

Title: Effects of plant growth regulators (PGRs) on winter wheat yield and quality – 2015

Objective: To evaluate winter wheat height response to the application of different commercial plant growth regulators.

Materials and Methods:

Lodging is a recurring problem in winter wheat production, and is largely a function of plant height. This study was designed to determine the effect of plant growth regulators on reducing crop height, and in turn, percent lodging.

Results:

The study was established as a randomized complete block with three replications. Yellowstone winter wheat was planted at 80 lb/A in 7 inch rows on September 29, 2014. Treatments were applied the following spring. Palisade and Cerone were applied at the two node and flag leaf stage of growth, respectively, either alone or as sequential applications. Palisade was applied at 10.5 oz/A and 14.4 oz/A, while Cerone was applied at 0.5 pt/A and 1.0 pt/A.

The application of plant growth regulators had a significant effect on lodging yet had no significant effect on height. Lodging averaged 12.2% and ranged from 0.0% to 58.0 percent. All treatments afforded a significant reduction in lodging compared to the control. However, there were no significant differences among PGR treatments.

Summary:

Plant growth regulators were effective at reducing lodging. However, the degree of lodging did not impact winter wheat yields.

Table 1. Materials and Methods - Effect of PGRs on Winter Wheat, Kalispell - 2015

Seeding Date:	9/29/2014	Harvest Date:	7/30/2015
Julian Date:	272	Julian Date:	211
Seeding Rate:	80 lbs/A	Soil Type:	Creston SiL
Previous Crop:	Canola	Soil Test:	29-10-158
Tillage:	Conventional	Fertilizer:	9-40-10, 0-0-62,130-0-0 TD
Irrigation:	None	Herbicide:	Huskie Complete 13.7 oz/A

Table 2. Agronomic data from the effects of PGRs on winter wheat yield and quality, Kalispell, MT - 2015.

Treatment	Rate	HD Julian	HT in	LOD %	YLD <sup>1</sup> bu/A	PRO <sup>2</sup> %	TWT <sup>1</sup> lb/bu	TKW <sup>1</sup> g	FN sec
Check		153	40.7	58.0	143.5	11.5	60.3	39.3	409.4
Cerone	0.5 pt/A	153	39.7	0.0	156.6	11.3	61.1	38.6	428.5
Cerone	1.0 pt/A	152	38.7	0.0	142.4	11.2	61.3	39.1	432.2
Palisade	10.5 fl oz/A	153	40.3	20.7	143.7	11.1	60.7	39.9	421.9
Palisade	14.4 floz/A	153	41.0	0.0	152.8	11.2	61.4	38.8	425.0
Palisade	10.5 fl oz/A	152	40.3	6.7	152.2	11.7	60.9	37.6	431.3
+ Cerone	0.5 pt/A								
Palisade	14.4 fl oz/A	152	39.3	0.0	143.9	11.3	61.0	38.9	430.7
+ Cerone	1 pt/A								
Mean		153	40.0	12.2	147.9	11.3	61.0	38.9	425.6
CV		0.4	3.2	167.9	4.9	5.8	1.0	3.2	4.8
LSD		ns	ns	36.4	ns	ns	ns	ns	ns
Pr>F		0.6596	0.3697	0.0359	0.1606	0.9449	0.3849	0.4958	0.8246

HD: heading date, HT: height, LOD: lodging, YLD: yield, PRO: protein, TWT: test weight, TKW: thousand kernel weight, FN: falling number, ns: nonsignificant

<sup>1</sup> adjusted to 13% moisture, <sup>2</sup> adjusted to 12% moisture