

Spot blotch incidence relying on biotrophic disease resistance genes in spring wheat

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Preface: The lack of wheat cultivars resistant to spot blotch disease caused by hemibiotroph pathogen *Bipolaris sorokiniana* has become of increasing concern in our country. Little is known for resistance genes and seeking for additional sources is an urgent solve.

Methodology: I. Field screening of Egyptian wheat cultivars for resistance to spot blotch associated with phenotypes linked to biotrophic disease resistance genes *Lr34* (LTN₁), *Lr46* (LTN₂) and *Sr2* (PBC).

Spot blotch



Resistance LTN

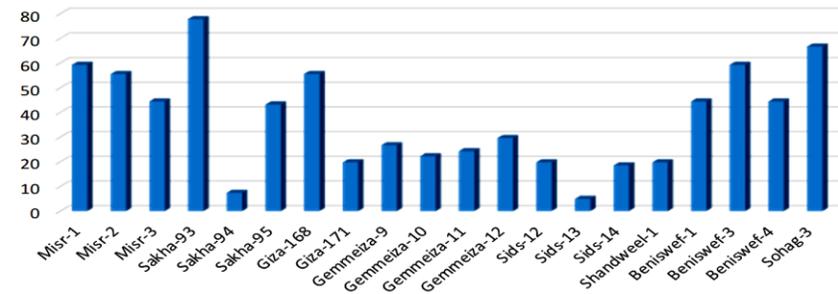


Methodology: II. Molecular screening of biotrophic disease resistance genes, *Lr34* linked to leaf tip necrosis (LTN₁), *Lr46* linked to leaf tip necrosis (LTN₂) and *Sr2* linked to pseudo black calf (PBC).

Disease incidence and phenotypes

- LTN and PBC phenotypes were recorded with 14 wheat cultivars.
- A strong association between LTN and spot blotch resistance in ten cultivars.
- Susceptibility to spot blotch was associated with PBC in four cultivars (Fig. 1).

Figure (1): Spot blotch Incidence



Genotypic alleles

- The presence of gene *Lr34* linked to LTN₁ in two cultivars, exhibiting high level of resistance.
- Gene *Lr46* linked to LTN₂ was present in 12 cultivars, nine of them exhibited low to moderate levels of resistance.
- Gene *Sr2* linked to PBC was recorded in three susceptible cultivars.

Conclusion

Although the discouraging observation of spot blotch susceptibility with PBC-associated gene *Sr2*. However, LTN linked to resistance genes *Lr34* and *Lr46* can be used as a morphological marker to facilitate selection for resistance. Cultivars possessing *Lr34* and *Lr46* should be incorporated in breeding program for spot blotch resistance. Further studies on spot blotch resistance loci are needed to provide more enough protection against the pathogen.