

# EVALUATIONS OF SPRING AND FALL HERBICIDES FOR PEPPERMINT

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## Introduction

Weed control in mint is essential in order to maintain high mint oil yields and quality. Reducing competition from weeds may also prolong the productive life of a mint stand. Chateau<sup>®</sup>, a new herbicide, has recently been labeled for use in mint. This research was conducted to evaluate Chateau in combinations with other registered herbicides and to compare these mixtures to a standard herbicide treatment.

## Materials and Methods

A trial was established near Nampa, Idaho to evaluate fall and spring herbicide applications to dormant mint for mint tolerance and weed control efficacy. Herbicides that were evaluated included a standard of Sinbar<sup>®</sup>, Karmex<sup>®</sup>, Stinger<sup>®</sup>, and Prowl<sup>®</sup> compared to Chateau in combinations with different herbicides including Sinbar, Karmex, Stinger, Treflan<sup>®</sup>, and Gramoxone Extra<sup>®</sup>. All herbicide treatments included a nonionic surfactant (Activator 90) at 0.25 percent v/v. Fall applications were made December 13, 2004 and spring applications were made February 23, 2005. Herbicide treatments were arranged in a randomized block design with four replicates. Plots were 10 ft wide by 30 ft long. Herbicides were applied with a CO<sub>2</sub>-pressurized backpack sprayer calibrated to deliver 20 gal/acre at 30 psi. Herbicide effects on weeds were determined by counting the number of each weed species present in each plot. Visual evaluations of mint injury could not be taken as mint was severely injured due to factors other than herbicide treatment. The trial was analyzed as a factorial design with two factors, herbicide treatment and application timing. Two treatments were included in the trial for comparison and were not included in the factorial analysis.

## Results and Discussion

Application timing by herbicide interactions were significant for blue mustard and downy brome control, but this interaction may be due to variability in the weeds across the plots (Table 1). There were significant differences among untreated plots, which demonstrated the variability in the weed distribution. Most treatments reduced blue mustard and downy brome densities. Treatments containing Gramoxone Extra eliminated downy brome. All treatments effectively controlled prickly lettuce. All treatments also reduced kochia density compared to the untreated check, with no significant differences among herbicide treatments. Pigweed densities were also reduced by all herbicide treatments compared to the untreated control. The combination of Chateau, Treflan, and Stinger had a higher density of pigweed than several other herbicide treatments including the combinations of Chateau, Treflan, and

Gramoxone Extra, or Chateau, Sinbar, and Stinger. Overall, herbicides were effective in reducing both winter and summer annual weed densities. Control of these weeds was due almost entirely to the herbicides as very little mint was present to compete with the weeds or to prevent their germination.

Table 1. Weed densities in response to fall and spring herbicide applications to dormant peppermint in Nampa, ID, Malheur Experiment Station, Oregon State University, Ontario, OR, 2005.

Treatment*	Rate† lb ai/acre	Weed densities‡						
		Blue mustard		Downy brome		Prickly lettuce	Kochia	Pigweed
		Fall	Spring	Fall	Spring	6-14	6-14	7-7
Untreated control	--	7	44	12	105	6	44	81
Sinbar + Karmex + Stinger + Prowl + NIS	0.6 + 0.8 + 0.124 + 1.5 + 0.25%	0	1	57	19	0	7	13
Sinbar + Karmex + Stinger + Chateau + NIS	0.6 + 0.8 + 0.124 + 0.125 + 0.25%	1	5	1	2	0	1	4
Sinbar + Karmex + Chateau + Gramoxone Extra + NIS	0.6 + 0.8 + 0.125 + 0.375 + 0.25%	0	0	0	0	0	1	10
Chateau + Treflan + Stinger + NIS	0.125 + 0.5 + 0.124 + 0.25%	2	9	12	60	0	3	45
Chateau + Sinbar + Stinger + NIS	0.125 + 0.6 + 0.124 + 0.25%	0	3	3	1	0	3	12
Chateau + Karmex + Stinger + NIS	0.125 + 0.8 + 0.124 + 0.25%	0	2	20	5	0	1	25
Chateau + Treflan + Gramoxone Extra + NIS	0.125 + 0.5 + 0.375 + 0.25%	0	0	0	0	0	4	11
Chateau + Sinbar + Gramoxone Extra + NIS	0.125 + 0.6 + 0.375 + 0.25%	0	0	0	0	0	1	14
Chateau + Karmex + Gramoxone Extra + NIS	0.125 + 0.8 + 0.375 + 0.25%	0	0	0	0	0	4	19
Chateau + Gramoxone Extra + NIS	0.125 + 0.375 + 0.25%	1	0	0	0	0	5	18
LSD (0.05)		14		47		2	13	32
Chateau + Stinger + NIS <sup>§</sup>	0.125 + 0.124 + 0.25%	2		23		0	0	8
Chateau + Stinger + NIS <sup>§</sup>	0.096 + 0.124 + 0.25%	2		5		0	1	6

\*Fall applications were made December 13, 2004. Spring treatments were made February 23, 2005.

†Herbicide rates are lb ai/acre. NIS (nonionic surfactant, Activator 90) was applied at 0.25 percent v/v.

‡Blue mustard and downy brome densities were counted on April 28, 2005. When significant herbicide by application timing effects were significant, data are presented by herbicide and application timing. When herbicide by application timing effects were not significant, densities were averaged over application timing.

§The treatments of Chateau plus Stinger were applied in the fall and again in the spring and are not included in the statistical analyses.