TRANSLINE HERBICIDE IN RANGELAND AND WILDLIFE HABITAT RESTORATION

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Transline* is a unique, selective, broadleaf herbicide which provides excellent control of many tough broadleaf invasive plants, yet is tolerant to a wide variety of herbaceous and woody plants, including grasses (Table 1). It is applied as a foliar spray and translocates throughout the plant to the root system, thereby reducing the potential for re-sprouting in perennial plants. It is active in controlling many invasive plants particularly in the Asteraceae and Fabaceae families. This paper will provide background information on Transline and report its activity on yellow and purple starthistles and artichoke thistle.

The active ingredient in Transline* herbicide, clopyralid, was discovered to have herbicidal activity in the 1950's. Even though clopyralid provided excellent selectivity, further development of the material was not pursued because it's spectrum of activity was deemed to be too narrow at that time. As vegetation managers began to understand the benefits of Integrated Pest Management (IPM) programs, Dow AgroSciences LLC began development of more selective herbicides including clopyralid. Transline has been registered by both the Federal Environmental Protection Agency (EPA) and the California Department of Pesticide Regulation (CA DPR) for use on: wildlife openings; non-cropland areas; and rights-of-way, including grazed areas on these sites; and on rangeland and pastures. During the registration process more than 120 tests have been completed on Transline and reviewed by EPA and CA DPR. Transline has been found to be: non-carcinogenic; non-mutagenic; non-teratogenic; and not a reproductive hazard. It degrades in the environment through the activity of soil microbes.

Three efficacy trials will be reported here, two on yellow starthistle and one trial on both artichoke thistle and purple starthistle.

MATERIALS AND METHODS

Yellow starthistle

Applications were made to plants at spring rosette, bud and fall rosette stages of development. Broadcast applications were made at each stage in 20 GPA water. Transline was applied at 2.6 fl. oz., 0.33, 0.66, 1, and 1.33 pt./A and Tordon* 22K at 1.5 pt./A. Dates of application were: spring rosette, March 30 and April 14, 1996; bud, June 4 and 13, 1996; and fall rosette, November 11, 1996. Evaluations were made 6 weeks, 3, 4, 5, 7, 12, or 14 months after applications depending on application timing.

Artichoke thistle and purple starthistle

Applications were made to plants at rosette (February 26, 1997) and bud (April 15, 1997) stages of development.

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Broadcast applications of Transline at 0.33, 0.66, 1 and 1.33 pt/A or Banvel at 2 pt/A were applied in 20 GPA of water at the rosette stage or 50 GPA of water at the bud stage. At the bud stage an additional treatment of Transline at 0.25% v/v was applied spray-to wet on all plants in the assigned plots. Evaluations were made approximately 2.5, 4 or 6 months after application depending on application timing.

RESULTS AND DISCUSSION

Yellow starthistle

Transline applied in the spring at the rosette stage provided 95-100% control of yellow starthistle in the season of application (Figure 1). Grass cover increased in plots with Transline use compared to grass cover in untreated areas (data not shown). Control from treatments applied at bud stage was 80-98% (Figure 1). Plants not completely controlled did not flower or produce seeds.

Following spring rosette treatments, control of germinating yellow starthistle through the winter season was 45-78% when few other plants were present to compete with new seedlings (Figure 2). Control was 95-100% where perennial grasses were established. Bud stage applications provided excellent (95-99%) control at both sites 1 year after treatment.

Applications applied in the fall on new seedlings varied by site. Control at the Cool location was 65-90% versus 98-100% control at the Woodland site (Figure 3). The difference may have been due to the presence of perennial grasses at the Woodland site.

Artichoke thistle and purple starthistle

Artichoke thistle control was excellent (100%) when Transline was applied at rosette stage (Figure 4). Plants at the bud stage (figure 5) were more difficult to control even with increased coverage. At California label rates up to 2/3 pint/A, the control was 78-86% at bud stage. Control was increased to 93% with the spray-to-wet application (0.25% v/v)of Transline.

Purple starthistle control was excellent (100%) at rosette stage with all treatments but was poor (5%) at bud stage (Figure 6).

CONCLUSIONS

Transline has excellent activity on yellow starthistle when applied as low as 0.33 pt./A at the rosette stage. Control of yellow starthistle into the next season was optimal when perennial grasses or other species compete with new yellow starthistle seedlings.

Control of artichoke thistle and purple starthistle is optimal when applied at rosette stages. Purple starthistle will not be effectively controlled after that stage of growth. Populations of artichoke thistle can be suppressed with applications of Transline at the bud stage, but re-treatment with Transline in subsequent years will be needed if complete control is the management objective.

Transline can be used to control other invasive species, especially thistles, such as: bull thistle, Canada thistle, milk thistle, musk thistle, kudzu, spotted, diffuse, and squarrose knapweeds, and orange and yellow hawkweeds. The selectivity of Transline means that certain plants including: filaree, small burnet, rabbitbrush, service-berry, dogwood, oaks, grasses (like crested wheatgrass, bluebunch wheatgrass, and Idaho fescue), cottonwoods, poplars, and conifers show good

tolerance to Transline. Transline should be used if management objectives call for: (1) effective control of yellow starthistle, Canada thistle, spotted and diffuse knapweeds, hawkweeds; (2) control of other sensitive invasive plants, especially for habitat management; and (3) applications over or around desirable, non-sensitive vegetation.

Table 1. PLANT SENSITIVITY TO TRANSLINE.

SENSITIVE TO TRANSLINE			NOT SENSITIVE TO TRANSLINE	
Bull thistle	Groundsel	Salsify	Conifers	Grasses
Buckwheat	Hawkweeds	Scotch thistle	Douglas-fir	Cottonwood
Burdock	Knapweeds	Sowthistle	Ponderosa pine	Poplar
Canada thistle	Kudzu	Sunflower	True firs	Willow
Clovers	Mayweed	Teasel	Redwood	Dogwood
Cocklebur	Musk thistle	Vetch	Scotch pine	Oaks
Cornflower	Nightshades	Yellow starthistle	Filaree	Rabbitbrush
Crupina	Oxeye daisy		Small burnet	Service-berry
Curly dock	Pineappleweed			
Dandelion	Prickly lettuce			
Fireweed (Erechites)	Ragweed			

FIGURE 1.

Yellow starthistle Control with Transline Treatments at Rosette and Bud Stages

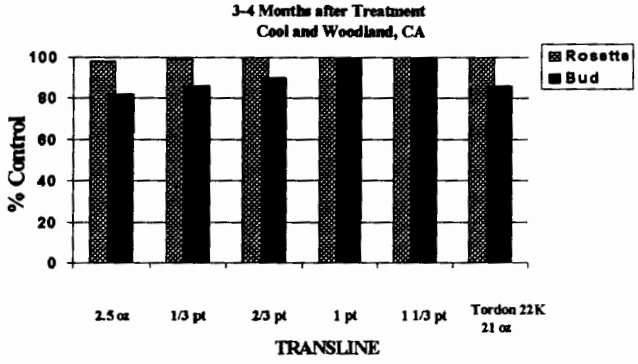

FIGURE 2.

Yellow starthistle Control with Transline Treatments at Rosette and Bud Stages

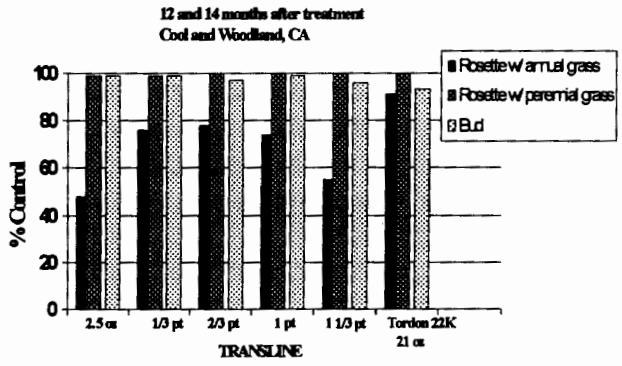

FIGURE 3.

Yellow starthistle Control with Transline Treatments at Fall Rosette Stage

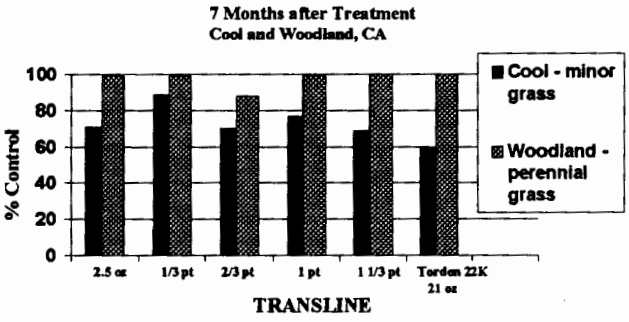

FIGURE 4.

Artichoke thistle Control with Transline Treatments Rosette Stage

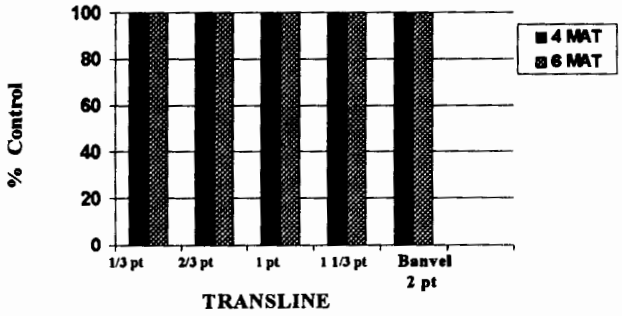

FIGURE 5.

Artichoke thistle Control with Transline Treatments at Bud Stage

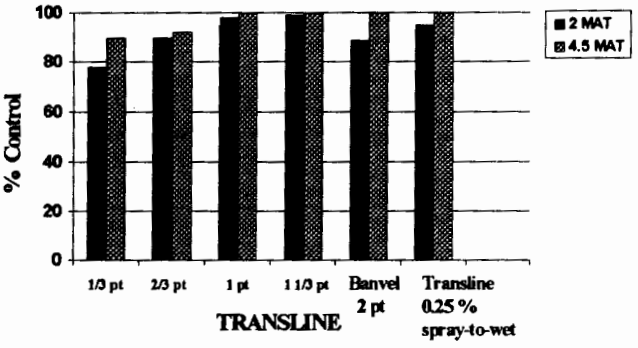

FIGURE 6.

Purple starthistle Control withTransline Treatments