

Economic Effect of the Diseases in Cultivation of Sorghum Crop and their Management

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Grain Smut of Sorghum

Causal Organism:- *Sporisorium sorghi* or *Sphacelotheca sorghi*

Spores are round to shortly oval dark brown in mass but olive brown singly smooth walled and 5–9-micron diameter. There after united in loos balls which break up in to individual spores when placed in water.

Symptoms:- Only individual grain affected but usually majority of them, sometimes whole ears. Each grain is transformed in to a spore sac which varies shape and size according to variety. Sometime stamen normal and also absent.



Management

- Disease is seed borne; seed treated with suitable fungicide is quite effective.
- Use of clean seed from cobs free from smut sori.
- Emersion of seeds in 0.5% formalin for 2 hours followed by quick drying and sowing had been old and very effective recommendation.
- Use resistant variety T29/1, PJ7K, CSH7R, SDM9.

Loose Smut of Sorghum

Causal Organism:- *Sporisorium cruentum*

The spores are formed in ovaries and floral bracts. Loose smut sori are often long and pointed. The covering of sorus is made up of loosely joined rounded and grey fungal cells.

Symptoms:- The affected plants are shorter than the healthy plants. The stalk is thinner and produces



tillers. Ears come out earlier. Generally all the spikelets of the head are affected and also floral part affected. Ovary contains smut sori and ruptures sori release dark colours spores.

Management:- The seed treatments recommended for the control of grain smut are effective in the control of loose smut also. Where soil survival of spores is possible crop rotation and field sanitation are recommended.

Head Smut of Sorghum

Causal Organism: *Sporisoriumreilianum* (kuhn) Langdon and Fullerton [syn. *Sphacelothecareiliana* (Kuhn) Clinton and *Sorosporiumreilianum* (Kuhn) McAl pine]. Phase contrast microscopy of the development of the sorus has shown that instead of a single central column there are several branched columns emerging from the sorus base. As the sorus grows and spores are differentiated the number of parenchyma cells in the columns is reduced. In fully grown sorus the columns consist of only only vascular bundles. The spores are radish brown to black finely echinulate irregular to spherical 9-12 micro meter in diameter.



Symptoms: In Sorghum the smut fungus reduced plant height. The major reduction occurs in the internodes nearest the panicle and is more sever in naturally infected than the artificially infected plant. Less affected plants develop sterile panicles and eventually. The inflorescence is invariably destroyed in the infected plants.

Management

- ❖ Deep ploughing in summer season.
- ❖ Sanitation of crop field.
- ❖ Adopted proper crop rotation.
- ❖ Infected plans destroy.
- ❖ Seed treated before sowing
- ❖ Bacillus megateriumis effective against the smut through its antibiotics.

Long Smut of Sorghum

Causal Organism:- *Tolyposporiumehrenbergii*

Spores ball of fungus remain united in solid balls. The exposed surface of the spores is covered by flattened echinulations. The spores do not have dormancy period. Sporidia are numerous single or in chain.

Symptoms:- Individual and only few grains are transformed in to smut sori. Each sorus is surrounded by healthy grains. The sori are very prominent long cylindrical slightly covered and rupture at the apex to release the brownish green spore balls.

Management

- ❖ Sanitation of crop field.
- ❖ Adopted proper crop rotation.
- ❖ Seed treated before sowing.
- ❖ Infected plans destroy.
- ❖ Use resistance variety like irungu