

# MONITORING THE SPREAD OF KARNAL BUNT OF WHEAT IN SOUTH AFRICA

Karnal Bunt disease of wheat, caused by the fungus *Tilletia indica*, was first reported from South Africa in 2001. As this disease has potentially severe economic implications for wheat producing countries, the Department of Agriculture, Forestry and Fisheries (DAFF) launched a countrywide survey during the 2000/2001 season to establish the distribution of the fungus in South Africa, by sending seed samples to ARC-PPRI's Mycology laboratory for analyses. In the 2007/2008 season, another survey was done to confirm the distribution of Karnal Bunt in South Africa, and to determine if it was still contained in the Northern Cape. During this survey, 70 silos throughout South Africa were sampled by DAFF inspectors by collecting dust using cotton swabs (instead of collecting seed).

Using cotton swab samples at various areas inside silos to retrieve fungal spores in the dust, including *T. indica* teliospores, proved to be far more economical and easy to perform. As the results of the swab survey correlated well with the results found using the seed wash method used before, it was decided to use the swab method during surveys and, if found positive, seed samples were collected from the silo. Currently, samples from DAFF are still being analyzed on an ad hoc basis as well as samples received privately from farmers, seed companies, etc.

## PROTOCOL

The identification of *T. indica* spores are based on a description from the North American Plant Protection Organization (NAPPO) standards for phytosanitary measures (1999): Teliospores are brown to opaque black, globose to subglobose, 22-61µm diameter; exospore with dense spines, 1.5 – 7.0 µm long, forming a verrucose surface ornamentation.

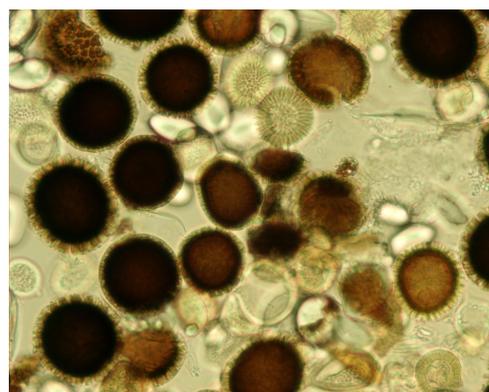
Selected microscope slides, identified as positive for Karnal Bunt, are being sent to an independent research laboratory that verifies identity of the spores found on the slides. All equipment used in this sample analysis process is de-contaminated in a 1:2.5 sodium chlorite solution to kill all *T. indica* spores. Disposable materials are discarded into waste bags, sealed and autoclaved, before they are disposed of. Solid waste is sealed, autoclaved and incinerated.

## OUTCOME

Results from such surveys enable the Department of Agriculture, Forestry and Fisheries to take informed decisions regarding regulation of diseases in compliance with the International Standards for Phytosanitary Measures of the International Plant Protection Convention (IPPC).

### For more information contact:

**Dr Elna van der Linde**  
ARC-Plant Health and Protection  
Tel: 012- 808-8000/8288



Karnal bunt spores



Cotton swabs and (bottom photo) Flip examining the slides

