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RESEARCH ARTICLE

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Effect of grain smut incidence on crop growth, seed yield and quality parameters of *Rabi* sorghum

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ABSTRACT

The field cum laboratory experiments was carried out to assess the effect grain smut incidence on crop growth, seed yield and quality of *Rabi* sorghum. The seeds were inoculated with smut spores @ 3 g kg^{-1} then treated with different fungicides @ 3 g kg^{-1} of seeds. The seeds sown without any fungicidal treatment (control) recorded minimum number of leaves per plant (7.5), plant height at maturity (188.1 cm), ear head length (15.2 cm), seed weight per plant (28.0 g), seed yield (945.4 kg ha^{-1}), 1000 seed weight (29.5 g), seed germination (85.3 %), seedling length (34.1 cm) and seedling dry weight (123.0 mg^{-5} seedlings) as compared to treated seeds. This might be due to the higher per cent of smut incidence (8.27) recorded in control.

KEY WORDS : Grain smut, Fungicides, Seed yield, Sorghum

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INTRODUCTION

Sorghum [*Sorghum bicolor* (L.) Moench] is an important cereal in the world next to wheat, rice, maize and barley. Sorghum is usually grown in both *Kharif* and *Rabi* season, especially growing of sorghum in *Rabi* season is unique to India and particularly to the southern states like Maharashtra and Karnataka. It is advisable to take seed production during *Rabi* or *summer* season as the yields are higher and the quality of seed is better compared to *Kharif* seed production. Obviously, there is a good scope to evolve suitable seed production technology for *Rabi* season. Productivity of sorghum crop in India is much less, this is because of sorghum is prone to several diseases and pests which cause considerable reduction in seed yield. Depending upon climatic condition and intensity of cultivation practices adapted the occurrence of sorghum.

Grain smut of sorghum is one among the major diseases. The incidence of grain smut is quite common and destructive in almost all sorghum growing areas of the world. In India, it is one of the most serious diseases of the crop in states of Tamil Nadu, Karnataka, Andhra Pradesh, Uttar Pradesh, Madhya Pradesh and Maharashtra. It causes direct loss of grains by replacing grain with smut sori. The incidence of grain smut ranged from less than 1 per cent to more than 40 per cent infected panicles. Most (>90 %) of the panicle were severely infected, and all grains were replaced by smut sori (Pande *et al.,* 1997). The smut pathogen is externally seed borne. During threshing the sori break releasing the spores which adhere to the surface of healthy seeds and remain dormant till next season. Sori/spores also fall down in the soil at time of harvest but soil borne inoculum plays insignificant role in the epidemiology of the disease. The infected plants appear to be normal till the emergence of ears when the diseased kernels are individually replaced by dark brown powdery masses of chlamydospores (sorus) covered by grayish brown membrane. With these ideas in view, a study was carried out to evaluate the different fungicides to control of grain smut incidence and its effect on crop growth, seed yield and quality parameters of *Rabi* sorghum.

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