

# Septoria tritici & wheat mildew

current status

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# Septoria tritici :

## BIRST SA-LINK (2000-04)

- Most resistance genes known to exist in UK germplasm have been identified and are being mapped
- Regions of the genome containing other, potentially important resistance genes have been identified
- Variation in 'disease escape' traits among current UK varieties, makes a minor contribution (at most) to reducing levels of septoria
- However, some major resistance genes are important in disease control in field
  - But not because matching pathogen virulences are rare

# Septoria tritici : future priorities

## IMPRESSIV SA-LINK (2004-09)

- Test genetic basis of association between Septoria susceptibility and increased yield
  - Identify genes which increase resistance without reducing yield
- Test contribution of resistance genes to disease control in the field
  - Test hypothesis about value of R-genes generated in BIRST
- Complete (as far as possible) genetic analysis of resistance in UK wheat
  - Identify resistance genes in current UK varieties and important European varieties

# Mildew : a re-emerging problem?

- Many wheat and barley varieties in the UK now have unknown major resistance genes
  - Modern wheat varieties (Shamrock, Robigus, Tybalt)
  - Older varieties in modern pedigrees (Sicco, Wembley, Axona...)
  - Large but short-term benefit
  - Masks good partial resistance (has been durable for >20 years)
- Genetics of resistance & markers for R-genes would assist breeders to choose to use major genes or to avoid them
- Straightforward to identify & map:
  - Pathology tests on F<sub>3</sub> populations with differential isolates (needs specialised knowledge of mildew)
  - Microsatellite markers (mapped, publicly-available)
  - Same methods for wheat & barley