

# KARNAL BUNT

NOT KNOWN TO  
OCCUR IN IDAHO



**Name:** Karnal Bunt

**Scientific Name:** *Tilletia indica* (*Neovassia indica* synonym)

Karnal bunt (KB), or partial bunt is a fungal disease of wheat, durum wheat, rye, and triticale (a hybrid of wheat and rye). It got its name because it was discovered in 1931 on wheat grown near Karnal, India. Since then, it has been found in all major wheat-growing states of India, as well as in Pakistan, Iraq, Mexico, and Afghanistan. The disease may have been present in Mexico since 1970 and has been well established in some areas in northwestern Mexico since 1982. It was detected for the first time in the United States in March 1996 in durum wheat seed by the Arizona Department of Agriculture. On March 25, 1996, the Animal and Plant Health Inspection Service (APHIS) issued a federal Karnal bunt quarantine which directly affects the state of Arizona and six adjacent counties in Texas and New Mexico. On April 19, the quarantine was extended to include Imperial County and the eastern part of Riverside County in southern California.



Karnal bunt is spread by spores. Spores can be carried in soil and on a variety of surfaces, including seed and other plant parts, farm equipment, tools, and even vehicles. They can also be windborne. KB spores are uplifted during the burning of wheat fields, and areas downwind may become contaminated if the spores remain viable. Spores can survive in soil for several years under certain conditions. Moderate temperatures and dry soil during fallow periods, such as occur in the southwestern states. Even though previous research might suggest conditions in temperate climates are not favorable for spore survival or disease establishment, the introduction of contaminated seed may lead to minor outbreaks during subsequent years. Thus, we need to be extremely vigilant regarding seed sources.

Karnal bunt is difficult to identify in the field. Developing wheat kernels are randomly infected and usually only partially converted to the fungus, which is why KB is sometimes called partial bunt. Infection typically occurs in only a few seeds per head, and not all heads on a single plant are infected. Infected grain shows no symptoms until near maturity. Even then, the disease is difficult to detect in the field. The grain must be threshed and examined. The diseased portion of kernels is dark in color and fishy smelling. The kernel usually remains whole, with only a part of the germ end converted into a black powdery spore mass, usually along the kernel groove. In extreme cases, the entire kernel is converted into spores. Examination must be done carefully, since three other diseases can be mistaken for KB: black point, common bunt, and dwarf bunt. Large, dark teliospores are diagnostic.



