Weed Management Area 16th Annual Continuing Education Seminar for Ranchers

Control Methods for Yellow Starthistle, Tocalote, Purple Starthistle and Milk Thistle

Devii Rao, Livestock & Natural Resources Advisor UC Cooperative Extension December 7, 2017, Hollister, CA

University of California Agriculture and Natural Resources Most information in this presentation comes from

DiTomaso, J.M., G.B. Kyser et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California. 544 p.



Weed Control in Natural Areas in the Western United States

Weed Research & Information Center • University of California



Yellow Starthistle



Herbicide Grazing Mowing Burning

UC Weed Report - http://wric.ucdavis.edu/information/natural%20areas/wr_C/Centaurea_solstitialis.pdf

Yellow Starthistle - Herbicide



Seedling stage





Bolting. Bolting is a stage of vigorous shoot growth during the time of greatest light availability.

Photo: http://www.cal-ipc.org/docs/ip/management/pdf/YSTMgmtweb.pdf

Rosette stage

Aminopyralid (Milestone) is the best option to control yellow starthistle. Spray from seedling to mid-rosette stage. Clopyralid (Transline) is also very effective. Spray from seedling to mid-bolting stage.

Yellow Starthistle– Some Herbicide Options

Product Name	Chemical Name	Rate per acre	When to Spray
Milestone	Aminopyralid	3 to 5 oz	 Seedling to mid-rosette stage Fall, before plants emerge Post-emergence applications are more effective Aminopyralid is very effective on all starthistles
Transline	Clopyralid	0.25 to 0.67 pint	 Seedling to mid-bolting stage, most effective during late rosette stage (but before bolting) Fall, before plants emerge Clopyralid is very effective on all starthistles
Roundup	Glyphosate	1.33 to 2.67 quarts (broadcast treatment)/1% to 2% v/v solution (spot treatment)	 From bolting to beginning of flowering Effective for late season control

Presentation with herbicide tables will be on website





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For information on phytosanitary inspection services on Saturdays and Holidays, Click Here.

For information on submitting pesticide Notice of Intents, go to our *Pesticide Forms* page.

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When using herbicides, remember to always

- Report Pesticide Use to Your County Ag Department (get operator ID)
- Read Herbicide Labels
- Follow Federal, State & Local Regulations

Yellow Starthistle - Grazing



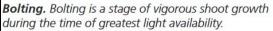


Photo http://cal-ipc.org/ip/management/pdf/YSTBiology.pdf



Spiny stage – too late to graze!

Graze from time when plant has bolted to right before the spines come out on the heads.

Yellow starthistle - Mowing Spiny Stage Versus Flowering Stage



UC Statewide IPM Project © 2000 Regents, University of California

Spiny stage – you could mow when all plants are in this stage, but it's safer if you wait to mow until you see flowers.



Flower initiation, flower expansion, and full bloom stage - mow now!

Mow when 2-5% of the flowerheads are blooming.

Yellow Starthistle - Burning



Prescribed fire. California Department of Forestry & Fire Protection conducts a prescribed burn at Sugarloaf Ridge State Park in California.

Image from: DiTomaso, J.M, G. B. Kyser, and M. J. Pitcairn. 2006. Yellow starthistle management guide. Cal-IPC Publication 2006-03. California Invasive Plant Council: Berkeley, CA. 78 pp. Available: www.cal-ipc.org.

Burn when yellow starthistle is just starting to flower.

Tocalote/Maltese Starthistle/Malta Starthistle



UC Statewide IPI/Project © 2000 Regents University of California

Photo by J. Zylstra, SBNF

Tocalote/Maltese Starthistle/Malta Starthistle



Photo by J. Zylstra, SBNF

Burning – effectiveness not known, but probably NOT practical Grazing – effectiveness not known, but probably effective (same timing as YST – bolting to before spiny stage) Mowing – same as for yellow starthistle Herbicide



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Tocalote – Some Herbicide Options

Product Name	Chemical Name	Rate per acre	When to Spray
Milestone	Aminopyralid	4 to 5 oz	 Before plants emerge From seedling to mid-rosette stage Aminopyralid is very effective on all starthistles
Transline	Clopyralid	0.25 to 0.67 pint	 Before plants emerge Seedling to mid-bolting, but best right before bolting Clopyralid is very effective on all starthistles
Roundup	Glyphosate	1.33 to 2.67 quarts (broadcast treatment)/1% -2% v/v solution (spot treatment)	 Bolting to beginning of flowering Very effective for late season control No soil residual Non-selective, so be careful if there are plants you want in the field.

Purple Starthistle



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Grazing – not effective Burning – not effective Mowing – full bloom – won't kill plants, but will reduce seed production Herbicide

 $http://wric.ucdavis.edu/information/natural\%20 areas/wr_C/Centaurea_calcitrapa-iberica.pdf$

Purple Starthistle – Some Herbicide Options

Product Name	Chemical Name	Rate per acre	When to Spray
Milestone	Aminopyralid	4 to 7 oz	 Fall from emergence through rapid growth Spring from rosette to bolting Residual control of seedlings if sprayed in late winter to early spring
Transline	Clopyralid	0.67 to 1.33 pint	• From emergence to rosette stage (before bolting)
Roundup	Glyphosate	3 quarts (broadcast treatment)/1.5% v/v solution (spot treatment)	 From emergence to when most individuals are at bud stage No soil residual Non-selective, so be careful if there are plants you want in the field.

Milk Thistle

Purple starthistle



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Milk Thistle



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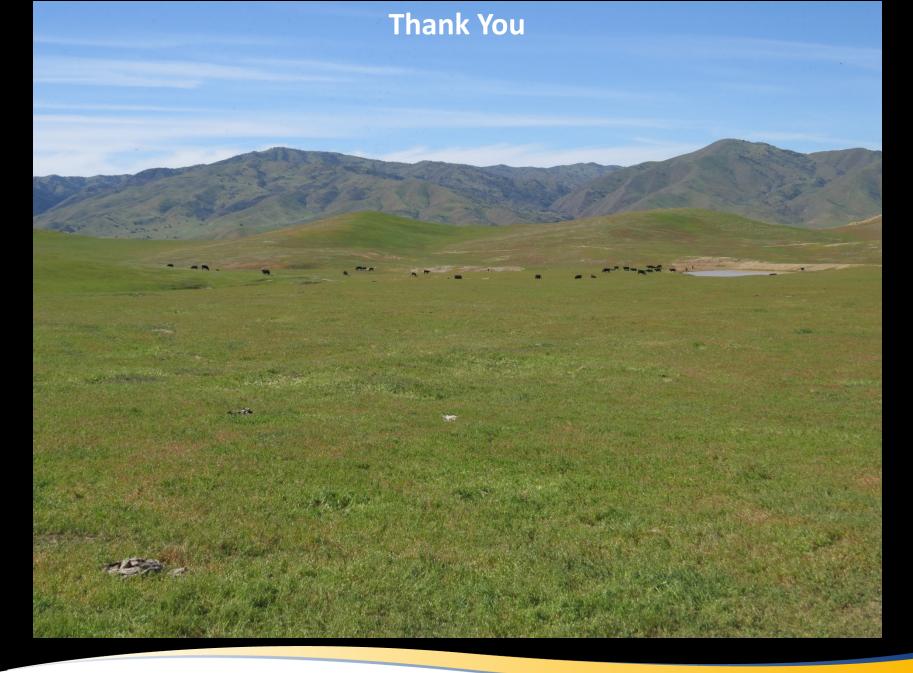
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Grazing – not effective Burning – not effective Mowing – just before flowers open Herbicide

http://wric.ucdavis.edu/information/natural%20areas/wr_S/Silybum.pdf

Milk Thistle – Some Herbicide Options

Product Name	Chemical Name	Rate per acre		When to Spray
Milestone	Aminopyralid	3 to 5 oz	•	Fall – seedling and rosette stages Spring/early summer – rosette and bolting stages
Transline	Clopyralid	0.25 to 1 pint	•	Seedling to bud stages



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