

# Trinexapac-ethyl on Established Red and Alsike Clover Seed Crops

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## Introduction

Lodging of clover seed crops can be a concern for clover seed growers. Crop lodging impacts seed yield in two ways:

- Pollination is reduced as access to flowering inflorescence is limited (affects number of seeds produced) and,
- Seed fill is reduced because of self shading by lodged plants.

Research from Norway showed that the application of trinexapac-ethyl (growth regulator) applied at stem elongation increased red clover seed yields by 21%. Trials in 2010 and 2011 in Oregon showed seed yield increases of 5-34 %. The application of trinexapac-ethyl to red clover has:

- Reduced canopy height and lodging,
- Increased flowering and,
- Promoted earlier maturity.

In Canada, Parlay (trinexapac-ethyl) is registered on perennial ryegrass grown for seed production. It is distributed by BrettYoung Seeds. The Peace Region Forage Seed Association is aiming to increase the label registration to include clovers, bromegrasses, timothy and creeping red fescue through the completion of research and field scale trials.

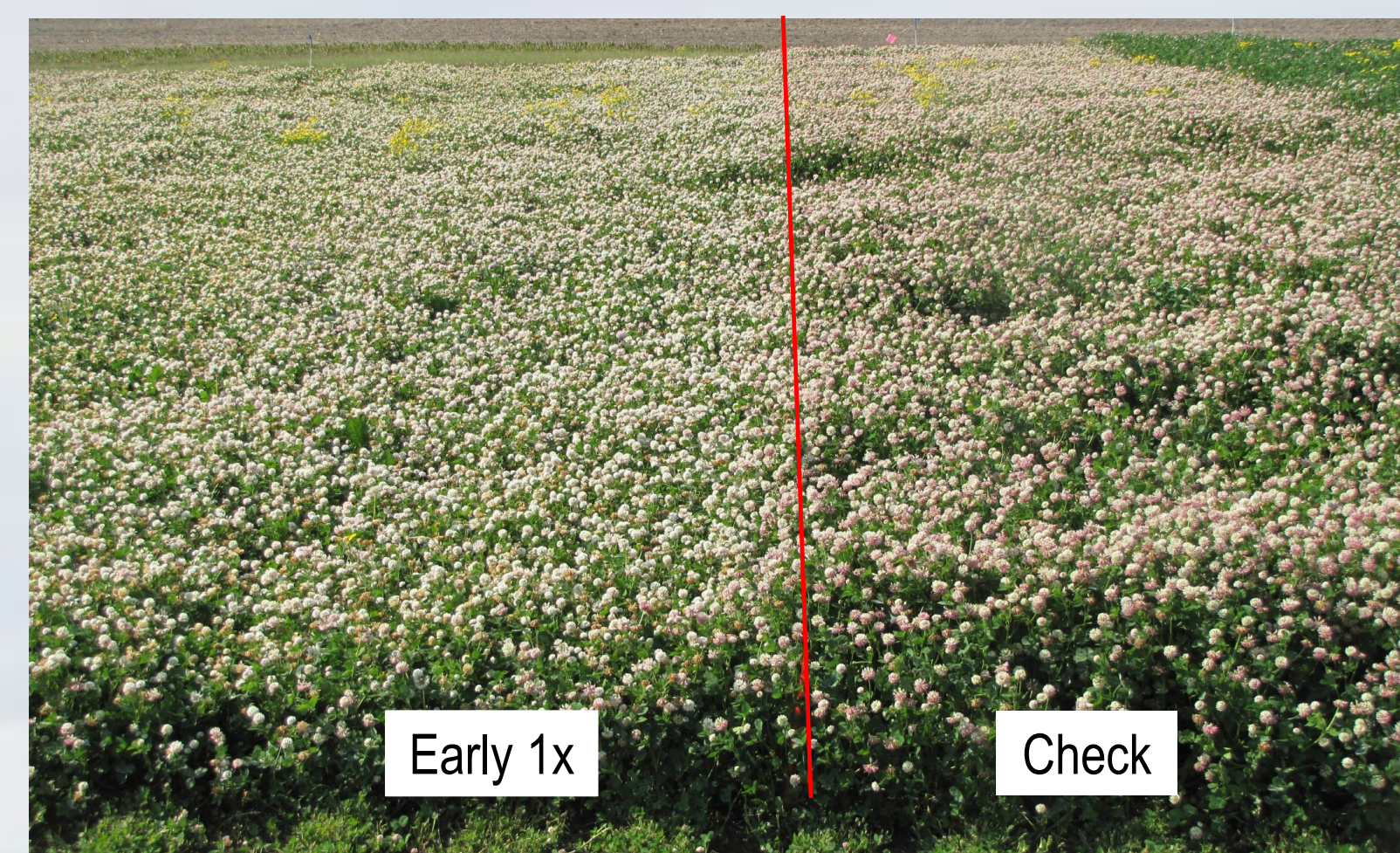


Figure 1. Trinexapac-ethyl applied to Alsike Clover at stem elongation and bud-early flower.

## Materials and methods

Trials were conducted in 2013 and 2104 in partnership with the Smoky Applied Research and Demonstration Association (SARDA) and Agriculture and Agr-Food Canada. First year alsike and red clover seed fields were selected in the Girouxville, Falher and Beaverlodge areas. Small plot replicated trials (2m x 40 m and 4 reps) were set up in each field. Each trial consisted of six treatments: 0.140 Stem Elongation, 0.280 Stem Elongation, 0.420 Stem Elongation, 0.210 Stem Elongation + 0.210 Bud, 0.280 Bud and a check.

Data collected included plant heights, flower counts, seed yield, 1000 kwts and germination.

## Results and discussion

Trials in 2013 and 2014 are showing reductions in height therefore decreasing lodging. There is also a visual increase in flowers. Currently there is a trend for improved seed yields on red clover but no yield increases on alsike. In fact a decrease in yield was seen under stress conditions. Seed germination was not affected. 1000 seed weights were lower following the application of trinexapac-ethyl. Addition trials were established in 2015.

### Red Clover Seed Crops

#### Girouxville 2013

Treatment (kg ai/ha)	Plant Height (cm)	Flowers (# / 1/4m <sup>2</sup> )	Seed Yield (kg/ha)	Germination (%)
0.140 Stem Elongation	67.8 a	274	493	97
0.280 Stem Elongation	59.8 bc	238	499	99
0.420 Stem Elongation	61.3 bc	278	474	98
0.210 Stem Elongation + 0.210 Bud	58.5 c	274	466	99
0.280 Bud	65.0 ab	212	475	97
Check	68.5 a	232	417	98
CV%	4.6	20.8	11.2	1.9
LSD (P=.05)	4.4	NSD	NSD	NSD

### Alsike Clover Seed Crops

#### Falher 2013

Treatment (kg ai/ha)	Plant Height (cm)	Flowers (# / 1/4 m <sup>2</sup> )	Seed Yield (kg/ha)	Germination (%)
0.140 Stem Elongation	72	462	281	96
0.280 Stem Elongation	74	457	286	97
0.420 Stem Elongation	69	612	278	96
0.210 Stem Elongation + 0.210 Bud	74	497	241	96
0.280 Bud	74	359	238	96
Check	75	466	287	93
CV%	7.2	17.7	9.1	2.0
LSD (P=.05)	NSD	NSD	NSD	NSD

#### Beaverlodge 2013

Treatment kg ai/ha	Plant Height (cm)	Seed Yield kg/ha
0.140 Stem Elongation	78.2 b	192
0.280 Stem Elongation	81 b	167
0.420 Stem Elongation	76.7 b	209
0.280 Bud	87.0 a	177
Check	87.7	151
CV%	2.9	16.5
LSD (P=.05)	4.5	NSD

#### Girouxville 2014

Treatment (kg ai/ha)	Plant Height (cm)	Flower s (# / 1/4 m <sup>2</sup> )	Seed Yield (kg/ha)	Germ. (%)	Seed Wt. (g/1000 seeds)
0.140 Stem Elongation	32	308	318 a	96.7	0.659 b
0.280 Stem Elongation	30	290	256 b	96.9	0.633 c
0.420 Stem Elongation	29	282	193 c	98.5	0.630 c
0.210 Stem Elongation + 0.210 Bud	32	317	152 c	97.6	0.604 c
0.280 Bud	29	319	200 c	97.8	0.607 c
Check	36	264	354 a	98.1	0.692 a
CV%	13.8	14.0	11.9	1.9	2.3
LSD (P=.05)	NSD	NSD	45	NSD	0.022

#### Girouxville 2014

Treatment (kg ai/ha)	Plant Height (cm)	Flowers (# / 1/4 m <sup>2</sup> )	Seed Yield (kg/ha)	Germ (%)	Seed Wt. (g/1000 seeds)
0.140 Stem Elongation	39.4 b	107	53 a	97.1	1.391 ab
0.280 Stem Elongation	32.7 c	114	37 ab	96.5	1.345 b
0.420 Stem Elongation	31.7 c	96	34 b	98.1	1.294 c
0.210 Stem Elongation + 0.210 Bud	34.5 c	103	34 b	98.7	1.242 c
0.280 Bud	42.5 c	100	42 ab	97.6	1.281 c
Check	43.8 ab	100	53 a	96.6	1.425
CV%	5.6	9.2	18.9	1.9	2.5
LSD (P=.05)	3.1	NSD	12	NSD	0.051

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