Control of Undesirable Woody Species in Pastures and Hayfields

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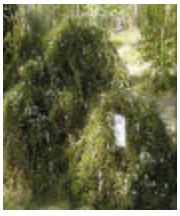
Buckbrush



Southern Dewberry

Eastern Red Cedar

Yucca

Black Hawthorn

Multiflora Rose

Autumn Olive

Introduction: The registration of Grazon P+D in selected regions of the Mid-Atlantic United States and national registration of Remedy has allowed growers to effectively and economically control most annual, biennial, and herbaceous perennial broadleaf weeds in pastures and hayfields. Growers, however, continue to request information regarding control of various undesirable woody species in pastures and hayfields. Control recommendations for woody species that are most commonly requested include: buckbrush (*Symphoricarpus orbiculatus*), black hawthorn (*Crataegus douglasii*), autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), eastern red cedar (*Juniperus virginiana*), southern dewberry (*Rubus trivialis*), and yucca (*Yucca filamentosa*). Presently, there is little information regarding the control of these woody species with Grazon P+D and Remedy.

Dow Agrosciences LLC has recently began evaluating two additional experimental herbicide combinations for the control of broadleaf weeds in pastures and hayfields. These two herbicides combinations are Surmount, which contains 0.67 plus 0.67 lbs ae/gallon[1] of picloram and fluroxypyr, respectively, and Pasturegard, which contains 1.5 plus 0.5 lb ae/gallon of triclopyr and fluroxypyr, respectively. Grazon P+D contains 0.54 and 2.0 lbs ai/gallon of picloram and 2,4-D, respectively. In Virginia, Grazon P+D **is labeled** in the counties shown in orange in Figure 1. These restrictions are due to the picloram content of Grazon P+D, which can cause injury to tobacco, tomatoes, grapes, and other sensitive broadleaf crops at very low concentrations. Remedy contains 4.0 lbs ai/gallon of triclopyr.

The objective of these experiments was to evaluate control measures for many of the common woody weed species found in Virginia's permanent fescue and mixed fescue / bluegrass /orchardgrass pastures and hayfields

Materials and Methods: All experiments were conducted in randomized complete block designs at multiple sites throughout Virginia. Most experiments contained treatments of various rates of registered and experimental Dow Agrosciences products compared to other registered pasture and hayfield herbicides. Yucca experiments evaluated non-selective herbicides for pasture and hayfield renovation. Treatments and rates varied between experiments.

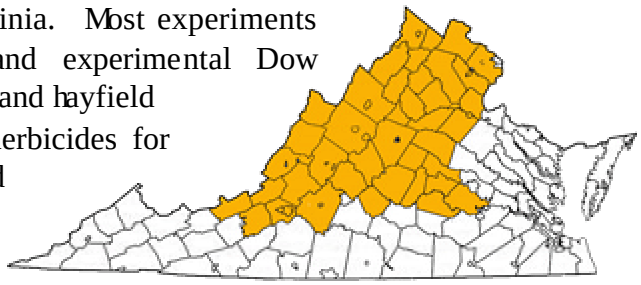


Figure 1.

[1] Abbreviation: ae/gallon, acid equivalent per gallon

Common Woody Weeds and Their Control

Buckbrush: Buckbrush, also referred to as coralberry or devil's shoestring, is a low-growing (1.5-6.0 ft tall) perennial shrub with rhizomes and distinctive red berries that persist well into the winter. Young plants are relatively tender, but become woody with age. Buckbrush is a very common and difficult-to-control weed of pastures, hayfields, and roadsides that is found primarily in the mountainous regions of Virginia. Control of buckbrush is most effective when the plant is young and has not yet become woody. The treatments described in Table 1 were applied to 8 to 16 inch buckbrush plants.

Table 1. **Buckbrush Control**

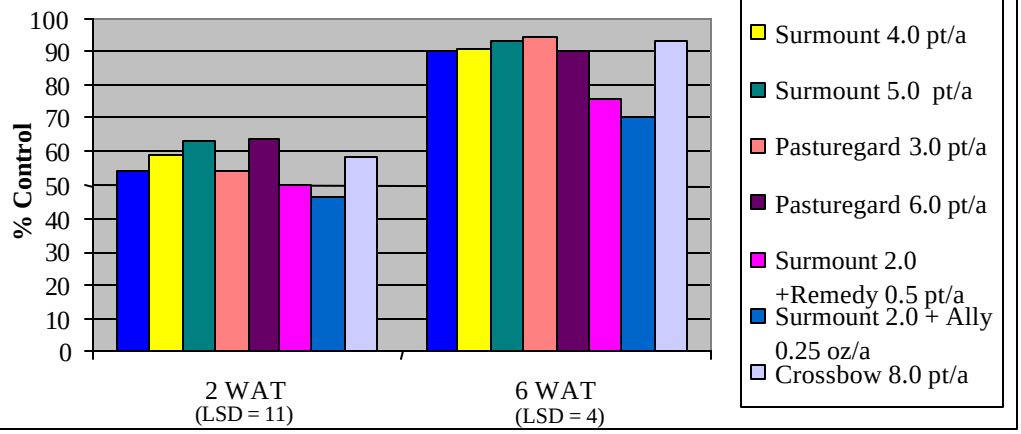
Herbicide	Rate	1 MAT	3.5 MAT
	product / acre	-------- % Visual Control ---------	
Grazon P + D	2.0 pt	55	75
Grazon P + D	3.0 pt	75	88
Remedy	1.0 pt	70	65
Grazon P + D + Remedy	2.0 pt + 1.0 pt	62	93
Grazon P + D + Remedy	3.0 pt + 1.0 pt	82	97
2,4-D amine	2.0 pt	48	73
2,4-D amine	4.0 pt	88	97
Cimmaron	0.3 oz	35	75
Cimmaron + Weedmaster	0.3 oz + 2.0 pt	70	92
LSD (0.05)		15	10

* Treated May 28th 2003; all treatments except 2,4-D applied with Activator 90 at 0.25 % (v / v)
Abbreviation: MAT, months after treatment

As illustrated in Table 1, buckbrush was controlled 75, 70, 82 and 88% with 3.0 pts of Grazon P+D, 1.0 pt of Remedy, 3.0 pts. of Grazon P+D plus 1.0 pt of Remedy, and with 4.0 pts of 2,4-D, respectively, at 1 month after treatment (MAT). Buckbrush control of 97% at 3.5 MAT was attained with 3.0 pts of Grazon P+D plus 1.0 pt of Remedy, and was equivalent to control with 4.0 pts of 2,4-D alone.

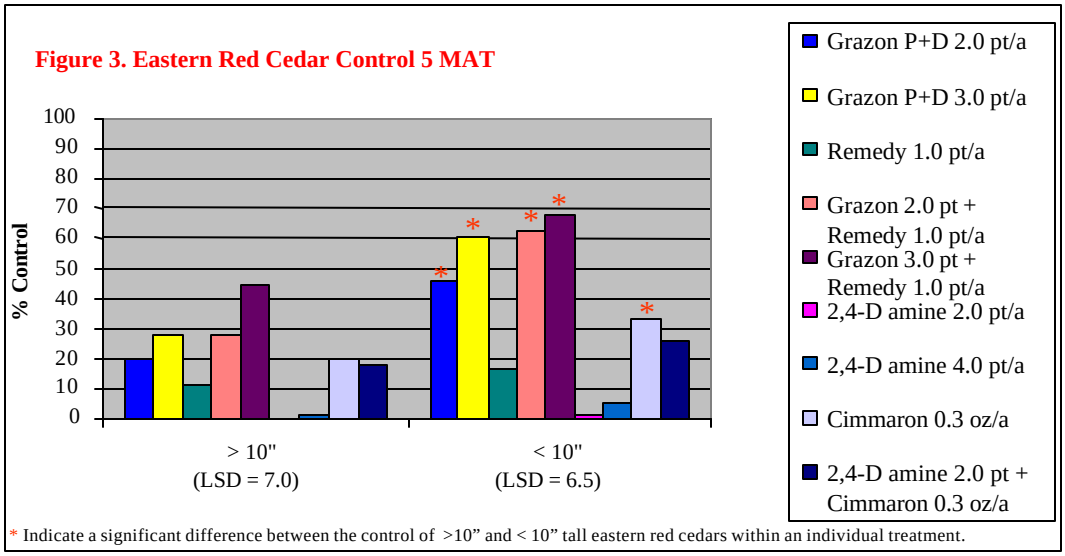
Southern Dewberry: Southern dewberry, which is a Rubus species, is a rhizomatous erect perennial with prickly trailing stems that produces one inch long black berries. Other similar Rubus species include raspberries and blackberries. Generally, Rubus species are referred to with the generic term "brambles" because of the similarity between species, and all species are relatively difficult to control. At 2 weeks after treatment (WAT), all treatments controlled southern dewberry greater than 50% except the Surmount treatments applied in combination with either Remedy or Ally, which only controlled southern dewberry 50 and 46%, respectively (Figure 2). At 6 WAT, southern dewberry was controlled 90% or greater with 3, 4, and 5 pints of Surmount, however, 6 pints of Pasturegard or 8 pints of Crossbow were required for equivalent control. The treatments of 2 pints of Surmount in combination with Remedy or Ally did not provide acceptable southern dewberry control. Similar levels of control of other rubus species are expected with these treatments, however, confirmation with additional experiments is needed. For superior control of rubus species, herbicide treatments should be applied when plants are in the prebloom to early bloom stage of growth.

Figure 2. Dewberry Control



Eastern Red Cedar: Eastern red cedar is a tree that can reach up to 100 feet in height and have a trunk diameter of 5 feet. Small (< 15 feet tall) eastern red cedars are a prevalent weed in pastures in Virginia. This tree is fast growing, rapidly spread, and very difficult to control. Effective control can only be achieved with spot treatment of growth regulator herbicides or through mechanical removal of all green tissue above the soil surface. These processes, however, are expensive and very labor intensive. Therefore experiments were conducted to evaluate broadcast treatments for the control of eastern red cedar. Results, however, indicated the eastern red cedar control was generally ineffective with all treatments evaluated (Figure 3). Small red cedars (<10") were controlled less than 70% at 5 MAT with 3 pints of Grazon P+D plus 1 pint of Remedy, which was the treatment that provided the highest level of control. Significantly higher levels of eastern red cedar control occurred with 5 of the 9 treatments applied to <10" tall eastern red cedars compared with >10" tall eastern red cedars. However, all of these eastern red cedars are expected to recover, and larger cedars (>10") were controlled less than 50% with all treatments. These herbicides were applied as broadcast treatments at 22.5 gallons per acre (GPA). It may be possible to increase control by increasing the GPA of the sprayer output, which would provide better coverage of the eastern red cedar trees. This theory will be investigated in subsequent experiments.

Figure 3. Eastern Red Cedar Control 5 MAT



* Indicate a significant difference between the control of >10" and < 10" tall eastern red cedars within an individual treatment.

Yucca: Yucca, also known as bear-grass, is a perennial weed that may reach 5 feet in height with thick underground rootstocks. Yucca is becoming more common in many of Virginia's pastures. Previous experiments by the authors evaluated various treatments for the control of yucca in hayfields. Subsequent experiments were then designed using herbicides that afforded the best control. These herbicides were applied broadcast as renovation treatments.

Table 2. **Yucca Control**

Herbicide	Rate / A	8 WAT	15 WAT
		---------- % Visual Control ----------	
Roundup	6 qt	48	54
Reward	1 qt	0	0
Roundup + Ally	6 qt + 0.75 oz	69	65
Reward + Ally	1 qt + 0.75 oz	63	63
LSD (0.05)		16	13

* All treatments applied with Cide-kick at 1.0% (v / v).

Check Roundup Reward Roundup + Ally Reward + Ally

Yucca continued: The treatments evaluated consisted of Roundup Ultra alone and Reward alone, and Roundup Ultra and Reward in combination with Ally. At 8 WAT, 48% yucca control occurred with 6 quarts of Roundup Ultra compared to zero percent control with Reward (Table 2). No difference in control occurred between Roundup Ultra or Reward when either was combined with 0.75 oz of Ally per acre. Control of yucca, however, was still less than 70% with these treatments at both rating timings. No significant difference in the level of control between evaluation timings occurred within an individual herbicide treatment. These results indicate that broadcast applications of these herbicides are not effective in the control of yucca. Previous research has indicated that effective control can be achieved with a 2% solution of Remedy in diesel fuel applied as a spot treatment.

Black Hawthorn, Multiflora Rose, and Autumn Olive: These perennial weeds are common, difficult to control weeds in pastures and hayfields in Virginia. Excellent (95-100%) control of black hawthorn and multiflora rose was observed with all treatments at 4 MAT (Table 3). These treatments included Surmount or Pasturegard applied at 1.0 and 2.0% volume to volume (v/v), Crossbow at 1.5% v/v, Grazon P+D at 1.0% v/v plus Remedy at 0.5% v/v, and 1 ounce of Ally applied per 100 gallons of water. Similar levels of control with most of these treatments occurred when applied to autumn olive, however, Ally applied at 1 ounce per 100 gallons of water controlled autumn olive only 30%.

Table 3. **Black Hawthorn, Multiflora Rose, and Autumn Olive Control**

		Weed Species				
		Black Hawthorn		Multiflora Rose		Autumn Olive
Treatment	Rate % Solution (v/v)	1 MAT	4 MAT	1 MAT	4 MAT	7 WAT
		% Control				
Surmount	1.0%	75	100	100	100	100
Surmount	2.0%	93	100	100	100	99
Pasturegard	1.0%	70	100	100	100	99
Pasturegard	2.0%	89	100	100	100	100
Crossbow	1.5%	53	100	100	100	99
Grazon P+D + Remedy	1.0% 0.5%	41	100	100	100	100
Ally	1 oz / 100 gal	95	100	95	100	30
LSD (0.05):	----	14	0	3	0	4

* All treatments applied with Activator 90 at 0.25% v/v.

Conclusion: Most of the weeds discussed in this publication are difficult to control in pasture and hayfield situations. Superior control of certain weeds often requires a specific herbicide choice. Care must be taken to match the weed species and weed size with the herbicide and rate needed for effective control. Repeat applications are often necessary to provide long-term control of some of these weed species. Weed control with herbicides alone often results in reinfestation of the pasture or hayfield. Long-term weed control must utilize herbicides in combination with a healthy, dense forage that can successfully compete with the weeds of pastures and hayfields. Please utilize your state's Extension Service if you have any concerns, and feel free to consult Virginia Tech's on-line weed ID site to help in the correct identification of a particular weed species.

The Virginia Tech Weed ID website is located at: http://www.ppws.vt.edu/weedindex.htm