



A Rancher's Perspective: Prescribed Fire on Rangelands

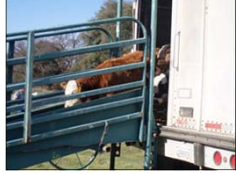



Jeff Stackhouse
University of California Cooperative Extension
Livestock and Natural Resources Advisor




What affects the bottom dollar?


- lbs on the truck
- 2.5% body weight dry matter forage/day
- Unlike trees, fire cannot be used to burn the understory of forage.
- Drought is unpredictable
- Hay is expensive

Bad idea!





- Consumes RDM
- Requires rest.
- Alters rotational systems.
- Consumes organic matter reserved for soil.
- Reduces forage growth subsequent year(s).
- Liability
- Increases forbs (toxic?)
- Attracts free grazers (ungulates).



Benefits of Fire

- Goes where 4-wheeler cannot (min. soil dist.)
- Non-selective consumer of forage.
- Can kill those nasty woody species.
- Fresh forage with increased quality and palatability.
 - Alter grazing season?





Increased protein, increased palatability, early green-up, altered forage window.
Increases forbs = important for CA protein req.





Cow Lactating 1st 90 days – CP%


Stage	Annual Grass (%)	Alfalfa (%)	Bar-Cover (%)
Early Vegetative	18	28	28
Late Vegetative	15	25	26
Early Flowering	15	22	26
Late Flowering	10	16	22
Mature	6	10	19
Dry	5	7	18
Dry, Leached	3	5	17

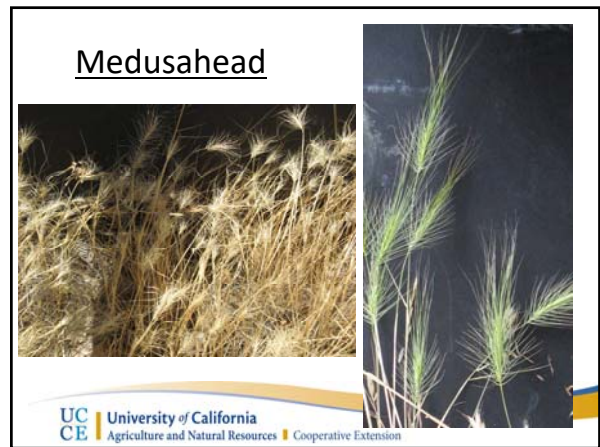
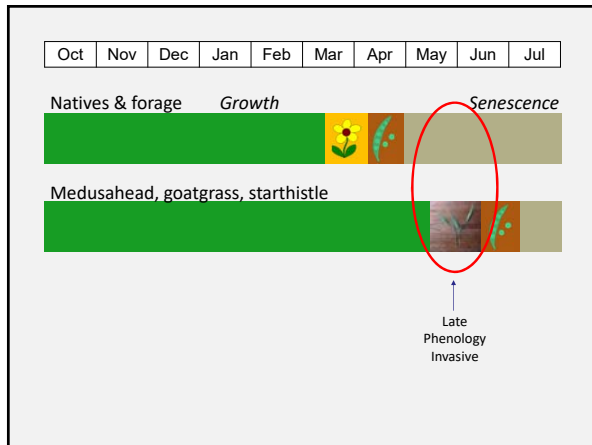
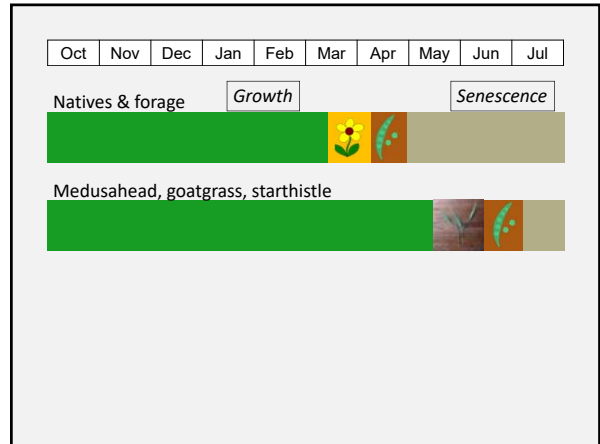


Fire for the rangeland ecosystem

- Ungulate forage value
- Increased forbs
- Pollinator response
- Fight against encroachment
- Healthy acorn crop
 - (F. Lake 2013)
- Weed control (?)



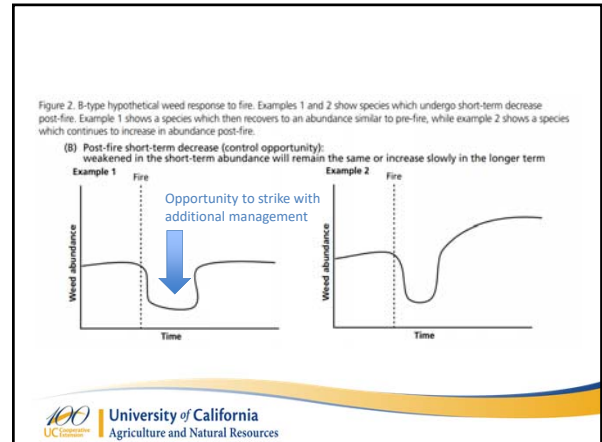




Rangeland Burn Note

Josh Davy (UCCE-Tehama County)

- 1,800 lbs of production to 900 lbs.
- 79% medusahead to 3.6% in year 2 after single burn.
- Only lasts about 4 years.



Using Grazers to Change Fire Behavior

- How?
 - Fire can alter livestock use patterns.
 - Location & Forage Choices
- Mosaic burn patterns
- Different grazers alter different fuels
 - Goats
 - Sheep
 - Cattle
 - Horses



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Berries burn much better once compacted by snow or livestock...



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Grazing does not always need to be deferred when planning an Rx fire... it depends on objectives.

Fire's Competition

- Chemical applications are cheaper
- Fire culture is gone from California
- Subsidies for hiring crews to clear brush may be more easily obtained for landowners than private Rx burning.
 - Liability gets cloudy
 - CA society is scared of fire

Chemical Alternative

- Pros:
 - Cheap
 - Relatively easy (1 person)
 - Reduces resprouting
 - Can have residual
 - Retain RDM
- Cons:
 - Need to make the right match
 - Still have a mess afterwards (woody)
 - Scale

Weather dependent.
(Neighbors will hate you no matter what you do...)

Chemical Treatment Costs

<p>Broadleaf-Herbaceous Plants</p> <ul style="list-style-type: none"> • Shark @ 1 and 2 oz/acre <ul style="list-style-type: none"> – ~\$6/oz = \$6 to \$12/acre • Milestone @ 3 and 7 oz/acre <ul style="list-style-type: none"> – ~\$2.90/oz = \$8.5 to \$20/acre • Transline @ 3 and 7 oz/acre <ul style="list-style-type: none"> – ~\$1.47/oz = \$4.5 to \$10.5/acre • 2, 4-D @ 32 and 64 oz/acre <ul style="list-style-type: none"> – ~\$0.15/oz = \$4.5 to \$9/acre • Triclopyr @ 32 and 64 oz/acre <ul style="list-style-type: none"> – ~\$0.50/oz = \$16 to \$32/acre • Crossbow @ 64 and 128 oz/acre <ul style="list-style-type: none"> – ~\$0.48/oz = \$31 to \$62/acre 	<p>Woody Plants</p> <ul style="list-style-type: none"> • 2,4-D @ \$16.67/gal <ul style="list-style-type: none"> – Spray (47 gal*5%)= ~\$39.17/acre • Triclopyr @ \$54.82/gal <ul style="list-style-type: none"> – Spray (47 gal*5%)= ~\$128.83/acre • Imazapyr @ \$49.10/gal <ul style="list-style-type: none"> – Spray (47 gal*5%)= ~\$115.38/acre • Glyphosate @ \$31.64/gal <ul style="list-style-type: none"> – Spray (47 gal*5%)= ~\$74.35/acre <p style="text-align: center;">Grass Only</p> <ul style="list-style-type: none"> • Poast @ 16 to 24 oz/acre <ul style="list-style-type: none"> – ~\$0.78/oz = \$13 to \$19/acre
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Mechanical Alternative

- Cat: \$85/hr (\$340/acre)
- Hired Saw: \$15/hr (\$487/acre)
- Excavator: \$125/hr (\$975/acre)

Mostly independent of weather

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


Treatment	Finds/ha ^a	Baccharis reduction, %	Bare ground, %
Exc	0.07 ^a	60b	22b
Cat	0.45 ^a	65b	19b
Saw	1.32 ^a	53a	3a

^aWithin a column means with a similar letter do not differ

Fire Costs

- Per-acre planning costs vary: operational efficiency, unit size and shape, fuel types, fire boss preferences, etc. (Cleaves et al. 2000)
- Unit size is one of the most important factors used in calculating per-acre costs (Gonzalez-Caban and McKetta 1986, Rideout and Omi 1995, Cleaves et al. 2000)
- Economies of scale can come at an infrastructure cost (fencing, pipe, etc.)

Take-home: Acres are a poor metric to measure Rx fire cost





- (My Personal) Minimum PPE:
 - Leather Boots
 - Leather Gloves
 - Natural Fiber Shirt
 - Natural Fiber Pants
- UC Additions:
 - Eye Protection (ANSI Z87)
 - “Long-sleeve” Shirt
 - Non-flammable Cap/Hat




Initial Equipment Cost


- Leather Gloves: \$0
- Pants/Shirt/Hat: \$0
- Tool: \$0
- Backpack pump/sprayer or ATV sprayer: \$145
- Drip Torch: \$135
- Lighter: \$2
- Torch Fuel (1.25 gal): \$5
- Beer: \$12

Total: \$299


HumCo #1

<ul style="list-style-type: none"> • Hunt: June 29th <ul style="list-style-type: none"> – 18 acres: Medusahead – \$500: Burn Plan – \$1500: Burn Boss – \$600: VFD Stipends – \$100: Air Quality + other • \$150/acre 	<ul style="list-style-type: none"> • Mazzeppa: October 31st <ul style="list-style-type: none"> – 140 acres: Coyote Brush – \$500: Burn Plan – \$1000: Burn Boss – \$200: Air Quality + other • \$12/acre
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HumCo #2

<ul style="list-style-type: none"> • Chalk Mt: Dec 14th <ul style="list-style-type: none"> – 20 acres: Restored Oak Woodland – No Burn Plan – No Burn Boss – \$100: Air Quality + other • \$5/acre 	<ul style="list-style-type: none"> • Rice: Dec 17th <ul style="list-style-type: none"> – 15 acres: Restored Oak Woodland – No Burn Plan – No Burn Boss – \$100: Air Quality + other • \$7/acre
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HumCo #3

<ul style="list-style-type: none"> • Hunt Burn 2: Dec 19th <ul style="list-style-type: none"> – 13 acres: Restored Oak Woodland – No Burn Plan – No Burn Boss – \$100: Air Quality + other • \$8/acre 	<ul style="list-style-type: none"> • Moore Burns: April 25th <ul style="list-style-type: none"> – 5 acres (over 1k acres): Scattered Blackberry – \$500: Burn Plan – \$1500: Burn Boss • (NRCS Requirements) – \$100: Air Quality + other • \$420/acre
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Final thoughts:



- Rx Fire is compatible with rangelands and livestock production.
 - Branding culture already exists
 - Ranchers value wildlife
- Bigger the burn, cheaper the costs, we can beat the herbicide costs with fire on larger acreages.

Questions?

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