

Medusahead Biology and Control

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wild oat
(*Avena* spp)



Italian
ryegrass
(*Lolium
multiflorum*)



soft brome
(*Bromus
hordeaceus*)



red brome
(*Bromus madritensis*)

ripgut brome
(*Bromus diandrus*)



barb goatgrass
(*Aegilops triuncialis*)



jointed goatgrass
(*Aegilops cylindrica*)

medusahead

(*Taeniatherum caput-medusae*)



Transformer species

Invasive species that change the character of an ecosystem.

These species are considered significant ecological threats.

- Form dense monocultures
- Excessive resource use
- Fire promoters
- Erosion promoters
- Litter accumulators





Medusahead Biology



- Winter annual
 - ☹ Majority germinates with first fall rains
 - ☹ Can also germinate through spring
- Initial growth is focused on root development
 - ☹ More competitive with other annuals
 - ☹ Stay green longer

Medusahead Impacts



- High silica content
 - 燧 Slows decay
 - 燧 Thatch buildup 2–5 inches
- Litter prevents other plant seeds from contacting soil surface
- Thatch ties up nutrients
- Adapted to germinate and survive in thatch
- Poor forage for grazing

Seeds



- Covered with small silica barbs
- Seedbank ~2 yrs, potentially up to 5 yrs

Reproduction and Establishment

- ▶ Self pollinated
- ▶ Seed dispersal
 - Falling to ground
 - Animals
 - Contaminated feed
 - Clothing/equipment



Controlling medusahead



To manage annuals...

- Prevent seed production
- Deplete existing seed bank
- Prevent recruitment

Mechanical control

A wide, flat field of dry, yellowish-brown grass under a bright sky. In the distance, there is a line of trees and a fence. The text 'Mechanical control' is overlaid in the upper right, and a bulleted list is in the lower right.

- Mowing
- Tillage



Prevent seed
production

- Timing – boot stage



Cultural control

A wide-angle photograph of a vast, open field of dry, golden-brown grass. The field stretches towards a distant horizon where a line of trees and a fence are visible. The sky is a pale, hazy white. The overall scene is a rural landscape, likely a pasture or a field used for agriculture.

- Grazing
- Prescribed burning



Prior to March grazing



After March grazing

Start of May grazing

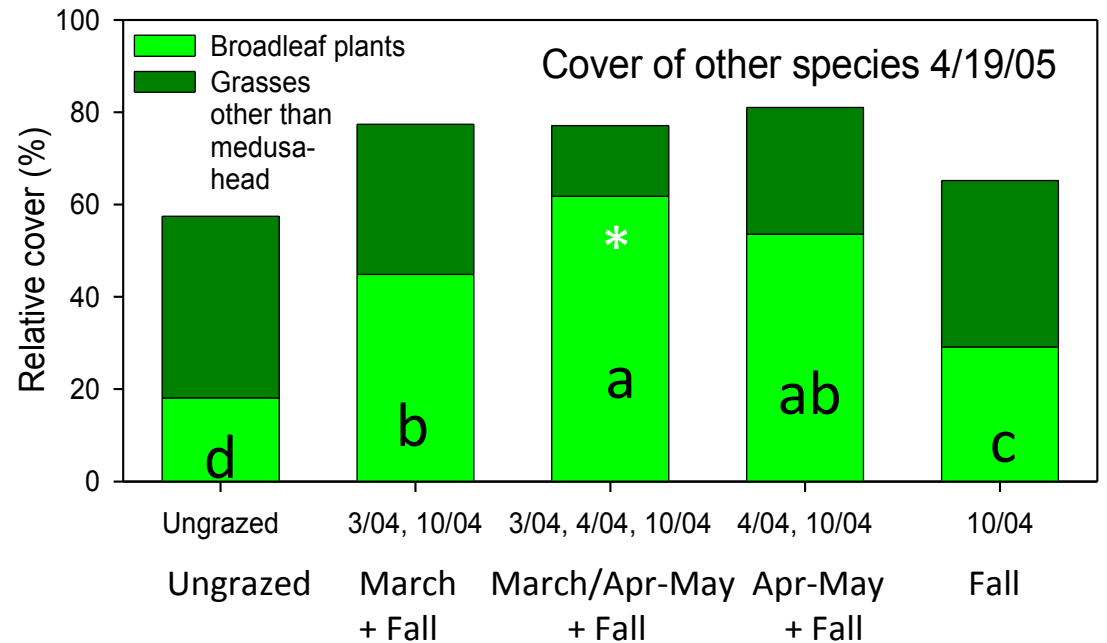
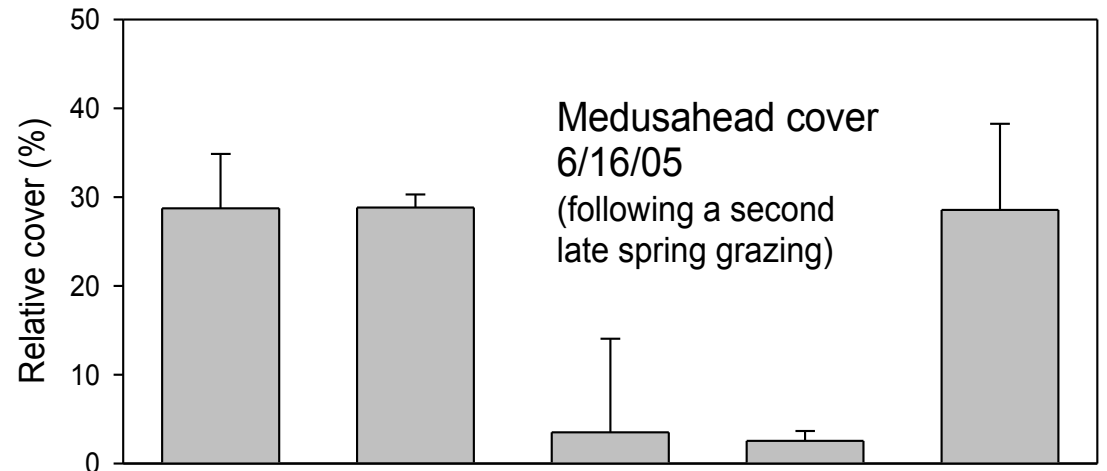




End of May grazing

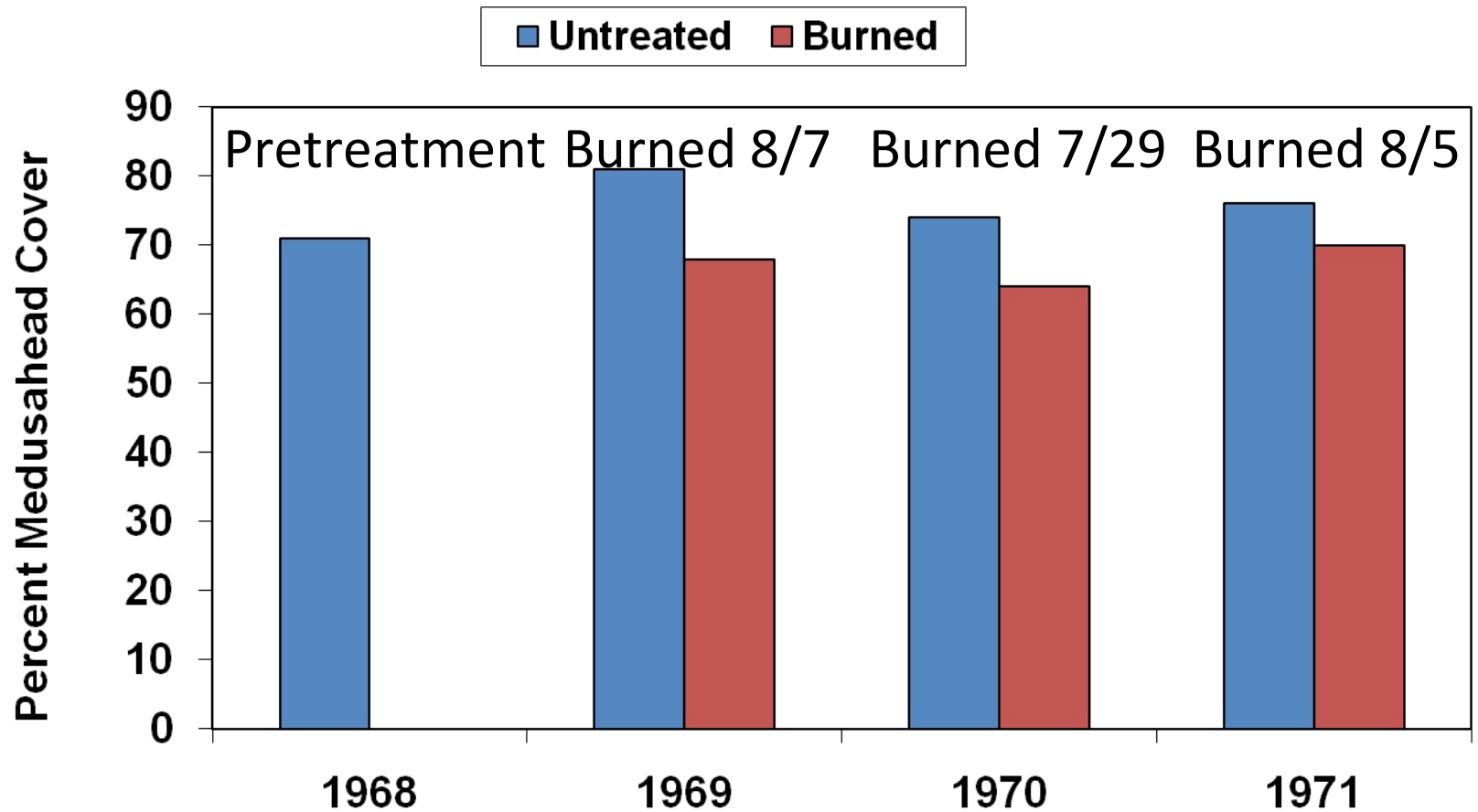
Control of medusahead with grazing, Yolo County

Grazed early spring, late spring, and fall 2004 + late spring 2005



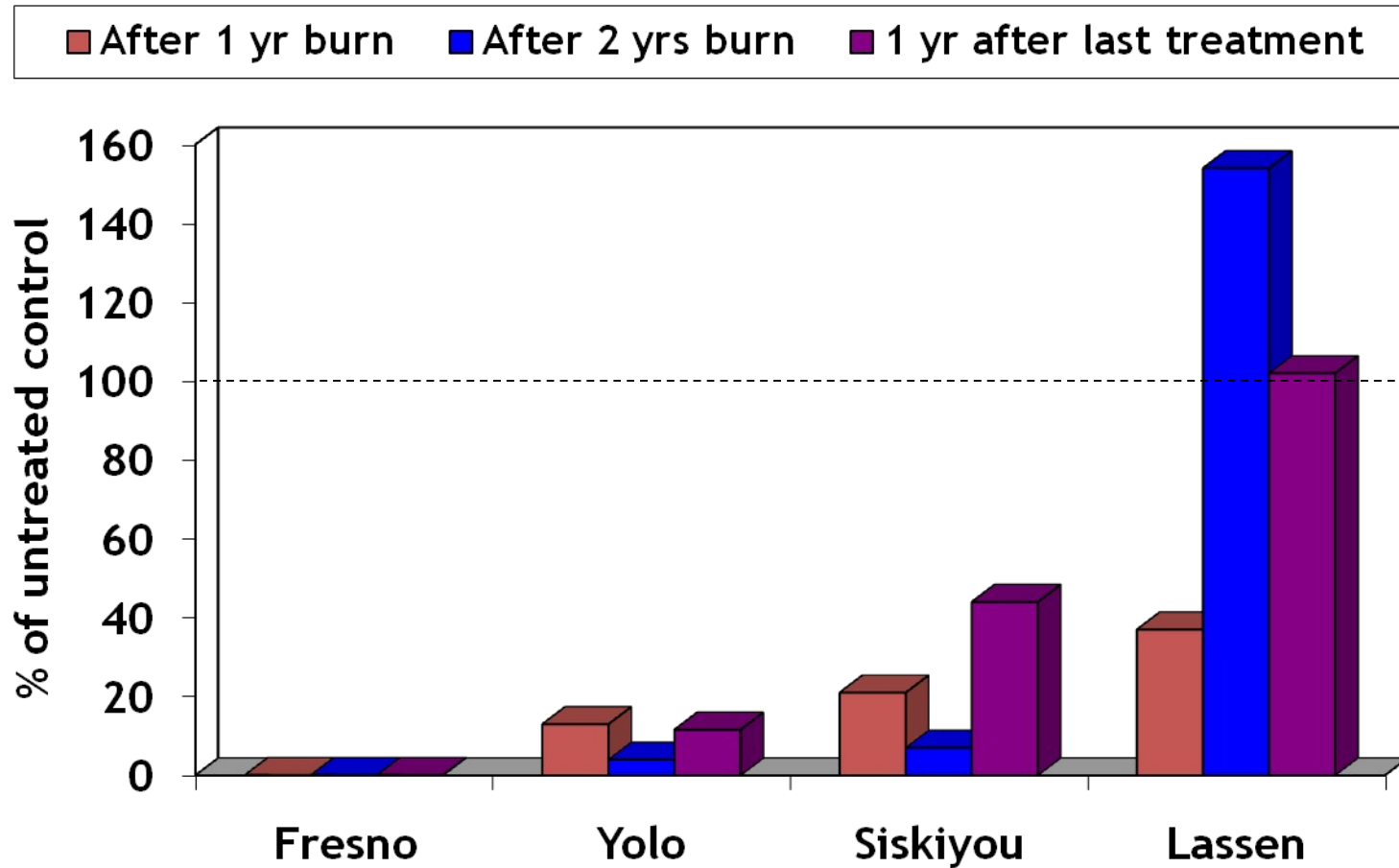


Effect of fire on medusahead control



From Young et al. 1972. J. Range Manage, 24:451

Burning for medusahead control in four counties



Counties

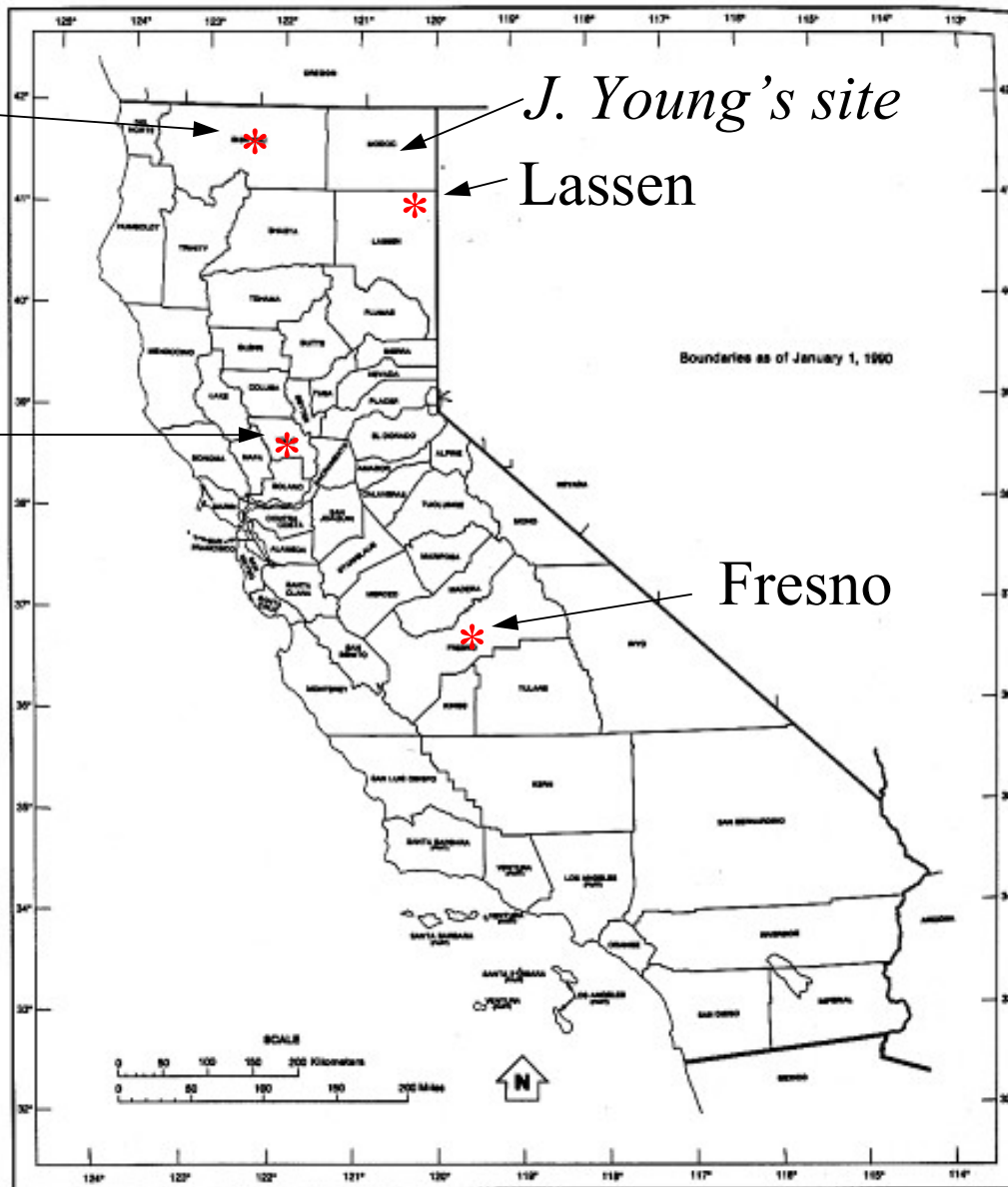
Siskiyou

J. Young's site

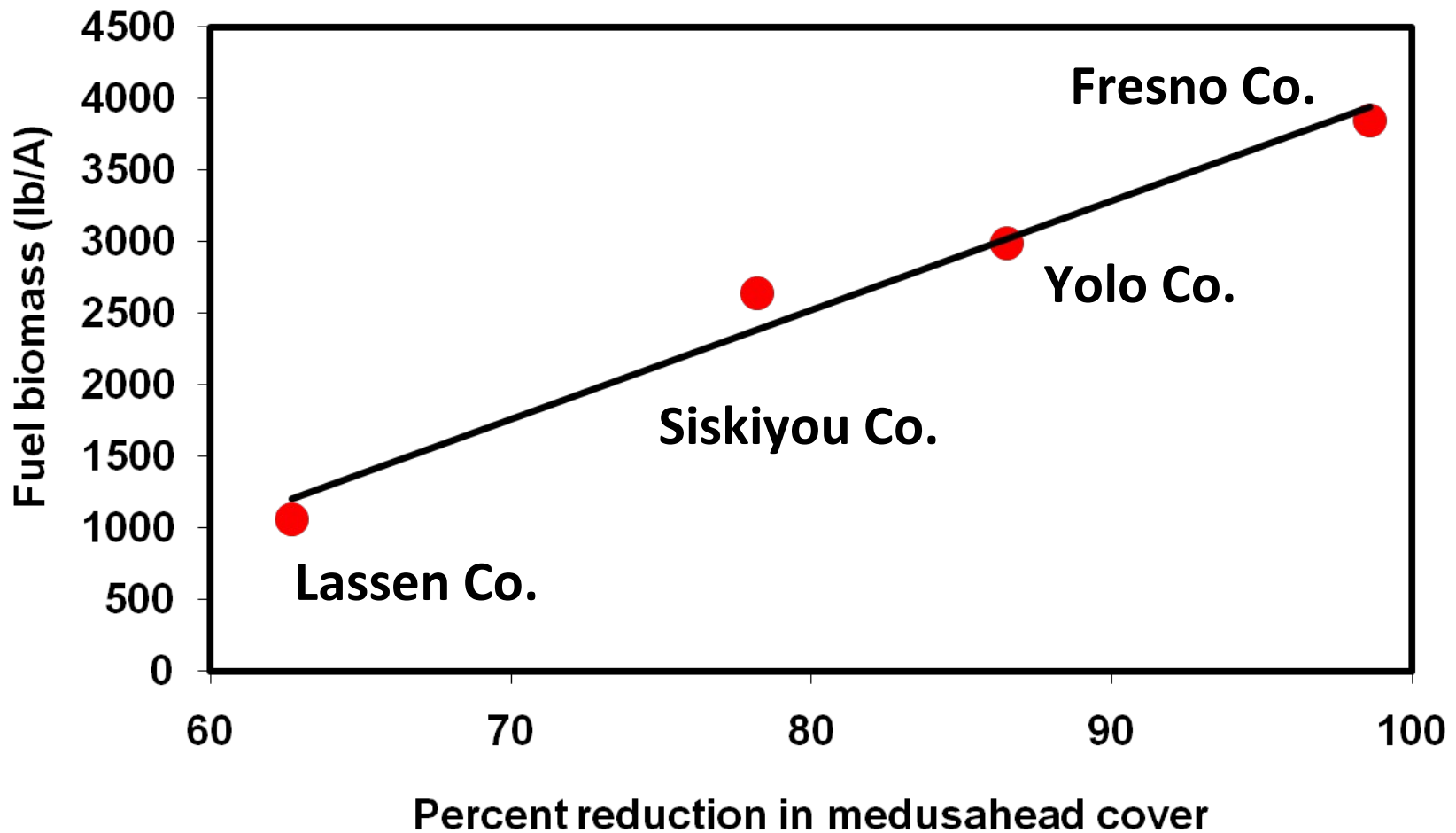
Lassen

Yolo

Fresno



Effect of fuel load on medusahead control one year after burning





Burning for medusahead control

- ▶ Greater forage production results in increased fire intensity and greater seed mortality
- ▶ Burning works in warm winter areas with high annual grass biomass, and may not be successful in semi-arid cool winter areas
- ▶ Burning tends to decrease other annual grasses but increase forbs, esp. legumes and *Erodium*

Chemical Control



Herbicides for Medusahead Control

- Glyphosate (Roundup®)
- Paraquat (Gramoxone®)
- Sulfometuron (Oust®)
- Sulfometuron + chlorsulfuron (Landmark®)
- Rimsulfuron (Matrix®)
- Imazapic (Plateau®)
- Aminopyralid (Milestone®)
- Aminocyclopyrachlor (MAT28)

Herbicides for Medusahead Control

- **Glyphosate (Roundup®)**
- **Paraquat (Gramoxone®) – Restricted Material**
- Sulfometuron (Oust®)
- Sulfometuron + chlorsulfuron (Landmark®)
- Rimsulfuron (Matrix®)
- **Imazapic (Plateau®) – Not Registered in CA**
- **Aminopyralid (Milestone®)**
- **Aminocyclopyrachlor (MAT28)**

Glyphosate (Roundup[®])

- Post emergent
- Non-selective
- Applications
 - Spot treatment (1–4% solution)
 - Broadcast treatment
 - High Concentration (late spring) (1 qt/acre)
 - Low concentration (early season) (2 – 18 oz/ac)

Concept: low rate of glyphosate as a “selective” herbicide

Apply over-the-top of weeds & native species
Has been tested on perennial grasses

Roundup ProMax at 0, 2, 4 ... 18 oz per acre

CO₂ backpack sprayer, 10-ft boom; 15 gpa spray solution

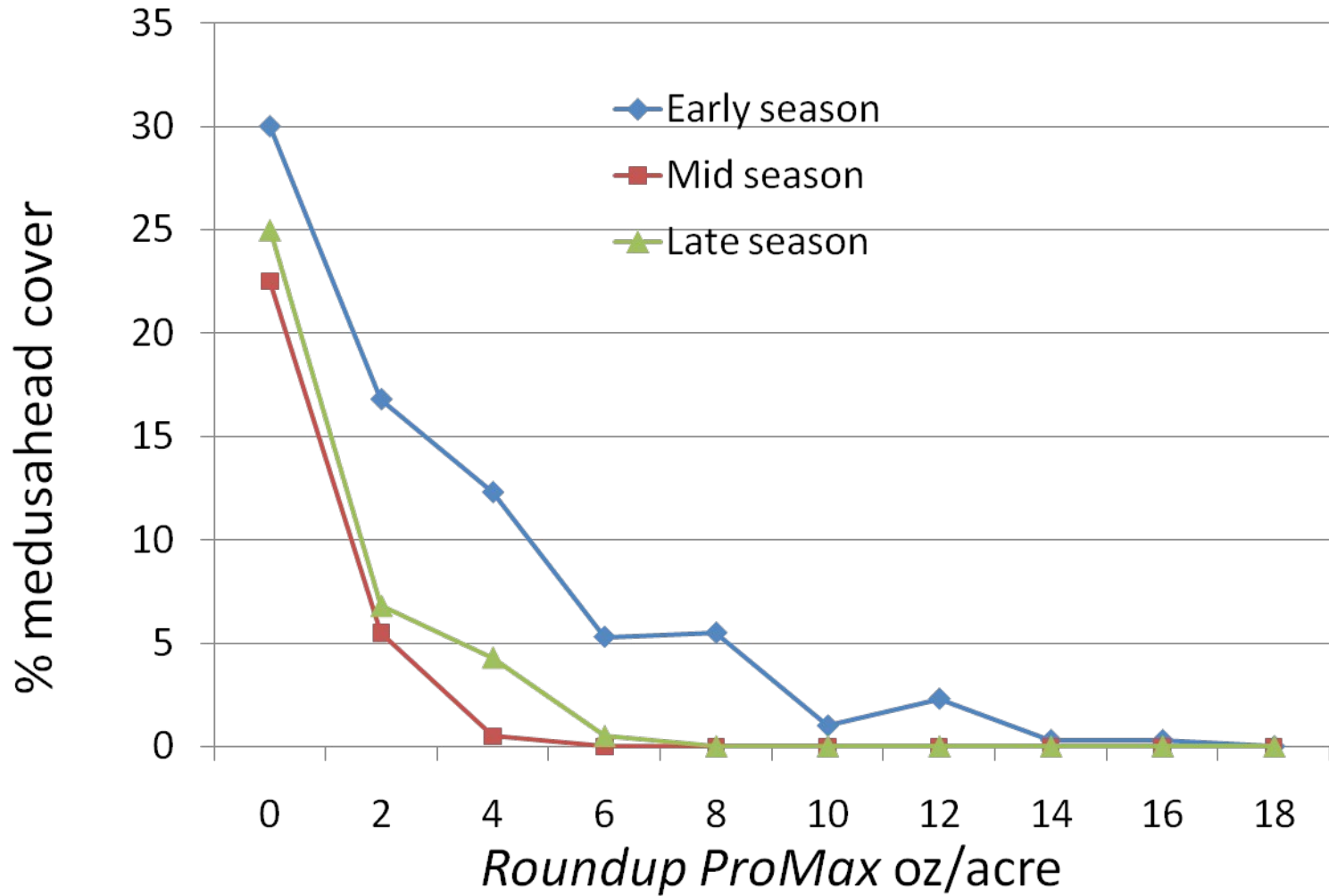
All treatments included 2.5% ammonium sulfate (~40% solution)

Times of application

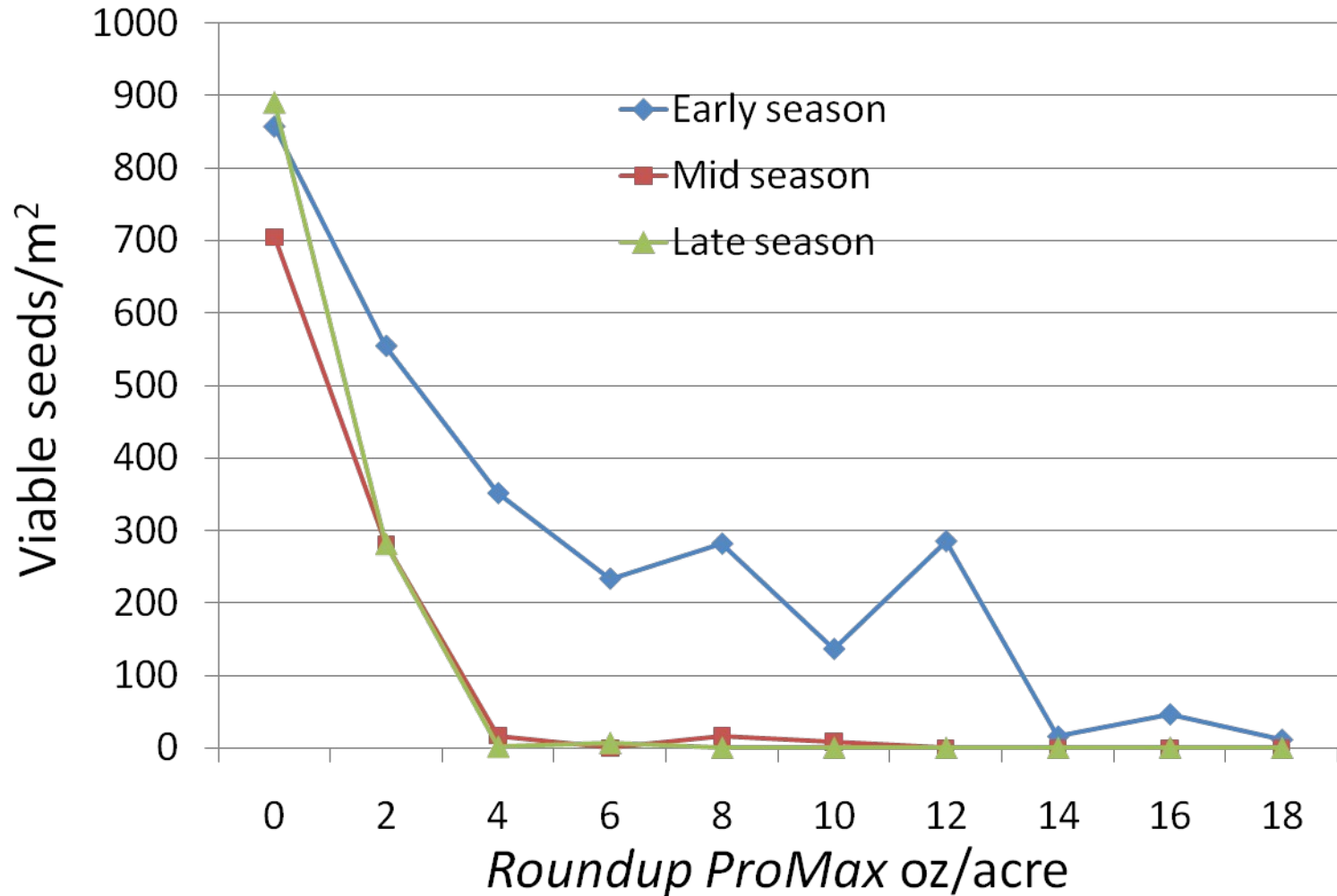
	2009	2010
Early seedlings to 5 cm	March 18	March 19
Middle up to 10 cm, first tillers	May 8	April 30
Late boot to early heading	May 27	June 8



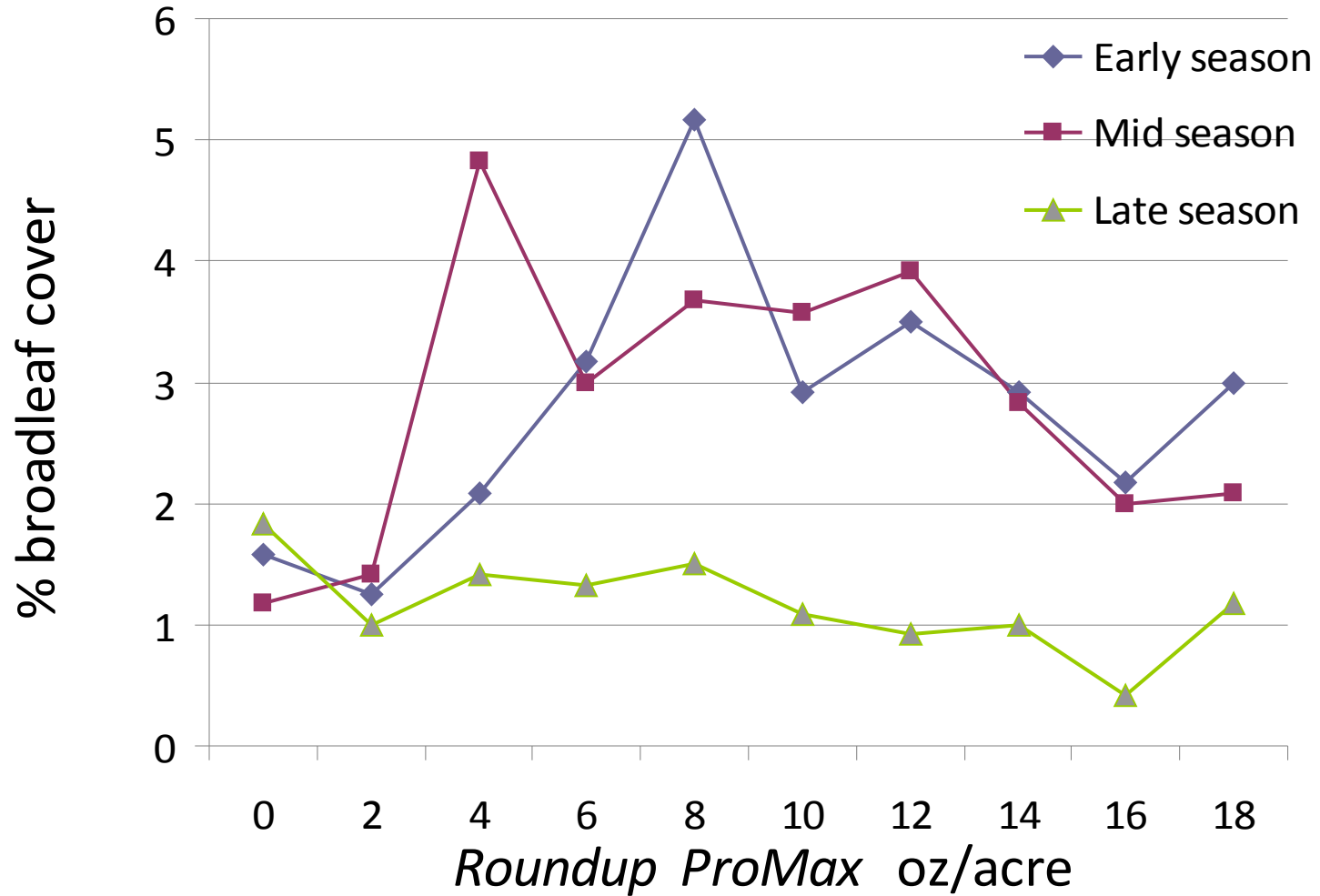
Medusahead cover, 2009



Medusahead viable seeds /m², 2009



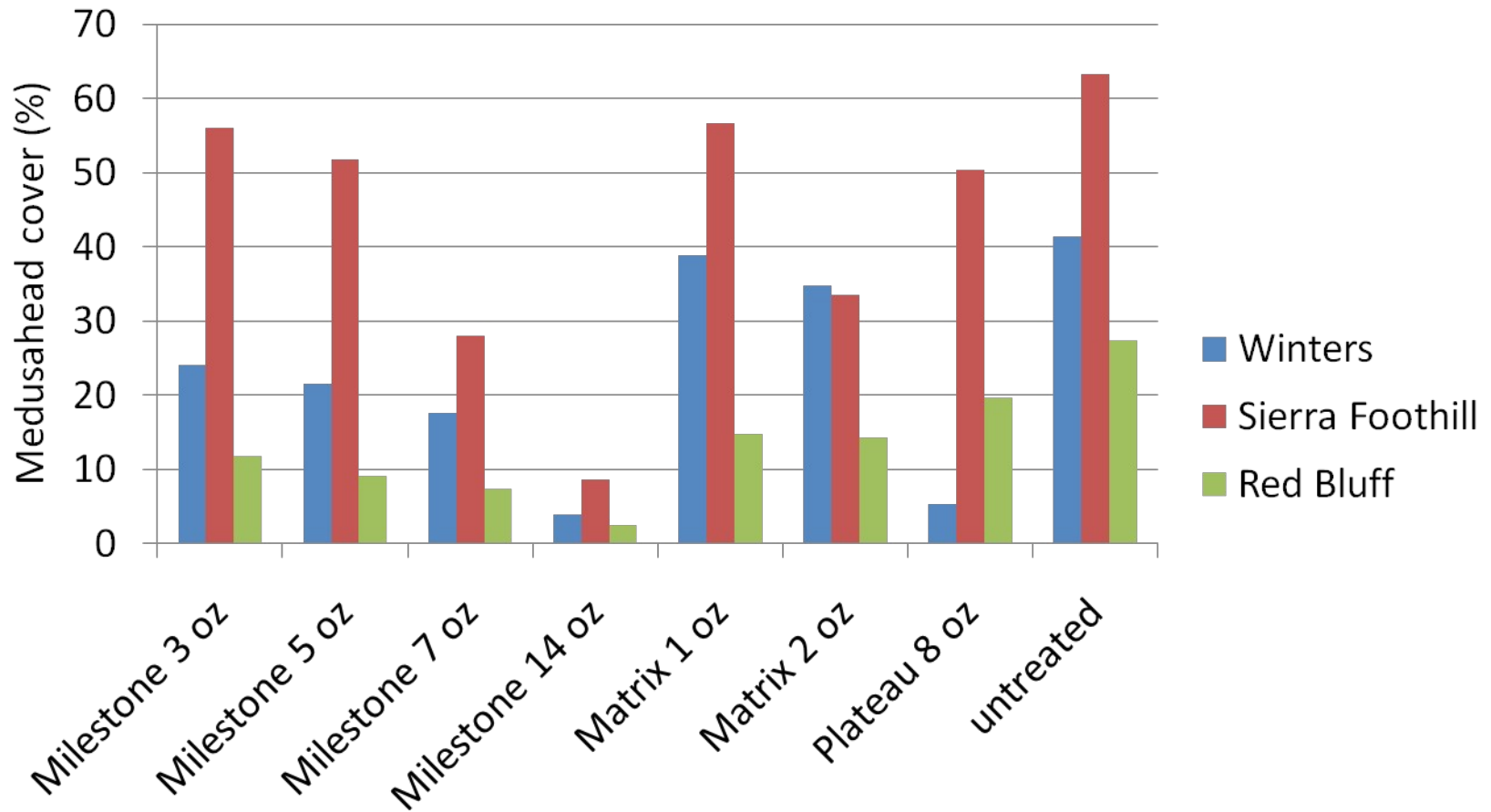
Broadleaf cover, 2010



Aminopyralid (Milestone®)

- Pre/Post emergent
- “Selective” – Broadleaf herbicide
- Typically used as a selective herbicide for yellow starthistle control
- Applications
 - Broadcast treatment

Treatments with *Milestone* (aminopyralid) at three sites



Winters, treated 10/9/2009, evaluated 5/21/2010
Sierra Foothill, treated 10/8/2009, evaluated 5/20/2010
Red Bluff, treated 9/28/2009, evaluated 5/28/2010

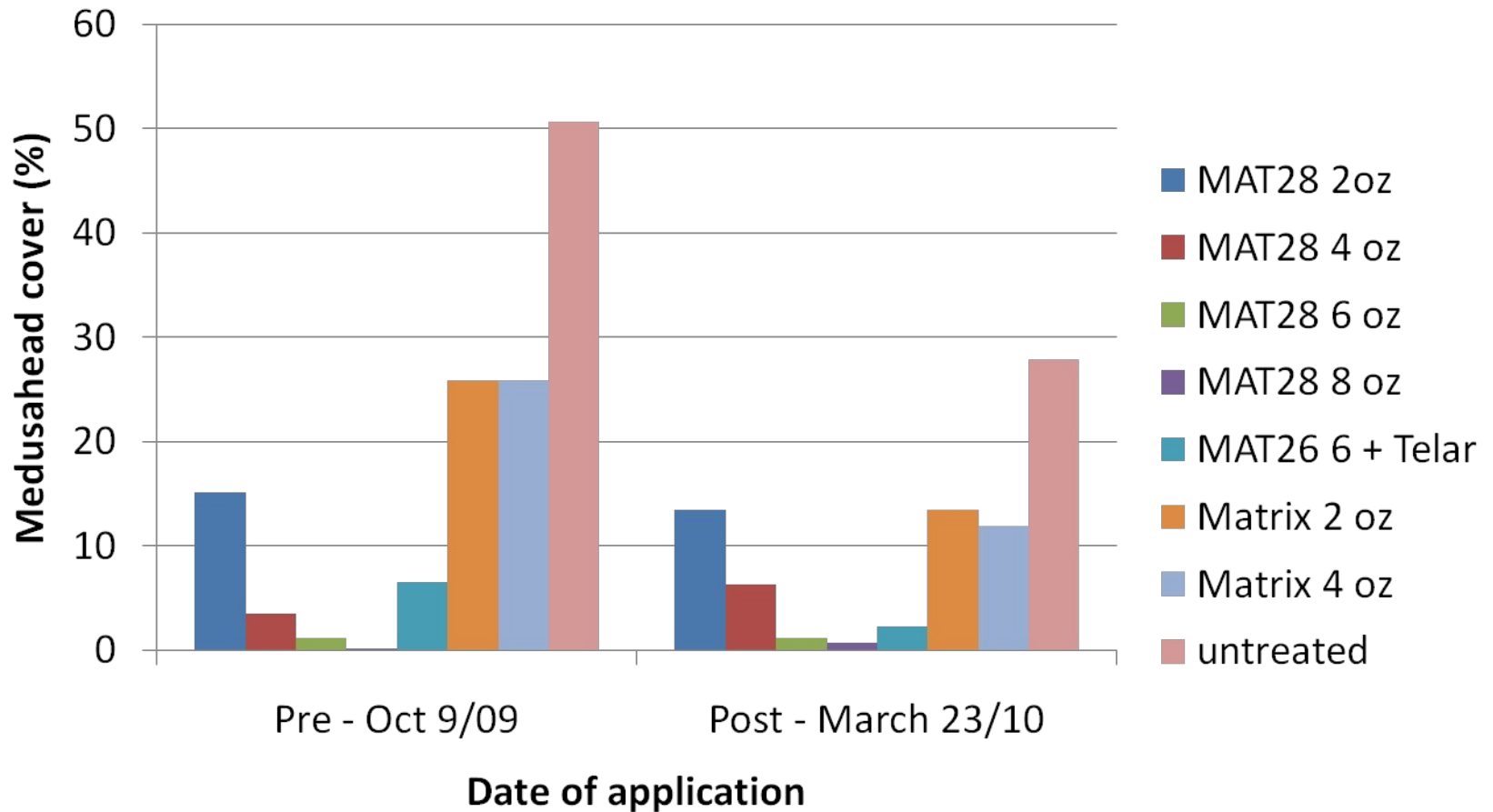




Aminocyclopyrachlor (MAT28)

- Pre/Post emergent
- “Selective” – Broadleaf herbicide
- Typically used as a selective herbicide for a number of broadleaf weeds
- Not registered in CA yet
- Applications
 - Broadcast treatment

Treatments with *MAT28* (aminocyclopyrachlor)

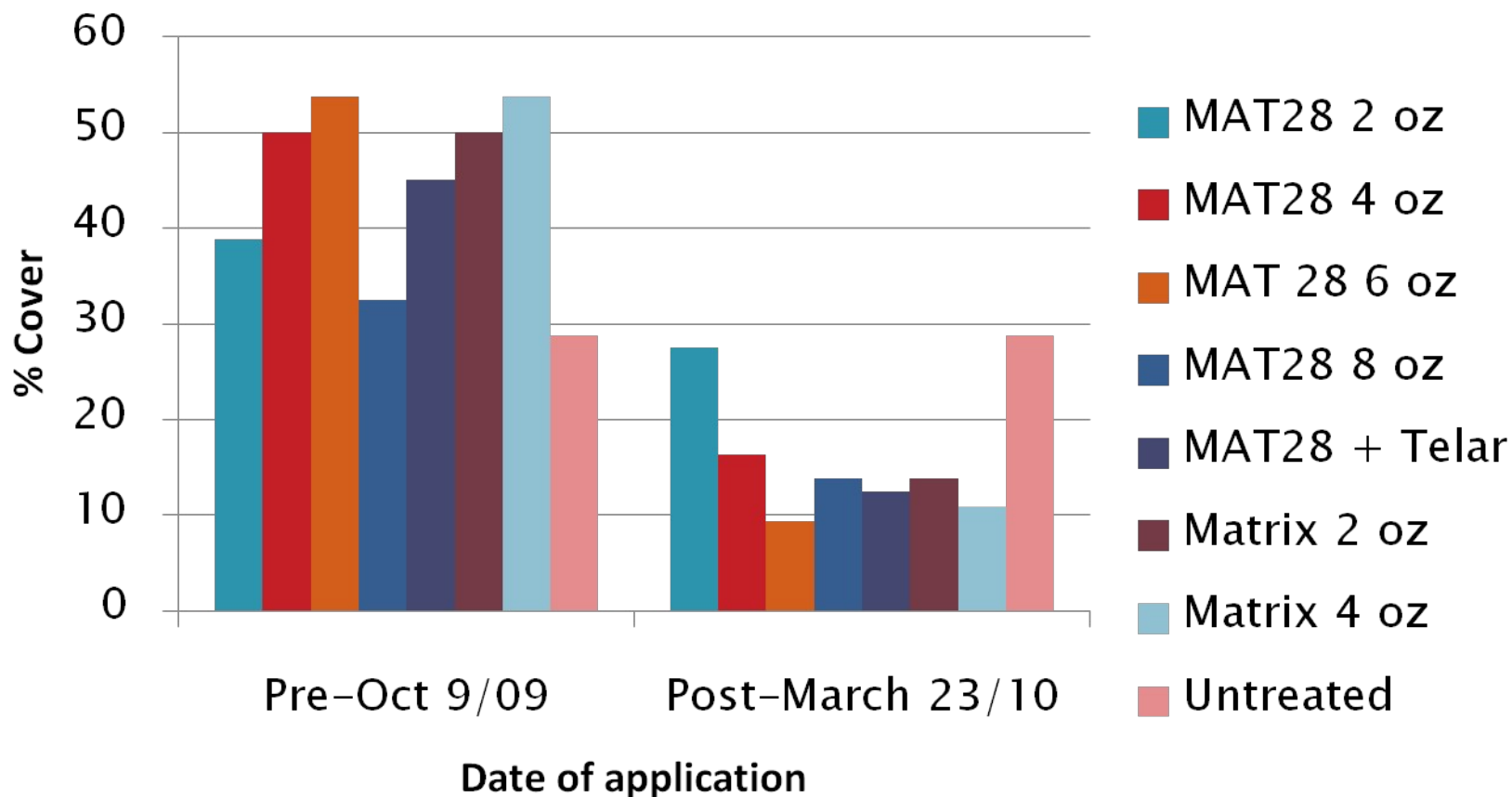


Evaluated on June 7, 2010

Wild oat (*Avena barbata*)



Cover of wild oat



Evaluated on June 7, 2010

A large field of dry, yellowish-brown grass, likely a pasture or field, with a fence and trees in the background. The text is overlaid in the center of the image.

**Always read and
follow the
herbicide label!**

Where can you get more information?

www.ipm.ucdavis.edu



wric.ucdavis.edu