What is Wheat CAP?

Coordinated Agricultural Project for Wheat is a multi-state, multi-institution project, funded by USDA/CSREES dedicated to the genetic improvement of US wheat through research, education and extension.

The Problem

Scab, also known as Fusarium head blight (FHB), has become a problem of epidemic proportions and is one of the most destructive diseases of wheat. In warm, wet climates, scab forms in the developing wheat head, damaging grain (fig. 1) and reducing yield. Scab is distributed worldwide and is caused by several species of the genus Fusarium that are soil or residue borne. Some species that cause scab produce a mycotoxin that is harmful to animals and humans. Losses due to scab exceed $2 billion.

The pathogen tends to overwinter in senescing stalks of a number of grasses, particularly corn. Although cultural and management practices can reduce, they cannot completely control scab epidemics. Application of fungicides can reduce damage level between 50 and 60% (under optimal conditions). However, a lower cost and more consistent strategy of control could be provided by breeding new varieties with reduced susceptibility.

Breeding Difficulties

Unfortunately, resistance to scab is not controlled by a single gene, instead several genes are needed to provide resistance. Therefore, the overall resistance of a given variety is the result of the combined effects of the resistance genes present. Traditionally, breeders identify resistant varieties by screening plants in the presence of the disease. This is problematic, since it requires infection of a large number of plants and the environment has a significant impact on the level of infection.

What is the Wheat CAP doing?

The Wheat CAP has established marker assisted selection in 25 public wheat breeding programs. We will continue to use MAS to improve wheat disease resistance, yield and quality.

for more information, please visit: http://maswheat.ucdavis.edu