

Correlations Between the Distribution Of *Tilletia Indica* Teliospores and Bunted Kernel Incidence

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BACKGROUND

Karnal bunt, or partial bunt, of wheat is caused by the fungus *Tilletia indica* and was first observed in the United States in 1996. Karnal bunt causes wheat kernels to be replaced with fungal propagules, which are referred to as teliospores. Teliospores burst through the seed coat of the wheat kernel and drop into the soil. Each diseased kernel can produce many reproductive spores and aid in the spread of the disease to other wheat fields. Teliospores that are deposited into the soil become the main source for disease in successive years. Bunted wheat can have an impact on flour quality by causing a fishy odor. Since Karnal bunt was found in the U.S., quarantines have been implemented on wheat farmers in several regions, including two regions in Texas. These quarantine regulations have had a devastating economic impact on wheat producers in the affected regions of the state and will continue to negatively impact wheat growers until they are repealed.



T. indica teliospores.



Photo showing the difference between bunted kernel positive wheat kernels (with black teliospores) and non-bunted wheat kernels.

OBJECTIVES

- Determine the distribution of *T. indica* teliospores in a naturally infested wheat field.
- Correlate the number of teliospores from soil points to bunted kernel incidence in the same field.

RESULTS / BENEFITS

The main benefit of this research will be development of a disease-to-teliospore distribution correlation that will allow educated predictions about future disease incidence. This would provide a better understanding about the ecology and epidemiology of the pathogen in natural settings.

Results will also help regulatory personnel to make decisions on quarantined fields and predict whether or not teliospore density might result in greater disease incidence.