Table 1. Canada thistle control with different herbicide treatment in a non-crop location near Bucyrus, ND, 2022-23. Canada thistle was in late-bud to early bloom stage at time of application.

		Rate	1 WAT	2 WAT	3 WAT	5 WAT	8 WAT	1 YAT
Treatment[a]		lb/a	Percent control					
1	glyphosate	1	73 bc	89 b	92 b	99 ab	99 a	35 e
	AMS	8.5						
2	glyphosate	1.5	65 cde	87 bc	92 b	100 ab	98 a	43 de
	AMS	8.5						
3	glyphosate	2.25	70 bcd	92 ab	97 a	100 ab	99 a	57 cd
	AMS	8.5						
4	aminopyralid	0.11	53 e	80 d	80 de	93 cd	97 ab	80 ab
5	picloram	0.5	66 cde	78 de	81 de	92 cd	97 ab	94 ab
6	aminocyclopyrachlor	0.125	57 de	75 e	81 de	90 d	95 ab	93 ab
7	aminocyclopyrachlor	0.19	67 cd	81 d	83 cd	95 bc	98 a	100 a
8	dicamba	1	58 de	78 de	78 e	84 e	87 c	23 e
9	glyphosate	1	87 a	94 a	96 ab	100 a	97 a	100 a
	aminocyclopyrachlor	0.125						
	AMS	8.5						
10	glyphosate	1	73 abc	88 b	87 c	98 ab	98 a	88 ab
	aminocyclopyrachlor	0.125						
	2,4-D LV6	0.7						
	AMS	8.5						
11	glyphosate	1	82 ab	92 ab	96 ab	100 ab	99 a	92 ab
	aminopyralid	0.11						
	AMS	8.5						
12	picloram	0.25	59 de	79 de	80 de	90 de	92 b	76 bc
	dicamba	0.5						
13	aminocyclopyrachlor	0.125	60 cde	82 cd	83 cd	91 cd	95 ab	93 ab
	dicamba	0.5						
LSD P=.05			12.98	5.04	4.36	4.88	4.6	20.64
Standard Deviation			7.72	3	2.59	2.88	2.71	12.25
CV			11.53	3.56	2.99	3.08	2.79	16.34
Treatment F			5.145	13.809	27.446	10.467	4.911	13.929
Treatment Prob(F)			0.0003	0.0001	0.0001	0.0001	0.0007	0.0001

[a] Glyphosate, Roundup PowerMax 3; aminopyralid, Milestone; picloram, Tordon; aminocyclopyrachlor, Method; dicamba, Sterling Blue; AMS, ammonium sulfate.

Table 2. Description of herbicide application and equipment for treatments applied to control Canada thistle in non-crop location near Bucyrus, ND, 2022-23.

Application Description			Application Equipment	
Date	7/14/2022		Equipment Type	Backpack
Start Time	10:30 AM		Operation Pressure	25 PSI
Stop Time	11:30 AM		Nozzle Model	11015
Timing	POST		Nozzle Type	Flat fan
Air Temperature Start, Stop	79, 81 F		Nozzle Spacing	19 IN
% Relative Humidity Start, Stop	73, 70		Boom Height	43 IN
Wind Velocity+Dir. Start	3.9 MPH, NW		Ground Speed	2.6 MPH
Wind Velocity+Dir. Stop	4.2 MPH, NW		Carrier	WATER
Wind Velocity+Dir. Max	11 MPH, NW		Application Amount	20 GAL/AC
Wet Leaves (Y/N)	N, no		Propellant	CO2
Soil Temperature	70 F			
% Cloud Cover	0			

A trial to evaluate Canada thistle control using various herbicides and herbicide combinations was initiated in a heavily infested non-crop field near Bucyrus, ND. Treatments were applied on July 14, 2022 using a backpack research sprayer with a 5 foot spray boom using a spray volume of 20 gallons per acre (Table 2). Canada thistle was at the budding stage to early bloom at time of application. Control was evaluated 1 to 8 weeks after treatment (WAT) application and then again at 1 year after treatment (YAT). At 8 WAT, Canada thistle control was 90% or more for all treatments except dicamba alone. At 1 YAT, only sis of the 13 treatments continued to control Canada thistle at 90% or more. These included picloram, aminocyclopyrachlor, glyphosate plus aminocyclopyrachlor, glyphosate plus aminopyralid, and aminocyclopyrachlor plus dicamba. Glyphosate alone, even at 2.25 lb ae per acre, provided poor control of Canada thistle (35 to 57%). Dicamba alone at 1 lb ae per acre also provided little control (23%). Aminopyralid alone, a very commonly used treatment for Canada thistle, provided 80% control. While aminocyclopyrachlor alone and in combination provided the best control most consistently, it is only currently labelled for use in non-crop, right-of-ways, and other areas that will not be grazed or hayed. It must not be used around any trees, as it will cause serious injury or death of most tree species if it leaches into the tree's root zone.