

Effects Trinexapac-ethyl (TE) on Established Meadow Bromegrass Seed Crop

Calvin Yoder, Alberta Agriculture and Rural Development, Phone: 780 864 3879, Email: calvin.yoder@gov.ab.ca

Nityananda Khanal, Agriculture and Agri-Food Canada, Phone: 780 354 5111, Email: nityananda.khanal@agr.gc.ca

Rahman Azooz, Agriculture and Agri-Food Canada, Phone: 780 354 5114, Email: Rahman.azooz@agr.gc.ca

Talon Gauthier, PRFSA General Manager, Phone: 1 877 630 2198, Email: coordinator@peaceforageseed.ca

Introduction

Trinexapac-ethyl is commonly used on grass seed crops in Oregon, Denmark and New Zealand to improve harvestability and seed yields. This plant growth regulator (PGR) shortens internodes which reduces lodging and allows for better pollination, seed set and harvesting. Data collected on perennial ryegrass and tall fescue in Oregon has shown TE can reduce seed head length and increase seeds/head which leads to an increase in seeds/m².

In Canada, Parlay (trinexapac-ethyl) is registered on perennial ryegrass grown for seed production. It is a Syngenta product 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 if the product shows potential.

Materials and methods

Trials were conducted on established creeping red fescue, timothy and meadow bromegrass seed crops at AAFC Beaverlodge in 2015, 2016 and 2017. Parlay was applied at 3 rates x 2 stages to small plot (2 x 10 m) RCB with 4 replicates. Grasses received a fall nitrogen application. Some treatments included early spring applied UAN with and without growth regulator (Table 1).

Table 1. Growth Regulator Treatment List

Treatment (kg ai/ha)	Stage	UAN (spring applied)
1	0.200	2 Nodes
2	0.300	2 Nodes
3	0.400	2 Nodes
4	0.200	Heading
5	0.300	Heading
6	0.400	Heading
7	0.300 + UAN	2 Nodes
8	0.300 + UAN	Heading
9	UAN	
10	Check	

*50 l/acre of UAN



Figure 1. TE on meadow brome in 2015.

Summary

AAFC Beaverlodge received above average precipitation in both 2015 and 2016. Applications of TE reduced plant heights and lodging in both years. TE has not significantly increased seed yields of meadow bromegrass in trials to date. Seed yields were variable among treatments in 2016. No seed yield increase from additional spring applied UAN although trend for highest yields with spring UAN+TE (mid-rate at 2 nodes). TE has not affected 1000 kwt or seed germination.

Table 2. Growing Season Precipitation (inches)

	2016	2015	LTA (1981-2011)
May	2.6	1.2	1.6
June	4.5	3.6	2.5
July	2.3	5.8	2.8
August	8.5	1.9	2.3
September	1.1	0.8	1.7
October	1.5	1.1	1.0
TOTAL	20.5	14.4	11.9

Table 3. Effects of trinexapac-ethyl on a 1st year stand of meadow bromegrass 2015.

Treatment kg ai/ha	Plant Height (cm)	Lodging (0-10)	Seed Yield (kg/ha)	Germination (%)	1000 kwt (g)
0.200 at 2 Nodes	138 ab	10	1336	92.5	5.376
0.300 at 2 Nodes	135 ab	10	1484	93.5	5.279
0.400 at 2 Nodes	122 b	10	1308	95.0	5.046
0.200 at Heading	136 ab	10	1136	91.0	5.561
0.300 at Heading	128 ab	10	1333	95.5	5.414
0.400 at Heading	128 ab	10	1218	94.0	5.485
0.300 at 2 Nodes + UAN	133 ab	10	1588	92.5	5.370
0.300 at Heading + UAN	143 a	10	1472	92.5	5.605
UAN	140 a	5.3	1320	93.0	5.501
Check	141 a	5.5	1308	92.0	5.393
CV%	5.2		13.6	4.5	2.8
LSD (P=.05)	10.0		NSD	NSD	NSD

Figure 2. Effects of trinexapac-ethyl on seed yields of a 1st year stand of meadow bromegrass, Beaverlodge 2015

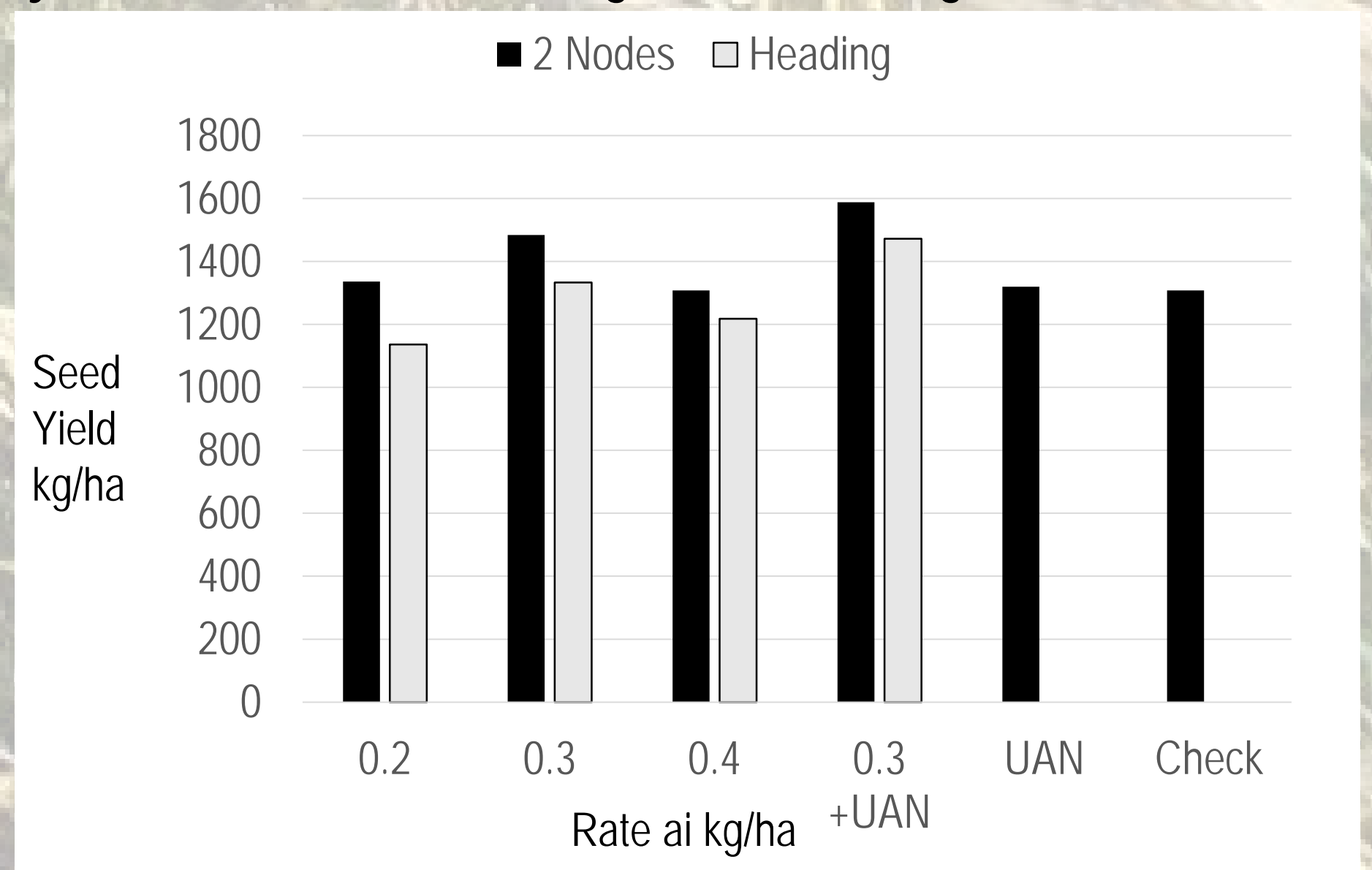


Figure 3. Effects of trinexapac-ethyl on seed yields of a 1st year stand of meadow bromegrass, Beaverlodge 2016

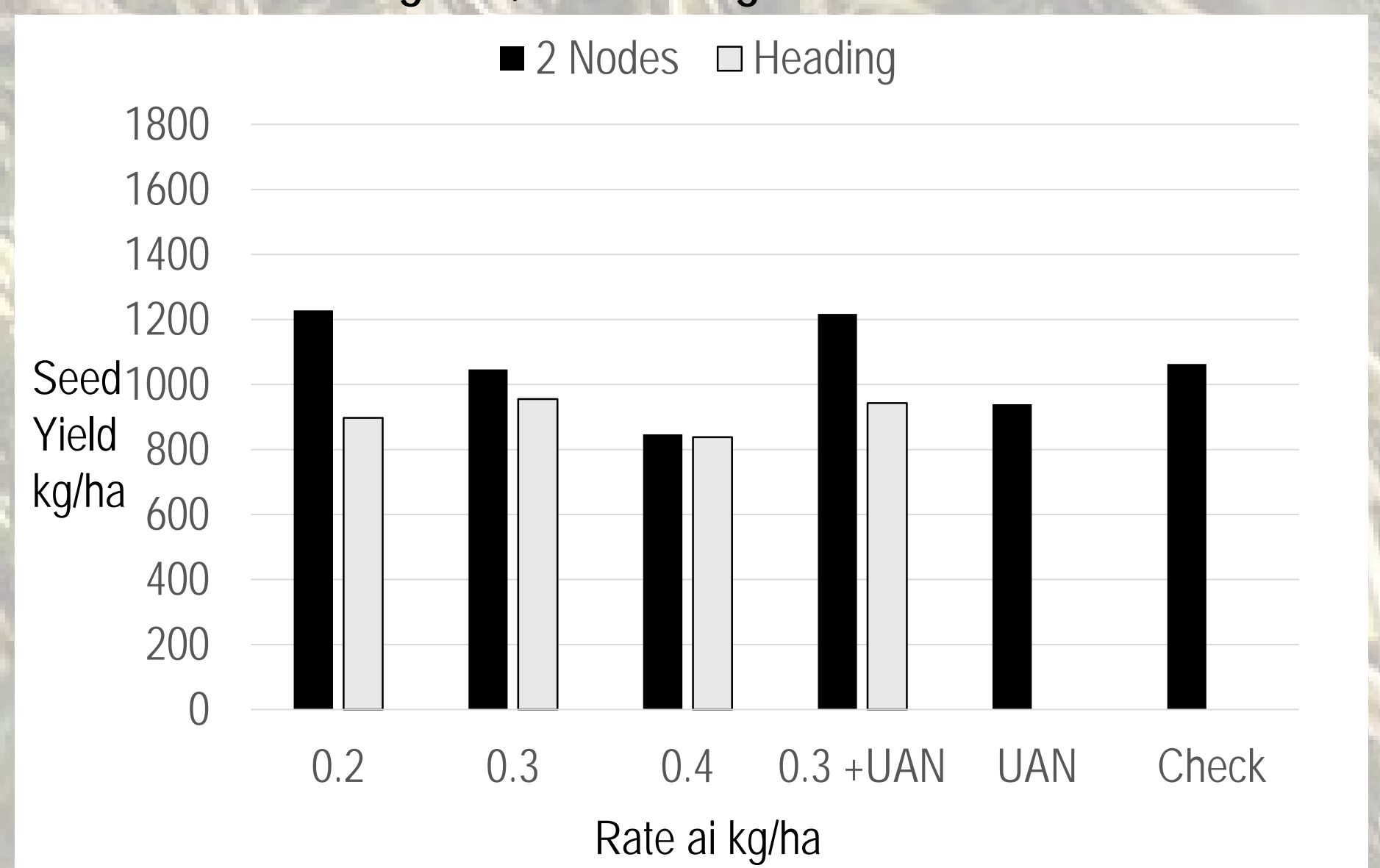


Table 4. Effects of trinexapac-ethyl on a 1st year stand of meadow bromegrass 2016

Treatment kg ai/ha	Plant Height (cm)	Lodging (0-10)	Seed Yield (kg/ha)	Germination (%)	1000 kwt (g)
0.200 at 2 Nodes	125 ab	10	1228	46.3	6.055
0.300 at 2 Nodes	123 ab	10	1046	48.5	5.869
0.400 at 2 Nodes	114 ab	10	847	47.5	5.989
0.200 at Heading	122 ab	10	896	48.5	6.016
0.300 at Heading	115 bc	10	954	48.8	6.146
0.400 at Heading	114 bc	10	838	47.8	5.874
0.300 at 2 Nodes + UAN	122 ab	10	1217	48.3	6.089
0.300 at Heading + UAN	105 c	10	943	49.0	6.137
UAN	127 a	8	940	47.0	5.896
Check	130 a	7	1063	47.5	5.875
CV%	4.5		3.4	1.7	2.5
LSD (P=.05)	7.8		NSD	NSD	NSD

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