

DPX-MAT28 and DPX-KJM44 for Control of Russian Olive in Riparian Environments along the North Platte River near Henry, Nebraska during the 2008 and 2009 Growing Seasons.

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Field studies were initiated near Henry, Nebraska to compare the effectiveness of DPX-MAT28 and DPX-KJM44 for control of Russian olive. Two application techniques were evaluated basal bark and foliage sprays. Russian olive at the site were 3 to 5 feet in height and each shrub had multiple stems. The experimental design was a randomized complete block and environmental conditions at the time of treatment are provided in Table 1.

Basal bark treatments were applied with a handheld spray boom. Herbicide was mixed at various concentrations in UAP Timberline Basal oil blue LT in 1 gallon containers and 10 shrubs were treated. Each herbicide treatment was replicated twice; therefore, evaluations are the mean of 20 shrubs. Herbicide and carrier were applied in a 12-inch band near the base of the Russian olive plant and multiple stems were treated on each plant.

All basal bark treatments provided excellent control of Russian olive. Perennial grass near the base of each shrub was injured by herbicides with injury increasing as the concentration of DPX-MAT28 increased. Cottonwood trees provided an overstory above Russian olive shrubs. Cottonwood trees were injured by herbicide treatments and injury seemed to be related to the distance between shrub and cottonwood trees. Injured trees were 20 to 30 feet tall and by late September many of the trees had died. Results from this experiment suggest the rate of DPX-MAT28 could be reduced to lessen perennial grass and cottonwood injury and future studies should examine the influence of distance from Russian olive to cottonwood on tree injury.

Foliage sprays were applied with an all-terrain vehicle equipped with an 11 foot boom and herbicides were mixed with water and applied at 15.5 gallons of solution per acre. Plots were 11 feet wide by 25 feet long and each treatment was replicated three times. Each plot contained 5 to 10 shrubs. Environmental conditions at the time of herbicide application are given in Table 1.

Twelve months after treatment all rates of DPX-MAT28 provided over 90% Russian olive control. There was a trend for DPX-MAT28 to be more consistent in controlling Russian olive than DPX-KJM44. Adding Escort to DPX-MAT28 did not influence Russian olive control but seemed to increase perennial grass injury. Cottonwood tree injury was not observed from foliage herbicide treatments. Future experiments should examine reduced rates of DPX-MAT28 to determine the minimum rates of DPX-MAT28 required to control Russian olive.

Table 1. Environmental Conditions at the Time of Herbicide Application.

Date	Air temperature (F)	Humidity (%)	Wind speed & direction (mph)	Time of day	Russian olive
		Basal bark treatments			
June 5, 2008	55	85	5 NW	9:00 AM	Full foliage, actively growing
		Foliage spray treatments			
July 3, 2008	73	53	6 SE	2:00 PM	Full foliage, actively growing, bud stage

Table 2. KJM-MAT VM Brush Basal Bark Treatments for Russian Olive 2008 and 2009.

Treatment	Rate	Time of application ¹	Visual injury			Visual injury			Visual injury	
			Russian olive	Grass	Cottonwood	Russian olive	Grass	Cottonwood	Russian olive	Grass
			7/15/08			9/30/08			7/27/09	
			----- (%)-----			----- (%)-----			----- (%)-----	
Nontreated	--	--	0	0	0	0	0	0	0	0
DPX-Mat28	5%	Summer	98	95	40	95	28	99	99	68
Basal oil blue LT	95%	Summer								
DPX-Mat28	10%	Summer	99	95	30	99	65	99	99	94
Basal oil blue LT	90%	Summer								
DPX-Mat28	15%	Summer	99	95	40	99	68	--	99	99
Basal oil blue LT	85%	Summer								
Garlon 4	25%	Summer	99	95	20	99	25	99	99	68
Basal oil blue LT	75%	Summer								
Garlon 4	20%	Summer	99	95	--	99	45	20	99	99
Stalker	1%	Summer								
Basal oil blue LT	79%	Summer								
DPX-Mat28	10%	Summer	99	95	40	99	87	99	99	99
Stalker	1%	Summer								
Basal oil blue LT	89%	Summer								
LSD at 5%	--	--	NS	NS	39	6	54	NS	1	12

¹Herbicide treatments applied on June 5, 2008.

Table 3. DPX-MAT28 and DPX-KJM44 for Control of Russian Olive in Riparian Environments Along the North Platte River Near Henry, Nebraska during the 2008 and 2009 Growing Seasons.

Treatment ¹	Rate lb ai/acre	Foliage spray treatments					
		Russian olive control ²			Native perennial grass injury ²		
		7/15/08	9/30/08	7/27/09	7/15/08	9/30/08	7/27/09
		----- (%) -----					
Nontreated	--	0	0	0	0	0	0
DPX-MAT28 + MSO	0.111	93	99	99	9	2	2
DPX-MAT28 + MSO	0.222	88	99	91	5	7	5
DPX-MAT28 + MSO	0.333	86	97	99	10	4	2
DPX-KJM44 + MSO	0.111	94	93	91	9	2	4
DPX-KJM44 + MSO	0.222	76	91	79	5	2	0
DPX-KJM44 + MSO	0.333	83	96	91	7	7	0
DPX-KJM44 + Escort + MSO	0.222 + 0.062	85	96	99	9	12	2
DPX-MAT28 + Escort + MSO	0.111 + 0.062	91	99	91	7	10	4
DPX-MAT28 + Escort + MSO	0.222 + 0.062	86	98	98	10	12	0
Garlon 4 + Activator 90	3.0	98	99	91	14	0	2
LSD at (0.05)	--	18	5	23	8	6	4

¹Herbicides were applied on July 3, 2009 to actively growing Russian olive. Spray adjuvants methylated seed oil (MSO) was added at 1% per volume of carrier and Activator 90 was added at 0.25% per volume of carrier.

²Visual evaluations on a scale from 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.