

**USDA/APHIS CAPS Fiscal Year 2007  
Delaware Karnal Bunt of Wheat Survey  
Final Report**

Cooperators: University of Delaware  
State: Delaware  
Project: Karnal Bunt of Wheat Survey

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I. Introduction

Karnal bunt is a fungal disease of wheat and triticale (a hybrid of wheat and rye). The disease is caused by the fungus *Tilletia indica* Mitra. Typically, only a portion of the wheat kernel is affected, hence the disease is also called partial bunt. The disease is most severe when the weather is cool and wet at the time the wheat is heading out. The first discovery of Karnal bunt in the United States was in Arizona in March, 1996. Additionally, limited wheat growing areas of California, New Mexico, and Texas were regulated because of association with Karnal bunt infected seed or grain produced in the infested areas in Arizona. In 1997, Karnal bunt was also discovered in San Saba County, Texas. In succeeding years in the regulated areas, Karnal bunt was found at low levels. Karnal bunt was not found in national surveys conducted annually in other wheat growing counties in the United States. In the harvest season of 2001, wheat fields in additional Texas counties were found to be infected. Regulatory quarantines were further imposed to protect US wheat export markets. Karnal bunt has minimal effect on quality and yield of wheat. The disease can be managed by use of clean seed treated and appropriate agricultural practices. The processing of grain used for consumption often kills *Tilletia* spores and grain used for consumption is not a risk for the spread of Karnal bunt. A survey in Delaware of harvested grain was done to detect any possible infestation with *Tilletia*, and support the ability of Delaware to grow and ship grain not infected.

## II. Methods and Results:

Wheat grain harvested in all three counties of Delaware was sampled for the presence of Karnal bunt between July 1 and July 30, of 2007. The protocol for wheat grown for grain in Delaware called for an examination of the grain for bunted kernels. Four samples representative of the three Delaware counties were collected by the staff of the Delaware Department of Agriculture at the grain mills, comprising a composite of all wheat from Delaware growers. Processing of samples within Delaware was done by the University of Delaware Plant Diagnostician in Newark. The protocol found in the most recent APHIS-PPQ Karnal Bunt Survey Procedures Manual was followed. The protocol included handling of samples in a reception area, followed by analysis in a lab under clean conditions. One 500 ml aliquot of grain from each 4 pound sample was examined using a stereomicroscope for the presence of bunted kernels. No kernels were found that appeared bunted. Dry weather resulted in very low levels of any fungi found on the grain. No samples were sent to the PPQ National Identifier (Mary Palm) in Beltsville. All results were recorded and the State Survey Coordinator entered data into NAPIS database on August 21, 2007. All material was disposed of as per project guidelines.

No *Tilletia indica* infected kernels or spores were observed in any of the wheat sampled. Individual sample specimens were recorded as follows:

Sample DE-S-07-701 – Perdue Farms, Seaford, Sussex County - **no Karnal bunt**, < 1% black point and scab

Sample DE-S-07-702 – Mountaire Farms, Millsboro, Sussex County – **no Karnal bunt**, < 1% black point and scab

Sample DE-K-07-703 – Mountaire Farms, Harrington, Kent County – **no Karnal bunt**, very clean overall

Sample DE-N-07-704 – Peavey Grain Company, Townsend, New Castle County – **no Karnal bunt**, < 1% black point and scab