



UNIVERSITY OF WISCONSIN AGRONOMY, SOYBEAN RESEARCH, UNIVERSITY OF WISCONSIN-EXTENSION

Response of Four Oat Varieties to a Plant Growth Regulator and Foliar Fungicide Combination-2019

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In an Oat Shock:

- Trivapro® fungicide increased oat yield and test weight in 3 out of the 4 varieties tested
- Palisade PGR applied alone did not reduce lodging or plant height over the NTC
- Only very low levels of crown rust were observed in 2019
- Growers should explore expected ROI and apply BMP's prior to adding any additional inputs

A research trial was initiated in the spring of 2019 at the Arlington Agricultural Research Station, Arlington, WI to assess the impact of a plant growth regulator (PGR) (Palisade®, trinexapac-ethyl, Syngenta) and a foliar fungicide (Trivapro®, benzovindiflupyr+azoxystrobin+propiconazole, Syngenta) in oat to offset the negative effects of lodging and protect against oat stem rust. Four high yielding varieties were selected for this trial: 1) Antigo is a high yielding, early maturing oat with excellent test weight, medium lodging, and moderate resistance to crown rust. 2) Badger is an early season yellow seeded oat variety with medium plant height. Badger has high yield potential and excellent test weights. It has good straw strength and lodging resistance. Badger is resistant to crown rust and has good tolerance to barley yellow dwarf virus. 3) Esker is a mid-season oat which has had consistently high grain yields. BYDV tolerance is comparable to that of Ogle. Crown rust resistance is good. 4) Esker2020 has a high yield potential, and medium to high test weight. It is highly resistant to crown rust. Esker2020 is similar to Esker in lodging and plant characteristics but is superior in grain yield, test weight, and disease resistance. Palisade® PGR was chosen because of its potential to mitigate lodging caused by high nitrogen fertilization levels. It acts by shortening the internodes and strengthening the stem through inhibition of cell elongation. It was applied at 12.0 fl oz/a at the Feekes 4 stage (29-May). Trivapro® was chosen as a broad-spectrum, preventative fungicide against many leaf diseases including rusts. It was applied at 13.7 fl oz/a at the Feekes 9 stage (14-Jun). A higher than recommended N rate was applied to increase lodging risk and challenge treatments.

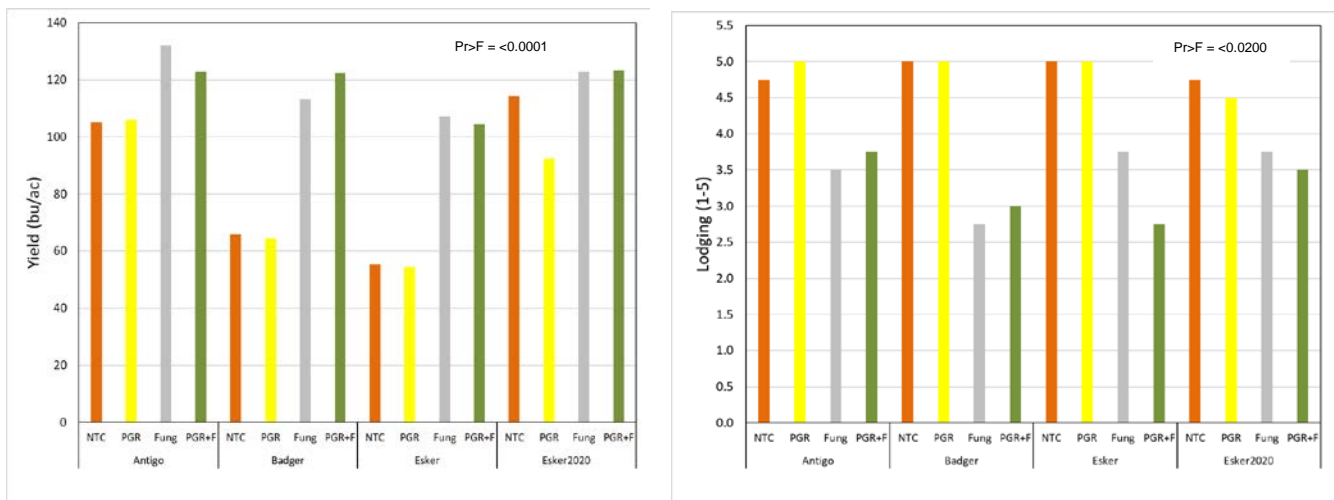


Figure 1. Oat yield (left) and lodging (right) response to a PGR and fungicide combination

Table 1. Materials, methods, and location information.

Year:	2019		
Expt. No.	19092		
Title:	Response of Four Oat Varieties to a Plant Growth Regulator and Foliar Fungicide Combination		
Personnel:	Dr. Shawn Conley, John Gaska, Adam Roth, Spyridon Mourtzinis		
Organization:	University of Wisconsin-Madison, Dept. of Agronomy		
Supported by:	Wisconsin Crop Improvement Association		
Location:	Arlington Agricultural Research Station, Arlington, WI		
FIELD INFORMATION			
Field:	248E		
Previous Crop:	Soybean		
Fertilizer applied:	90 lbs N/a as urea		
Tillage:	No-tillage		
EXPERIMENTAL PROCEDURE			
Exp. Design:	RCB		
Replicates:	4		
Variables:	4 oat varieties 4 PGR and foliar fungicide combinations		
Plot Size:	Planted:	8' x 18'	
	Harvested:	5' x 14'	
Row Spacing:	7.5"		
Planting:	Date:	22-Apr-19	
	Equipment:	No till plot planter	
	Rate:	1.4 million seeds/acre	
	Depth:	1"	
Harvesting:	Date:	7-Aug-19	
	Equipment:	2010 Almaco SPC-40 plot combine	
	<u>Material</u>	<u>Rate</u>	<u>Use</u>
Pesticides:	MCPA	24 fl oz/a	Herbicide : 31-May-2019

Table 2. Grain yield, plant height, lodging, and test weight response of four oat varieties to foliar PGR and fungicide treatments.

Variety	Foliar treatment		Grain yield bu/a	Height inches	Lodging 1-5	Test weight lbs/bu
	Product	Rate				
Antigo	NTC		105.0	37.8	4.8	36.3
	Palisade PGR	12.0 fl oz/a	106.0	36.3	5.0	35.2
	Trivapro Fung	13.7 fl oz/a	132.0	35.3	3.5	37.7
	PGR+Fung	12.0 + 13.7 fl oz/a	122.8	36.5	3.8	38.7
Badger	NTC		65.9	35.5	5.0	26.4
	Palisade PGR	12.0 fl oz/a	64.5	35.5	5.0	24.4
	Trivapro Fung	13.7 fl oz/a	113.2	36.8	2.8	34.0
	PGR+Fung	12.0 + 13.7 fl oz/a	122.3	34.3	3.0	33.2
Esker	NTC		55.4	36.3	5.0	23.1
	Palisade PGR	12.0 fl oz/a	54.5	36.5	5.0	22.5
	Trivapro Fung	13.7 fl oz/a	107.1	37.0	3.8	30.6
	PGR+Fung	12.0 + 13.7 fl oz/a	104.4	36.0	2.8	30.3
Esker2020	NTC		114.3	38.5	4.8	30.8
	Palisade PGR	12.0 fl oz/a	92.5	37.0	4.5	27.9
	Trivapro Fung	13.7 fl oz/a	122.8	39.3	3.8	31.2
	PGR+Fung	12.0 + 13.7 fl oz/a	123.3	37.0	3.5	31.2
Means			100.4	36.6	4.1	30.8
Pr>F			<.0001	0.1708	0.0201	0.0003

Results

The main effects of variety, Trivapro® fungicide or the combination of Palisade PGR® and Trivapro® fungicide were significant for all variables measured including yield. The application Trivapro® fungicide alone significantly increased yield and test weight in three out of the four oat varieties and decreased lodging in all four varieties tested. Similar results were noted with the combination of Palisade PGR® and Trivapro® fungicide. The application of Palisade® alone did not decrease plant height or lodging. The effectiveness of the application of Trivapro® fungicide for control of rust could not be determined due to low incidence of crown rust this season.