

Influence of 2007 Fall Applications of Milestone and Forefront on Canada Thistle Control the Following Year.

Robert Wilson

A field study was initiated near Scottsbluff, Nebraska to compare the influence of fall applications dates on Canada thistle control with Milestone and Forefront. The experimental design was a randomized complete block with four replications. Plots were 11 feet wide by 25 feet long and were located on a sandy loam soil with a pH of 7.8 and organic matter of 4.3%. Herbicides were applied on three different dates; September 26 before the first frost, actively growing rosettes; November 1 frost damaged, 80% of thistle leaves were brown; December 5, all leaves brown from frost damage (Table 1). 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 2.

Milestone applied at 0.078 lb/acre (5 oz/acre) and Forefront at 0.747 lb/acre (32 oz/acre) on September 26 provided 96% or more Canada thistle control the following year (Table 3). Increasing the Forefront rate from 0.747 (32 oz/acre) to 0.934 lb/acre (39 oz/acre) increased Canada thistle control from 96 to 99%. 2, 4-D ester at 1.0 lb/acre provided only 25% Canada thistle control the following year. Canada thistle control declined 10 to 15% when Milestone and Forefront were applied the first of November following 80% frost damage to Canada thistle leaves. Herbicides applied in December, even though Canada thistle leaves had been severely damaged by frost still provided 92% or greater Canada thistle control. Canada thistle control was again evaluated during the spring of 2009 (Table 3). Milestone and Forefront applied on September 26 or December 5, 2007 continued to provide 95% or greater Canada thistle control while herbicides applied on November 1 still were providing marginal thistle control. This data would suggest that the application of Milestone or Forefront can occur late into the fall even though Canada thistle leaves may have been injured by frost.

Table 1. Low Daily Temperatures from September 1 through November 15, 2007.

Date	Low Temperature (F)			Date	Low Temperature (F)		
	September	October	November		September	October	November
1	58	33	22	17	54	37	29
2	54	40	23	18	48	31	42
3	55	42	21	19	48	29	32
4	53	37	25	20	53	38	25
5	57	49	22	21	50	28	13
6	53	46	21	22	49	25	5
7	49	35	21	23	56	36	5
8	47	37	24	24	42	29	8
9	46	31	24	25	34	27	14
10	39	38	31	26	34	36	16
11	35	40	33	27	36	32	15
12	40	34	36	28	48	23	17
13	45	43	34	29	53	26	14
14	47	41	14	30	41	36	10
15	49	31	11	31		25	
16	48	29	31				

Table 2. Environmental conditions at the time of herbicide application.

Date	Air temperature	Humidity	Wind speed & direction	Time of day	Canada thistle growth stage
	(F)	(%)	(mph)		
September 26	69	22	6 NW	3:00 pm	actively growing rosettes
November 1	57	35	1 SW	10:00 am	80% frost damage to leaves
December 5	40	74	2 SE	11:00 AM	100% of leaves frost damaged

Rainfall before and after herbicide application

Date	Amount	Date	Amount	Date	Amount
	(inches)		(inches)		(inches)
Sept 23	0.02	Oct 13	1.26	Oct 21	0.03
Sept 24	0.07	Oct 14	0.30		
Sept 30	0.16	Oct 20	0.20		

no moisture in November

Table 3. Influence of 2007 Fall Applications of Milestone and Forefront on Canada Thistle Control the Following Year.

Treatment	Rate (lb/acre)	Time of application	Canada thistle				Visual injury ¹
			Stand		Control calculated from stand counts		Canada thistle
			6/13/2008	6/24/2009	6/13/2008	6/24/2009	7/1/2008
----- (275 sq ft) -----		----- (%) -----		(%)			
Nontreated	—	—	105	90	0	0	0
Milestone Activator 90	0.078 0.25%	Sept 26 Sept 26	1	2	99	97	99
Forefront R+P Activator 90	0.747 0.25%	Sept 26 Sept 26	10	4	90	95	96
Forefront R+P Activator 90	0.934 0.25%	Sept 26 Sept 26	0	0	99	99	99
2, 4-D Ester Activator 90	1.0 0.25%	Sept 26 Sept 26	153	227	25	23	20
Milestone Activator 90	0.078 0.25%	Nov 1 Nov 1	71	60	35	54	83
Forefront R+P Activator 90	0.747 0.25%	Nov 1 Nov 1	38	12	64	87	85
Forefront R+P Activator 90	0.934 0.25%	Nov 1 Nov 1	83	57	21	41	80
2, 4-D Ester Activator 90	1.0 0.25%	Nov 1 Nov 1	133	49	22	46	30
Milestone Activator 90	0.078 0.25%	Dec 5 Dec 5	29	4	73	95	92
Forefront R+P Activator 90	0.747 0.25%	Dec 5 Dec 5	4	0	96	99	98
Forefront R+P Activator 90	0.934 0.25%	Dec 5 Dec 5	3	1	97	98	96
2, 4-D Ester Activator 90	1.0 0.25%	Dec 5 Dec 5	93	104	34	26	60
LSD at 5%	—	—	89	133	39	45	32

¹ 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.