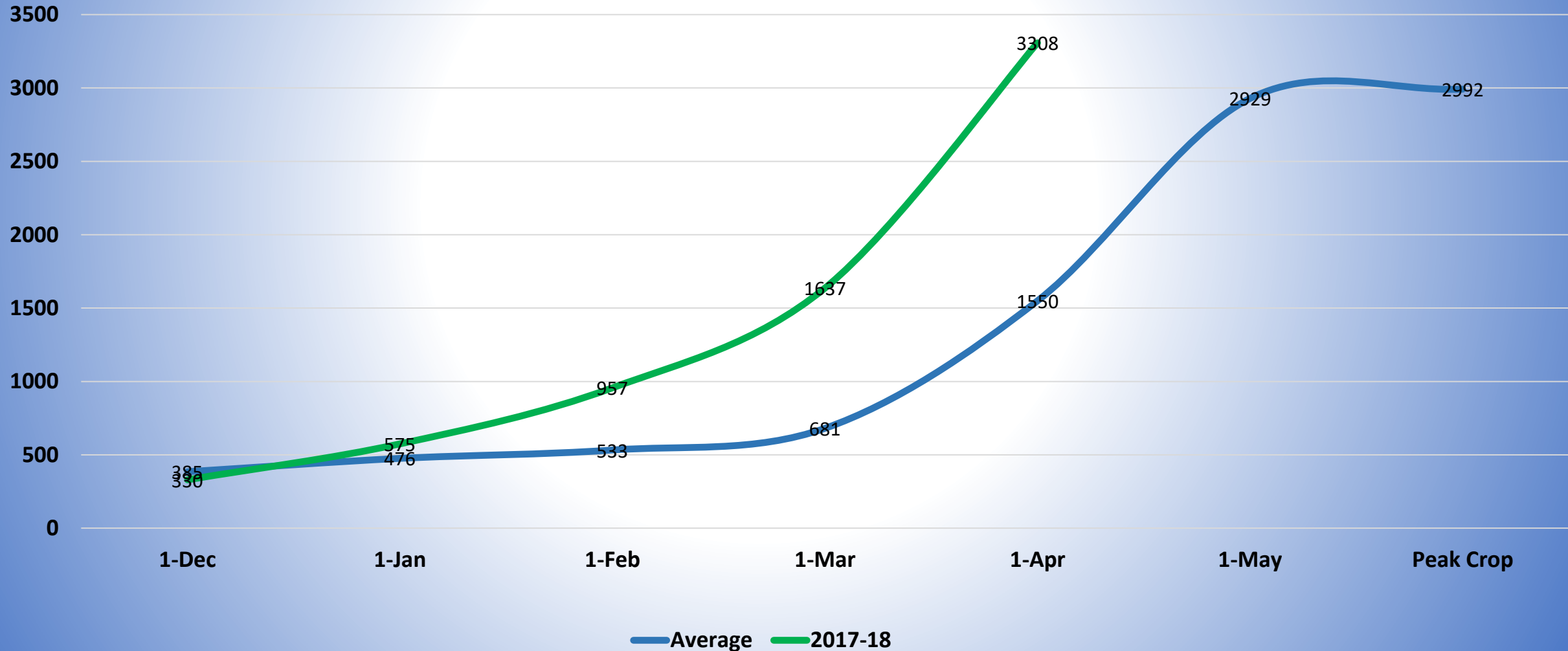
# Forage Supply - SFREC

Monthly Rangeland Forage Production – SFREC (Average 1979-2017)



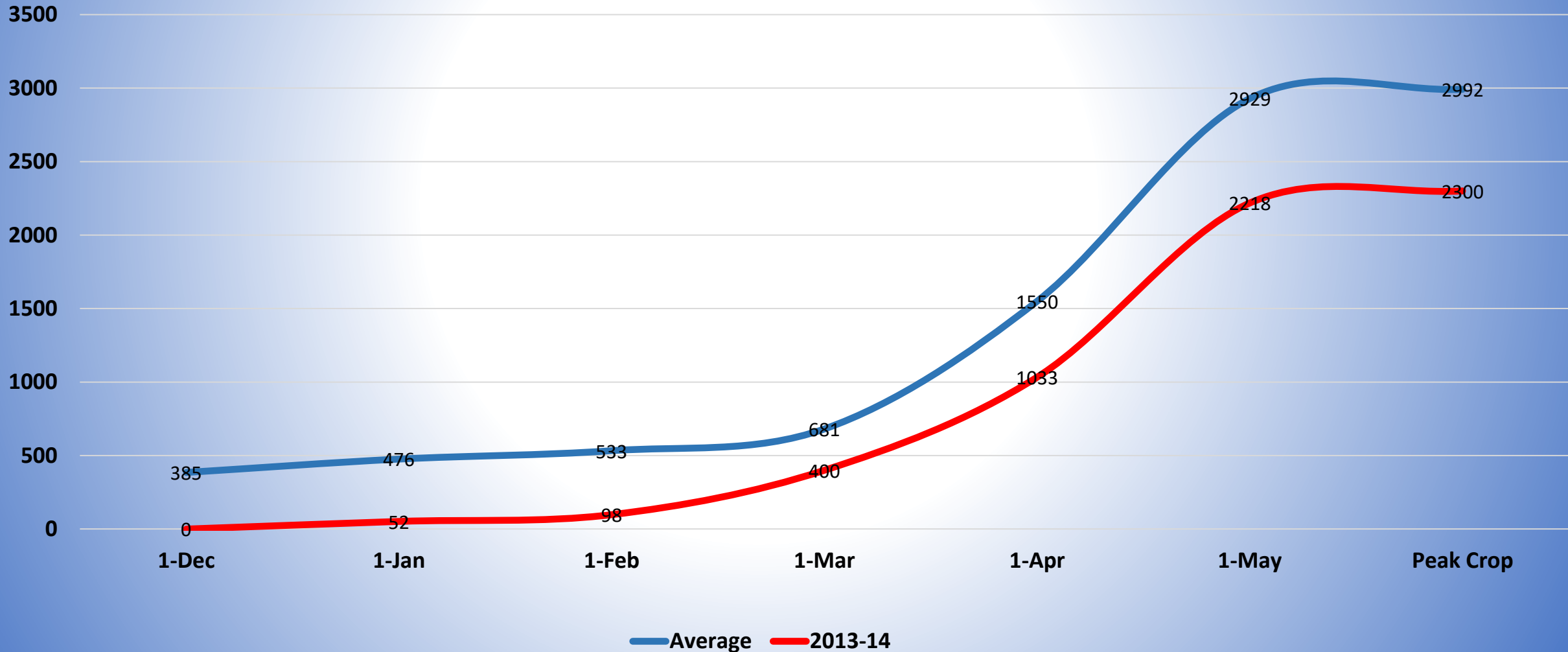
# Forage Supply - SFREC

## Monthly Rangeland Forage Production - SFREC



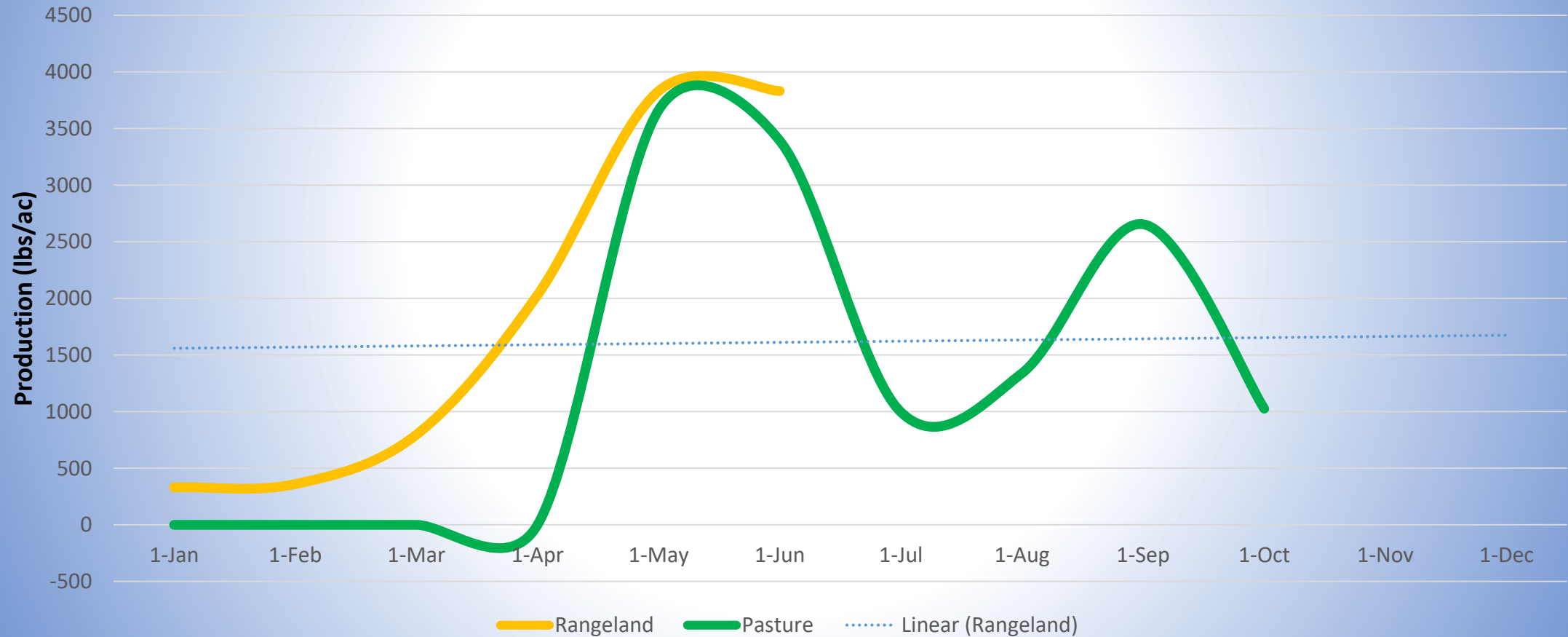
# Forage Supply - SFREC

## Monthly Rangeland Forage Production - SFREC





# Rangeland and Irrigated Pasture – SFREC (2015-16)



# Estimating forage supply

- How can we estimate our forage supply?
  - Clipping
  - Visual estimation
  - Past records
- Units of measurement
  - Pounds per acre
  - Stock-days per acre
- Keeping records will train your eye!



# Estimating forage demand



- **Size, class and stage of production matter!**
  - **A lactating cow will need more forage than a dry cow!**
- **Forage quality matters, too!**

# Estimating forage demand – Aussie Style!

Class of Livestock	DSE Rating <sup>1</sup>	Daily Intake (lbs DM/day)
660 lb Steer gaining ~ 2 lbs/day	10	22 lbs DM / day
1,100 lb Cow with New Calf	16	35 lbs DM / day
1,100 lb Dry Cow	13	29 lbs DM/day

This means that a pasture that would support 100 dry cows for 30 days would support 100 lactating cows for about 25 days! In other words, stocking rate varies with changes in animal class and stage of production!

<sup>1</sup>DSE: Dry Sheep Equivalent – 1 kg of pasture dry weight contains the energy required for a mature 50 kg wether or dry ewe to maintain bodyweight.

# Estimating Graze Periods

Paddock	L x W (1 Stock Day)	Square Yards	Stock Days / Acre (1 Ac = 4840 sq yds)	Paddock Size (Acres)	Animal Days / Paddock	Number / Class of Animals	Stock Day Adjustment	Graze Period
Home	10 yds x 10 yds	100 sq yds	48.4 stock days / ac	20 ac	968 stock days	100 dry cows	1.0	9.68 days
Hill	10 yds x 9 yds	90 sq yds	53.7 stock days / ac	40 ac	2,148 stock days	100 lactating cows	1.3	16.5 days

Note: Determine what your Stock Day represents in your operation (e.g., dry cows, pairs, etc). Adjust the graze period based on this equivalent.

# Keeping Track!

Paddock	Acres	Estimated Stock Days / Acre	Predicted Graze Period	Actual Graze Period	Number / Class of Animals	Stock Day Adjustment	Actual Stock Days / Acre
Home	20 ac	48.4 SD/ac	9.68 days	12 days	100 dry cows	1.0	60 SD/ac
Hill	40 ac	53.7 SD/ac	16.5 days	10 days	100 lactating cows	1.3	32.5 SD/ac

What would these numbers be telling you?!

# GRAZING CHART

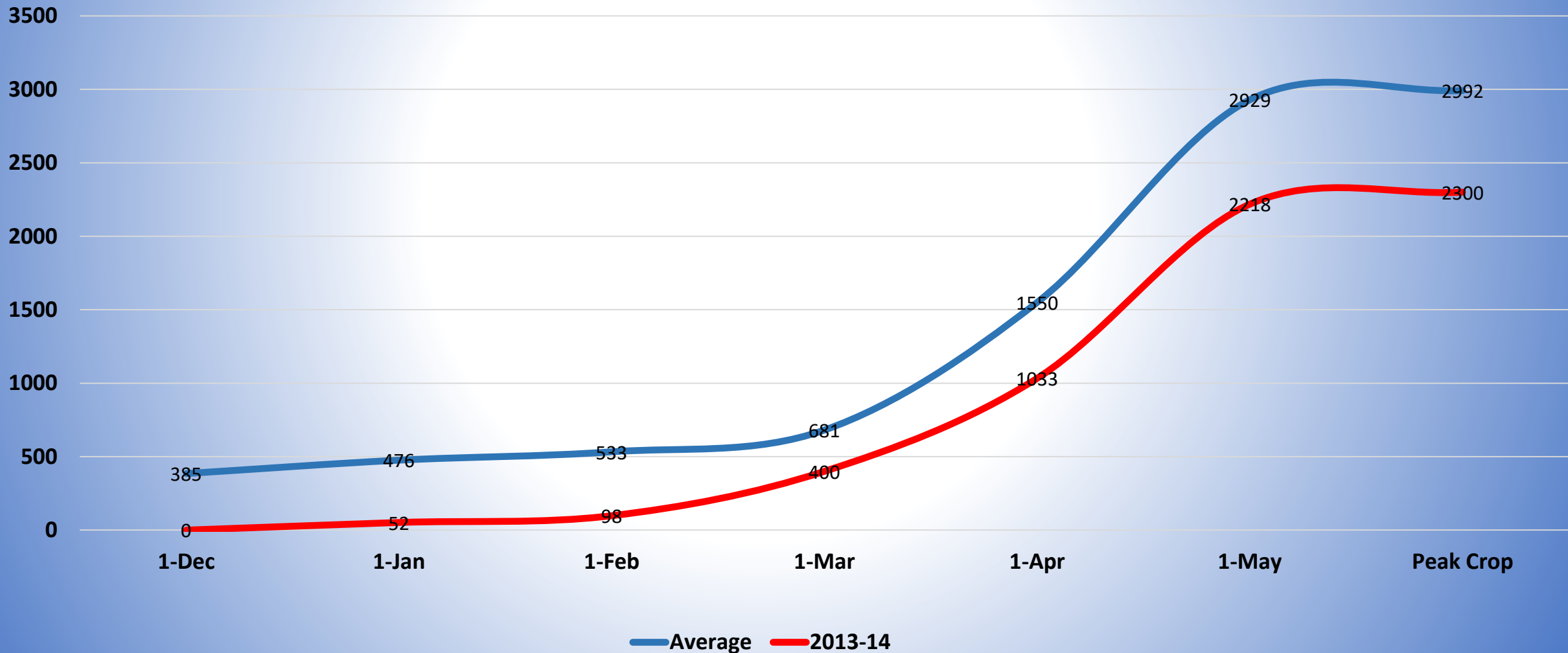
PADDOCKS

Dec-Apr Jun-Aug  
Year: 2017-18 2018-2019

NO.	SIZE	JANUARY 2018		FEBRUARY		MARCH		APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER				
		2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018			
1	2.2																											
2	4.77																											
3	7.6																											
4	9.75																											
5	11.9																											
6	6.86																											
7	3.53																											
8	2.27																											
9	3.57																											
10	6.37																											
11	1.9																											
12	1.57																											
13	1.71																											
14	2																											
15	6.85																											
16	4.45																											
17	2.28																											
18	7.74																											
19	8.22																											
20	3.1																											
21	6.05																											
22	4.1																											
23	3.75																											
24	5.85																											
25	3.75																											
26	3.5																											
27	5																											
28	3.14																											
29	1.44																											
30	3.86																											
31	6																											
32	5.5																											
33	5																											
34	2.1																											
35	2																											
36	7																											
Precipitation (Rain Equiv.)		89.35	.01	104.138			15.97	.93	15.22	82.359			68.30	1.54	.15						.52	36.92	1.72	81.85	20.02	.48		
Month's Precip Year Ago		12.48		12.88		4.21		5.38													4.57	2.39		5.19				
Total Precip for 12 Months		37.61		25.93		30.26		28.66													46.57	49.11		43.22				
Stock Days This Month		769		737		700		263																563				
1. Stock Days Year Ago		672		641		874		56																507				
2. Total Stock Days for 12 Months		3561		3657		3783		3990																3464				
3. SDA/12 Months																												
4. SDA/1" Precipitation																												
5. Stock Weight/Condition		5(3)		5(3)		5(3)		5(3)																	5(3)			
6. Type of Animals		Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU	# Avg. AU	Total AU			
7. Ewes - Gestating		62	145	336	22.5	46	145	336	15.2	8	145	188	1.7	7	145	188	1.1								67	135	.21	14.1
8. Ewes - Twins				9	143	504	4.6	31	143	504		31	143	504	15.6													
9. Ewes - Single				7	143	448	3.1	23	143	448		24	143	448	10.8													
10. Yearlings		22	115	242	5.3	22	120	242	5.3	22	125	242	5.3												22	115	.242	5.3
11. Daily Herd Demand (HAD)			27.8		28.2				32.8																			

# Let's go back: Forage Supply - SFREC

## Monthly Rangeland Forage Production – SFREC (average vs. 2013-14)





# **Drought Strategies**



A Venn diagram illustrating drought strategies. It consists of three overlapping circles. Two circles at the top are light blue and overlap each other. A third circle at the bottom is yellow and overlaps both of the blue circles. The text is centered within each circle.

**Drought  
Preparation  
Strategies**

**Drought  
Response  
Strategies**

**Drought  
Recovery  
Strategies**

# *Lessons from the Last Drought:* Drought Preparation Strategies

Strategy	% Adoption	Perceived Effectiveness	
		1 (not effective)	5 (highly effective)
Incorporate pasture rest into grazing plan	91%		4.25
Identify animals that would be sold in case of drought	79%		3.94
Stockpile forage	76%		3.89
Conservative stocking rate	67%		4.33
Purchase forage insurance	42%		3.84
Use 1-3 month forecasts	37%		3.06
Graze multiple classes of livestock	27%		4.08

N = 48 rangeland cattle, sheep and goat producers

# *Lessons from the Last Drought:* Drought Response Strategies

Strategy	% Adoption	Perceived Effectiveness	
		1 (not effective)	5 (highly effective)
Purchased feed	83%		4.38
Applied for government assistance	74%		3.47
Weaned early	63%		4.03
Reduced herd size	61%		4.07
Changed irrigation practices	61%		3.47
Sold retained females	58%		3.96
Developed/hailed stockwater	56%		4.44

N = 48 rangeland cattle, sheep and goat producers

# **Recovering from Drought**

**What are your  
Drought  
Recovery  
Strategies?**

# Key Elements of a Drought Plan

## Preparation

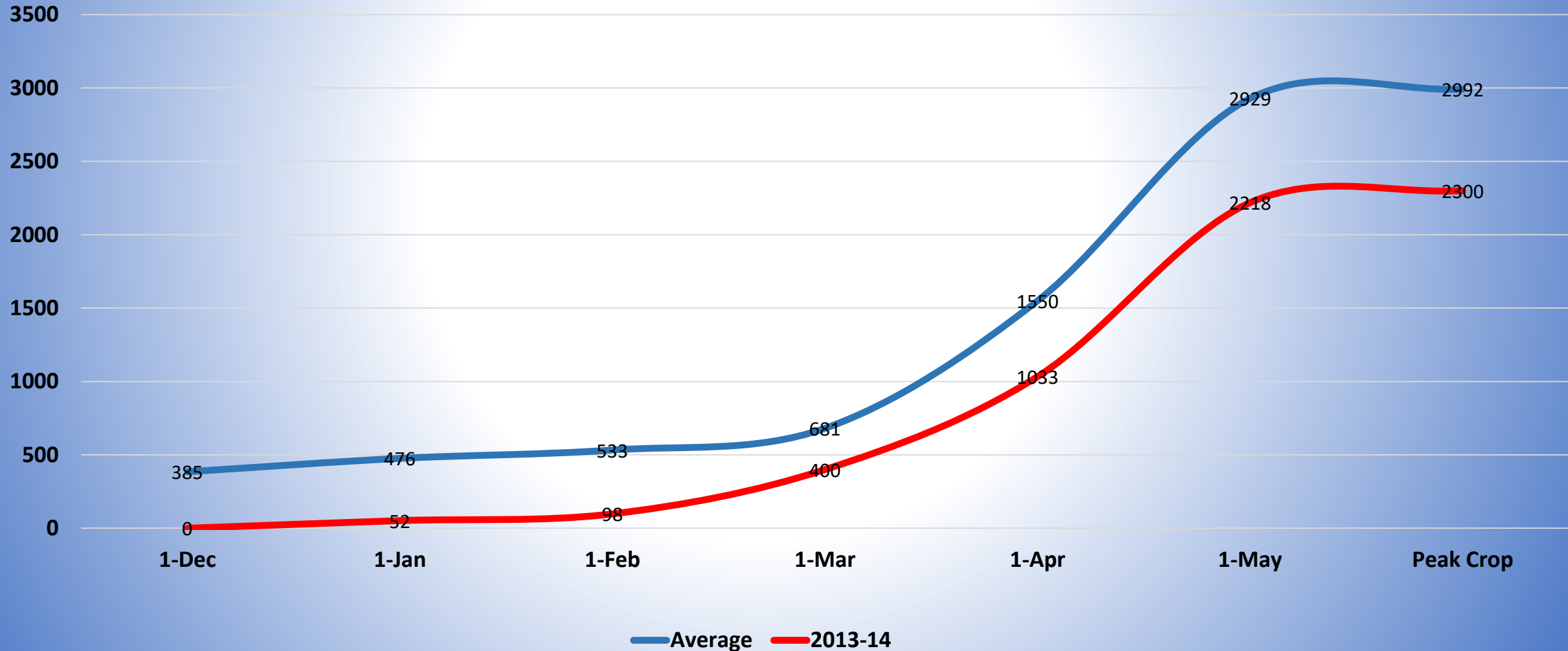
- Identify key management strategies that provide flexibility in case of drought.
- Develop skillset and equipment that enhance flexibility.
- Track key predictive indicators (weather and forage).

## Response

- Identify strategies, actions and critical dates for implementation.
- Compare the economic and ecological costs of specific strategies with the no action alternative.

# What are YOUR critical dates?

## Monthly Rangeland Forage Production – SFREC (average vs. 2013-14)



# **Example: Flying Mule Farm Drought Plan**

## **Preparation**

- 1. Conservative stocking rate**
- 2. Match management calendar to forage production**
- 3. Plan grazing activities on monthly basis**
- 4. Keep records on ewe productivity and forage production**
- 5. Stockpile forage and rest pastures based on recovery rates**
- 6. Track SFREC forage and long-range weather forecasts**
- 7. Invest in portable fencing and stockwater systems**
- 8. Investigate additional grazing leases and contracts**



# Example: Flying Mule Farm Drought Plan

## Response

Strategy	Action	Critical Date Condition(s)
Reduce forage demand	Sell older ewes	Jun 1 if <50% forage @ peak Sep 1 if fall forage supply is limited Dec 1 if germination has not occurred
Supplemental feeding	Provide protein to bred ewes	Dec 1 if germination has not occurred
Additional labor	Plan for additional labor at lambing	Feb 1 if Jan forage is <50%
Reduce forage demand	Early wean lambs	May 10 (shearing) if Apr forage is <25%
Reduce irrigated forage demand	Early wean lambs	Jun 1 if irrigation water is <25%
Reduce irrigated forage demand	Sell replacements and feeders	Jul 1 if irrigation water is <50%



# **Example: Flying Mule Farm Drought Plan**

## **Culling Criteria**

1. Poor mothers
2. Behavior problems (e.g., lack of respect for electric fence)
3. Broken mouths and/or hard bags
4. Open for 2 consecutive years
5. Ewes > 8 years of age
6. Lower productivity ewes (typically have single lambs)
7. Replacement ewe lambs

# Online Resources

<http://ucanr.edu/sites/Livestock/>

University of California  
Placer/Nevada/Sutter/Yuba Livestock & Natural Resources

Placer-Nevada Home | Sutter-Yuba Home | Ranch Economics | Pasture & Rangelands | Stockmanship  
Targeted Grazing | Feeds/Forages

Home | Beef Cattle | Sheep & Goats | Swine | Poultry | Livestock and Predators

Home Page

Click on the links above for specific livestock production information, or visit our Foothill Farming website.

**NEW! Livestock Protection Tools for California Ranchers**  
**2018 Shepherd Skills Workshops - Schedule & Registration**

**Calendar of Events**

**California Beef Cattle Grazing School 2018**  
Date: April 27, 2018 - April 28, 2018  
[View Event Details](#)

Event Name	Date
California Beef Cattle Grazing School 2018	4/27/2018
Wool Handling and Shearing Management - Workshop	5/12/2018

<http://rangelands.ucdavis.edu/>

## RANCHING IN THE SIERRA FOOTHILLS

News and conversation about ranching in the Sierra Nevada foothills

### Gearing Up for Irrigation Season

Author: Dan Macon | Published on: April 5, 2018

While it may be difficult to imagine with another atmospheric river storm bearing down on Northern California this evening, irrigation season is just around the corner. Most of the water districts in the foothills will begin delivering water around April 15 - and six months of moving water through irrigated pasture will begin for many of us! Here are a few tips to help make this coming irrigation season run smoothly!

First, we should schedule irrigation (or design our systems) to provide the right amount of water at the right time to meet plant needs. These obviously change as we go through the irrigation season - after this weekend's storm, we should have plenty of soil moisture for a week or more.

Plant and soil water demand, ideally,

## UCRANGELANDS

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### Managing for Drought

Ranchers and researchers working together to develop management tools for adaptation strategies for drought.

[Learn more](#)

<http://ucanr.edu/blogs/ranchinginthefoothills/>