



DISEASES OF MAIZE ***(ZEA MAYS)***

DFHCM-I
CREDIT HOUR:2+1

MAJOR DISEASES OF MAIZE

FUNGAL DISEASES	
DOWNY MILDEW OR CRAZY TOP OF MAIZE	<i>Peronosclerospora sorghi</i>
TURCICUM LEAF BLIGHT/LEAF SPOT	<i>Helminthosporium turcicum</i> (Syn : <i>H. maydis</i>) PERFECT STAGE: <i>Trichometasphaeria turcica</i>
COMMON SMUT	<i>Ustilago maydis</i>
HEAD SMUT	<i>Sphacelotheca reiliana</i>
BROWN SPOT	<i>Phycooderma zae-maydis</i>
RUST	<i>Puccinia sorghi</i>
CHARCOAL ROT	<i>Macrophomina phaseolina</i> (Sclerotial stage: <i>Rhizoctonia bataticola</i>)
STALK ROT OF MAIZE	<i>Cephalosporium acremonium/C.maydis</i>

MAJOR DISEASES OF MAIZE

BACTERIAL DISEASES	
SHOOT AND EAR ROT OF MAIZE	<i>Erwinia carotovora</i>
BACTERIAL LEAF SPOT	<i>Xanthomonas campestris pv.maydis</i>
VIRAL DISEASES	
MAIZE LEAF STREAK	Maize streak virus (MSV)
MAIZE DWARF MOSAIC	Maize dwarf mosaic virus (MDMV)
MOSAIC OF MAIZE	Sugarcane mosaic virus

DOWNY MILDEW OR CRAZY TOP OF MAIZE

INTRODUCTION

- The disease is restricted to India and severe outbreaks have occurred in several states.
- The disease was 1st reported in Panthnagar, UP, by Payakand Renfro (1967).
- The disease causes considerable loss of the crop yield.

SYMPTOMS

- The most characteristic symptoms is the development of long, rather broad and chlorotic stripes on the leaf.
- White downey growth of the fungus can be seen on the lower surface of the leaf.
- Proliferation of axillary buds on the stalk of tassel and top (crazy top) takes place.
- Plant exhibit stunted and bushy appearance.

SYMPTOM OF DOWNY MILDEW OR CRAZY TOP OF MAIZE



CAUSAL ORGANISM

- The pathogen is responsible for downy mildew of maize is *Peronosclerospora sorghi*
- Sporangiohores are massive, wedge-shaped, short, dichotomously branched.
- Sporangiohores are profusely into series of pointed sterigmata which bear hyaline, oblong or ovoid sporangia (conidia).

FAVOURABLE CONDITIONS

- High relative humidity(90%).
- Water logging condition.
- Light drizzles with at emperature of 20-25°C.
- Young plants are highly susceptible.

DISEASECYCLE

- The primary source of infection is through oospores in soil and also dormant mycelium present in the infected maize seeds.
- Secondary spread is through airborne sporangia (conidia).

DISEASE MANAGEMENT

- Do not grow maize in low, wet fields.
- Provide adequate soil drainage (where this is a problem).
- Control grass weeds in or around the maize fields.
- Deep ploughing.
- Crop rotation with pulses.
- Treat the seeds with Metalaxyl at 4 g / kg.
- Spray the crop with Metalaxyl + Mancozeb @ 1 kg on 20th day after sowing.
- Grow resistant varieties like CO 1, Hybrids-COH 1, 2.

STALK ROT OF MAIZE

Cephalosporium wilt (Black bundle disease and late wilt)

Symptoms

By *Cephalosporium acremonium*

- The diseases prominent when maize has reached the dough stage.
- One of the first symptoms is the purpling of leaves and stalks.
- The most characteristic symptom is the **restricted blackening of vascular bundles in the stalk with** shredding of the intermodal pith region.
- Blackening of the vascular bundles extends through several internodes.
- Barren plants, excessive tillering and multiple ears are the other diagnostic symptoms.

By *Cephalosporium maydis*

- Symptoms *appear only after flowering stage* .
- *plants start wilting* basipetally giving a dull green appearance of the leaves which later dry up.
- The lower internode turns discoloured, become reddish brown, shrunken and soft, and subsequently becomes dry and hollow.
- When diseased stalks are split open, reddish brown vascular bundles are seen.

STALK ROT OF MAIZE



Pathogen

- Conidiophores swollen or slender; conidia are one celled, hyaline and are produced successively at the tip and usually embedded in a slimy drop.

Disease cycle

- **Primary infection** – Soil, Plant debris and seed
- **Secondary infection** – Conidia

Favourable Conditions

- High temperature and low soil moisture (drought) favour the disease.

Management

- Crop sanitation.
- Crop rotation.
- Avoid water stress at flowering.
- Seed treatment with Carboxin + Thiram (Vitavax Power) @ 2g/kg of seed.
- Grow resistant varieties like DHM-103, DHM 105, Hi-Starch and Ganga Safed-2.
- Soil drenching and foliar spray of carbendazim + Mancozeb @ 0.2%.