

# **Update from Humboldt County: burn objectives and range management, project costs, and bringing fire back to the people**

**Jeff Stackhouse  
University of California Cooperative Extension**





# 18 broadcast burns since June 2017!





# What and when are we burning?

- Late phenology species
- Forest/Wildland-urban interface fuels reduction
- Woody encroachment on rangelands
- Fir removal from oak woodlands
- Other/Training



What does it cost?



# HCPBA Participation Cost?

- HCPBA Membership: \$25
- Leather Gloves: \$0
- Cotton Pants/Shirt/Hat: \$0
- Tool: \$0
- Lighter: \$1

Total Participation Cost: \$26

But what about treatment cost?





# Chemical Treatment Cost Estimates

## Broadleaf-Herbaceous Plants

- Shark @ 1 and 2 oz/acre
  - ~\$6/oz = \$6 to \$12/acre
- Milestone @ 3 and 7 oz/acre
  - ~\$2.90/oz = \$8.5 to \$20/acre
- Transline @ 3 and 7 oz/acre
  - ~\$1.47/oz = \$4.5 to \$10.5/acre
- 2, 4-D @ 32 and 64 oz/acre
  - ~\$0.15/oz = \$4.5 to \$9/acre
- Triclopyr @ 32 and 64 oz/acre
  - ~\$0.50/oz = \$16 to \$32/acre
- Crossbow @ 64 and 128 oz/acre
  - ~\$0.48/oz = \$31 to \$62/acre

## Woody Plants

- 2,4-D @ \$16.67/gal
  - Spray (47 gal\*5%)= ~\$39.17/acre
- Triclopyr @ \$54.82/gal
  - Spray (47 gal\*5%)= ~\$128.83/acre
- Imazapyr @ \$49.10/gal
  - Spray (47 gal\*5%)= ~\$115.38/acre
- Glyphosate @ \$31.64/gal
  - Spray (47 gal\*5%)= ~\$74.35/acre

## Grass Only

- Poast @ 16 to 24 oz/acre
  - ~\$0.78/oz = \$13 to \$19/acre



# Mechanical Treatment Cost Estimates

- Cat: \$85/hr – \$150/hr (\$340-~~\$600~~/acre)
  - Hired Saw: \$15 - \$25/hr (\$487-\$812/acre)
  - Excavator: \$125 - \$200/hr (\$975- \$1560/acre)
- } Hired contractor prices

**Table 1:** LSD mean frequency and cover reduction of *Baccharis* and bare ground by treatment

Treatment	Plants/M <sup>2</sup>	<i>Baccharis</i> reduction, %	Bare ground, %
Exc	0.07 <sup>a1</sup>	68b	22b
Cat	0.45 <sup>a</sup>	65b	19b
Saw	1.32 <sup>b</sup>	53a	3a

<sup>1</sup>Within a column means with a similar letter do not differ





# Air Quality: Monterey Bay vs North Coast

??

*PFIRS.*

\$20/year for standard burn permit (4x4)

\$40/year for less than 1 acre of material

\$80/year for 1-10 acres

\$250/year for 10-100 acres

\$500/year for 100-300 acres

\$1,250/year for greater than 300 acres

+\$65/Bi-annually for SMP for all non-standard permits



Objective	Acres	Burn plan	Burn Boss	VFD stipend	Air quality	Crew size	Total cost	Cost/acre
Medusahead control/training	18	\$500	\$1,500	\$600	\$100	30	\$2,700	\$152
Coyote brush control/training	140	\$500	\$1,000	\$600	\$200	25	\$2,300	\$17
Oak woodland restoration/training	20	N/A	N/A	\$0	\$100	12	\$100	\$6
Oak woodland restoration	15	N/A	N/A	N/A	\$100	3	\$100	\$7
Oak woodland restoration	13	N/A	N/A	N/A	\$0*	6	\$0	\$0
Blackberry control	5	\$500	\$1,500	N/A	\$145	10	\$2,145	\$431
Grasshopper control/medusahead control/training	6	\$0	\$1,500	\$600	\$145	25	\$2,245	\$378
Coyote brush control/training	215	\$500	\$1,000	\$750	\$565	35	\$2,815	\$13
Coyote brush control/training	145	\$0*	\$1,000	\$750	\$565	30	\$2,315	\$16
Native grass seeding trial	0.25	N/A	N/A	N/A	\$145	3	\$145	\$592
Coyote brush control/training	130	\$0*	\$1,000	\$750	\$0*	30	\$1,750	\$14
Understory fuels reduction/training	3	\$1,000	\$1,500	\$600	\$145	25	\$3,245	\$1,090
Oak woodland restoration	163	N/A	N/A	N/A	\$565	2	\$565	\$3
Oak woodland restoration	22	N/A	N/A	N/A	\$315	9	\$315	\$15
Blackberry control	2	N/A	N/A	N/A	\$145	3	\$145	\$74
Understory fuels reduction/training	5	\$0	\$0	\$0	\$145	20	\$145	\$33



Medusahead



Starthistle

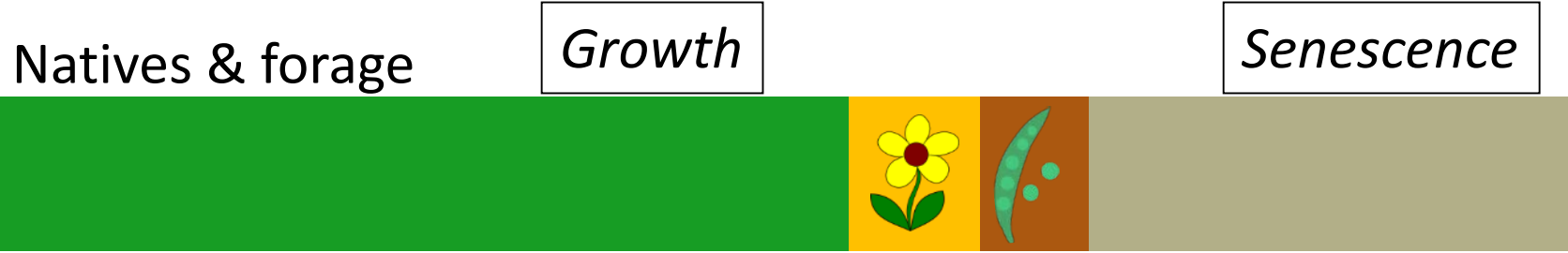


Barbed goatgrass



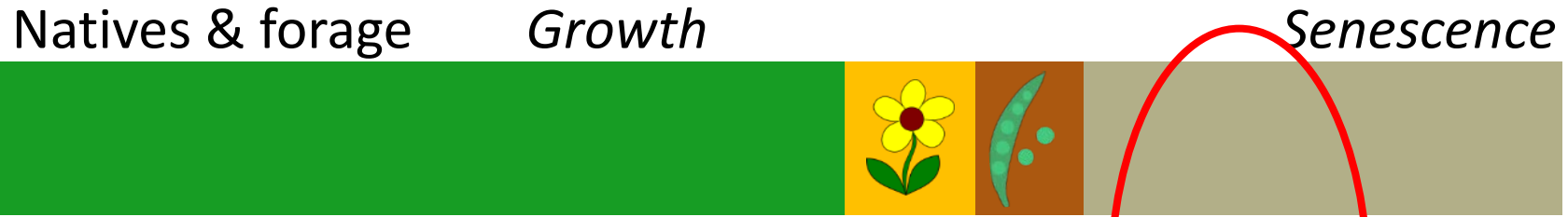


Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
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Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
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Late  
Phenology  
Invasive





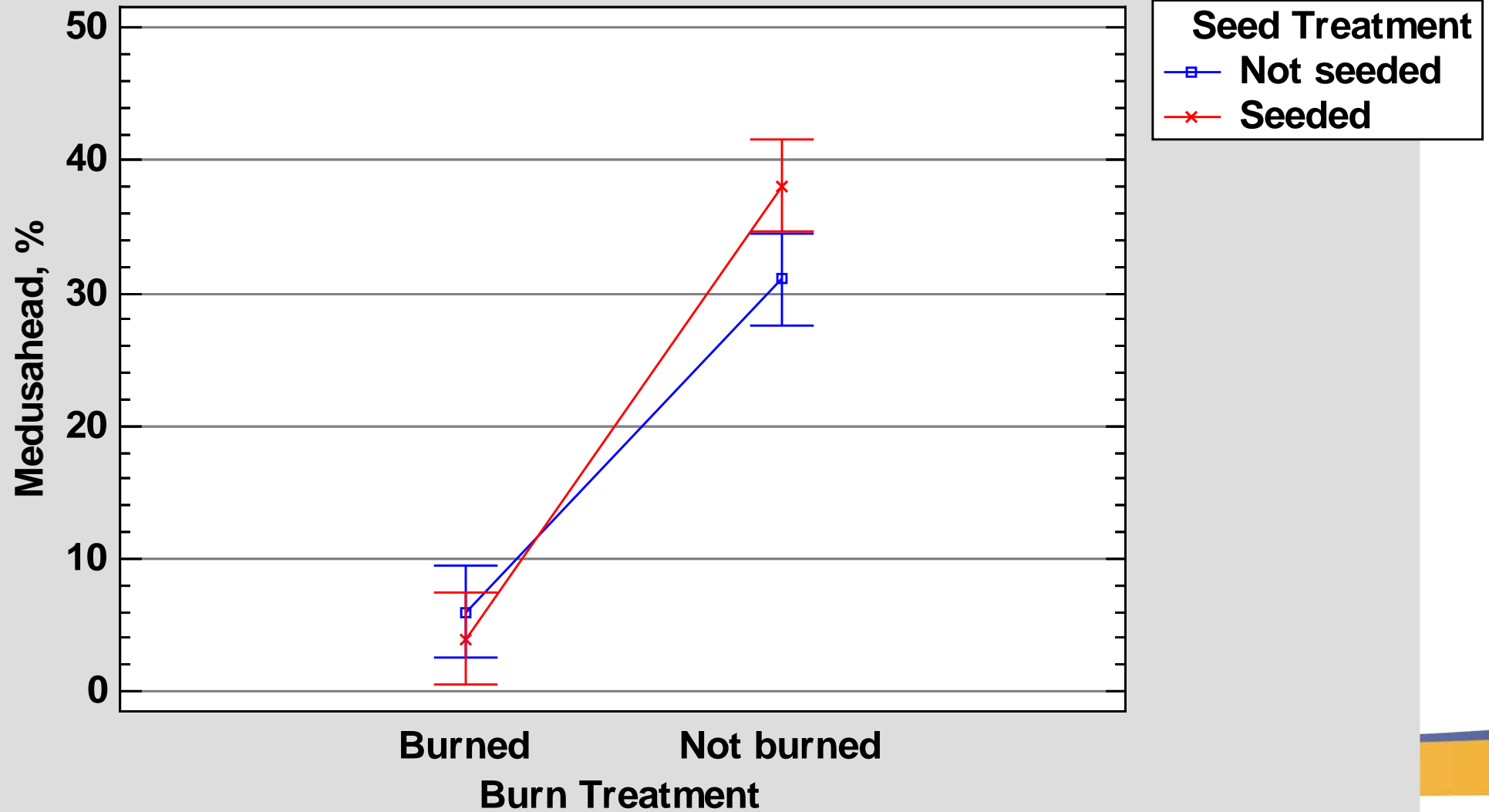
- Hunt: June 29, 2017
  - 18 acres: Medusahead
  - \$500: Burn Plan
  - \$1500: Burn Boss
  - \$600: VFD Stipends
  - \$100: Air Quality + other
    - \$150/acre + ~30 people



- Phelps Burn: June 26, 2018
  - 3 acres: Vineyard Edge
  - 3 acres: Medusahead
  - No Burn Plan
  - \$1500 Burn Boss
  - \$100: Air Quality + other
    - \$267/acre + ~25 people



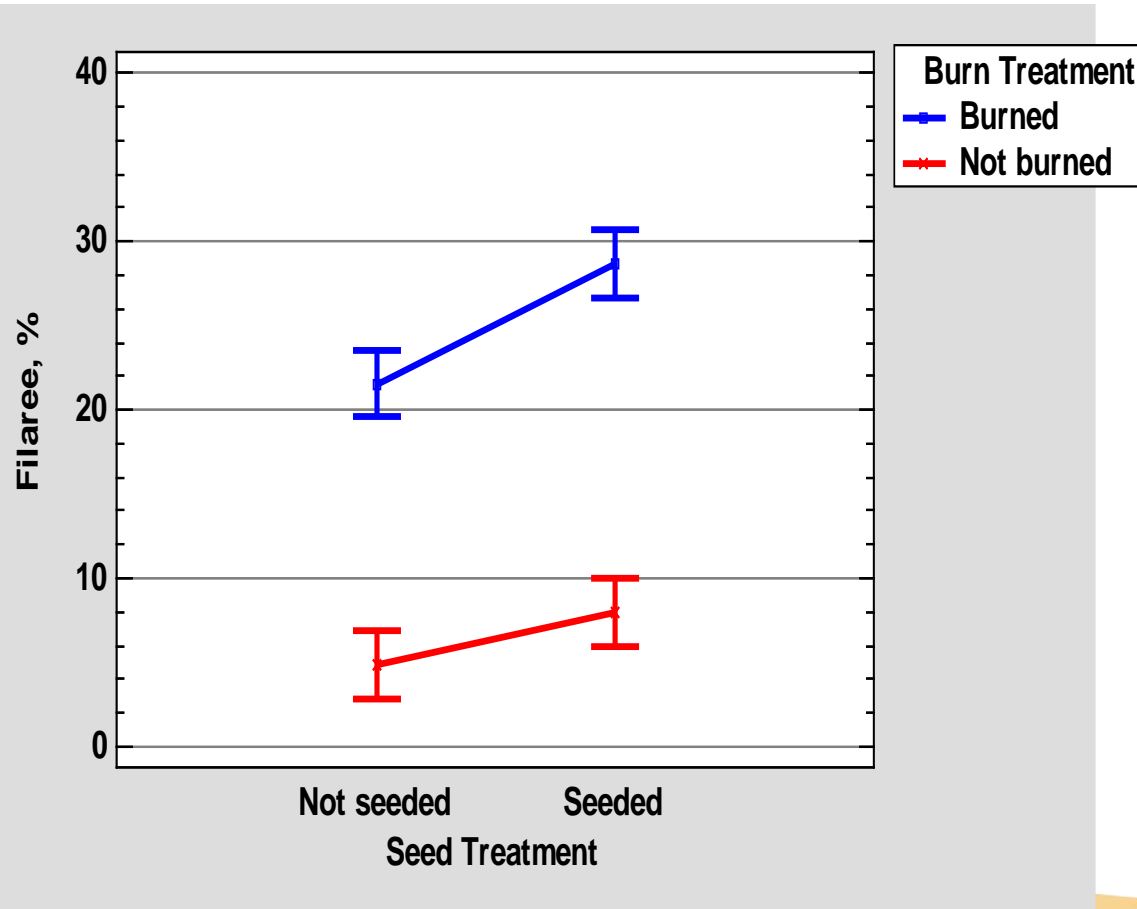
# Medusahead Cover 1 Year Post-Burn - Humboldt



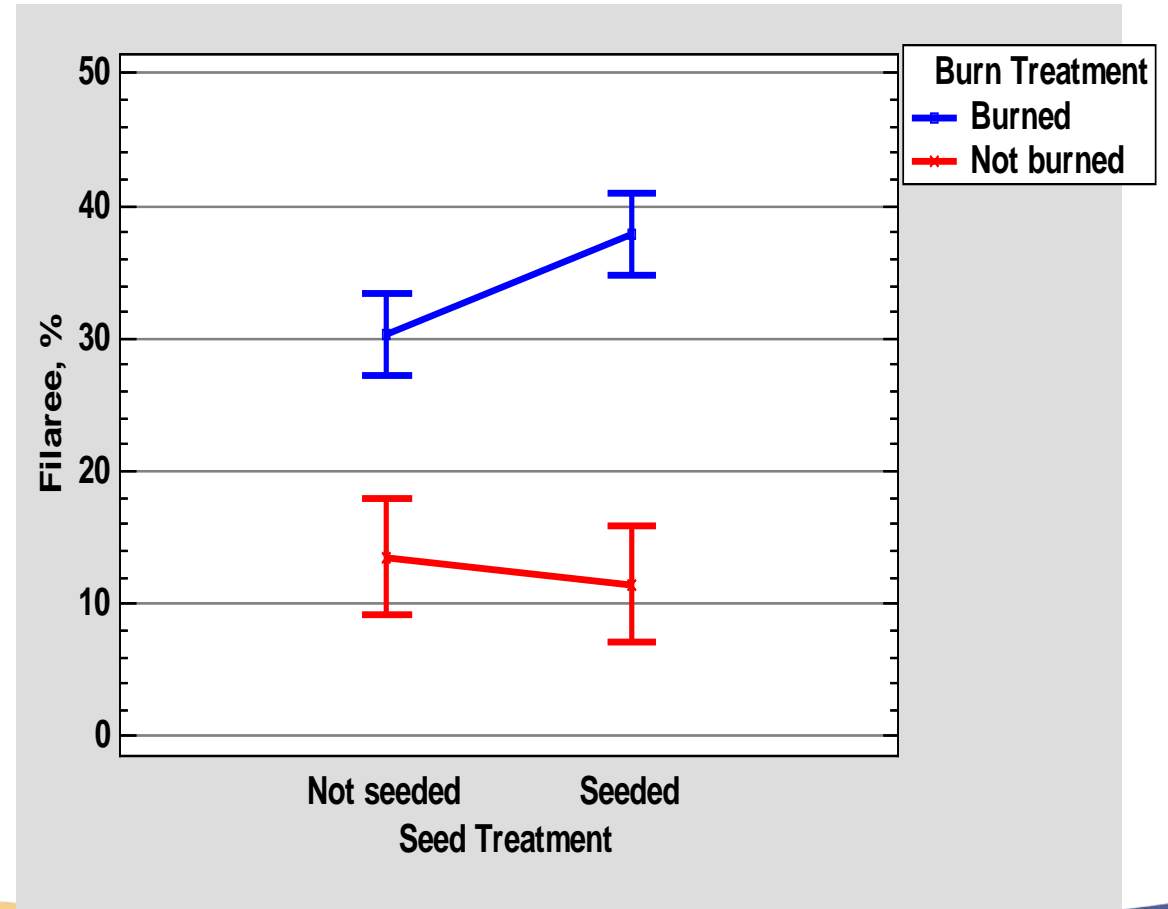


# Filaree 1 Year Post-Burn – Both Counties

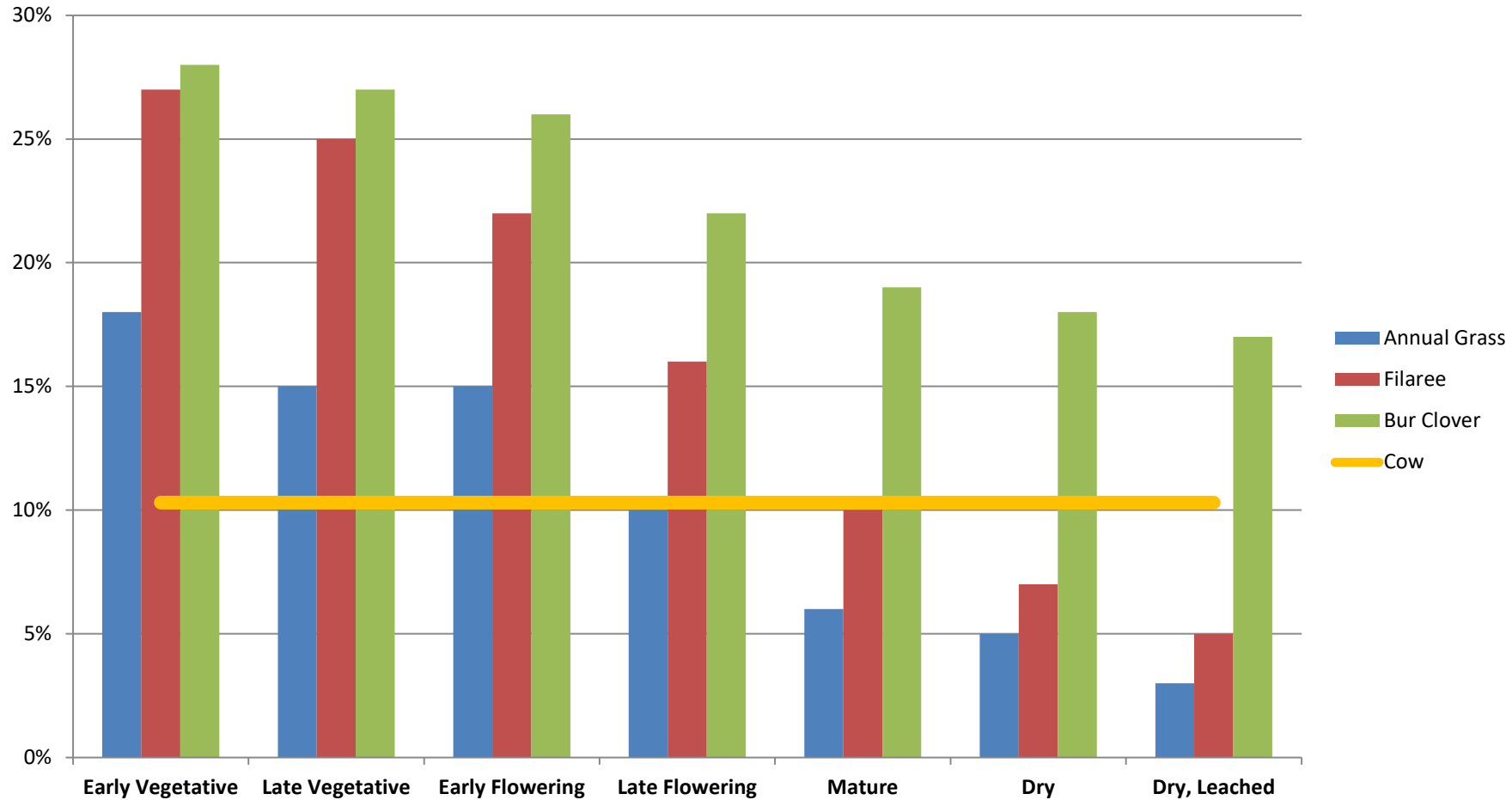
## Humboldt



## Tehama

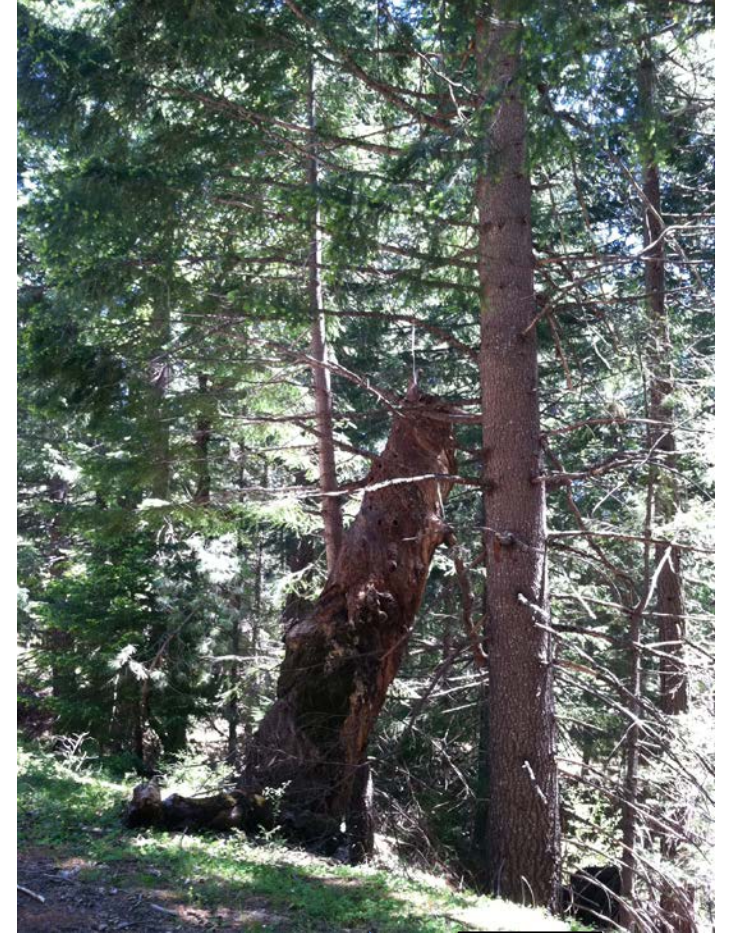
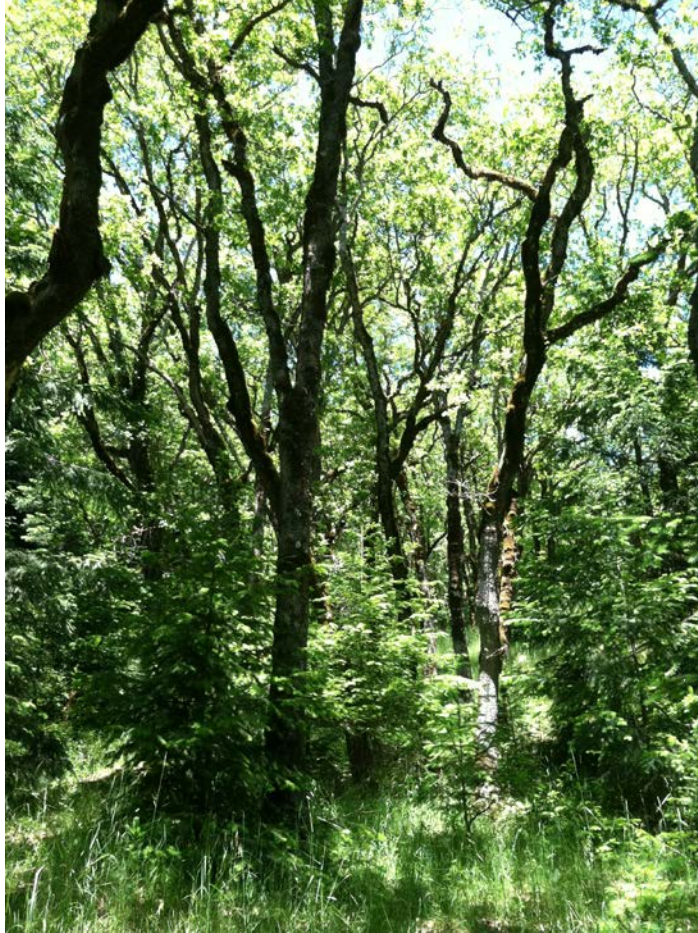


# Cow Lactating 1st 90 days – % CP





# Fir encroachment into oak woodlands













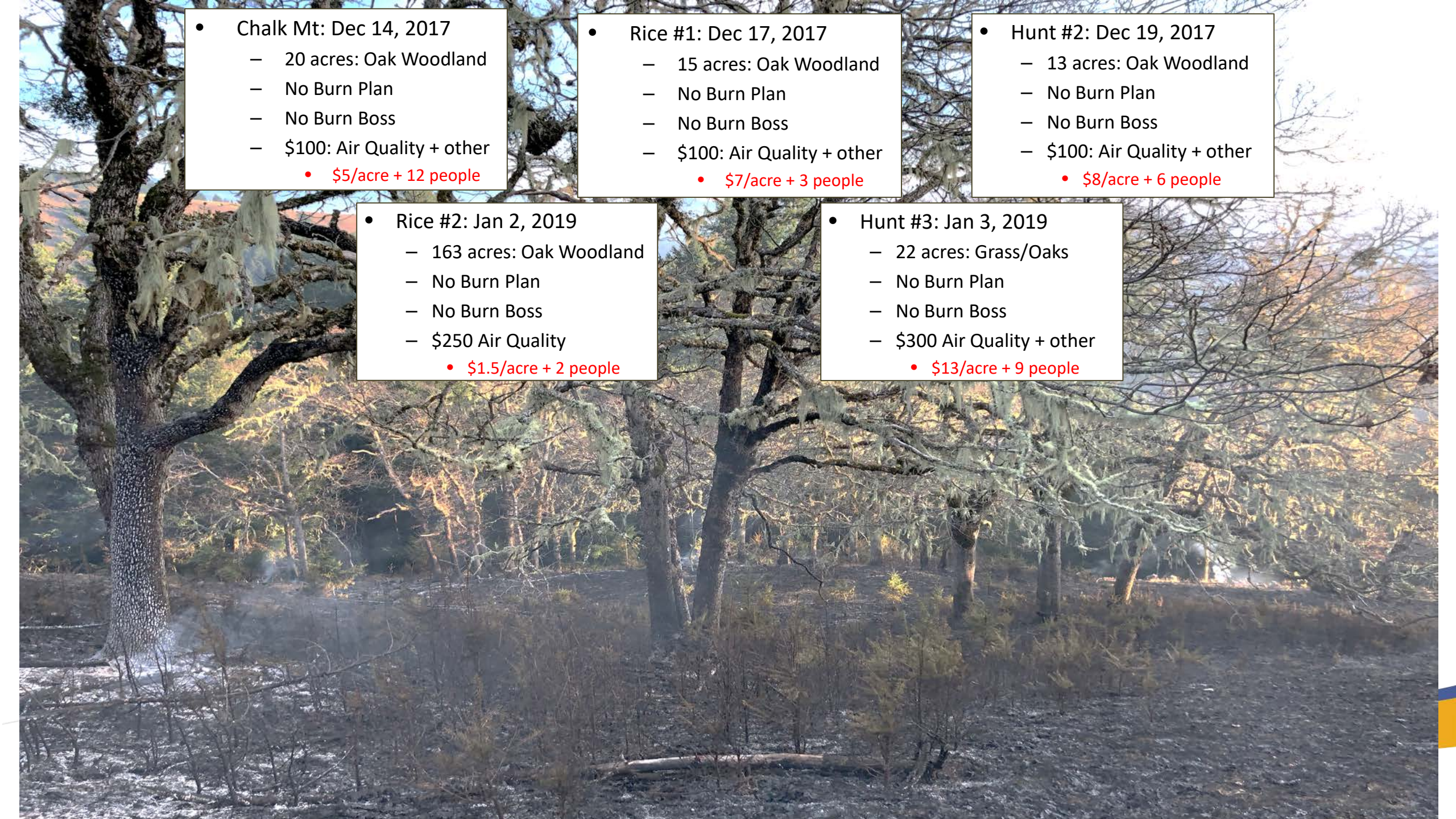
- Chalk Mt: Dec 14, 2017
  - 20 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$100: Air Quality + other
    - \$5/acre + 12 people

- Rice #1: Dec 17, 2017
  - 15 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$100: Air Quality + other
    - \$7/acre + 3 people

- Hunt #2: Dec 19, 2017
  - 13 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$100: Air Quality + other
    - \$8/acre + 6 people

- Rice #2: Jan 2, 2019
  - 163 acres: Oak Woodland
  - No Burn Plan
  - No Burn Boss
  - \$250 Air Quality
    - \$1.5/acre + 2 people

- Hunt #3: Jan 3, 2019
  - 22 acres: Grass/Oaks
  - No Burn Plan
  - No Burn Boss
  - \$300 Air Quality + other
    - \$13/acre + 9 people





# Coyote brush in coastal grasslands



- October 2017
- September & October 2018





# California's largest NRCS-funded burn





- Mazeppa #1: October 31, 2017

- 140 acres: Coyote Brush
- \$500: Burn Plan
- \$1000: Burn Boss
- \$200: Air Quality + other
  - \$12/acre + ~25 people

- McBride #1: Sept 26, 2018

- 215 acres: Coyote Brush
- \$500: Burn Plan
- \$1000: Burn Boss
- \$1000: Air Quality + other
  - \$5/acre + ~35 people

- Mazeppa #2: Sept 27, 2018

- 145 acres: Coyote Brush
- Reused Burn Plan
- \$1000 Burn Boss
- \$800: Air Quality + other
  - \$12/acre + ~30 people

- McBride #2: Oct 17, 2018

- 130 acres: Coastal shrub
- Reused Burn Plan
- \$1000 Burn Boss
- \$200: Reused Air Quality + other
  - \$9/acre + ~30 people





# Fuels reduction projects



- Cocking, October 2018





## Ostrow: April 29, 2019

- 4 acres: Understory
- No Official Burn Plan
- No Official Burn Boss
- \$145 Air Quality + other
  - \$36/acre + 20 people



## • Cocking: October 20, 2018

- 3 acres: Forest/Urban
- \$1000 Burn Plan
- \$1500 Burn Boss
- \$830 Air Quality + other
  - \$1110/acre + 25 people





# Blackberry control

- April 2018 & 2019
- Any burnt blackberry is good blackberry.







Westfall: April 25, 2019

- 2 acres: Snow/Blackberry
- No Burn Plan
- No Burn Boss
- \$145 Air Quality + other
  - \$72/acre + 3 people



- Moore Burns: April 25, 2018
  - 5 acres (over 2k acres): Scattered Blackberry
  - \$500: Burn Plan
  - \$1500: Burn Boss
    - (NRCS Requirement)
  - \$100: Air Quality + other
    - \$420/acre + 10 people



# Research trial: seeding and fire

- Evenson Grass Seeding Trial: Oct 15, 2018
  - 1.5 acres: Clover + CA Brome Trial
  - \$100: Air Quality + other
    - \$66/acre + 3 people





# Finally: Developing *Search Images*

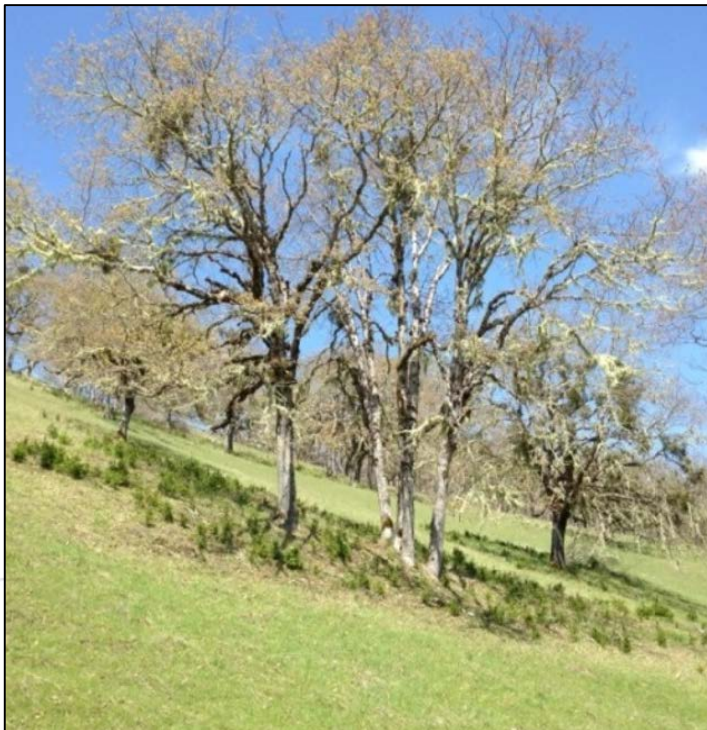
- What is a search image?
  - Predator/Prey
  - Selecting seed trees
  - Selecting real estate





# Rx Fire Search Images:

- See the problem
- See the burn unit
- See the opportunity



e Extension



Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July
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### Herbaceous Plants



### Deciduous Oaks



### Conifers/Brush/Blackberries



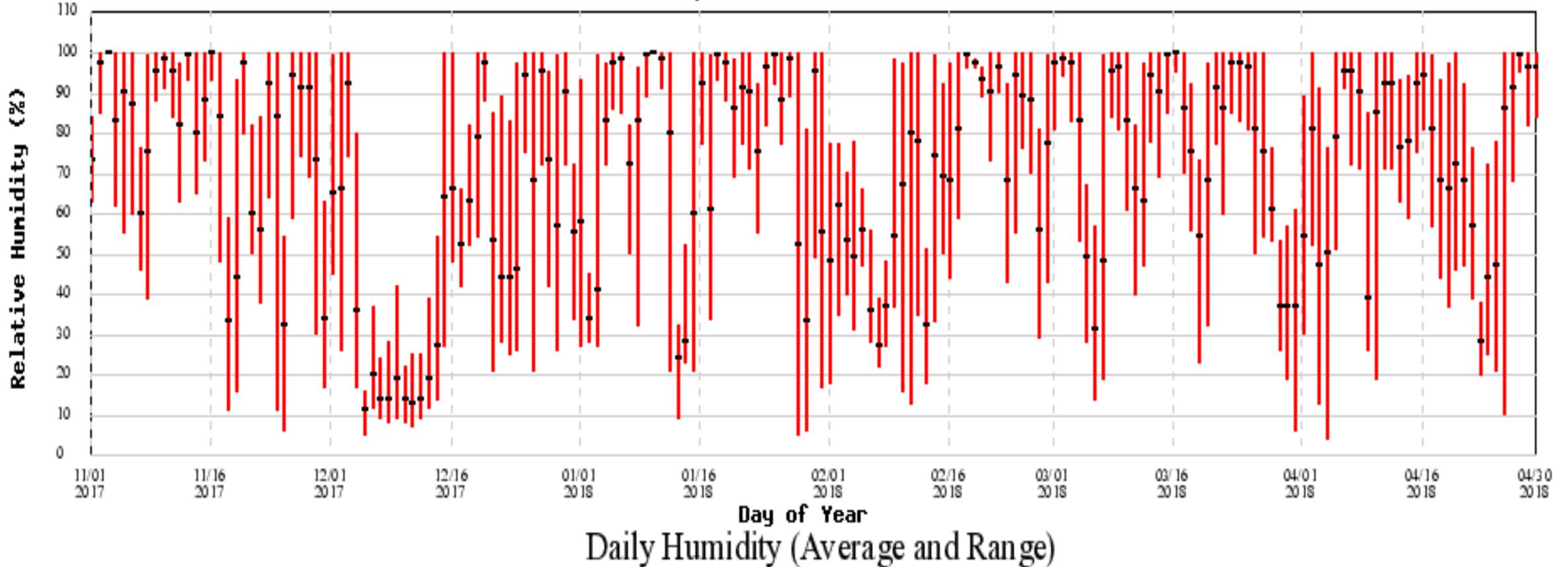
We need to rethink burn windows: drive by objective not just by expert knowledge... remember, CA's fire experts are wildfire experts.



# 17/18 HumCo Windows

## Kneeland California

Daily Data run on 4/26/2019 11:32 PST.



Western  
Regional  
Climate  
Center



University of California

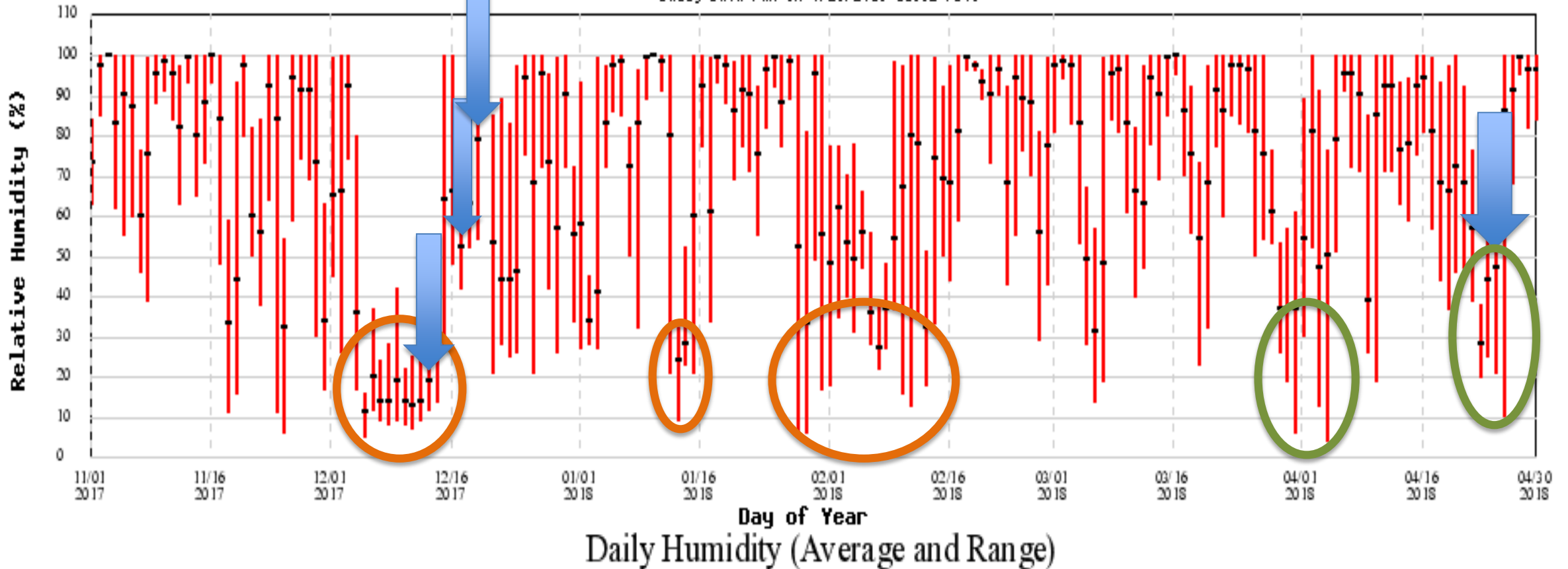
Agriculture and Natural Resources Cooperative Extension



# 17/18 HumCo Windows

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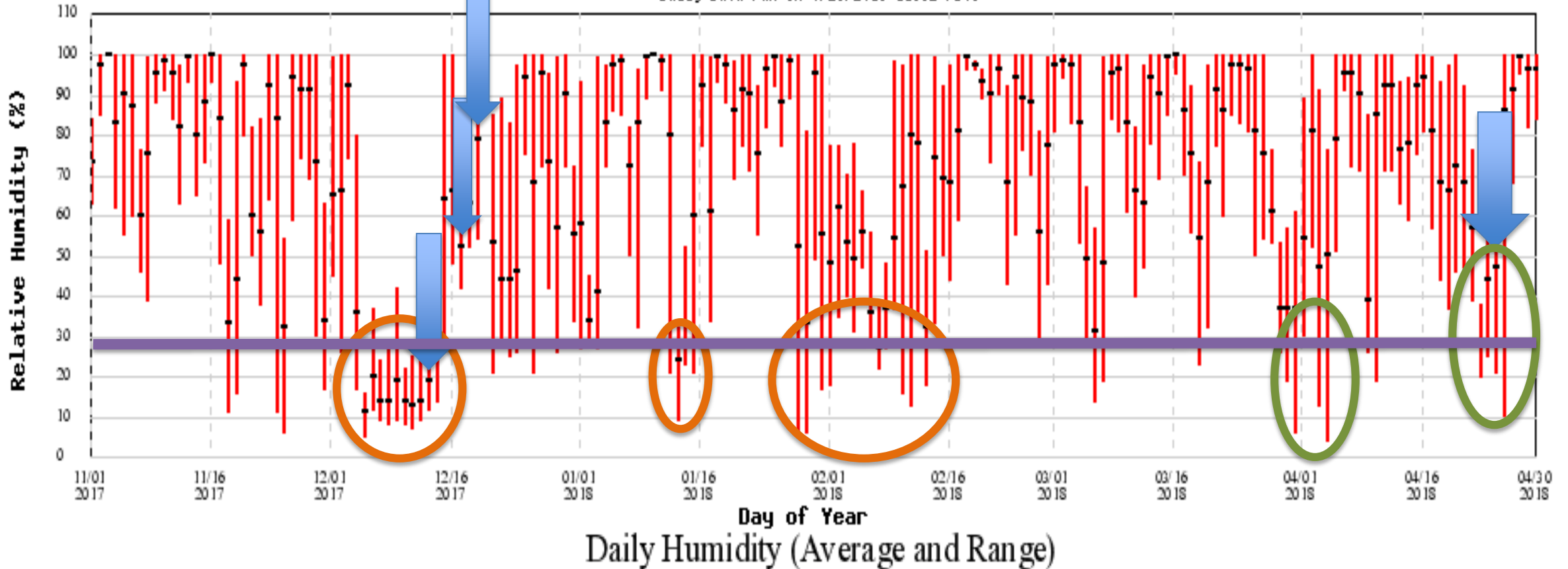




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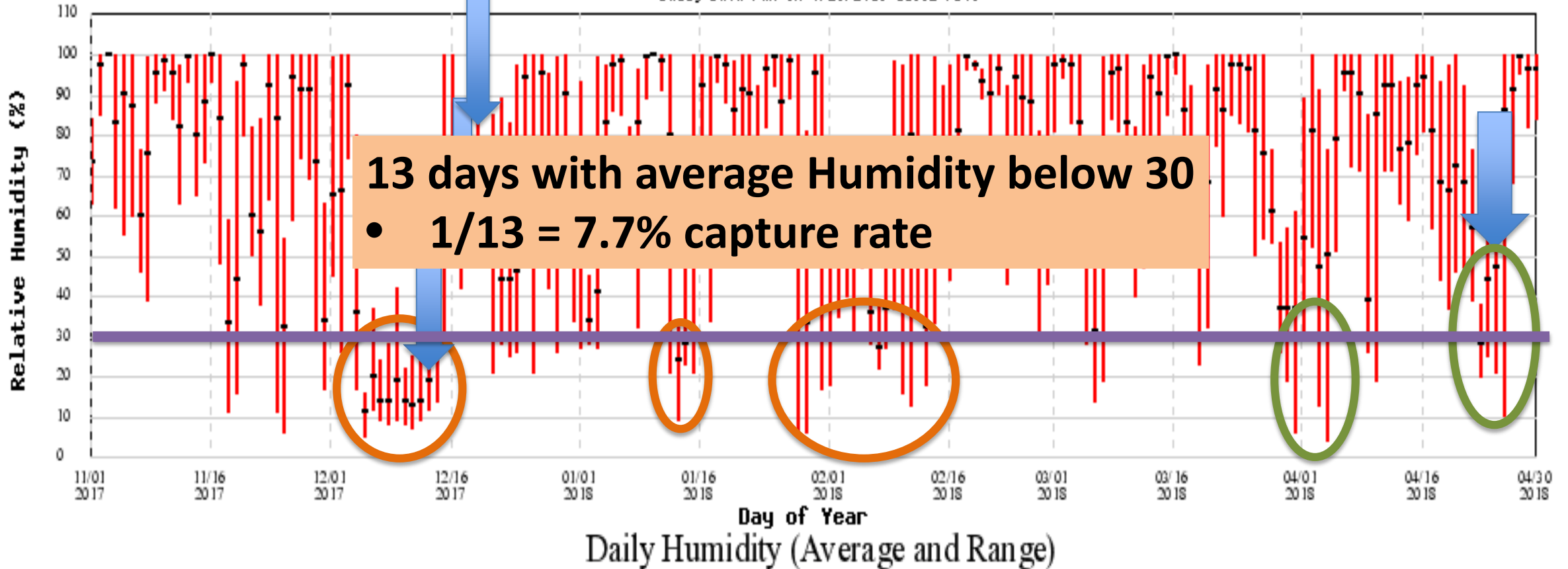




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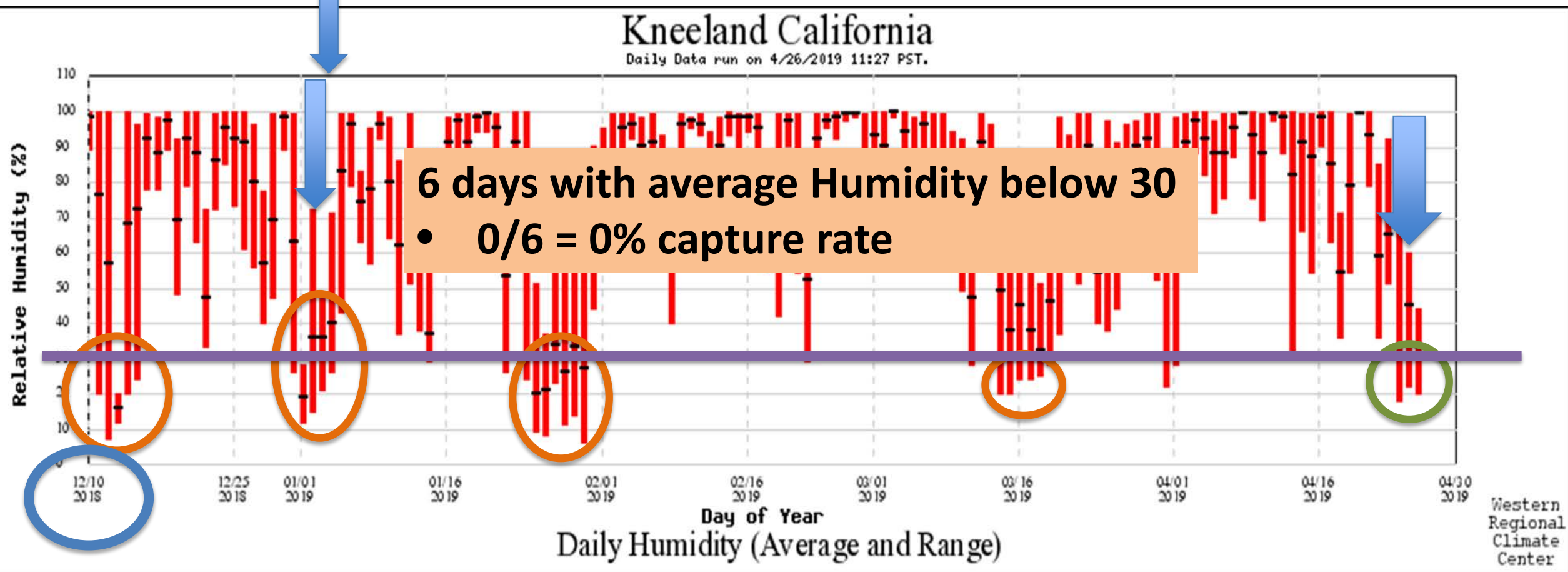
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# 18/19 HumCo Windows





# Questions?

## Jeffery Stackhouse

Livestock and Natural Resources Advisor

[jwstackhouse@ucanr.edu](mailto:jwstackhouse@ucanr.edu)

(707) 445-7351

## Lenya Quinn-Davidson

Area Fire Advisor

[lquinndavidson@ucanr.edu](mailto:lquinndavidson@ucanr.edu)

(707) 445-7351





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\*\*\*Prep/Cleanup costs not included  
in any example!



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    - \$1000: Air Quality + other
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- 
- Mazeppa #2: Sept 27, 2018
    - 150 acres: Coyote Brush
    - Reused Burn Plan
    - \$1000 Burn Boss
    - \$1050: Air Quality + other
      - \$14/acre + ~30 people





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