Evaluation of Sharpen Herbicide in Dormant Alfalfa

Alfalfa and Forage Meeting

September 12, 2014

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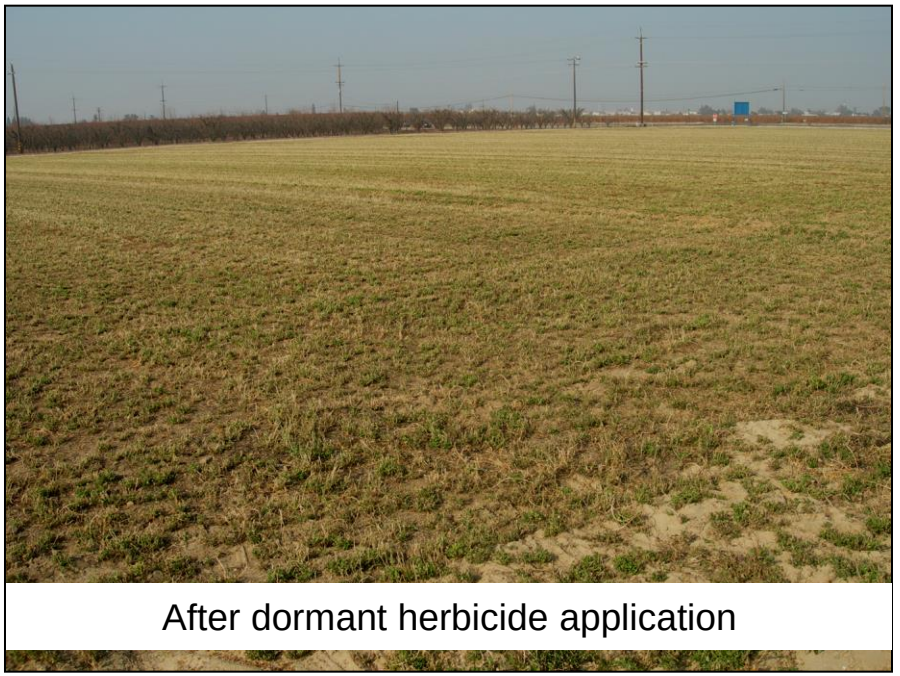
Why we need weed control in alfalfa:

- Stand development
- Yield
- TDN
- Palatability
- Poisonous
- Off-flavoring

Cheeseweed
Dodder
Fiddleneck
Groundsel
Hairy fleabane
Henbit
Horseweed
Junglerice
Knotweed
Nettle
Nightshade
Sprangletop
Swinecress
Nutsedge
Yellow foxtail

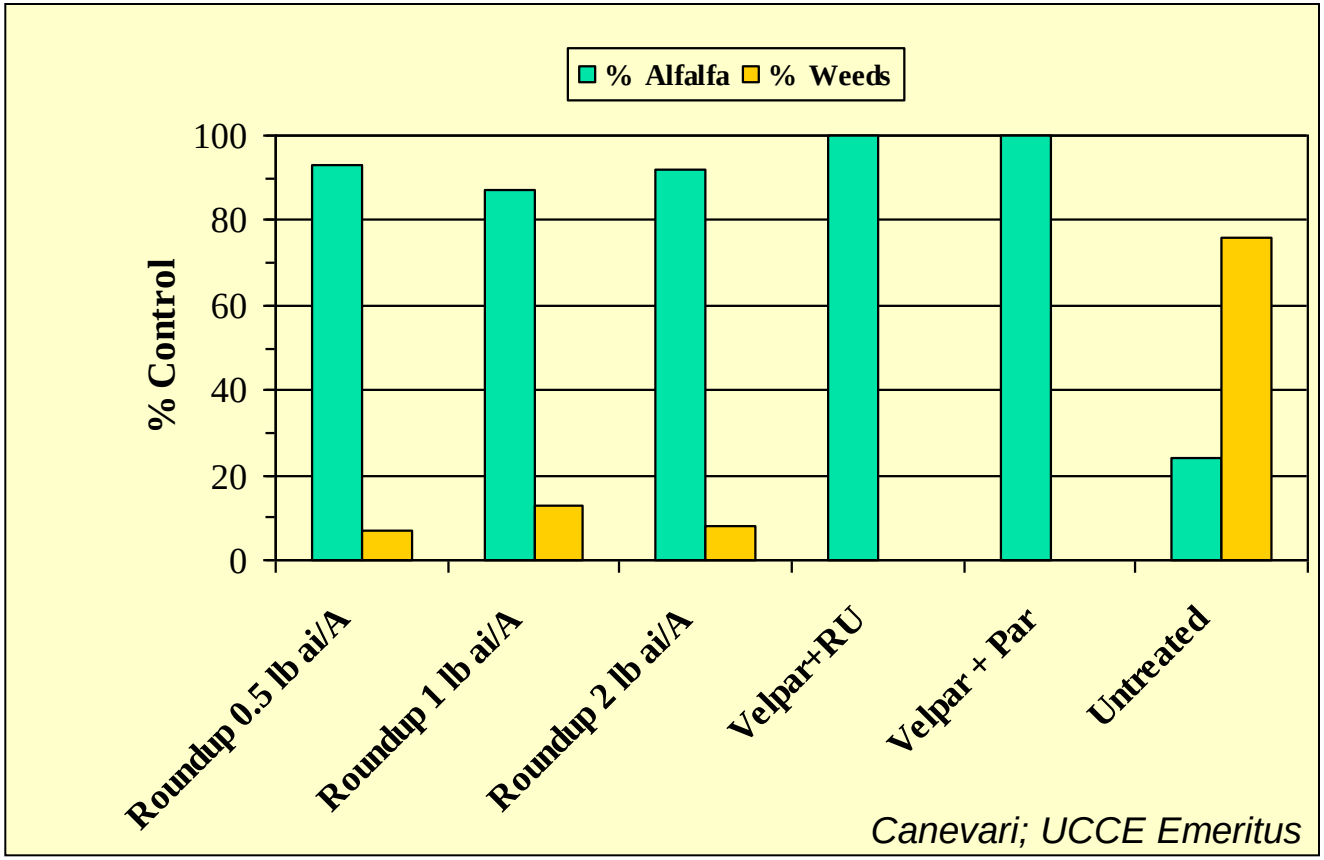
Herbicides are usually needed during the dormant period:

Weed growth before dormant herbicide(s) applied



After dormant herbicide application

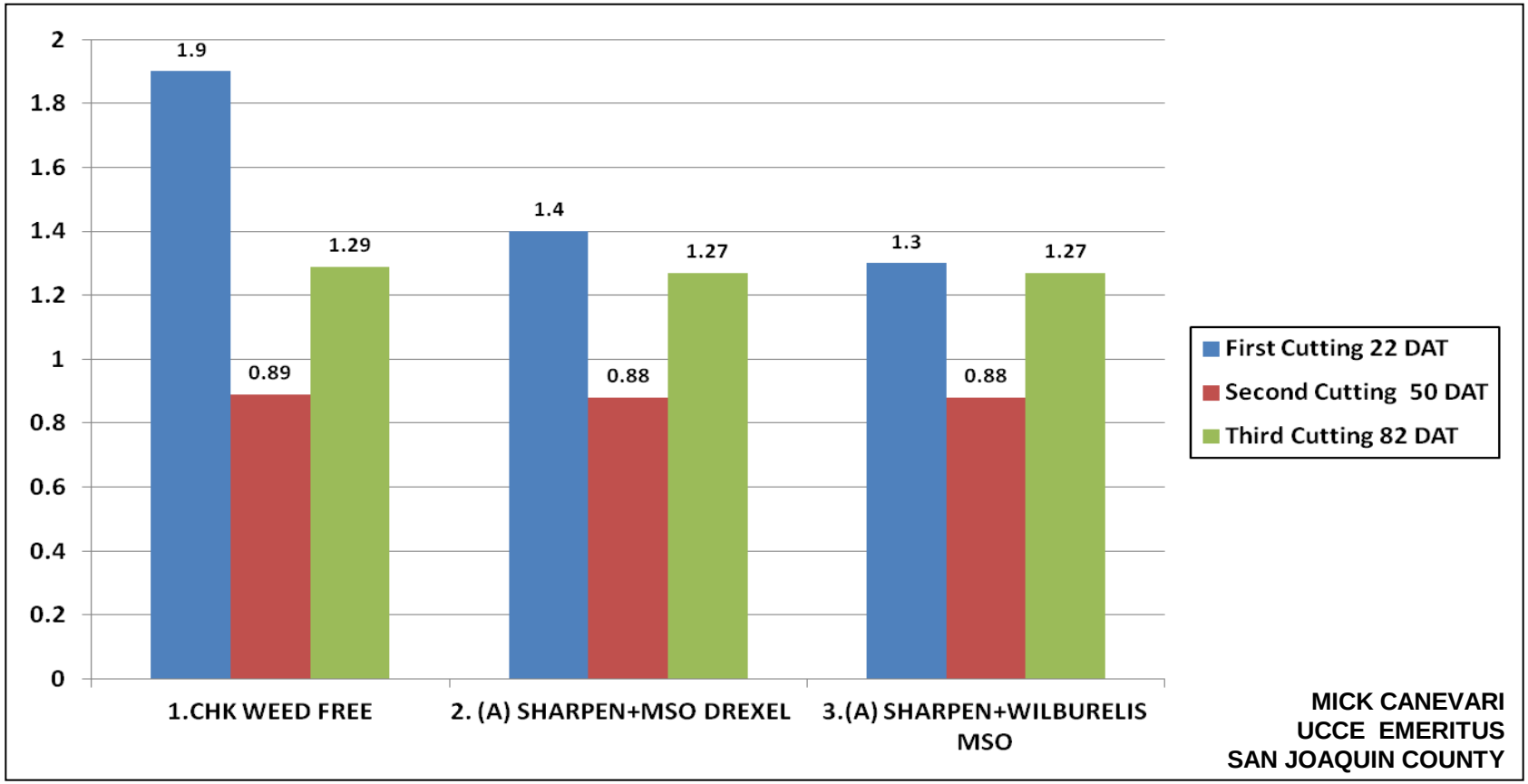
Previous work in dormant alfalfa:



The untreated treatment had annual sowthistle, chickweed, burning nettle, malva, annual bluegrass.

ALFALFA SHARPEN TOLERANCE BETWEEN CUTTINGS - 2013

TONS/ACRE



Appl. A = 5/28/13; Sharpen @ 0.0445 lba/A.; All additives @ 1.0% V/V; All treatments AmmoSulfate @ 8.5lb/100gal

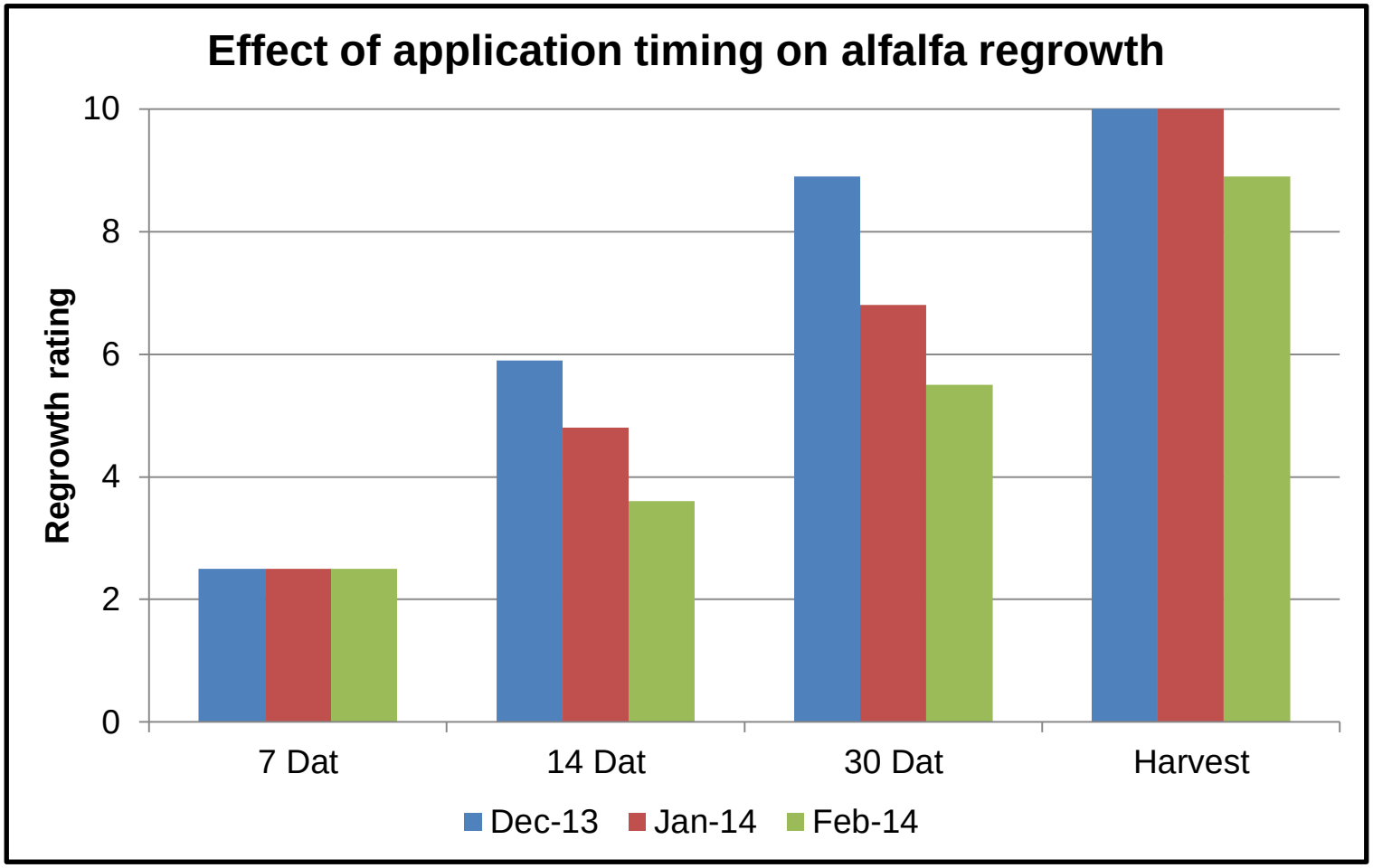
We conducted a field trial in 2013/14 to evaluate the effect of dormant treatments of saflufenacil (Sharpen) on alfalfa growth response.

Note: Sharpen was not registered in alfalfa in California at the time of this trial.

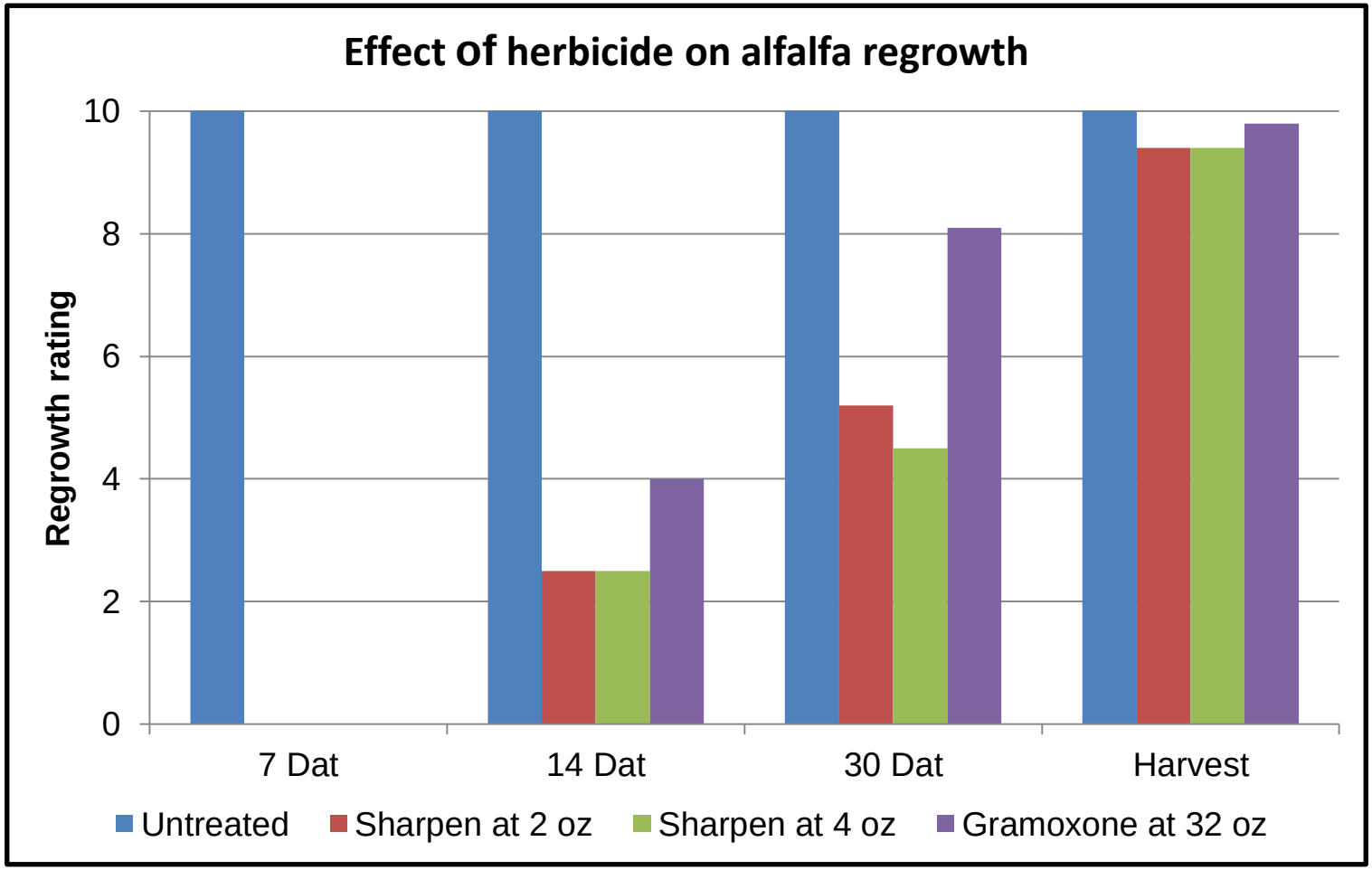
Basic trial information:

- ⇨ Location: UC KARE in Parlier, CA
- ⇨ Alfalfa: 3-yr old stand (Roundup Ready)
- ⇨ Split-plot design with 4 replications:
  - Main plot was treatment timing (Dec 13, Jan 14, Feb 14)
  - Sub-plot was herbicide (Unt., Sharpen 2 & 4 oz, Gramoxone 32 oz)
- ⇨ Sub-plots were 14 feet wide and 25 feet long
- ⇨ CO2 back-pack sprayer; TT11002 (4); 2 passes/plot
- ⇨ Spray volume of 23.8 gpa at 40 psi
- ⇨ Evaluations included:
  - crop recovery, stem count, height, and yield, plant composition, weed control

Results:


Effect of application timing on alfalfa regrowth
Regrowth rating
10
8
6
4
2
0
7 Dat
14 Dat
30 Dat
Harvest
Dec-13
Jan-14
Feb-14

Results:


Effect of herbicide on alfalfa regrowth
Regrowth rating
10
8
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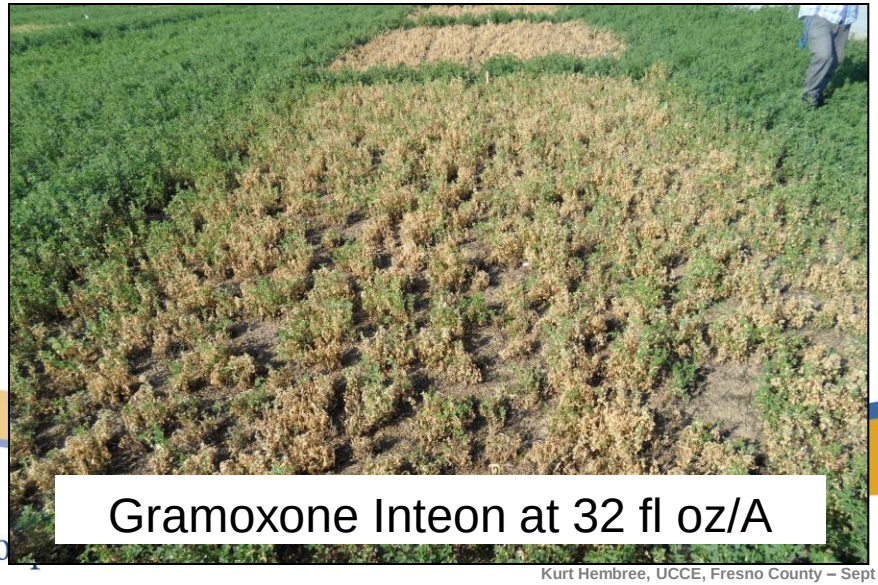
2
0
7 Dat
14 Dat
30 Dat
Harvest
Untreated
Sharpen at 2 oz
Sharpen at 4 oz
Gramoxone at 32 oz

Alfalfa recovery

(Treated with Sharpen; 2 weeks after Feb app.):

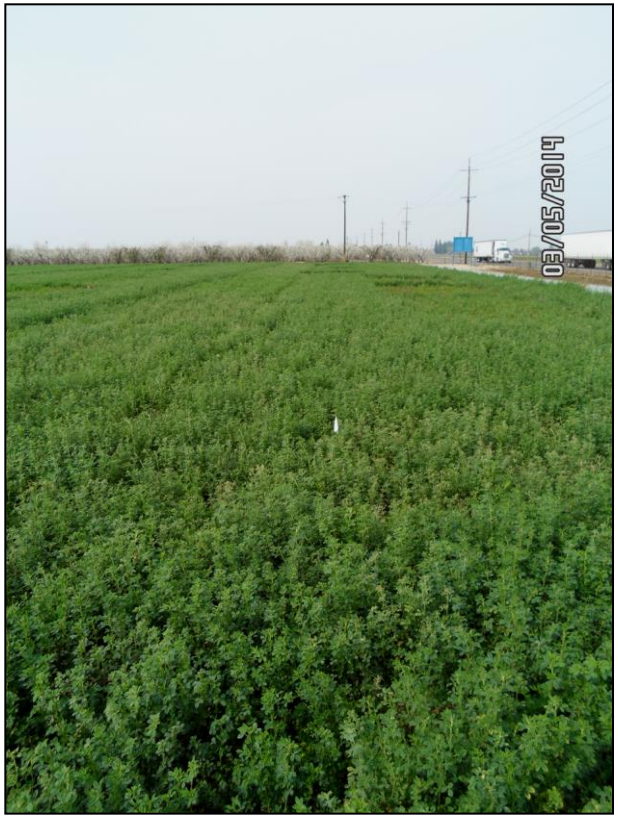
Alfalfa recovery

(2 weeks after Feb application):



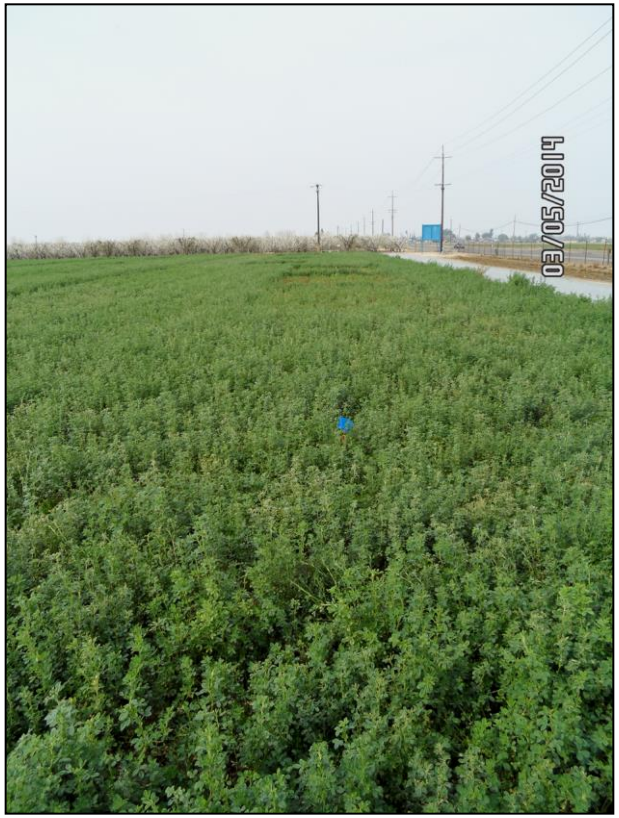
Alfalfa recovery

(2 weeks before harvest):



Treated Dec 2013

Treated Jan 2014



Treated Feb 2014

Alfalfa recovery
(prior to 2nd cutting)**:**

Results:

Effect of application timing on alfalfa stem count, height, and yield

Timing	Stem count[1] (at harvest)	Harvest[2] weight (lbs)	Crop height[3] (2nd cutting)	Crop height[3] (3rd cutting)
1. A (Dec 13)	43.8 a	41.1	22.8 a	31.5
2. B (Jan 14)	44.1 a	40.8	21.8 a	31.2
3. C (Feb 14)	40.9 b	37.5	20.0 b	30.9
CV (%) *LSD (p=0.05)*	*8.58* *2.65*	*13.70* *n.s.*	*8.97* *1.39*	*6.26* *n.s.*

[1]Number green, productive stems in a 1 ft^2 area, and based on three samples per sub-plot.
[2]Wet weight in pounds, using a Cater plot harvester, swath 6 ft wide by 25 ft long.
[3]Measured in inches from soil line to top of plant, and based on three samples per sub-plot.

Results:

Effect of herbicide on alfalfa stem count, height, and yield

Herbicide	Rate/A	Stem count[2] (at harvest)	Harvest[3] weight (lbs)	Crop height[4] (2nd cutting)	Crop height[4] (3rd cutting)
1. No herbicide	0	44.5 a	43.6 a	22.8	30.1
2. Sharpen[1]	2 fl oz	44.0 a	39.4 ab	21.2	31.5
3. Sharpen[1]	4 fl oz	40.1 b	39.6 ab	21.1	32.0
4. Gramoxone[1]	32 fl oz	43.2 ab	36.7 b	21.0	31.2
CV (%)		*8.58*	*13.70*	*8.97*	*6.26*
LSD (p=0.05)		*3.06*	*4.53*	*n.s.*	*n.s.*

[1] AMS added at 8.5 lb/100 gal + MSO at 1% v/v.
[2]Number green, productive stems in a 1 ft^2 area, and based on three samples per sub-plot.
[3]Wet weight in pounds, using a Cater plot harvester, swath 6 ft wide by 25 ft long.
[4]Measured in inches from soil line to top of plant, and based on three samples per sub-plot.

Results:

Effect of app timing and herbicide on weed control and plant composition

Herbicide	Rate/A	Timing	Weed cntrl 30 DAT	Weed cntr at harvest	Alfalfa DW (%)	Weed DW (%)
1. No herbicide	0	A (Dec-13)	0.0 b	0.0 b	96.10	3.90
2. Sharpen	2 fl oz	A (Dec-13)	10.0 a	10.0 a	100.00	0.00
3. Sharpen	4 fl oz	A (Dec-13)	9.9 a	9.8 a	99.56	0.44
4. Gramoxone	32 fl oz	A (Dec-13)	9.9 a	9.8 a	99.83	0.17
5. No herbicide	0	B (Jan-14)	0.0 b	0.0 b	97.47	2.53
6. Sharpen	2 fl oz	B (Jan-14)	9.9 a	9.9 a	99.82	0.18
7. Sharpen	4 fl oz	B (Jan-14)	9.9 a	9.8 a	99.82	0.18
8. Gramoxone	32 fl oz	B (Jan-14)	9.9 a	9.9 a	100.00	0.00
9. No herbicide	0	C (Feb-14)	0.0 b	0.0 b	99.37	0.63
10. Sharpen	2 fl oz	C (Feb-14)	10.0 a	10.0 a	100.00	0.00
11. Sharpen	4 fl oz	C (Feb-14)	10.0 a	9.9 a	100.00	0.00
12. Gramoxone	32 fl oz	C (Feb-14)	9.9 a	9.9 a	99.89	0.11
Statistical notation		*CV (%)* *LSD (p=0.05)*	*1.02* *0.13*	*2.22* *0.28*	*1.25* *n.s.*	*182.68* *n.s.*

Weed control
(after Jan treatment):

No herbicide

Sharpen at 2 fl oz/acre

Summary

- Alfalfa regrowth was reduced 24-38% at 30 DAT when treated in Jan and Feb, while only the Feb treatment timing continued to reduce regrowth (11%) at 1st cutting.
- Sharpen-treated plots reduced regrowth by 50% at 30 DAT and by 11% at 1st cutting.
- Stem counts were lower in Feb-treated plots or where Sharpen was used at the highest rate tested (4 fl oz).
- Herbicide timing or herbicide type did not appear to result in reduced yields.
- All herbicides tested gave excellent weed control under a “lower-than-normal” rainfall year.
- Applying Sharpen to dormant alfalfa later than December in the southern San Joaquin Valley delays alfalfa recovery and may be to risky to use that time of year. Treating with Sharpen after final cutting or clipping (no later than Dec) would be safer.

I want to acknowledge James Schaeffer (SRA) who did most of the heavy lifting in this trial.

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