



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

Response of Four Oat Varieties to a Plant Growth Regulator and Foliar Fungicide Combination-2018

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In an Oat Shock:

- Trivapro fungicide increased oat yield in Badger, Esker and Shelby 427 oat varieties
- Trivapro fungicide plus Palisade PGR reduced lodging in all four varieties tested
- The application of Trivapro reduced crown rust incidence
- Growers should explore expected ROI and apply BMP's prior to adding any additional inputs

A research trial was initiated in the spring of 2018 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 oats to offset the negative effects of lodging and protect against 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) Shelby 427 has a high yield potential, test weight, and groat percentage. It is resistant to smut, crown rust, and BYDV, and has moderate resistance to stem rust. Shelby 427 also has excellent lodging resistance, a medium plant height, and an early maturity. 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 fl oz/a at the Feekes 4 stage (23-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 (4-Jun). Normal, UWEX recommended nitrogen and corrective fertilization practices were used in this trial.

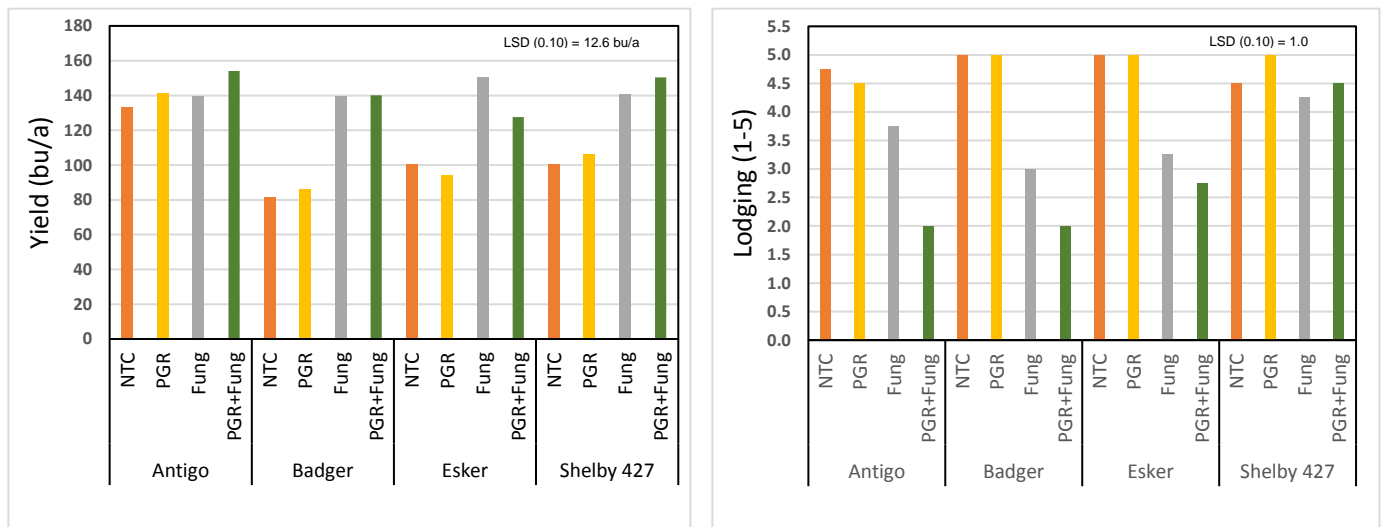


Figure 1. Yield and lodging of four oat varieties, with and without a PGR and fungicide combination.

Table 1. Materials, methods, and location information.

Year:	2018		
Expt. No.:	18092		
Title:	Response of Four Oat Varieties to a Plant Growth Regulator and Foliar Fungicide Combination		
Personnel:	Dr. Shawn Conley, John Gaska, and Adam Roth		
Organization:	University of Wisconsin-Madison, Dept. of Agronomy		
Supported by:	Wisconsin Crop Improvement Association		
Location:	Arlington Agricultural Research Station, Arlington, WI		
FIELD INFORMATION			
Field:	248C		
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:	24-Apr-18	
	Equipment:	No till plot planter	
	Rate:	1.4 million seeds/acre	
	Depth:	1"	
Harvesting:	Date:	24-Jul-18	
	Equipment:	2010 Almaco SPC-40 plot combine	
Pesticides:	<u>Material</u>	<u>Rate</u>	<u>Use</u>
	MCPA	24 fl oz/a	Herbicide

Table 2. Grain yield, plant height, lodging, disease rating, and test weight of oat variety and PGR + fungicide treatments.

Variety	Foliar treatment		Grain yield bu/a	Plant		Crown rust % incidence	Test weight lbs/bu
	Product	Rate		height inches	lodging 1-5		
Antigo	NTC		133.3	40.3	4.8	23	36.0
	Palisade PGR	12 fl oz/a	141.2	39.0	4.5	14	35.1
	Trivapro Fung	13.7 fl oz/a	139.2	41.3	3.8	8	34.7
	PGR+Fung	12.0 + 13.7 fl oz/a	154.0	36.8	2.0	6	36.0
Badger	NTC		81.5	38.0	5.0	55	27.0
	Palisade PGR	12 fl oz/a	85.7	33.0	5.0	48	28.9
	Trivapro Fung	13.7 fl oz/a	139.3	36.8	3.0	11	26.9
	PGR+Fung	12.0 + 13.7 fl oz/a	140.1	33.0	2.0	19	29.5
Esker	NTC		100.5	42.8	5.0	53	26.2
	Palisade PGR	12 fl oz/a	94.0	40.5	5.0	49	26.5
	Trivapro Fung	13.7 fl oz/a	150.1	42.8	3.3	29	29.7
	PGR+Fung	12.0 + 13.7 fl oz/a	127.5	41.3	2.8	33	29.5
Shelby 427	NTC		100.4	41.3	4.5	50	31.3
	Palisade PGR	12 fl oz/a	106.0	39.5	5.0	50	32.8
	Trivapro Fung	13.7 fl oz/a	140.4	41.3	4.3	30	35.0
	PGR+Fung	12.0 + 13.7 fl oz/a	150.4	39.8	4.5	40	32.2
Means			124.0	39.2	4.0	32	31.1
Pr>F			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
LSD (0.10)			12.6	1.9	1.0	9	2.7

Results

The main effects of variety and foliar treatment were significant for all variables measured including yield. Trivapro fungicide increased oat yield in Badger, Esker and Shelby 427 oat varieties whereas Trivapro fungicide plus Palisade PGR reduced lodging in all four varieties tested. The application of Trivapro fungicide also reduced the incidence of crown rust in all varieties.