



## Genetic Effects of Resistance to Spot Blotch in Selected Wheat Genotypes

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### Introduction & Aim:

Spot blotch disease caused by *Bipolaris sorokiniana* Shoemaker is the major fungal disease affecting wheat production in the warm and humid environments worldwide. The pathogen infects all plant parts, thus resulting in reduced yield and quality due to shrivelled grains. Yield loss reaching up to 100% on susceptible cultivars has been reported in Zambia due to the disease various control methods (crop rotation, removing of diseased leaves and use of chemicals) are used to reduce damage caused by the disease. However, these have not been effective, practical or economical. Breeding for resistance is considered to be the most viable, economical and sustainable approach to reducing losses caused by the disease.

Knowledge on the genetics of spot blotch resistance is required for effective resistance breeding against the. Previous studies on the type of gene action controlling inheritance of resistance to spot blotch disease have reported conflicting reports Prashant and Kumar and Neupane et al. Reported that resistance to spot blotch disease was dominant and controlled by one major gene. Duveiller and Sharma suggested that dominant, recessive and epistatic gene effects governed the inheritance of resistance to the disease. Similarly, studies by Ragiba et al. indicated the importance of the dominant and recessive gene in conditioning resistance. Singh et al.

showed two recessive genes responsible for governing inheritance of resistance to the disease. Sharma et al. found that partially dominant genes controlled the inheritance of resistance and that resistance was inherited quantitatively with moderate to high heritability estimates. Conversely, Joshi et al. indicated the presence of three additive genes controlling the inheritance of resistance. It is clear that more information about the inheritance of resistance and the type of gene action controlling resistance to spot blotch is required for the successful spot blotch resistance breeding of wheat. The objective of this study was to determine the genetic effect influencing inheritance of resistance to spot blotch in selected wheat genotypes using generation mean analysis to devise a resistance breeding strategy.

**Keywords:** additive genetic effect, dominance, epistasis, generation mean analysis, wheat