



IVORYCHEM PTE LIMITED
10 Jalan Besar
#10-03 Sim Lim Towers
Singapore 208787
Tel / Fax +65 – 63145409
contact@ivorychem.com
www.ivorychem.com

Company Registration No 200405572W

MANAGEMENT OF FUNGII IN MAIZE - WHITE PAPER BY IVORYCHEM

CAUSAL ORGANISMS	RECOMMENDED PRODUCT
Rusts and Powdery Mildew	cyproconazole
Sheath blight	ARREST 25 EC
Brown leaf spot	
Narrow brown leaf spot	
Brown blotch	
Leaf smut	
Kernel smut	
Black sheath rot	
Stem rot (Suppression)	
False smut (Suppression)	
Leaf curl	RAPIDOX 50 WP
Freckle	
Brown rot	
Black spot	SYSTAKIL 80 WP

SYMPTOMS

Kernel smut

White to greyish-white galls (soft tumours) develop on any part of the plant. These galls are light coloured in early stages, become blackish on maturity and filled with black powder (spores of disease causing fungus). Large sized galls involving the entire head.

The disease causing fungi perpetuates through diseased plant debris lying in the field.

Control:

1. Do not sow diseased seed,
2. Fallow 2-3 years crop rotation and
3. Do not expose the manure heaps near the field.



See photo: Smut (*Ustilago maydis*)

CRAZY TOP, *Sclerophthora macrospora*

1. **Symptoms.** Tassels develop a mass of leafy structures; no pollen is formed. Ears may be replaced by leafy structures. Severely infected plants may have narrow straplike leaves, produce no tassel or ears, be stunted, and develop excessive suckering. Crazy top is rare but may be found in low areas of a field where the soil may be flooded for brief periods shortly after planting.



IVORYCHEM PTE LIMITED
10 Jalan Besar
#10-03 Sim Lim Towers
Singapore 208787
Tel / Fax +65 – 63145409
contact@ivorychem.com
www.ivorychem.com

Company Registration No 200405572W

2. **Survival and Spread.** The fungus survives in the soil and in infected crop residue. It is spread in water by swimming spores which are produced when the soil is saturated for at least 48 hours. Infection may occur any time from seed germination until the seedlings are in the four- to five-leaf stage.
3. **Other Crops Affected.** Small grains, wild grasses, and sorghum.
4. **Control.** No seed treatment is effective and no information is available about hybrid resistance. Provide adequate soil drainage. Control grassy weeds. Avoid planting in low, wet spots.

EYESPOT, *Kabatiella zae*

1. **Symptoms.** Very small (1/16 to 1/8 inch), translucent circular to oval spots with yellow halos. Initial spots are water-soaked; the spots later develop a brown or purple border, hence called eyespot. Easily seen when leaf held up to light and light transmitted through spots.
2. **Survival and Spread.** Overwinters in corn stubble. Spores carried to crop by wind or splashing rain.
3. **Control.** Crop rotation and tillage reduce disease levels.

NORTHERN LEAF BLIGHT, *Helminthosporium turcicum*

1. **Symptoms.** Large elliptic water soaked lesions develop on the leaves; these soon turn straw colored to dark brown with a faint target pattern. Lesions form on the husk, but the kernels are not attacked.
2. **Survival and Spread.** Fungus survives on crop residue, producing wind-borne spores that infect the new crop.
3. **Other Crops Affected.** Sorghums, sudangrass, and Johnsongrass.
4. **Control.** Hybrids vary in resistance. Bury corn crop refuse by tillage; use crop rotation.

RUST, *Puccinia sorghi*

1. **Symptoms.** Pustules form on leaves and sometimes on husks. Elongated red pustules bear summer spores; later, black winter spores form in the pustules.
2. **Survival and Spread.** Survives on its alternate host, *Oxalis* sp. (wood sorrel), and as summer spores in the south. Summer spores blow up from the south. Favored by cool temperatures and dew.
3. **Control.** Rarely serious enough to require control. Hybrids vary in resistance.



IVORYCHEM PTE LIMITED
10 Jalan Besar
#10-03 Sim Lim Towers
Singapore 208787
Tel / Fax +65 – 63145409
contact@ivorychem.com
www.ivorychem.com

Company Registration No 200405572W

Sheath rot

The damage of sheath rot on crop begins with the development of spots or lesions unfilled and discolored panicles.

Sheath rot is characterised by regular spots or lesions, with dark reddish brown margins and gray center and discoloration in the sheath. Lesions enlarge and often coalesce and may cover the entire leaf sheath. Severe infection causes entire or parts of young panicles to remain within the sheath. Unemerged panicles rot and florets turn red-brown to dark brown. A whitish powdery growth appears inside the affected sheaths and young panicles, leaving infected panicles sterile, shrivelled, or with partially filled grain.

Factors favouring fungal development

- associated with insect injury
- presence of entry points
- high amount of nitrogen
- high relative humidity
- dense crop growth
- temperature from 20 to 28°C - heading to maturity rice crop stages

See Photo. Infected sheaths (IRRI)



CONTROL

Chemical – At booting stage, seed treatment and foliar spraying with SYSTAKIL 80 WP was found to reduce sheath rot. Foliar spraying with benomyl and RAPIDOX 50 WP were also found to be effective. SYSTAKIL 80 WP may be purchased from Ivorychem Trinidad or your nearest distributor.

Cultural – Removal of infected stubbles after harvest and optimum plant spacing are among the cultural practices that can reduce the disease. Application of potash at tillering stage is also recommended. Foliar spray of calcium sulfate and zinc sulfate was found to control sheath rot.

Source: Nyvall, R. F. 1979. Field crop diseases handbook. AVI Pub. Co. Inc. Westport.