

Aminocyclopyrachlor (KJM44) Combinations for Total Vegetation and Marestalk (*Conyza canadensis*) Control

Introduction

Aminocyclopyrachlor (DPX-MAT28 / KJM44) is a synthetic auxin active ingredient currently in development for the noncrop and invasive plant market by DuPont. Noncrop vegetation management occasionally requires total vegetation management and problematic plant species, such as marestalk, thrive in the microconditions created by total vegetation management. The potential for glyphosate and ALS resistant marestalk plants to exist in these areas is increasing due to the repeated use of glyphosate and ALS inhibiting herbicides in total vegetation management. KJM44, both alone and in combination with standard bareground treatments, was evaluated in late spring of 2008 for total vegetation and marestalk control.

Methods and Materials

Eleven treatments were installed in late spring 2008 in a completely randomized block design with 4 replications under the guardrails at the Newtown Pike and New Circle Road interchange in Lexington, KY. Marestalk plants were evenly distributed across the study site that included vegetation common to roadside guardrails. All treatments included methylated seed oil at 1 % v/v and glyphosate at 64 fl oz per acre. Plots, measuring 5' X 30', were treated at 25 GPA on May 28, 2008 using a CO₂ powered sprayer. Data collected included visual percent bareground and visual percent cover by plant species at application, 30 DAT, 60 DAT, 90 DAT, and 120 DAT.

Data analysis examined treatment effects on percent area bareground and marestalk control. Analysis of covariance, with percent area bareground at application as the covariate, was used to analyze the bareground data set with Tukey-Kramer's HSD for treatment mean separation. Marestalk data were analyzed using analysis of variance and Fisher's LSD for treatment mean separation. The untreated check was removed from analysis of the marestalk control dataset to reduce variance.

Results

There were no statistical differences between any herbicide treatment tested for percent bareground at any evaluation interval (Table 1). All chemical treatments, except Krovar I, resulted in greater than 90% area bareground 30 DAT. KJM44 alone treatments reached maximum bareground area 30 DAT then began to decrease throughout the trial. The three-way mixes of KJM44 plus Oust plus either Escort or Telar resulted in the highest and only operationally acceptable (i.e. > 80%) treatments for percent bareground at 120 DAT.

All herbicide treatments resulted in excellent control of marestalk (Table 2). Treatments containing KJM44, at any rate tested, resulted in statistically higher control of marestalk 120 DAT than Roundup alone or the Oust plus Telar treatment.

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KJM44 is not recommended as a stand alone total vegetation control product. It does provide an excellent tank mix partner to provide effective post emergent and some pre emergent weed control while minimizing the potential of herbicide resistant species. KJM44 is an excellent marestalk control product.

Table 1: Percent area bareground by treatment for KJM44 Trial

Treatment	Rate per acre	Percent Bareground				
		0 DAT	30 DAT	60 DAT	90 DAT	120 DAT
KJM44	3.75 oz	50	97 a	82 a	74 a	72 ab
KJM44	5 oz	65	96 a	95 a	85 a	67 ab
KJM44	6.25 oz	46	98 a	92 a	75 a	55 ab
Oust + Telar	3 oz + 1.5 oz	75	95 a	84 a	83 a	70 ab
Roundup Pro	64 fl oz	57	91 a	73 a	77 a	54 ab
KJM44 + Oust + Escort	5 oz + 3 oz + 1 oz	64	99 a	97 a	94 a	88 a
KJM44 + Oust + Telar	3.75 oz + 3 oz + 1.12 oz	71	96 a	95 a	93 a	88 a
KJM44 + Oust + Telar	5 oz + 3 oz + 1.5 oz	54	100 a	100 a	98 a	81 a
KJM44 + Oust + Telar	6.25 oz + 3.73 oz + 1.88 oz	79	98 a	93 a	91 a	88 a
Krovar I	8 lb	39	82 a	93 a	78 a	78 a
Untreated		25	37 b	26 b	11 b	30 b

Note: Treatment means in the same column followed by the same letter are not statistically different using Tukey-Kramer's HSD at p = 0.05. All treatments included a MSO at 1% v/v.

Aminocyclopyrachlor (KJM44) Combinations for Total Vegetation and Marestalk (*Coryza canadensis*)
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Table 2: Percent control marestalk by treatment

Treatment	Rate per acre	Percent Control Marestalk		
		30 DAT	60 DAT	90 DAT
KJM44	3.75 oz	100 a	100 a	100 a
KJM44	5 oz	99 a	100 a	100 a
KJM44	6.25 oz	100 a	98 a	100 a
Oust + Telar	3 oz + 1.5 oz	98 a	98 a	95 b
Roundup Pro	64 fl oz	89 b	93 b	95 b
KJM44 + Oust + Escort	5 oz + 3 oz + 1 oz	100 a	100 a	100 a
KJM44 + Oust + Telar	3.75 oz + 3 oz + 1.12 oz	100 a	97 a	100 a
KJM44 + Oust + Telar	5 oz + 3 oz + 1.5 oz	100 a	100 a	100 a
KJM44 + Oust + Telar	6.25 oz + 3.73 oz + 1.88 oz	100 a	100 a	100 a
Krovar I	8 lb	98 a	100 a	100 a
Untreated		0	0	0

Note: Treatment means in the same column followed by the same letter are not statistically different using Fisher's LSD at $p = 0.05$. All treatments included a MSO at 1% v/v.