

# DEVELOPMENT OF CONTROL PROGRAM FOR ERGOT IN KENTUCKY BLUEGRASS SEED PRODUCTION, 1995

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## Abstract

*Fungicides, fusilazole (Punch, Du Pont), propiconazole (Tilt, Ciba), tebuconazole (Folicur, Miles) and Orthorix (Best Sulfur Products) were evaluated for control of ergot in Kentucky bluegrass seed production at two locations in central Oregon during the 1995. Incidence of ergot at the Central Oregon Agricultural Research Center (COARC), Powell Butte location, was much higher in the commercial production field near Trail Crossing. A single application of Punch provided the greatest ergot control, followed by a double application of Tilt at 8 fl oz/a, a single application of Tilt at 8 fl oz/a, and a double application of Tilt at 4 fl oz/a plus Orthorix at 64 fl oz/a.*

## Introduction

Ergot, caused by the fungus *Claviceps purpurea*, is an important flower-infecting pathogen in Kentucky bluegrass seed production in central Oregon. Research has been conducted locally since 1992 to evaluate fungicides, rates, and timings for development of a control program for ergot. The objective of this project was to focus on combinations which included Tilt, the only fungicide with a label for use on grass seed for ergot control.

## Methods and Materials

During the 1995 season fungicides were evaluated for control of ergot in a 'Coventry' Kentucky bluegrass seed field at Trail Crossing near Culver, Oregon. Fungicide evaluations were conducted at a second field of 'Coventry' located at the COARC, Powell Butte site, which was infected with ergot at 1 sclerotia/fe in 1993 and 1994. Punch, Tilt, Folicur, and Orthorix were evaluated during 1995. Surfactants Sylgard 309 and Penaturf were evaluated as the second of two applications following Tilt.

Materials were applied to 10 ft x 20 ft plots, replicated four times in a randomized complete block design, with 8003 TwinJet nozzles on a 9 foot CO, pressurized, hand-held boom sprayer at 40 psi and 30 gal/a water. Sylgard 309 at 16 fl oz/100 gal and R-56 at 1 pt/100 gal were applied in combination with all fungicides except Orthorix, and one 4 fl oz Tilt treatment. Treatments were applied at the Trail Crossing location on June 3 and June 16, and at the Powell Butte site on June 3 and June 13. The first treatments were applied at the initiation of anthesis at both locations.

One hundred panicles were collected from each plot on June 30 at the Trail Crossing location, and July 6 at the Powell Butte site. Number of panicles with sclerotia and total sclerotia per sample

were determined for each plot. Seed weight per sample and weight per 1,000 seed was determined following standard separation procedures. Percent germination followed the Association of official Seed Analysts (AOSA) rules for testing seed.

## Results and Discussion

Incidence of ergot at the Powell Butte site was quite high, while the infection level at Trail Crossing was relatively low. Comparison of the number of panicles with sclerotia and the total number of sclerotia per sample at the Powell Butte site (Table 1) indicates a single application of Punch provides the most effective control of ergot. A single Punch application, both a single and double application of Tilt at 8 oz/a, and a double application of Tilt plus Orthorix statistically out-performed both single and double applications of Orthorix and the nontreated plots. At the Trail Crossing location, there were no significant differences between treatments (Table 2) when comparing either panicles with sclerotia or total sclerotia per 100 panicle sample.

Seed weight per sample or weight per 1,000 seed was not significantly different at either location, indicating no detrimental effect from fungicide applications on seed size. There were no differences in percent seed germination between treatments.

Table 1. Evaluation of fungicides applied for ergot control to 'Coventry' Kentucky bluegrass at the COARC Powell Butte site in central Oregon on June 3 and June 13, 1995.

Fungicide Treatment	Rate		Panicles with sclerotia	Total sclerotia per sample	Weight per sample	1000 seed weight	Seed Germination
	June 3	June 13					
	(fl oz/a)	(fl oz/a)					
Punch 25E	28		13f	23 d	4.47	334	92
Tilt 3.6E/Orthorix + Tilt 3.6E/Orthorix	4/64	4/64	34cdef	89 cd	4.75	335	90
Tilt 3.6E	4		50abcde	194 bcd	4.63	350	94
Tilt 3.6E	4 <sup>1</sup>		57abc	221 abcd	4.63	344	92
Tilt 3.6E + Tilt 3.6E	4	4	43bcde	152 bcd	4.37	345	92
Tilt 3.6E + Orthorix	4	64	45bcde	145 bcd	4.71	337	93
Tilt 3.6E + Sylgard 309	4	322	66ab	282 abc	4.23	335	94
Tilt 3.6E + Penaturf	4	42	56abcd	262 abc	4.40	324	94
Tilt 3.6E	8		33def	89 cd	4.76	340	94
Tilt 3.6E + Tilt 3.6E	8	8	27of	72 cd	4.44	329	92
Folicur 3.6F	4		49abcde	172 bcd	4.67	338	93
Folicur 3.6F	8		51abcde	177 bcd	4.59	346	93
Orthorix	64		65ab	348 ab	4.86	327	92
Orthorix + Orthorix	64	64	61ab	325 ab	4.59	340	91
Untreated			71a	415 a	4.85	327	90
					n.s.	n.s.	n.s.

<sup>1</sup>Application with Penaturf at 42 fl oz rather than standard surfactants

<sup>2</sup> Sylgard 309 applied at 32 fl oz per 100 gals

Mean separation with T-method at P 0.05

Table 2. Evaluation of fungicides applied for ergot control to 'Coventry' Kentucky bluegrass in the Trail Crossing area near Culver, Oregon on June 3 and June 16, 1995.

Fungicide Treatments	Rate		Panicles with sclerotia	Total sclerotia per sample	Weight per sample	1000 seed weight	Seed Germination
	June 3	June 16					
	(fl oz/a)		(%)	(no.)	(g)	(mg)	(%)
Punch 25E	28		1.3	1.3	3.03	291	92
Tilt 3.6E/Orthorix + Tilt 3.6E/Orthorix	4/64	4/64	1.0	1.3	3.03	273	91
Tilt 3.6E	4		1.8	3.3	3.44	291	88
Tilt 3.6E	4'		4.0	8.5	3.38	306	90
Tilt 3.6E + Tilt 3.6E	4	4	1.8	2.0	3.01	296	89
Tilt 3.6E + Orthorix	4	64	2.3	3.8	2.96	295	90
Tilt 3.6E + Sylgard 309	4	322	2.5	5.5	3.23	297	89
Tilt 3.6E + Penaturf	4	42	3.0	6.0	3.34	280	88
Tilt 3.6E	8		1.0	1.5	3.16	285	89
Tilt 3.6E + Tilt 3.6E	8	8	0.3	0.3	3.59	275	87
Folicur 3.6F	4		1.0	2.8	3.53	285	90
Folicur 3.6F	8		0.3	0.3	3.24	280	88
Orthorix	64		6.8	36	3.53	292	90
Orthorix + Orthorix	64	64	3.0	5.8	3.28	302	93
Untreated			5.0	10	3.48	296	91
			n.s.	n.s.	n.s.	n.s.	n.s.

'Application with Penaturf at 42 fl oz rather than standard surfactants

2 Sylgard 309 applied at 32 fl oz per 100 gals

Mean separation with T-method at P 5 0.05