ERGOT LEVEL EFFECT OF SEED STOCK ON DISEASE INCIDENCE

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Abstract

Ergot (Clavicpes purpurea) *sclerotia are the primary means of survival and source of inoculum for infection of grass flowers. To determine if there is a direct correlation between the number of sclerotia present in seed at planting and incidence of the disease in following years, 14 ft x14 ft plots of 'Coventry' Kentucky bluegrass* (Poa pratensis) *seed was infested with 0, 0.1, 0.5, 1, 2, and 3 percent ergot sclerotia by weight during the 1995-96 and the 1996-97 seasons. No differences were observed between treatments in the number of sclerotia present at harvest. It is unclear whether this is the result of experimental design or a lack of correlation with the number of sclerotia present in the seed*

Introduction

Ergot *(Calvicpes purpurea)* is an important flower-infecting pathogen, which is particularly damaging to Kentucky bluegrass *(Poa pratensis)* seed production. The disease not only replaced the seed with ergot sclerotia, but also produces honeydew that makes harvest difficult. The objective of this study was to determine if there is a direct correlation between the number of sclerotia present in seed at planting and the incidence of the disease in following years.

Methods and Materials

`Coventry' Kentucky bluegrass seed was infested with 0, 0.1, 0.5, 1, 2, and 3 percent ergot sclerotia by weight. This seed was planted August 23, 1995, and August 29, 1996, in 14 ft X 14 ft plots, replicated 4 times at the Central Oregon Agricultural Research Center, Madras, Oregon, location. Plots were separated by 10-foot borders planted with 'Stevens' wheat *(Triticum aestivum)* to provide isolation and to prevent movement of secondary spores by wind and insects between plots.

One hundred panicle samples were harvested from each plot on July 9, 1996, and July 8, 1997. Samples were evaluated for percentage of total sclerotia per 100 panicle samples and panicles with sclerotia both years. Panicles with honeydew were determined in 1997.

Results and Discussion

There were no differences either year in the number of sclerotia present at harvest between the different levels of ergot-infested seed at planting (Tables 1, 2). These results are similar to the first year of the project conducted in Powell Butte, Oregon, during the 1994-1995 season. It is not clear if no effect is due to a lack of correlation with the level of sclerotia in the seed at planting or to experimental design. Explanations would include the possibility that the 10-foot borders of wheat may not have been sufficient to prevent cross contamination between plots, or alternately, spores could have come from outside the trial area.

The 1994-1995 season plots in Powell Butte were sprinkler-irrigated twice a week before harvest, and it appeared that a moist, high-humidity microclimate developed in the protected pockets of grass surrounded by the three-foot high wheat. This would have provided near optimum conditions for ergot infection during flowering. However, during the 1995-1996 season, plots were irrigated once a week, and the plots remained relatively dry. Despite the dryer conditions, a moderate level of ergot developed in the plots, but was not significantly correlated with the level of inoculum at planting. During the 1996-1997 season, plots received a moderate amount of water, with no differences between inoculum levels.

Table 1. Effect of sowing various levels of ergot-infested seed on incidence of the disease 1995-96 at the Central Oregon Agricultural Research Center, Madras, OR.

Infested sown seed by weight	Sclerotia per sample	Panicles per sample with sclerotia
(%)	(number)	(%)
0	122	36
0.1	103	22
0.5	66	15
1.0	47	15
2.0	104	31
3.0	134	23
LSD P<0.05	NS	NS

Table 2. Effect of sowing various levels of ergot-infested seed on incidence of the disease 1996-97, Central Oregon Agricultural Research Center, Madras, OR.

Infested sown seed by weight	Sclerotia per sample	Panicles per sample with honeydew
(%)	(number)	(%)
0	2.6	1.8
0.1	1.0	0.8
0.5	2.6	1.0
1.0	1.6	0.6
2.0	0.8	0.4
3.0	3.8	1.4
LSD *P*< 0.05	NS	NS