Research updates

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September 29, 2020

University of California
Agriculture and Natural Resources

Trace mineral supplementation

Grazing and fire

Keyline subsoiling with Yeoman’s plow

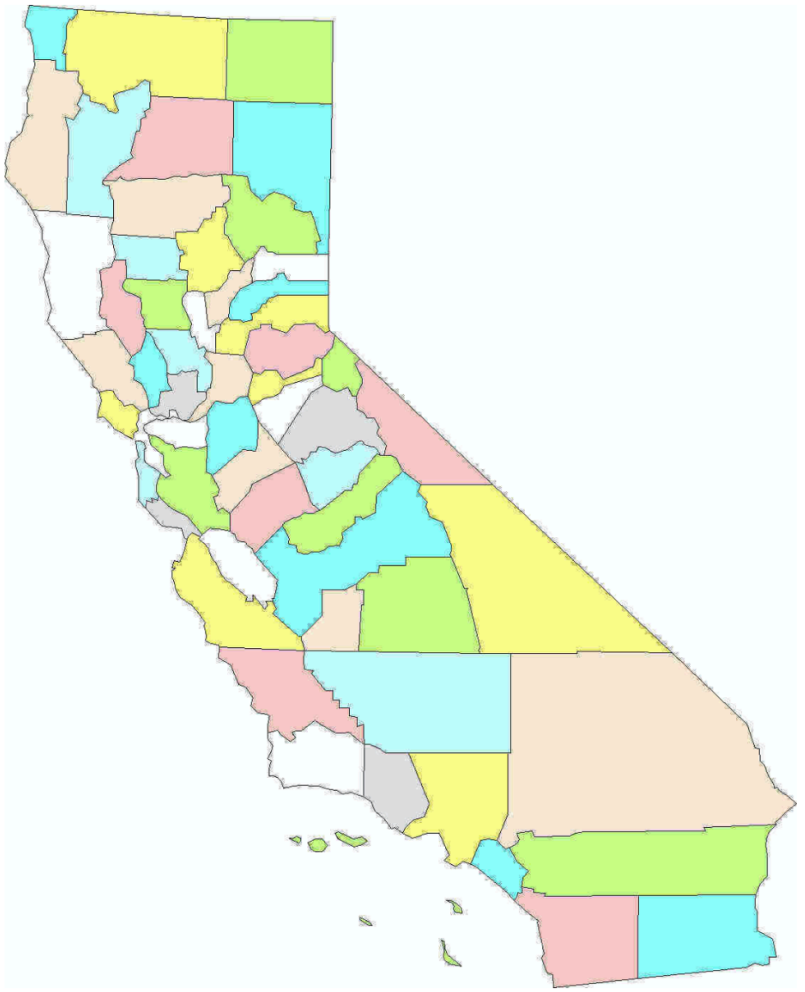
Compost on rangelands

Welcome, to the Trace Minerals for California Beef Cattle homepage.

This homepage was designed to access California trace mineral information. Information on local or statewide mineral status is now just a mouse click away. This information is possible due to the Cooperative Extension system, county Livestock Farm Advisors, Specialists, the Renewable Resources Extension Act (RREA), and staff. Feel free to contact us (Drake, Oltjen, Maas, and Smith) if you have any questions or comments on the website, its information or its references.

Instructions: Use this website to learn more about beef cattle trace mineral nutrition in California. To learn more general information on the trace minerals Selenium, Copper, Zinc, and Phosphorous and their role in beef cattle health, click on the mineral names in the left hand toolbar. To learn more on county-specific information simply click on a county on the California map below or choose a county from the California county list, also located in the toolbar on the left.

Directions: Click on a county for more mineral information on that specific county. Or refer to the California county list.



https://dcbsp.ucdavis.edu/x/mineralproject/

Trace Minerals for California Beef Cattle

University of California, Cooperative Extension

San Luis Obispo County Mineral Status

Click on a county image to view Specific San Luis Obispo County Mineral Data

Se Cu Zn P

Trace Minerals for California Beef Cattle

University of California, Cooperative Extension

San Luis Obispo County Mineral Data

Selenium

Samples (n=78) from 8 herds had an average whole blood selenium level of 0.143 ppm which indicates San Luis Obispo county is not selenium deficient. Herds sampled were located near Cambria, Paso Robles, San Luis Obispo, Santa Maria and Shandon. A few cattle had individual selenium levels of 0.03 to 0.04 ppm, which is on the borderline to selenium responsive.

Copper

Class 3 liver data averaged 131 ppm (SD 151) suggesting some Cu deficiency. More complete testing is needed.

Zinc

A large number of Class 3 samples indicate Zn is adequate.

Phosphorus

Insufficient data are available for conclusions.

Trace Minerals for California Beef Cattle

University of California, Cooperative Extension

Ventura County Mineral Status

Click on a county image to view Specific Ventura County Mineral Data

Se Cu Zn P

Trace Minerals for California Beef Cattle

University of California, Cooperative Extension

Santa Barbara County Mineral Status

Click on a county image to view Specific Santa Barbara County Mineral Data

Se Cu Zn P

Timeline:

April-June 2018:	Preliminary blood sampling 13 herds, 3 counties, 138 animals Copper, Zinc, Manganese, Selenium
June-August 2019:	Mineral trial, Ventura County *chelated* *"organic"* 2 ranches, 90 days, 40 liver biopsies Poor consumption
March-May 2020:	Mineral trial, Santa Barbara County Simplot/Novus Int. formula 1 ranch, 90 days, 20 blood samples Weak but positive signal
September 2020:	Protein/mineral supplement available from Simplot
Winter 2020-2021:	Mineral trial, Santa Barbara County 2 treatment herds, 90 days, 40 liver biopsies

CA 40% BLOCK

FOR BEEF CATTLE

Guaranteed Analysis

Crude Protein*	Minimum	40.0	%
* (This includes more than 8.96 % equivalent crude protein from non-protein nitrogen.)			
Crude Fat	Minimum	1.3	%
Crude Fiber	Minimum	5.8	%
Calcium	Minimum	1.9	%
Calcium	Maximum	2.4	%
Phosphorus	Minimum	1.5	%
Salt	Maximum	0.1	%
Magnesium	Minimum	2	%
Potassium	Minimum	1	%
Copper	Minimum	511	ppm
Zinc	Minimum	1,541	ppm
Manganese	Minimum	833	ppm
Cobalt	Minimum	5	ppm
Iodine	Minimum	12	ppm
Selenium	Minimum	4.1	ppm
Selenium	Maximum	4.9	ppm
Vitamin A	Minimum	80,000	IU/LB
Vitamin D	Minimum	14,727	IU/LB
Vitamin E	Minimum	200	IU/LB

Ingredient Statement

Plant Protein Products, Molasses Products, Calcium Carbonate, Monocalcium Phosphate, Dicalcium Phosphate, Urea, Magnesium Oxide, Zinc Methionine Hydroxy Analogue Chelate, Manganese Methionine Hydroxy Analogue Chelate, Zinc Hydroxychloride, Selenium Yeast, Copper Methionine Hydroxy Analogue Chelate, Amorphous Silicon Dioxide, Sodium Hydroxide, Calcium Hydroxide, preserved with Propionic Acid, Sorbic Acid, Benzoic Acid, Propylparaben, Methylparaben and BHA., Manganese Hydroxychloride, Vitamin E Supplement, Basic Copper Chloride, DRY BITTER FLAVOR, Salt, Vitamin A Acetate, Vitamin D Supplement, Ethylenediamine Dihydriodide, Cobalt Sulfate, Magnesium Chloride, Iron Oxide.

Use Directions

This Protein Block is a compressed supplement intended to be self-fed to beef cattle. The measured hardness of the block will limit the daily consumption to approximately 1 lb per head per day for adult and yearling cattle. Be sure an adequate supply of fresh water is available to the animals at all times. Range condition, weather conditions, the quality and availability of feedstuffs will affect block consumption.

CAUTION: DO NOT FEED SHEEP DUE TO HIGH LEVEL OF SUPPLEMENTAL COPPER.

Manufactured By:

SIMPLOT WESTERN STOCKMEN'S CALDWELL, ID 83605 - 208-459-0777

This feed is manufactured in a facility that does not handle or store animal proteins prohibited in ruminant feeds.

Net Weight 33.33 lbs (15.11 kg)

40.0% protein delivery, intended for late summer/Fall

High copper delivery

High in Vitamin A to make up for late summer deficiencies

Look at ingredients! Minerals are delivered as chelates as opposed to oxides/sulfates/etc.

1lb/hd/day feeding rate

33.33-lb blocks

CA 40% BLOCK

FOR BEEF CATTLE

Guaranteed Analysis

Crude Protein*	Minimum	40.0	%

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(This includes not more than 8.96 % equivalent crude protein from non-protein nitrogen.)

Crude Fat	Minimum	1.3	%
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Calcium	Minimum	1.9	%
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This feed is manufactured in a facility that does not handle or store animal proteins prohibited in ruminant feeds.

Net Weight 33.33 lbs (15.11 kg)

$705/ton

60 blocks to the pallet

$0.35/lb

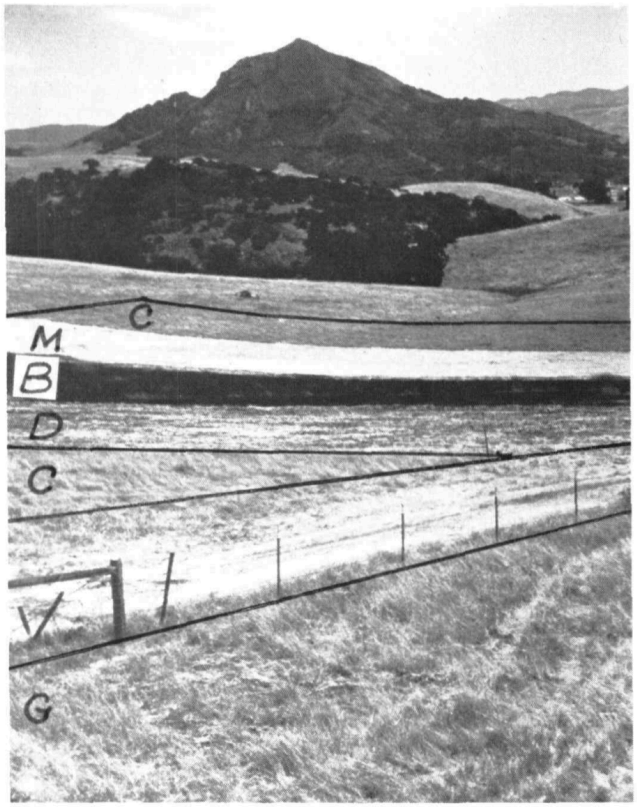
For herd of 100 head:

$1,057.50/mo

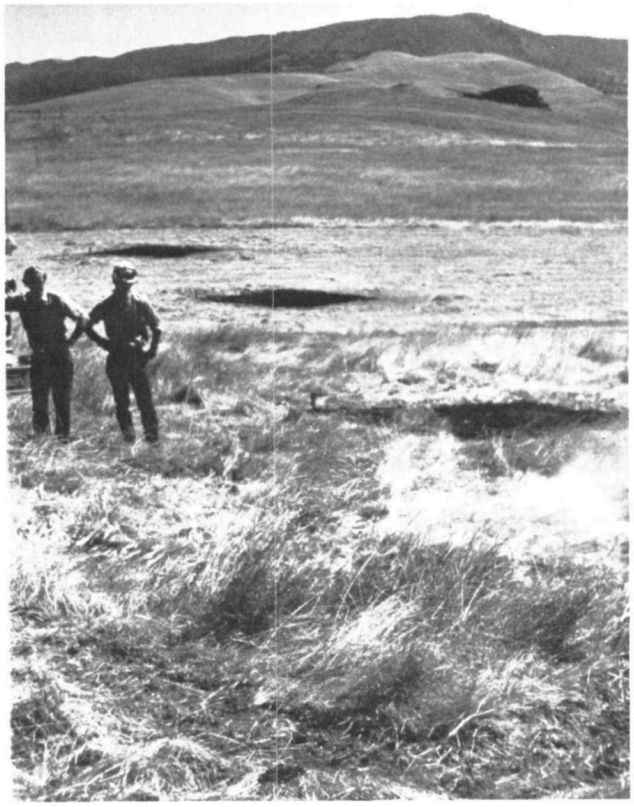
Grazing and fire

Fire Hazard Reduction Practices for Annual-type Grassland

John V. Stechman



Study area in October, 1977, depicting plot layout for study of four traments: G-grazed, D-disced, B-burned, M-mowed and C-controls.



A test of combustion rate being conducted on a control plots; note completed tests on the mowed plot in the background.

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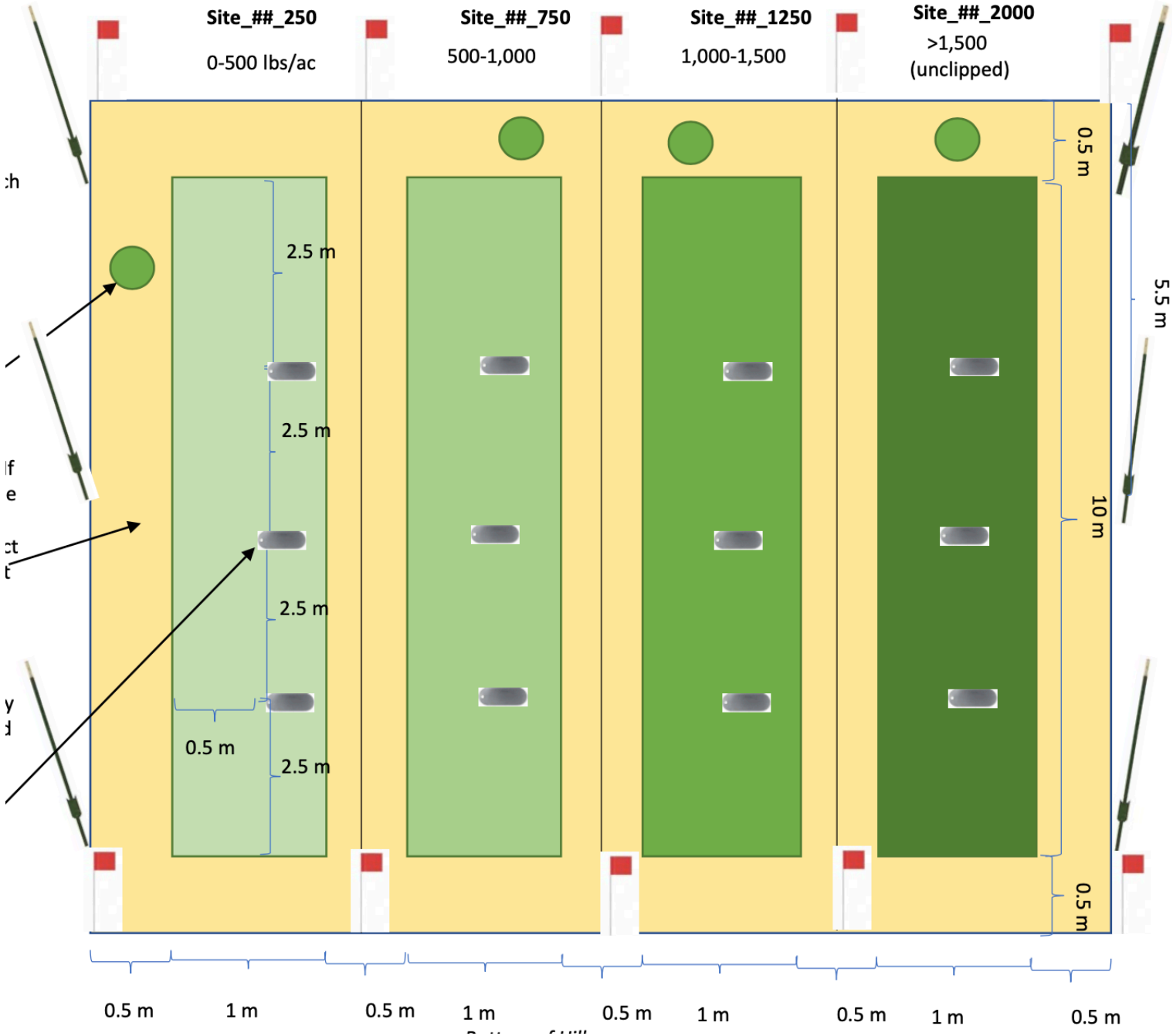
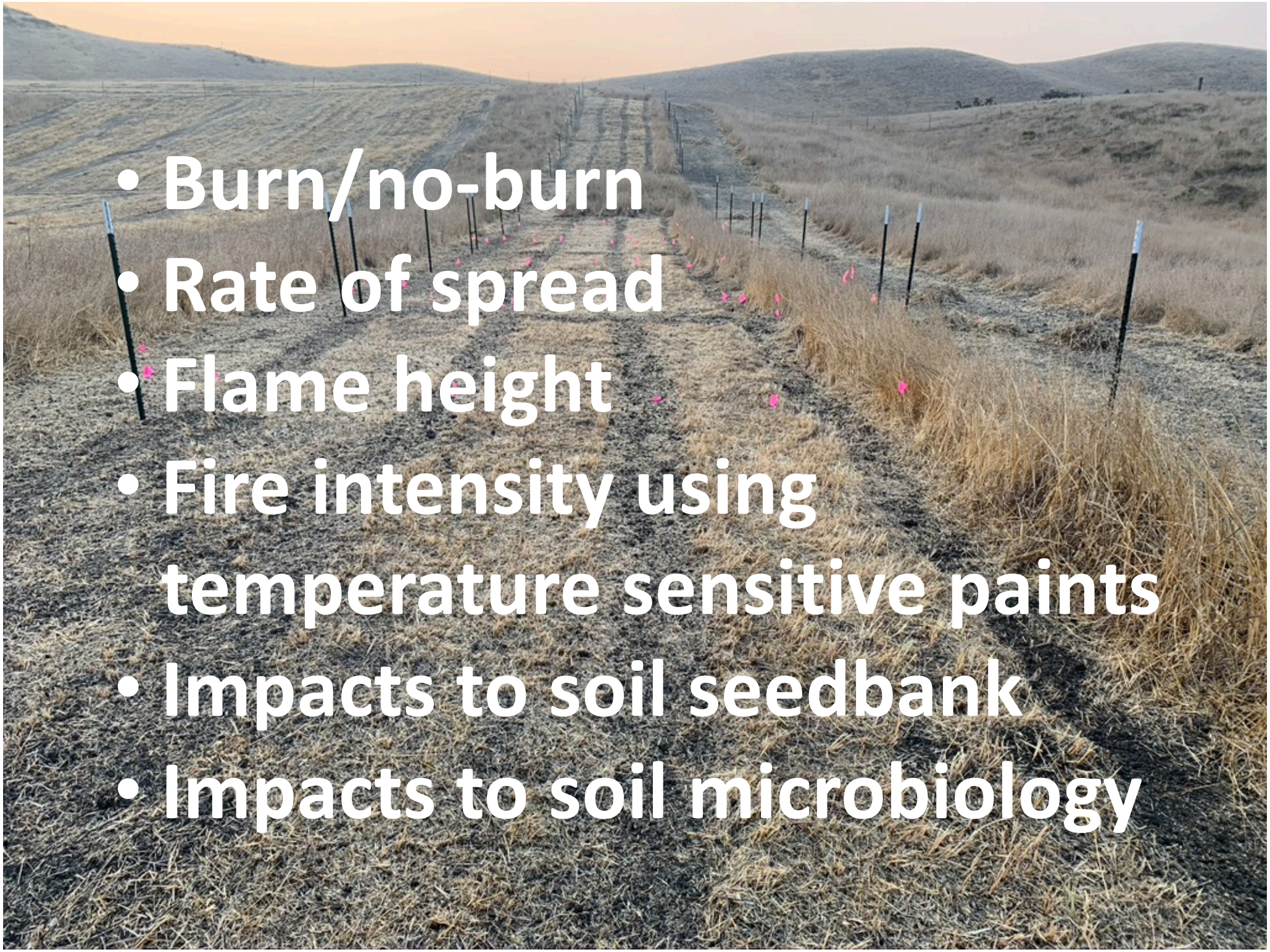
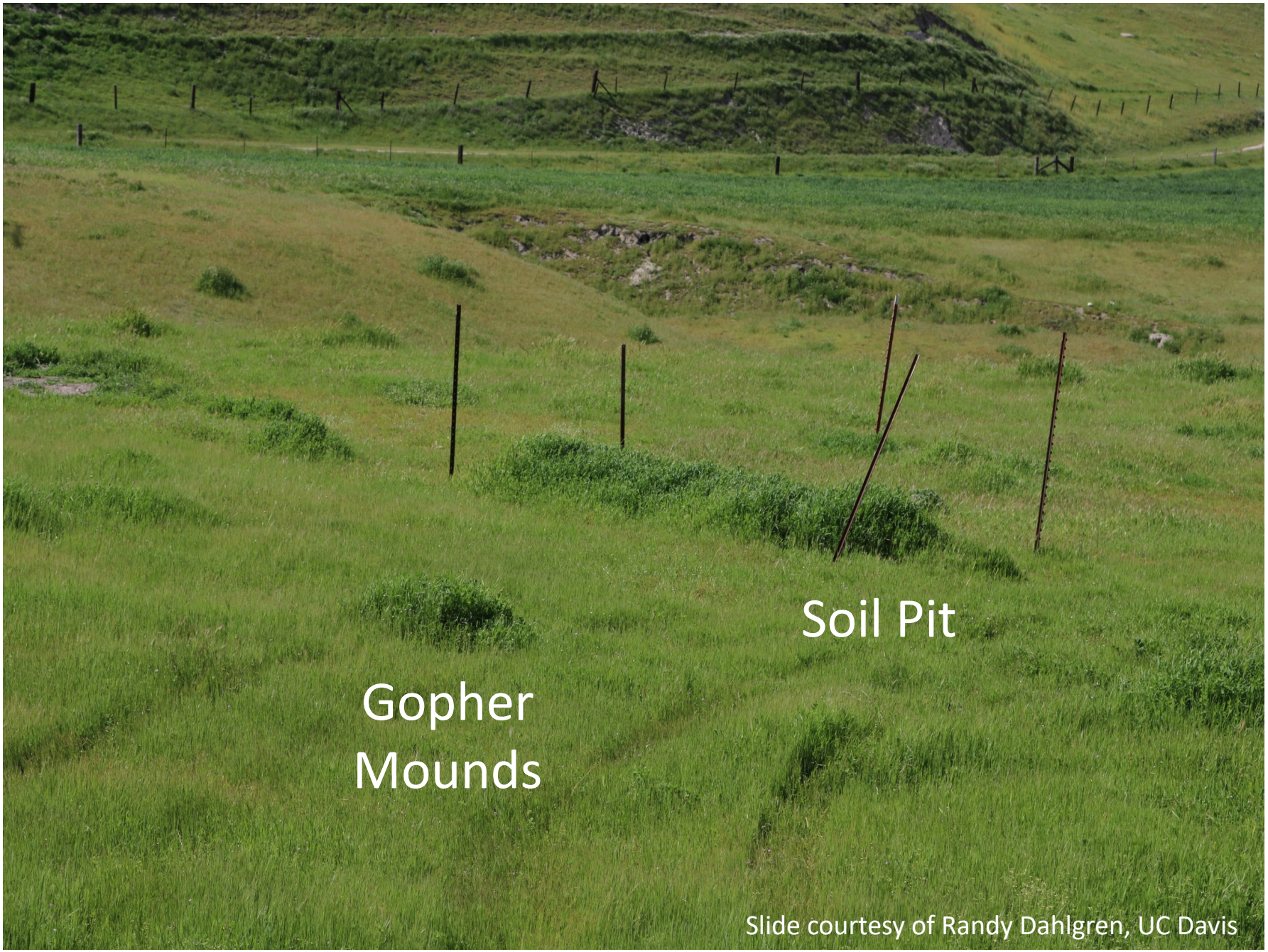
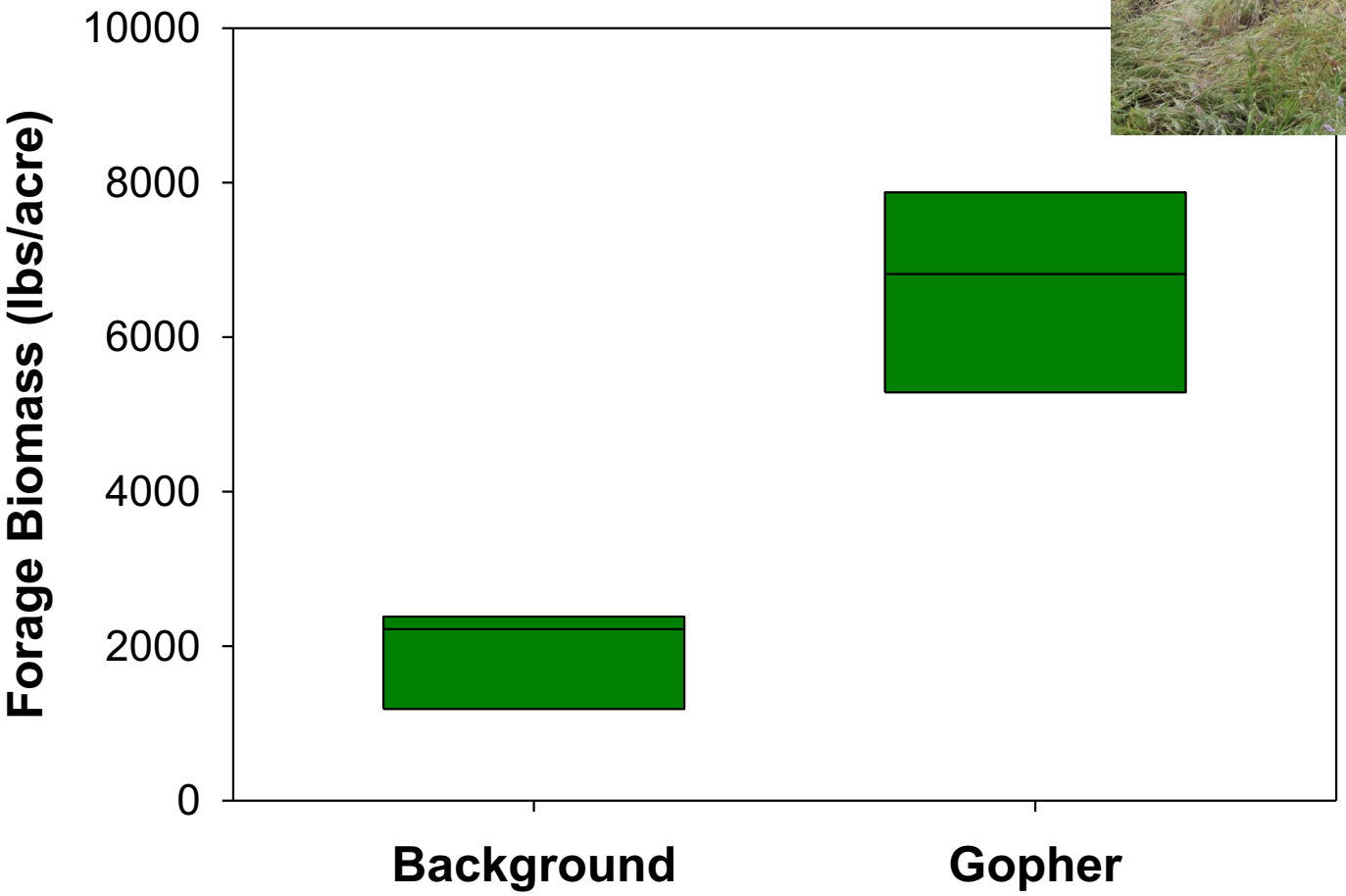

Site_##_250
0-500 lbs/ac
Site_##_750
500-1,000
Site_##_1250
1,000-1,500
Site_##_2000
>1,500
(unclipped)
2.5 m
2.5 m
2.5 m
2.5 m
0.5 m
0.5 m
10 m
5.5 m
0.5 m
0.5 m
1 m
0.5 m
1 m
0.5 m
1 m
0.5 m


• Burn/no-burn
• Rate of spread
• Flame height
• Fire intensity using temperature sensitive paints
• Impacts to soil seedbank
• Impacts to soil microbiology

Keyline subsoiling with Yeoman's plow


Soil Pit
Gopher
Mounds
Slide courtesy of Randy Dahlgren, UC Davis

Forage Biomass
Gophers vs Background



Soil Nutrients

↑P, ↑Fe, ↑Mn

Forage Nutrients

No Differences

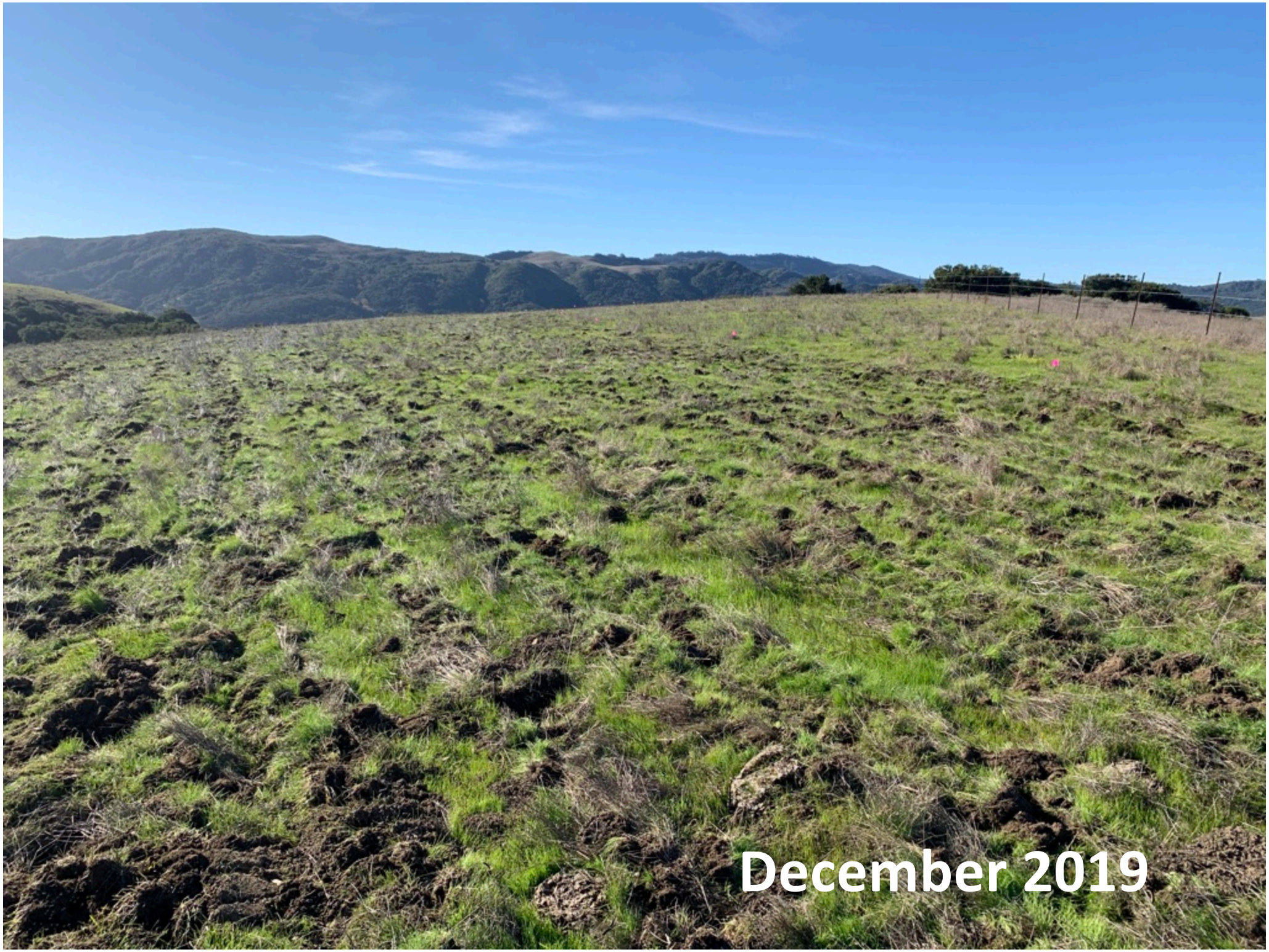
Bulk density

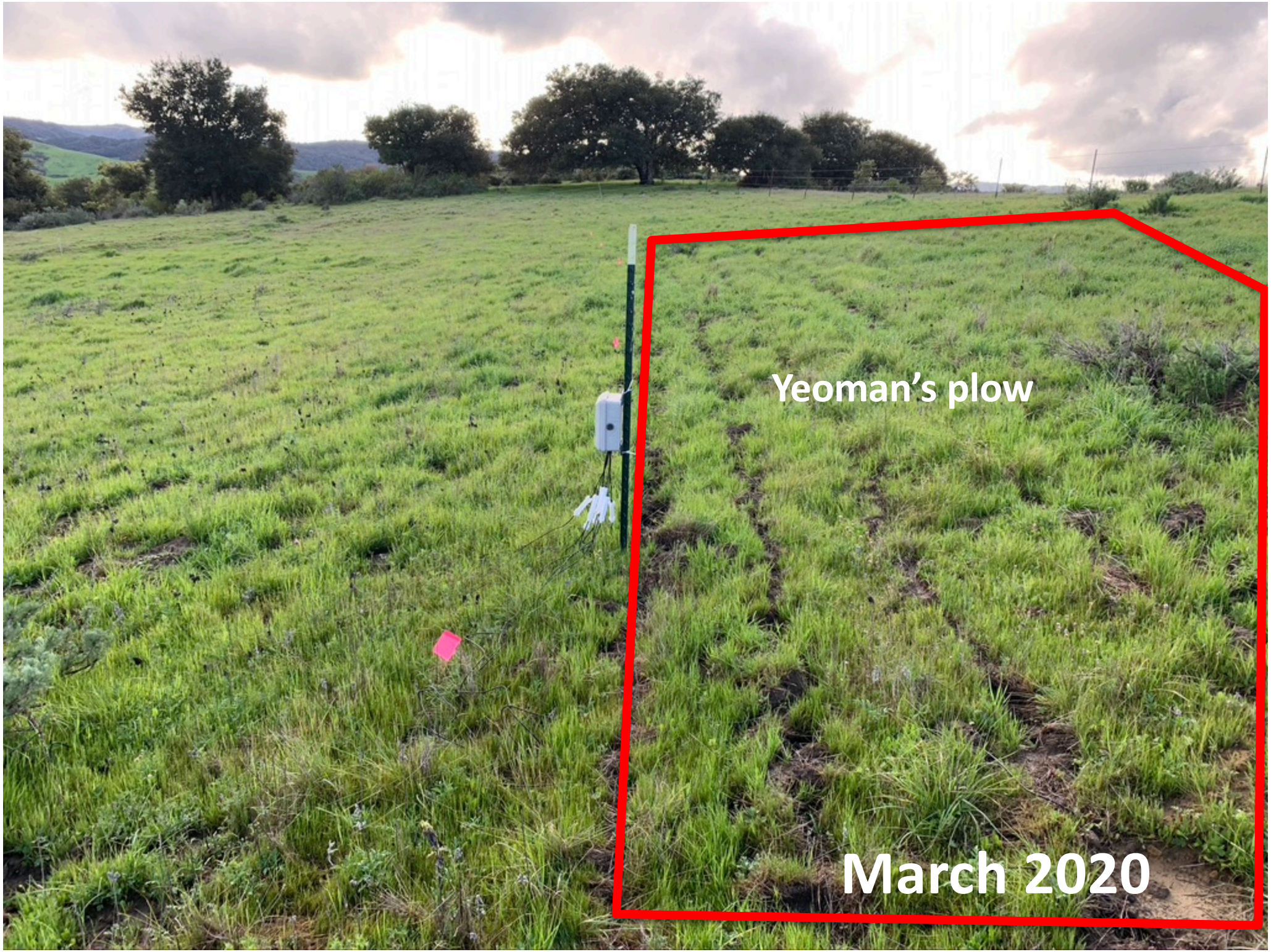
Significant differences

Slide courtesy of Randy Dahlgren, UC Davis


PLOW CO.
YEO


KUBOTA

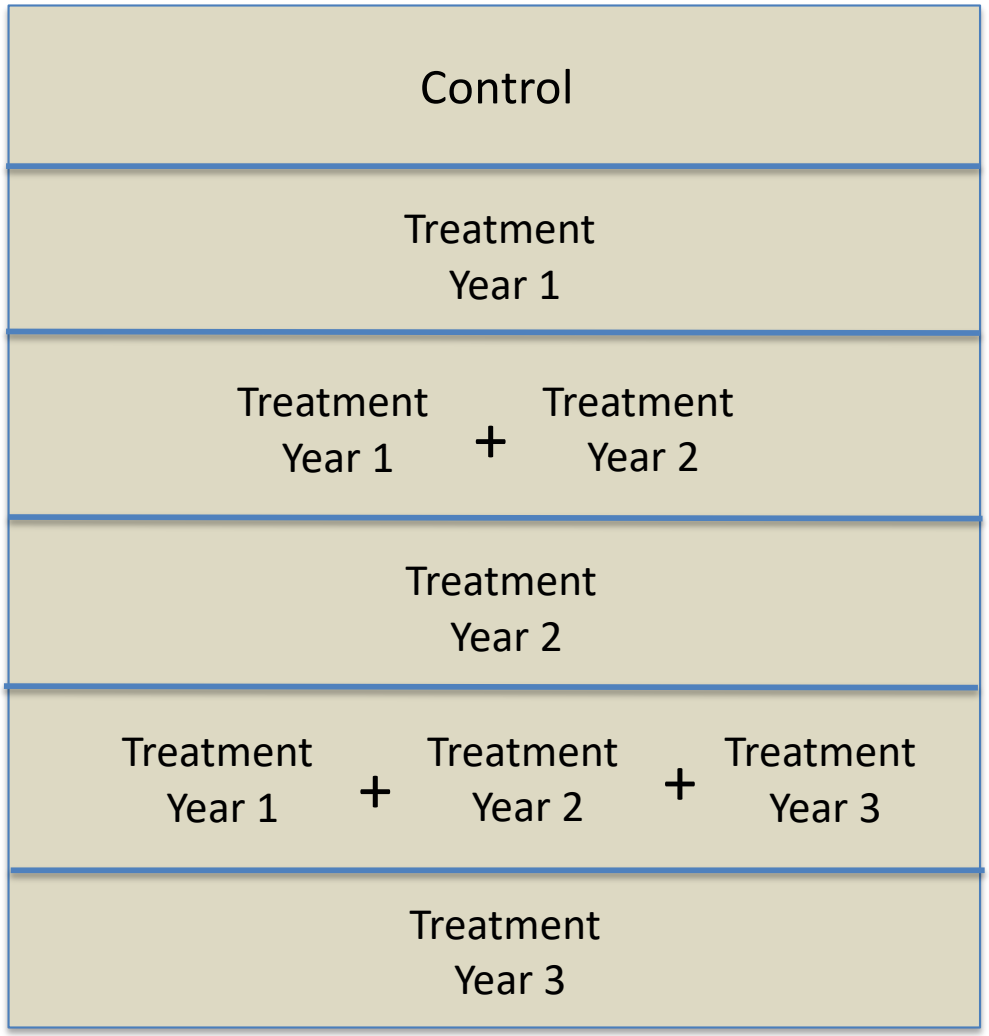

December 2019


Yeoman’s plow
March 2020


Yeoman’s plow
May 2020

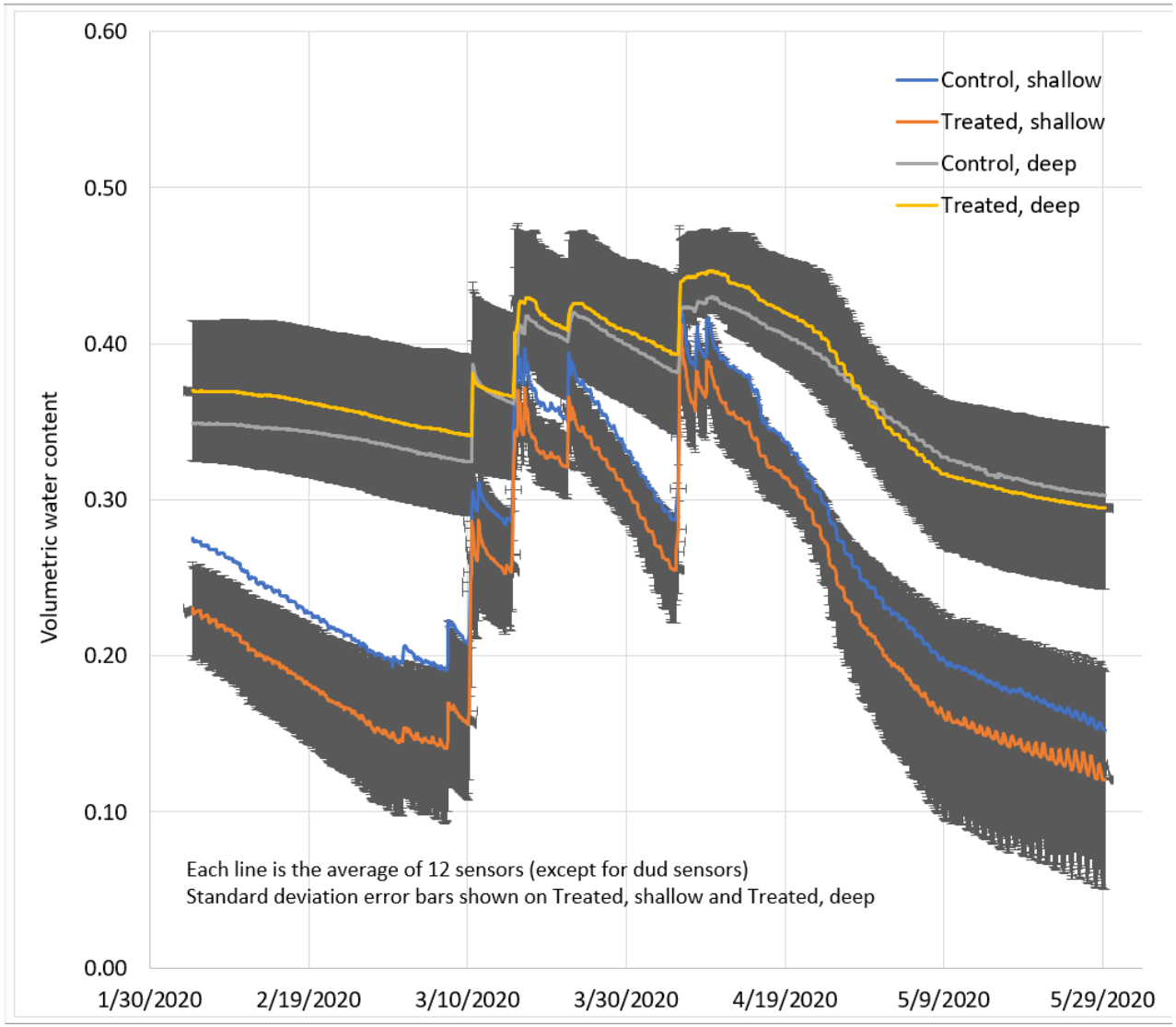
Proposed SB County research trial (3 years)

6-acre exclusion



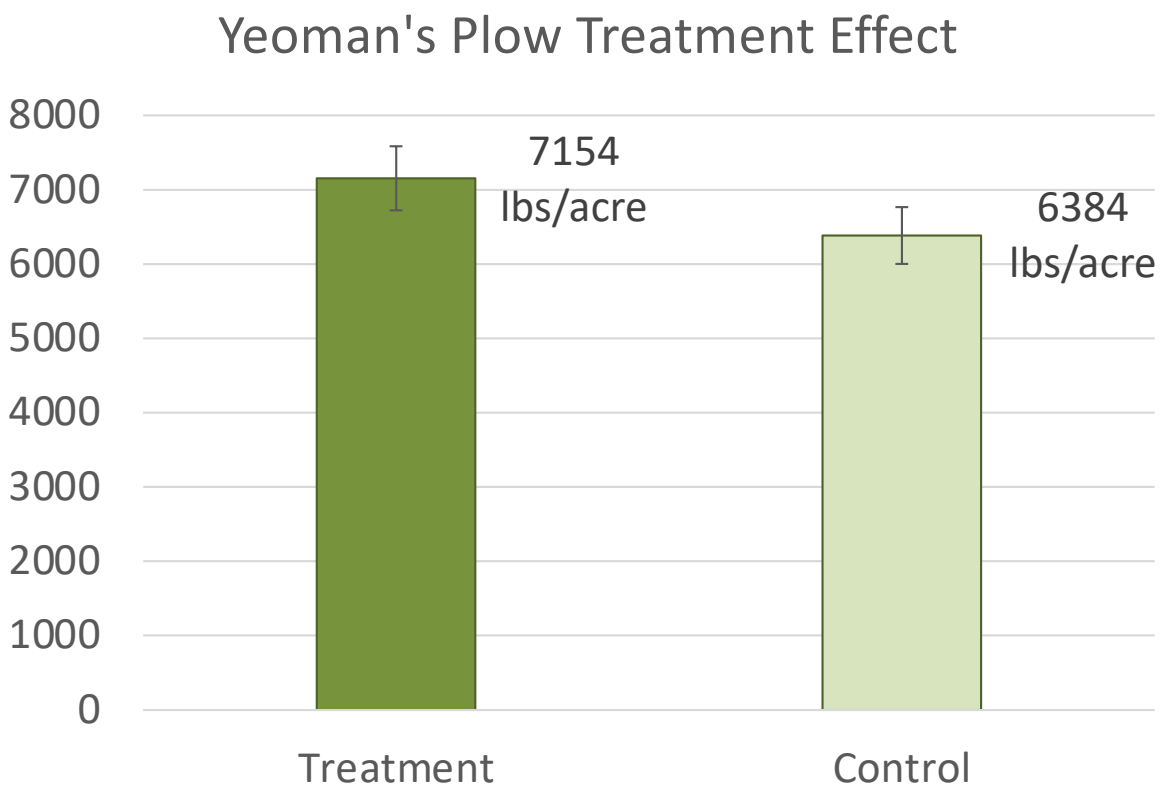
- Soil moisture
- Forage production

Proposed SB County research trial (3 years)



- **Soil moisture**
- Forage production

Proposed SB County research trial (3 years)

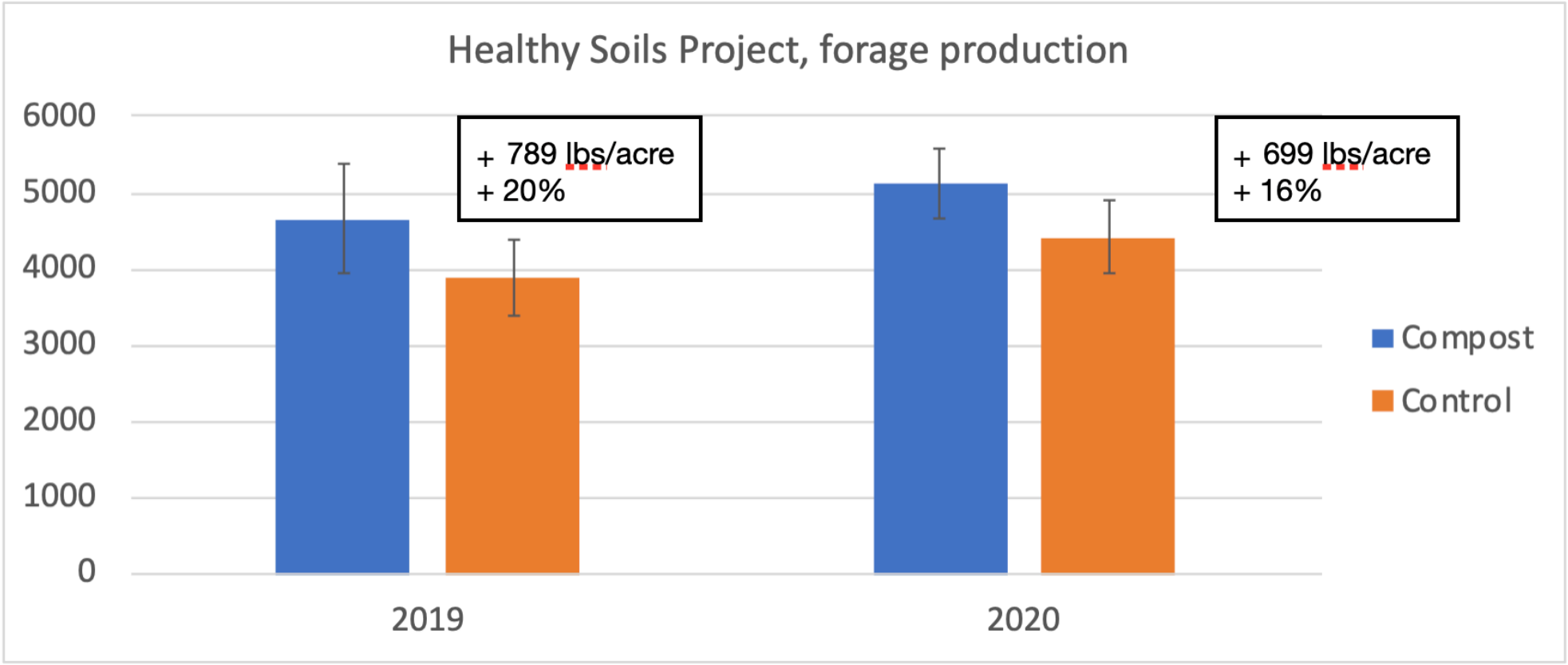


- Soil moisture
- **Forage production**

Summary after Year 1:

- Increase of 770 lbs/acre forage
- 12% increase
- Positive signal but NOT statistically significant

Compost on rangelands



Total Precipitation:
18.31 inches
January-March: 15.57
April: 0.02

Total Precipitation:
14.77 inches
January-March: 5.11
April: 3.33

BACK-OF-THE-ENVELOPE ECONOMICS:

If you had applied compost to 200 acres in Fall 2018 and Fall 2019

2019: +157,800 lbs of forage
+12 cows
+ $9,360 (assuming 12 600# calves sold May 31 at $1.30/lb)

2020: +139,800 lbs of forage
+ 10 cows
+ $7,800 (assuming 10 600# calves sold May 22 at $1.30/lb)

Total financial benefit to cattle operation after 2 years: $17,160

Trace mineral supplementation

Grazing and fire

Keyline subsoiling with Yeoman's plow

Compost on rangelands


Questions?