

Free Hybrid Workshop

Monterey County Rangeland Carbon Sequestration: Ranchers and Rangelands Are Part of the Climate Change Solution

In-person space is limited.

Join us to hear the latest information on carbon sequestration, funding opportunities for management practices, and how ranchers have contributed to carbon sequestration and can continue to help!

Speakers:

- Chris Lopez, Supervisor of Monterey County
- Ashley Paulsforth, Monterey County
- Toby O'Geen, UC Davis
- Lynn Huntsinger, UC Berkeley
- Frank Mitloehner, UC Davis
- Ari DeLara, USDA- NRCS
- Justin Luong, UC Santa Cruz and Jazmine Mejia- Muñoz, California Marine Sanctuary Foundation
- Royce Larsen and Devii Rao, UC Extension
- Panel of local Ranchers:
 - Rodrigo Sierra Corona, Santa Lucia Conservancy
 - Jeff Mundell, Gabilan Ranch
 - Rich Casey, Redtail Ranch,
 - Steve Dorrance, Dorrance Ranches

Register Now



Date September 22, 2022

Time 9:00 AM - 2:30PM
Lunch Provided

Venue Via Zoom or UCCE
Conference Room
1432 Abbott Street
Salinas, CA 93901



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University of California

Agriculture and Natural Resources | Cooperative Extension



Results from Range Seeding and Oak Planting Experiments September 22, 2022

Royce Larsen
Watershed / Natural Resource
Advisor

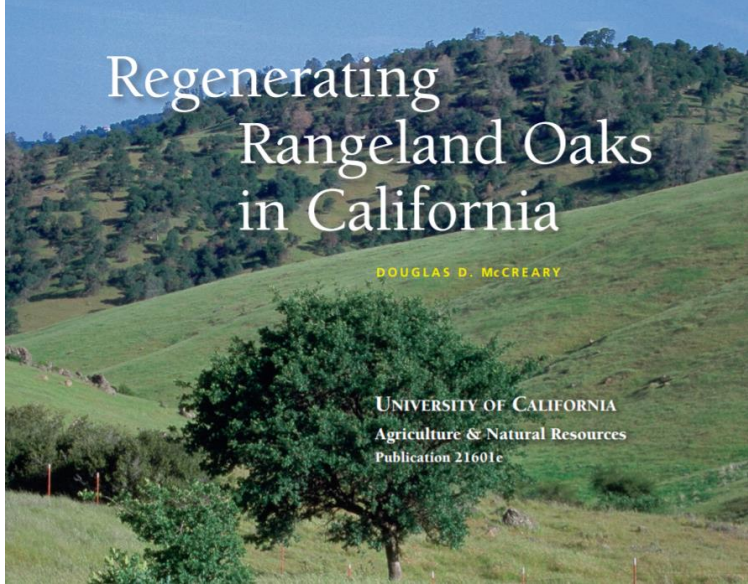
Rangeland Seeding and Oak Planting practices?

<https://oaks.cnr.berkeley.edu/wp-content/uploads/2018/09/Regenerating-Oaks.pdf>

Perennial Grass Seedings




Oak Plantings



<https://anrcatalog.ucanr.edu/Details.aspx?itemNo=8575>

University of California Agriculture and Natural Resources


ANR Publication 8575 | June 2017 

<http://anrcatalog.ucanr.edu>

Restoration Manual for Annual Grassland Systems in California

ELISE S. GORNISH, University of California Cooperative Extension Specialist, Department of Plant Sciences, University of California, Davis; JULEA SHAW, Department of Plant Sciences, University of California, Davis

Grassland and rangeland habitat are some of the most economically, socially, and environmentally important habitats in California (fig. 1). Unfortunately, widespread development and massive degradation are quickly eroding the persistence and health of these systems (see Huenneke and Mooney 1989; Cameron et al. 2014), making them one of the most endangered ecosystems on the planet (Sampson and Knopf 1994; Peters and Noss 1995). Restoration of these systems encourages revegetation and soil recovery by encouraging natural successional processes that might otherwise take decades to occur in the absence of applied management (Beltran et al. 2014). In general, the restoration process for grasslands and rangelands involve



2005 Regents of the University of California

There have been successful Plantings

Weather Considerations???

The news has been full of weather occurrences this year!

- **Heat Waves**
- **Floods**
- **Mega Droughts**

Maps show where extreme heat shattered 7,000 records this summer

By Harry Stevens and Jason Samenow
Sept. 13 at 1:17 p.m.

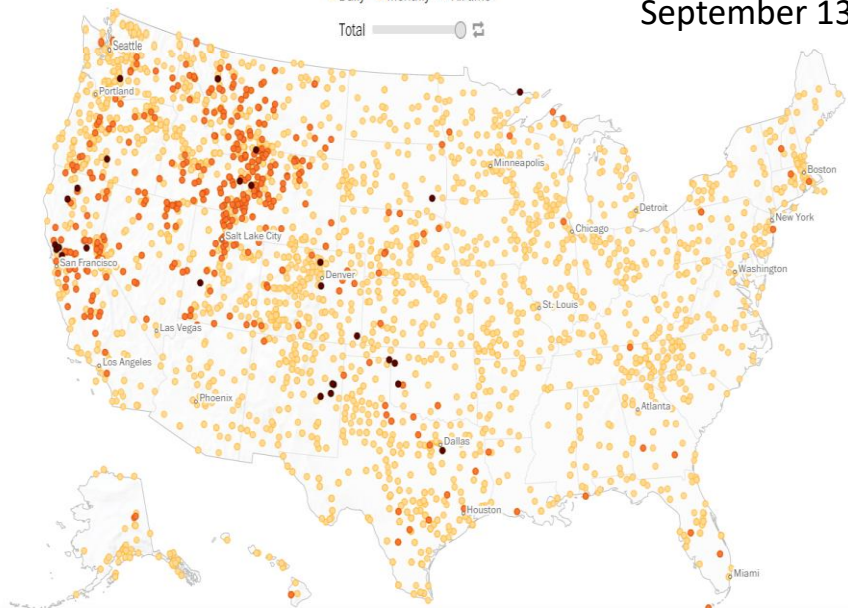


Broken temperature records, June 1 through Sept. 7

● Daily ● Monthly ● All-time

Total

The Washington Post
September 13, 2022



<https://www.npr.org/2022/08/20/1118603246/death-valley-reopen-public>

CLIMATE

Flood-damaged Death Valley will reopen popular sites to the public

August 20, 2022 · 1:10 AM ET

THE ASSOCIATED PRESS



Mojave Desert 80 miles from Death Valley – Indian Wells Rest Stop I-15 East of Baker

August 11, 2022

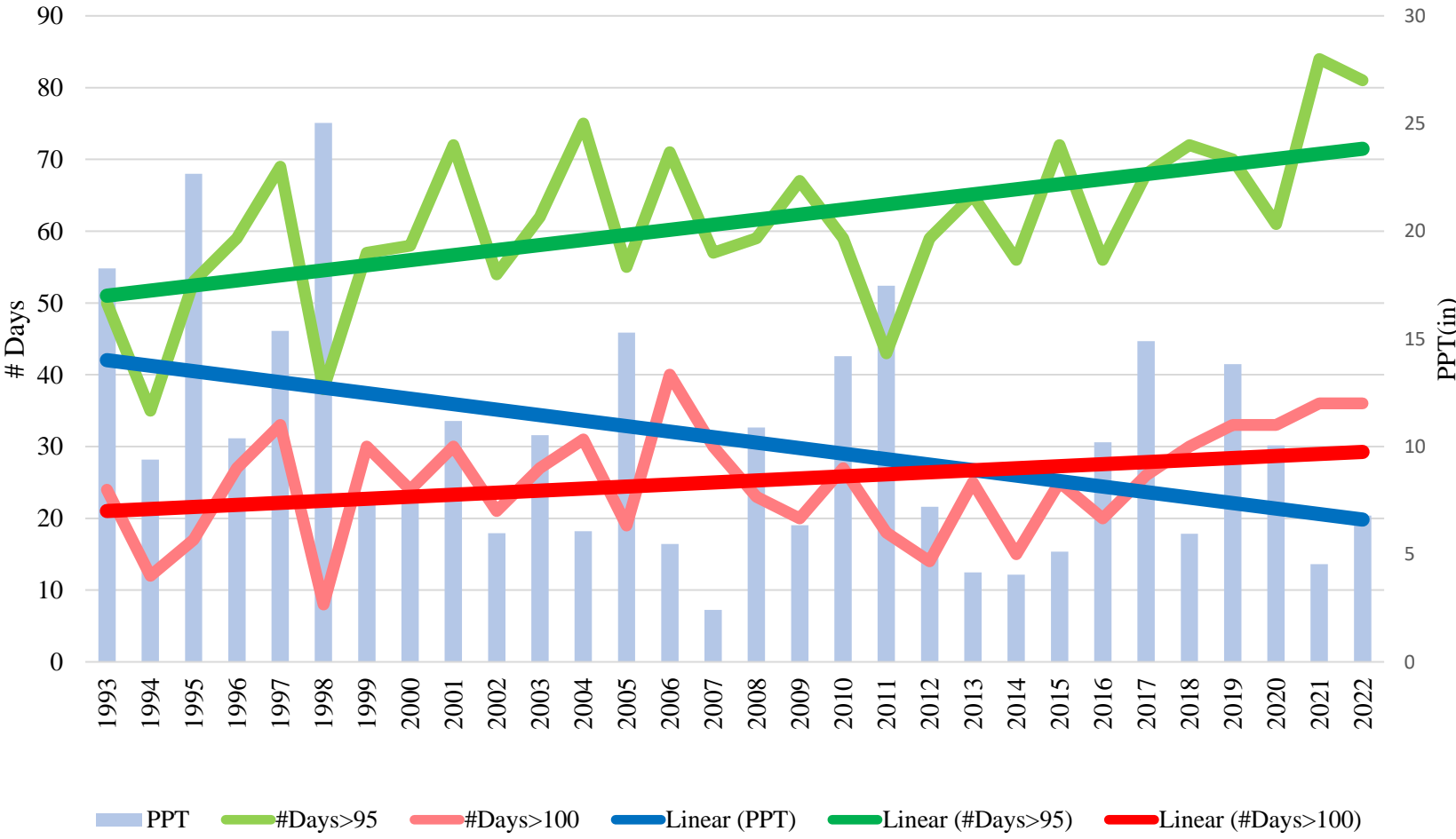


September 3, 2022



Weather Considerations??

RAWS Lapanza
Eastern San Luis Obispo County



In General:

Number of hot days increased from 1993-2022

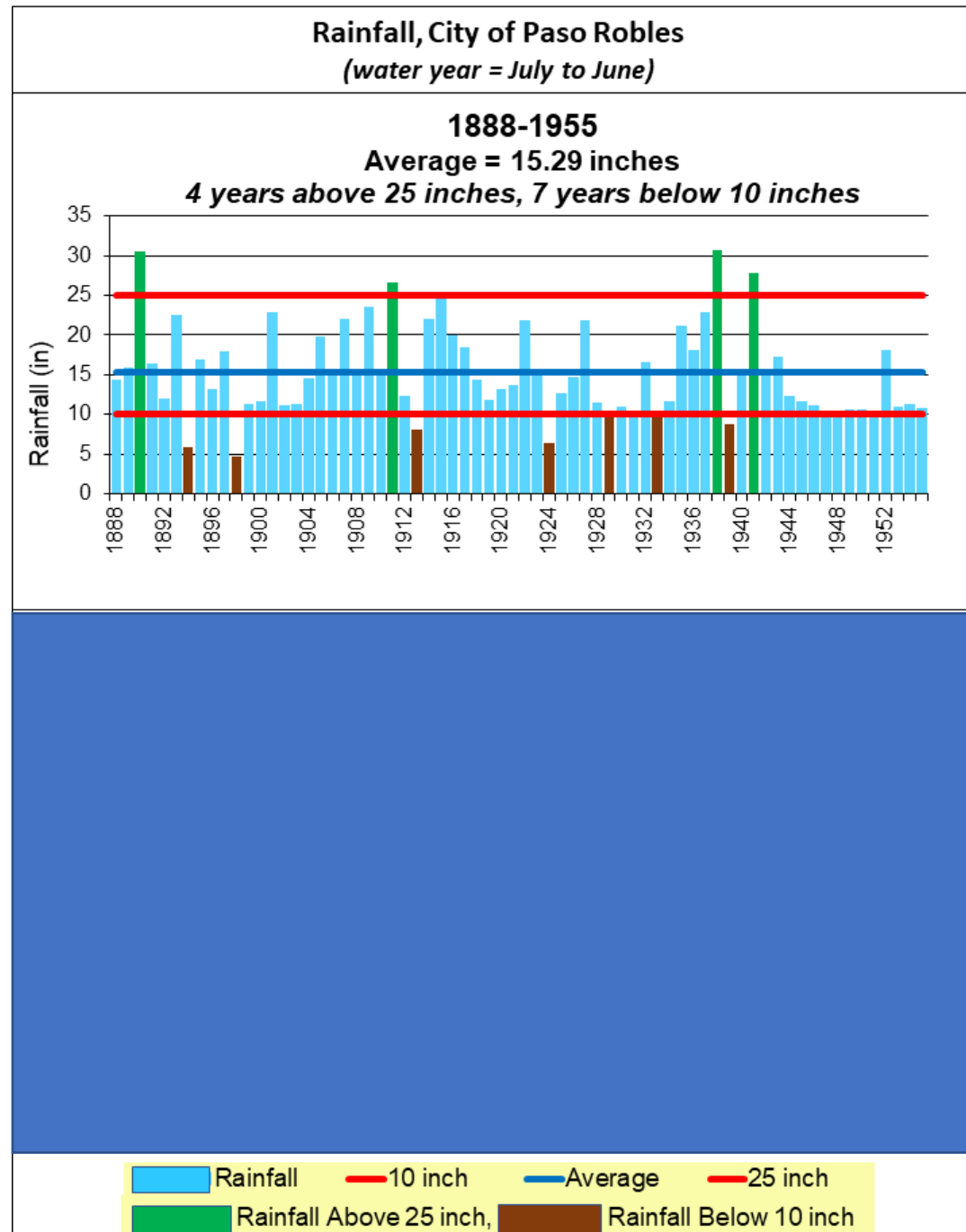
days > 95° F increased from 50 to 70

days > 100° F increased from 20 to 30

Rainfall decreased from 12” per year to 7” per year.

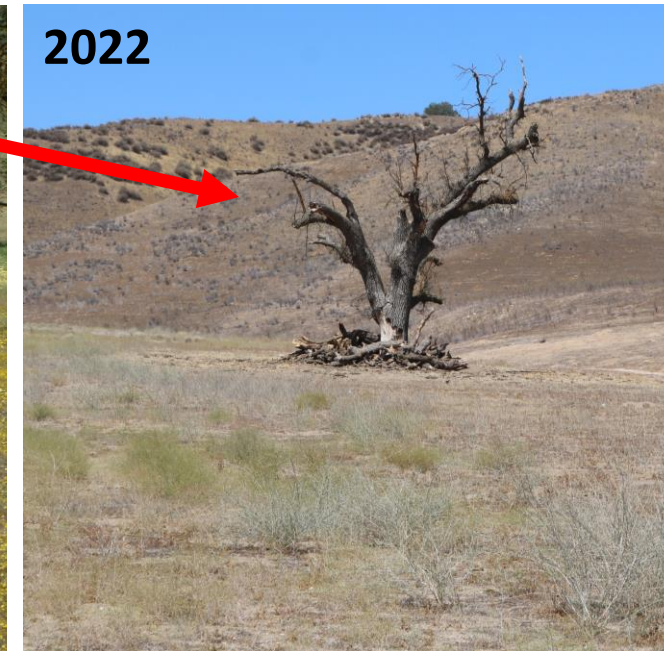
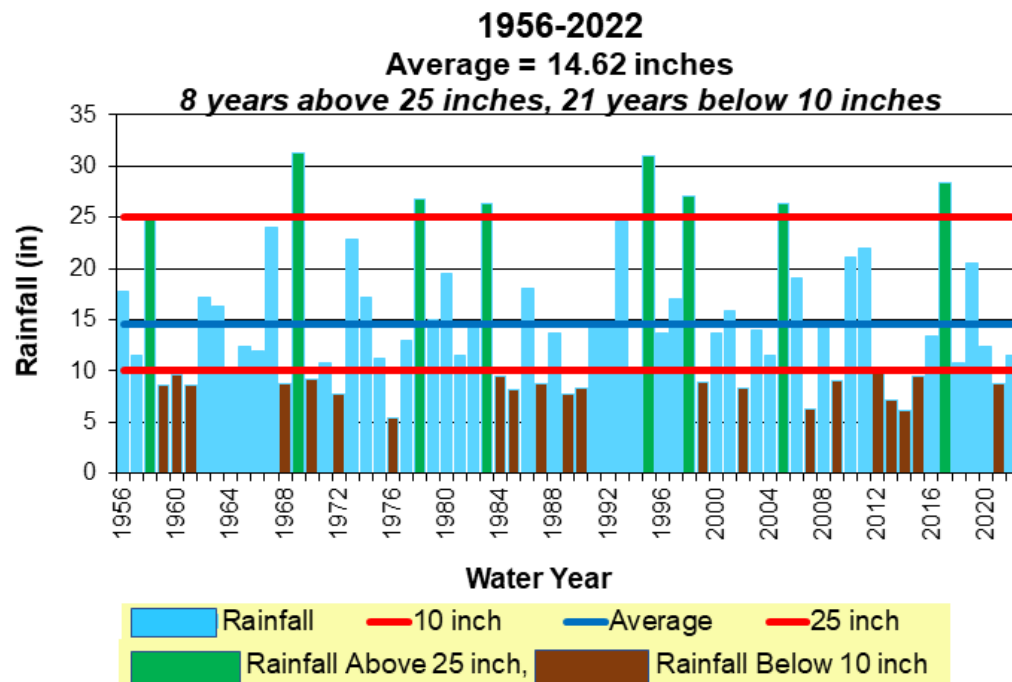
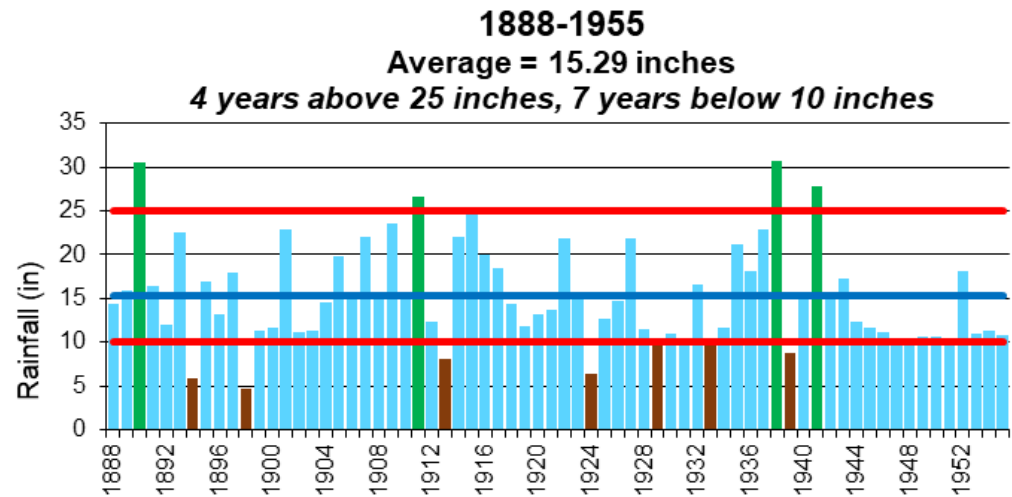
Weather Considerations??

What is average rainfall?



Weather Considerations

Rainfall, City of Paso Robles
(water year = July to June)



Mega Droughts
Especially 2012 – 2015



ESTABLISHMENT OF PERENNIAL GRASSES IN THE CALIFORNIA ANNUAL GRASSLAND

Royce Larsen, UC Cooperative Extension and Karl Striby, USDA Natural Resources Conservation Service

SRM Poster 2004

Convert annual grasses to perennials

- Extend the grazing season
- Improve the watershed
- Increase Soil Organic Matter

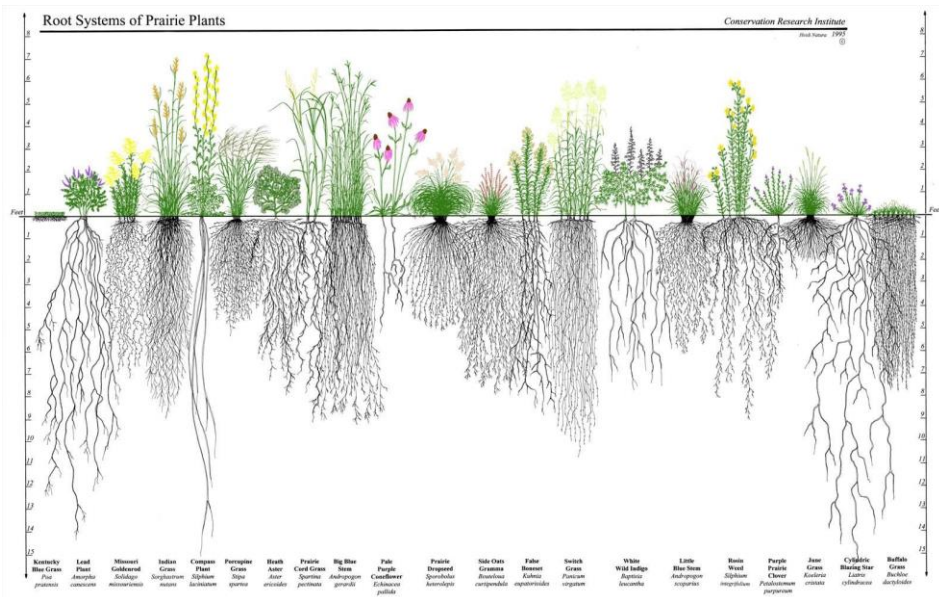
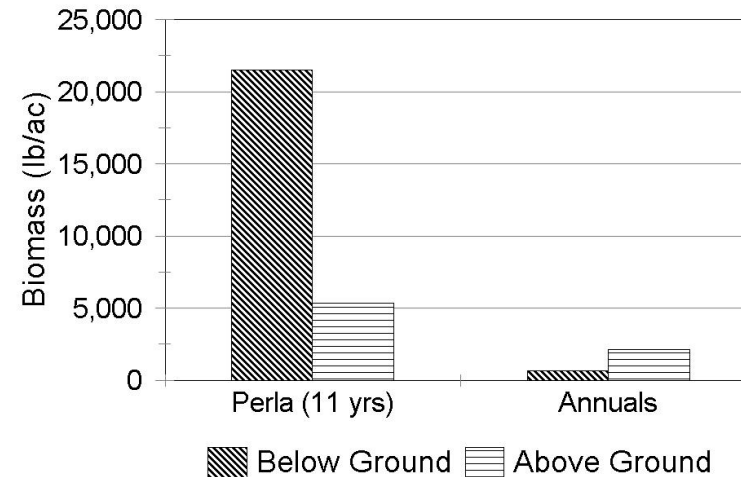
Establishment of perennial grasses:

- Rainfall amount and timing
- Insects & Weed Control
- Plant Species Used
- Grazing Management

2001-2003
Parkfield, CA

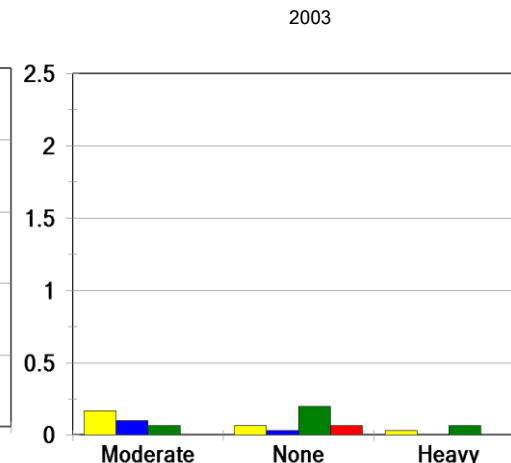
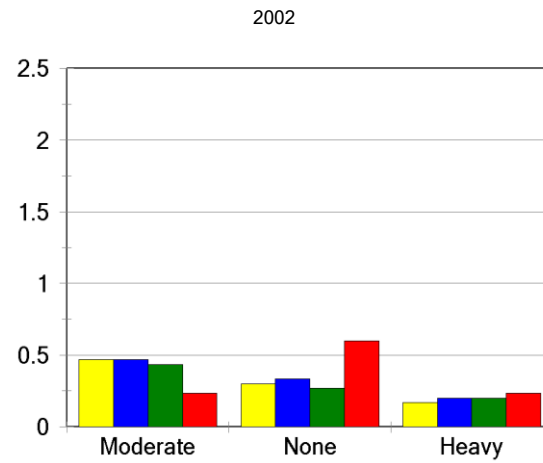
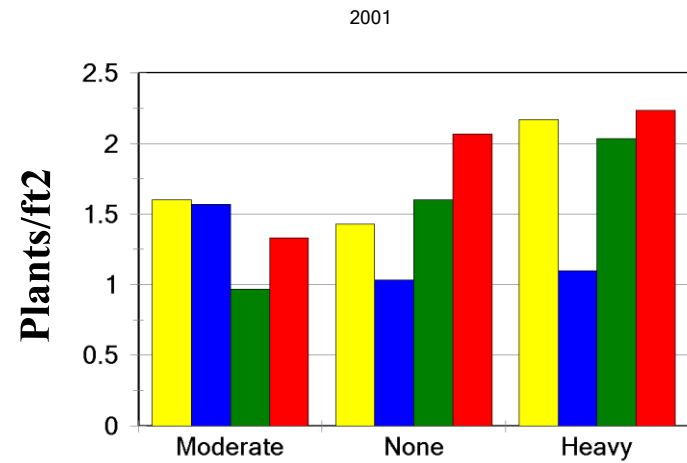


Red Bluff, CA
(0-10 cm)



https://www.google.com/search?sa=X&rlz=1C1GCEA_enUS831US831&q=Grass+root+depth+chart&tbm=isch&source=iu&ictx=1&vet=1&biw=1740&bih=838&dpr=1.1#imgrc=ICdCm4Wjt2fUUM

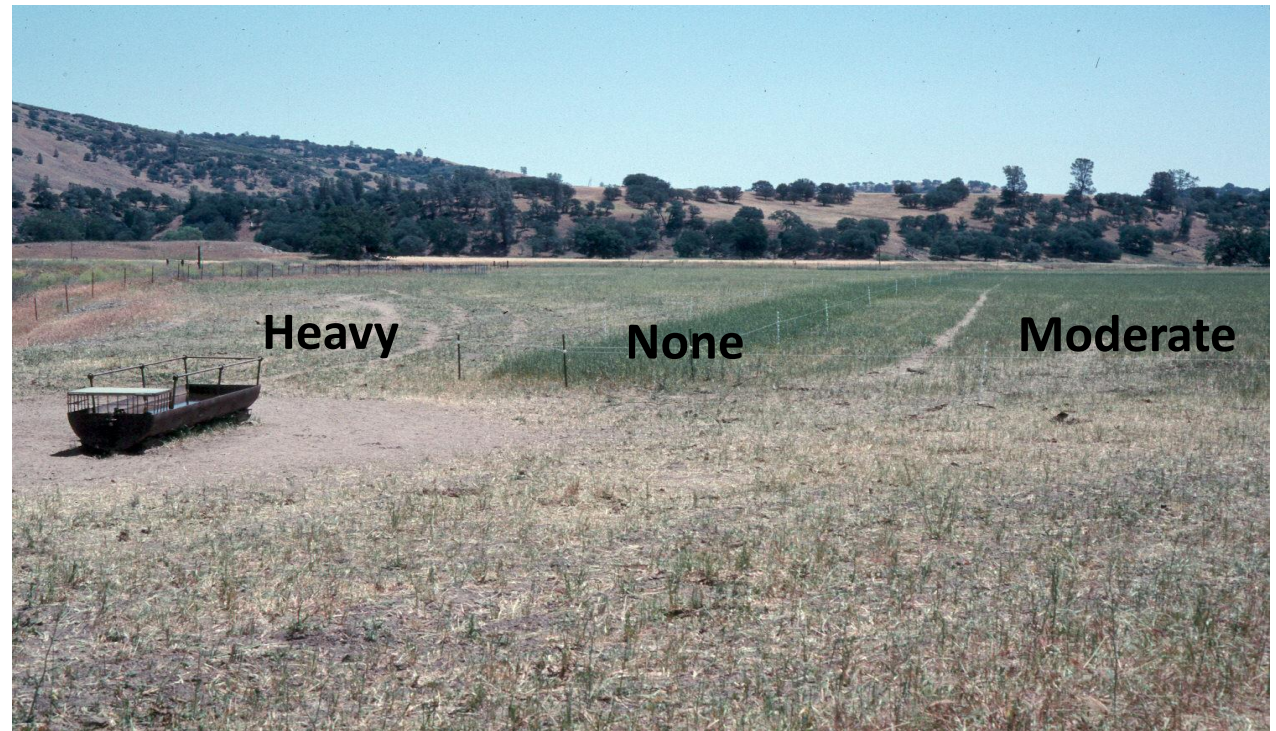
Plant Density - Seed Mixes



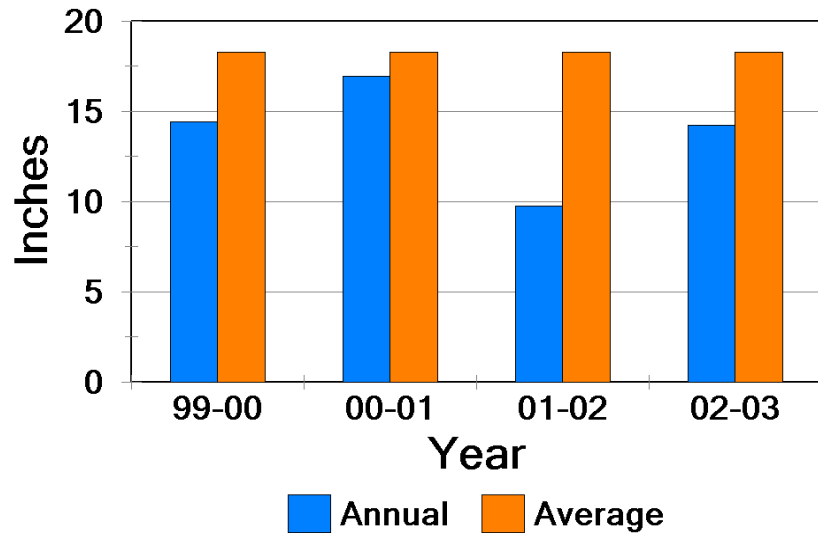
Grazing Intensity

Mix

- **Blue Wildrye - 50%**
Paiute Orchard Grass - 50%
- **Perla Grass - 48%**
Slender Wheatgrass - 26%
Hard Fescue - 26%
- **Holdfast Harding Grass - 33%**
Perla Grass - 33%
Paiute Orchard Grass - 33%
- **Paiute Orchard Grass 50%**
Holdfast Harding Grass - 25%
Perla Grass - 25%
- **Red = Native**
- **Black = Introduced**



Rainfall



Conclusions / Challenges:

- **Rainfall most important factor**
- **Annual grass competition was high**
- **Grazing intensity-needs retesting**
it may help control annuals
- **High number of grasshoppers were detrimental**
- **After 3 Years, very few perennials left**

21 Grasshoppers (Different Site)



We Have Not Given Up!!!

Since the Early 2000's, other seeding trials on the Central Coast have ended with similar results as the Parkfield trial. A few have had some success.

We are still working on new seeding trials.



Used Hedge Cone Seeder - 630 Plots

Irrigated Pasture Trial

- Working with USDA ARS – Plant Breeders
- Seeded February 2022
- Organic – no weed control
- Testing 89 entries, 24 different species, many with several different cultivars'



Some of the species can be seen coming through the weeds

Including:
Tall Fescues
Bromes
Wheat Grass
Harding Grass
Orchard Grass
Wild Rye
Medics
Clovers
Burnett

Tree shelters and weed control enhance growth and survival of natural blue oak seedlings

CALIFORNIA AGRICULTURE • VOLUME 65, NUMBER 4

<https://oaks.cnr.berkeley.edu/>

An alternative oak regeneration strategy is to promote the advancement of naturally occurring seedlings on-site, helping them to reach the sapling stage.



Success with Planting of Oaks

2007 to 2010

With out Tree Shelter



With Tree Shelter



Tree shelters and weed control enhance growth and survival of natural blue oak seedlings

CALIFORNIA AGRICULTURE • VOLUME 65, NUMBER 4

From the Research Article:

- **Tree shelters can enhance growth, and weed control increases survival**
- **When annual precipitation was above average the seedlings in full or near-full sunlight had the maximum benefit**
- **Blue oak seedlings with tree shelters generally grow into saplings in less than a decade**
- **Artificial regeneration techniques costs about twice as much as using tree shelters on natural seedlings**



Conclusions:

**Are rangeland re-seeding
and planting of oaks
considered good practices?**



There has been successful Grass Seeding and Oak Plantings
On the Central Coast

Yes – But I recommend Caution

- If you want to do a seeding project-expect that there will be some failures.
- Cost? Start with a small acreage, test the grass species of interest first. We found that perla grass, harding grass and blue wildrye were better adapted to the Parkfield site than orchard grass, slender wheatgrass and hard fescue.
- Weather – multi year droughts, heat waves???? – The future??
- We are in a Mediterranean ecosystem, dominated by annual grasses – first manage the annuals well. Then try planting perennial grasses if desired.
- Enhancing natural oak seedlings can be more successful than planting new oak seedlings, and it costs less.