





Species	Life habit	Reproduction
Woolly distaff thistle	Annual weed	Germinates with rainfall throughout winter, maybe into summer
Stinkwort		
Purple starthistle	Perennial weed	Germinates with rainfall <i>and also</i> sprouts from the roots
Artichoke thistle		

Chemicals tested in 2011, 2012, 2013

Product	Chemical	Rate per acre
<i>Milestone</i>	aminopyralid	3 oz, 7 oz
<i>Transline</i>	clopyralid	2/3 pint, 1 1/3 pint
<i>Milestone VM+</i>	triclopyr + aminopyralid	2 qts, 3 qts
<i>Imprelis</i>	aminocyclopyrachlor	3 oz, 4.5 oz
<i>Perspective</i>	aminocyclopyrachlor + chlorsulfuron	2.5 oz, 5 oz

Times of application

Late fall	Nov to Dec
Mid winter	Jan to Feb
Spring	Mar to Apr



Purple starthistle timing trial, Novato, 2011-2012							
Product	Rate per acre	Application date					
		FALL – 12/14/11		WINTER – 2/1/12		SPRING – 4/5/12	
		cover %	count	cover %	count	cover %	count
Milestone	3 oz	0.1	0.5	0.3	8.0	0.6	0.8
Milestone	7 oz	0.6	14.3	0.0	0.3	0.2	2.5
Milestone VM+	2 qt	--	--	--	--	0.0	0.8
Milestone VM+	3 qt	--	--	--	--	0.1	1.0
Transline	1 1/3 pt	0.3	10.5	0.0	1.3	0.6	0.5
Transline	2 2/3 pt	0.7	5.5	0.0	0.3	0.0	0.0
Imprelis	3 oz	0.6	9.8	0.1	3.3	0.3	1.0
Imprelis	4.5 oz	0.3	6.8	0.0	0.5	0.6	1.0
Perspective	2.5 oz	0.2	3.5	0.0	0.5	0.1	1.5
Perspective	5 oz	0.6	22.5	0.1	0.5	0.0	1.3
untreated	---	37.5	26.3	26.0	11.8	33.8	11.3

Purple starthistle timing trial, Novato, 2011-2012							
Product	Rate per acre	Application date					
		FALL – 12/14/11		WINTER – 2/1/12		SPRING – 4/5/12	
		cover %	count	cover %	count	cover %	count
Milestone	3 oz	0.1	0.5	0.3	8.0	0.6	0.8
Milestone	7 oz	0.6	14.3	0.0	0.3	0.2	2.5
Milestone VM+	2 qt	--	--	--	--	0.0	0.8
Milestone VM+	3 qt	--	--	--	--	0.1	1.0
Transline	1 1/3 pt	0.3	10.5	0.0	1.3	0.6	0.5
Transline	2 2/3 pt	0.7	5.5	0.0	0.3	0.0	0.0
Imprelis	3 oz	0.6	9.8	0.1	3.3	0.3	1.0
Imprelis	4.5 oz	0.3	6.8	0.0	0.5	0.6	1.0
Perspective	2.5 oz	0.2	3.5	0.0	0.5	0.1	1.5
Perspective	5 oz	0.6	22.5	0.1	0.5	0.0	1.3
untreated	---	37.5	26.3	26.0	11.8	33.8	11.3

Purple starthistle timing trial, Novato, 2011-2012							
Product	Rate per acre	Application date					
		FALL – 12/14/11		WINTER – 2/1/12		SPRING – 4/5/12	
		cover %	count	cover %	count	cover %	count
Milestone	3 oz	0.1	0.5	0.3	8.0	0.6	0.8
Milestone	7 oz	0.6	14.3	0.0	0.3	0.2	2.5
Milestone VM+	2 qt	--	--	--	--	0.0	0.8
Milestone VM+	3 qt	--	--	--	--	0.1	1.0
Transline	1 1/3 pt	0.3	10.5	0.0	1.3	0.6	0.5
Transline	2 2/3 pt	0.7	5.5	0.0	0.3	0.0	0.0
Imprelis	3 oz	0.6	9.8	0.1	3.3	0.3	1.0
Imprelis	4.5 oz	0.3	6.8	0.0	0.5	0.6	1.0
Perspective	2.5 oz	0.2	3.5	0.0	0.5	0.1	1.5
Perspective	5 oz	0.6	22.5	0.1	0.5	0.0	1.3
untreated	---	37.5	26.3	26.0	11.8	33.8	11.3



Many thistles can be controlled by mowing...

- Bud to early bloom stage
- Reduces seed production
- For perennials, must be repeated!




Distaff thistle timing trial, Petaluma, 2011-2012					
Product	Rate (per acre)	Application date			
		WINTER – 1/12/12		SPRING – 3/21/12	
		% cover	count	% cover	count
Milestone	3 oz	1.95	16.50	0.03	0.25
Milestone	7 oz	1.60	6.00	0.00	0.00
Milestone VM+	2 qt	---	---	0.00	0.00
Milestone VM+	3 qt	---	---	0.00	0.00
Transline	2/3 pt	3.00	31.00	0.03	0.25
Transline	1 1/3 pt	1.08	8.25	0.05	0.25
Imprelis	3 oz	1.83	16.00	0.00	0.00
Imprelis	4.5 oz	1.25	13.00	0.00	0.00
Perspective	2.5 oz	2.75	27.00	0.00	0.00
Perspective	5 oz	1.75	15.50	0.01	0.25
untreated	---	18.25	75.00	19.50	74.75

Distaff thistle timing trial, Petaluma, 2011-2012					
Product	Rate (per acre)	Application date			
		WINTER – 1/12/12		SPRING – 3/21/12	
		% cover	count	% cover	count
Milestone	3 oz	1.95	16.50	0.03	0.25
Milestone	7 oz	1.60	6.00	0.00	0.00
Milestone VM+	2 qt	---	---	0.00	0.00
Milestone VM+	3 qt	---	---	0.00	0.00
Transline	2/3 pt	3.00	31.00	0.03	0.25
Transline	1 1/3 pt	1.08	8.25	0.05	0.25
Imprelis	3 oz	1.83	16.00	0.00	0.00
Imprelis	4.5 oz	1.25	13.00	0.00	0.00
Perspective	2.5 oz	2.75	27.00	0.00	0.00
Perspective	5 oz	1.75	15.50	0.01	0.25
untreated	---	18.25	75.00	19.50	74.75

Distaff thistle timing trial, Petaluma, 2011-2012					
Product	Rate (per acre)	Application date			
		WINTER – 1/12/12		SPRING – 3/21/12	
		% cover	count	% cover	count
Milestone	3 oz	1.95	16.50	0.03	0.25
Milestone	7 oz	1.60	6.00	0.00	0.00
Milestone VM+	2 qt	---	---	0.00	0.00
Milestone VM+	3 qt	---	---	0.00	0.00
Transline	2/3 pt	3.00	31.00	0.03	0.25
Transline	1 1/3 pt	1.08	8.25	0.05	0.25
Imprelis	3 oz	1.83	16.00	0.00	0.00
Imprelis	4.5 oz	1.25	13.00	0.00	0.00
Perspective	2.5 oz	2.75	27.00	0.00	0.00
Perspective	5 oz	1.75	15.50	0.01	0.25
untreated	---	18.25	75.00	19.50	74.75

Stinkwort control

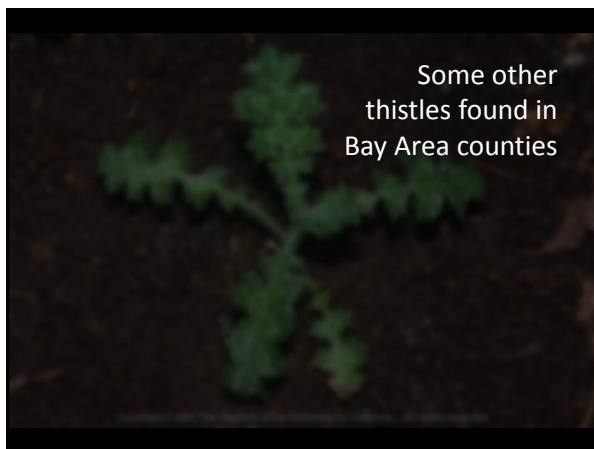
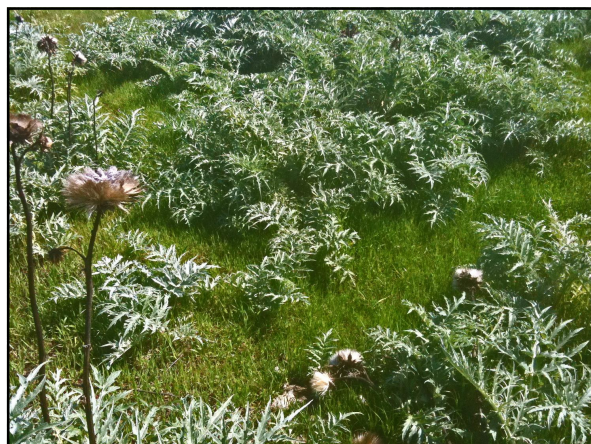


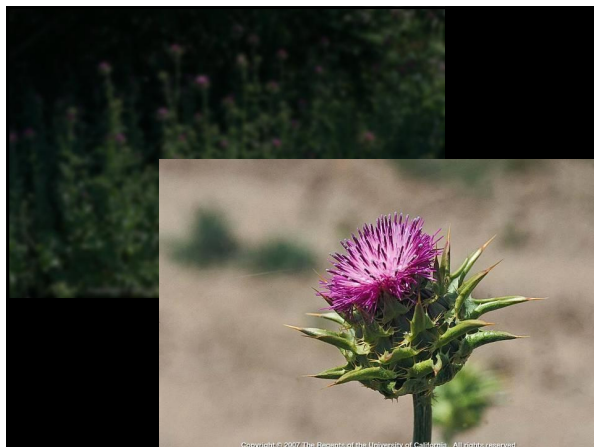
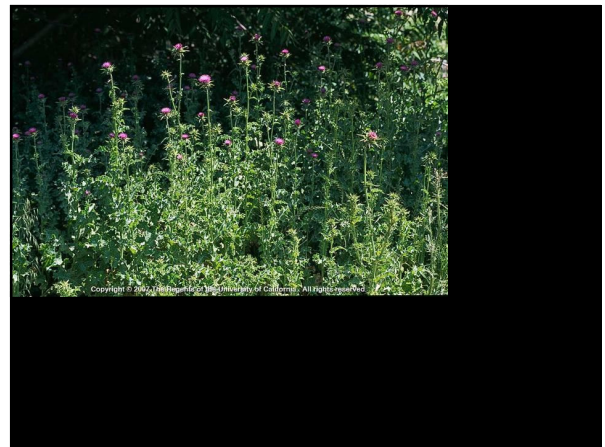
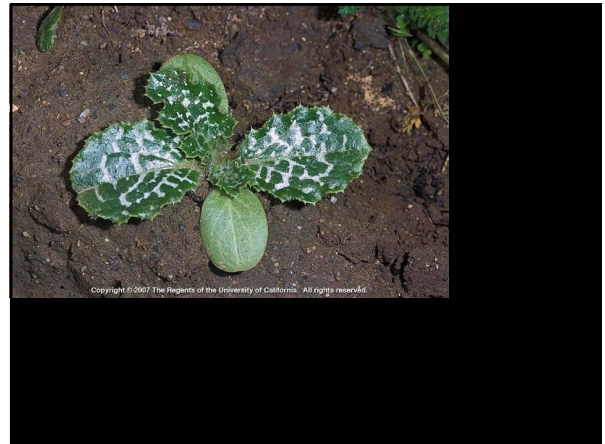
Results are not robust, but...

- timing is similar
- *Milestone* not too effective
- aminocyclopyrachlor looks good
- in summer, *Roundup* and *Garlon* are effective



Artichoke thistle timing trial, Solano County 2011							
Product	Rate (per acre)	Application timing					
		December		January		March	
		% cover	sdlgs	% cover	sdlgs	% cover	sdlgs
Milestone	3	13.33	7.33	2.00	13.33	9.00	1.67
Milestone	7	1.33	4.67	0.00	2.67	2.67	0.03
Imprelis	4	0.33	5.00	0.00	0.00	0.17	0.33
Imprelis	8	0.00	0.00	0.00	0.33	0.00	0.00
Perspective	4	0.33	6.67	0.00	0.00	0.00	0.00
Perspective	8	0.00	2.00	0.00	0.00	0.00	0.00
untreated		15.00	4.33	11.46	5.67	16.67	8.00



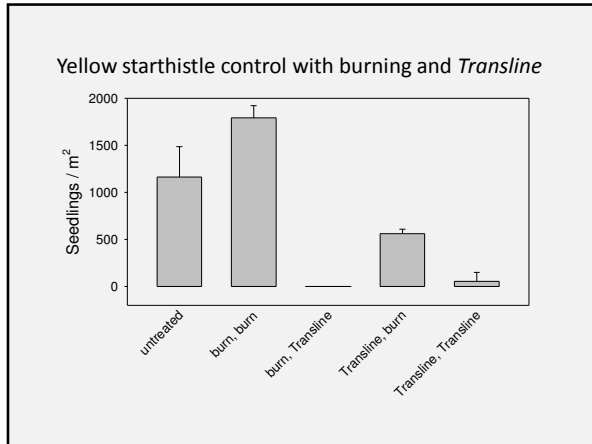




Product	Residual	Good for	Best timing
<i>Milestone</i>	3-6 months	Most thistles (not strong for stinkwort, artichoke)	Mid to late winter
<i>Transline</i>	2-3 months	Annual thistles (also good for purple starthistle)	Late winter to spring
<i>Milestone VM+</i>	1-2 months	Most thistles	Spring
<i>Imprelis</i>	3-6 months	Most thistles	Mid to late winter
<i>Perspective</i>			

Product	Residual	Good for	Best timing
<i>Milestone</i>	3-6 months	Most thistles (not strong for stinkwort, artichoke)	Mid to late winter
<i>Transline</i>	2-3 months	Annual thistles	Late winter to spring
<i>Milestone VM+</i>	1-2 months	Most thistles	Spring
<i>Roundup</i>	None	Most plants	Late spring to summer
<i>Garlon</i>	None	Most broadleaves	Late spring to summer





Confamilia (family):
Woolly starthistle

Family: Asteraceae
Field: Present in the western half of the United States, from the coast of Oregon, Arizona, Texas and Oklahoma. Several subspecies occur in the Pacific Northwest, including the coast and upland areas of California, Oregon, Idaho, Nevada and Washington.

Plant: This species is a perennial herb with a taproot. The plant is 10-20 cm tall and has a basal rosette of leaves. The leaves are lanceolate to elliptic, with serrated margins. The flowers are yellow and are borne in a terminal, branched inflorescence.

Control: This species is a perennial herb with a taproot. The plant is 10-20 cm tall and has a basal rosette of leaves. The leaves are lanceolate to elliptic, with serrated margins. The flowers are yellow and are borne in a terminal, branched inflorescence.

Management: This species is a perennial herb with a taproot. The plant is 10-20 cm tall and has a basal rosette of leaves. The leaves are lanceolate to elliptic, with serrated margins. The flowers are yellow and are borne in a terminal, branched inflorescence.

Notes: This species is a perennial herb with a taproot. The plant is 10-20 cm tall and has a basal rosette of leaves. The leaves are lanceolate to elliptic, with serrated margins. The flowers are yellow and are borne in a terminal, branched inflorescence.

Useful websites

- wric.ucdavis.edu
- ipm.ucdavis.edu
- cal-ipc.org
- genericherbicides.com