

Downy Brome Control in Perennial Grass during the 2007/2008 Growing Season.

Robert Wilson

A field study was initiated near Mitchell, Nebraska to compare the effectiveness of various herbicides applied in late fall or early spring for downy brome control in range. The experimental design was a randomized complete block with three replications. Plots were 11 feet wide by 25 feet long and were located on a sandy loam soil with a pH of 8.0 and 2% organic matter. In late fall (November 2, 2007), downy brome was actively growing and 1 to 2 inches tall and perennial range grasses were dormant. In early spring (March 21, 2008), downy brome was 1 inch tall, yellow and showing signs of drought stress and perennial grasses were dormant. Herbicides were applied with a backpack sprayer calibrated to deliver 20 gallons of water per acre at 36-psi pressure with Spraying Systems 11002 VS nozzles. Environmental conditions at the time of herbicide application are given in Table 1.

Downy brome density was uniform throughout the plot. On April 17, 2008, downy brome control ranged from 60 to 93% from herbicides applied in the fall and 68 and 93% from the same treatments applied in the spring (Table 2). With fall applications of Olympus, the addition of Sencor at 0.187 lb/acre improved early season control of downy brome. By the end of May, fall applications of Plateau were providing 96% downy brome control. Spring application of Olympus at 0.053 lb/acre plus X77 surfactant and liquid nitrogen (UAN) provided more downy brome control than the same treatment applied in the fall. Plateau was more effective for downy brome control when applied in the fall compared to the spring. Fall applied Plateau caused more native grass injury than Olympus.

Summarizing data over four trials showed that fall applied Olympus provided 75% downy brome control compared to Plateau which provided 92% control (Table 3). Plateau and Olympus both provided similar downy brome control from spring treatments. Plateau caused more perennial grass injury than Olympus.

Table 1. Environmental conditions at the time of herbicide application.

Date	Air temperature (F)	Humidity (%)	Wind speed & direction (mph)	Time of day	Perennial grass	Downy brome
November 2, 2007	49	22	4 NW	2:00 pm	dormant	2 leaves
March 21, 2008	50	30	6 W	11:00 am	dormant	3 leaves

Rainfall and irrigation before and after herbicide application

Date	Amount - (inches) -	Date	Amount - (inches) -
no precipitation in November 2007		March 31, 2008	0.07

Table 2. Olympus for Control of Downy Brome in Rangeland during the 2007 and 2008 Growing Season.

Treatment ¹	Rate (lbs/acre)	Time of application ²	Visual Injury ³			Downy brome control on 6/12 calculated from weed counts ⁴
			Dobr 4/17	Dobr 5/21	Crested Wheatgrass 5/21	Dobr
			----- (%) -----			----- (%) -----
Nontreated	—	—	0	0	0	0
Olympus + X77	0.053	Fall	60	67	3	0
Olympus + X77 + UAN	0.053	Fall	60	42	3	30
Plateau + X77	0.093	Fall	93	96	18	74
Olympus + Sencor DF + X77	0.053 + 0.187	Fall	87	80	5	46
Olympus + X77	0.053	Fall + Spring	93	84	68	50
Olympus + X77	0.053	Spring	68	83	22	0
Olympus + X77 + UAN	0.053	Spring	70	90	17	36
Plateau + X77	0.093	Spring	77	93	17	73
Olympus + Sencor DF + X77	0.053 + 0.187	Spring	87	93	23	56
LSD at 5%	—	—	15	27	22	56

¹ Spray additives were combined with the spray solution at the following rate: surfactant X77 at 0.25% v/v, and liquid nitrogen (UAN) at 1% per volume carrier.

² Herbicides applied on November 2, 2007 (Fall) and March 21, 2008 (Spring).

³ Visual crop injury evaluated on a scale from 0 to 100 with 0 equal to no injury and 100 equal to death of the plant.

⁴ Percent weed control calculated from weed counts taken on June 12. Weed abbreviations: downy brome (Dobr).

Table 3. Four Year Summary of Olympus for Downy Brome Control in Rangeland at Mitchell and Melbeta, NE During the 2005 through 2008 Growing Seasons.

Treatment	Rate	Time of application	Downy brome control					Perennial grass injury				
			05	06	07	08	Avg	05	06	07	08	Avg
Olympus + X77	0.053 (1.2 oz)	Fall	60	83	91	67	75	0	3	0	3	2
Plateau + X77	0.094 (6 oz)	Fall	82	98	93	96	92	3	12	8	18	10
Olympus + X77	0.053 (1.2 oz)	Spring	57	88	75	83	75	10	2	0	22	9
Plateau + X77	0.094 (6 oz)	Spring	40	89	88	93	77	12	30	8	17	17