



# MAIZE

## FOLIAR DISEASES

Maize plants can be damaged by different fungal diseases, affecting quality and ultimately the yield of the crop. The relevance as well as the awareness of leaf- and ear fungal infections varies greatly between the different regions of the world. Moreover, geography determines the nature of the predominant species.

While Grey Leaf Spot and Gibberella ear rot are the most damaging fungal diseases observed in the United States, Rust and Fusarium ear rot play a dominating role in Latin America. In China, fungi responsible for Grey Leaf Spot and Northern Leaf Blight are the dominating species encountered in maize. Ear rot and several leaf diseases are of economic importance to South African maize. In recent years, development of modern fungicides have provided effective solutions for controlling fungal diseases and consequently increasing yield. Accurate disease diagnosis is the first step for determining how they can be best managed.

### Important diseases causing yield losses in SOUTH AFRICA:



#### COMMON RUST

<b>Infection caused by:</b>	<i>Puccinia sorghi</i>
<b>Conducive conditions:</b>	Wet, humid & cold environmental conditions. Infection occurs when leaves are wet or exposed to moisture for periods longer than 6 hours.
<b>Appearance:</b>	Appearing scattered as reddish-brown pustules of large, circular to elongated shape, common rust can be easily observed on the adaxial and abaxial leaf surface of maize plants, but generally not prior to tasseling. Uredospores are produced in pustules of common rust during summer and released from the fruiting bodies and dissipated in the canopy infecting new leaf tissue. Yellowing of the leaf occurs around pustules. During senescence of maize plants, pustules turn into a dark-brown colour as the fungus starts producing teliospores.
<b>Outcome if not controlled:</b>	If the environmental conditions are persistently favourable, brown leaf areas develop often leading to premature leaf senescence finally resulting in incomplete grain filling and yield losses.
<b>Control:</b>	Early fungicide application to prevent production of pustules in conjunction with resistant cultivars. Apply preventative spray with <b>Nativo</b> <sup>®</sup>



#### HEAD SMUT

<b>Infection caused by:</b>	<i>Sphaeocolotheca reiliana</i> (syn. <i>Sporisorium holci-sorghii</i> )
<b>Conducive conditions:</b>	Abiotic factors favouring the disease are low soil moisture, cold planting conditions, hot temperatures and soil characterized by nitrogen deficiency.
<b>Appearance:</b>	Overwintering as dark-coloured and thick-walled teliospores in the soil, <i>S. reiliana</i> infects the maize seedling, with symptoms not visible until male (tassel) & female (ear) flower parts emerge. The visible symptom of head smut is spores being present mainly on tassels and ears. A spore is a compact mass of dark-coloured teliospores covered by a thin greyish-white tissue layer.
<b>Outcome if not controlled:</b>	Head smut can cause extensive yield losses (up to 80%).
<b>Control:</b>	Fungicide seed treatment with <b>Baytan</b> <sup>®</sup> 150FS. Avoid planting in cold conditions.

## GREY LEAF SPOT

<b>Infection caused by:</b>	<i>Cercospora zeina</i>
<b>Conducive conditions:</b>	The main initial source of inoculum is infected maize stubble present on soil surfaces. Following several days of high humidity and favourable temperatures, conidia formed on infested maize residues are disseminated within and among fields by wind and/or rain. Favoured by extended periods of leaf wetness, primary infections are usually established on lower leaf levels visually appearing as small, necrotic, tan lesions before silking stage. Under favourable environmental conditions, these primary lesions can serve as secondary inoculum source within the development canopy. Spores produced in lesions on lower leaves are dissipated by wind or rainfall to upper leaf levels.
<b>Appearance:</b>	Spore releasing lesions of <i>Cercospora zea-maydis</i> appear greyish-coloured, giving the disease its name. Under extended favourable conditions, developing lesions often coalesce into larger lesions of rectangular shape spreading in parallel to leaf veins.
<b>Outcome if not controlled:</b>	Grey Leaf Spot leads to reduced photosynthetic-active leaf area and premature plant senescence. Both of these cause incomplete grain filling resulting in yield losses.
<b>Control:</b>	Early fungicide application to protect maize foliage. <b>Nativo</b> ® followed by <b>Zantara</b> ®

## NORTHERN CORN LEAF BLIGHT

<b>Infection caused by:</b>	<i>Exserohilum turcicum</i> (formerly classified as <i>Helminthosporium turcicum</i> / <i>Setosphaeria turcica</i> )
<b>Conducive conditions:</b>	Moderate temperatures (18 - 27 °C), high humidity or heavy dews. <i>E. turcicum</i> overwinters as mycelium or conidia on infected crop debris which serves as a primary inoculum source in subsequent cropping seasons. Maize monoculture practices as well as reduced/minimum tillage systems are also conducive to development of the disease.
<b>Appearance:</b>	Under favourable environmental conditions, the incubation period lasts about eight to twelve days until the first lesions appear after infection. Developed lesions of Northern Corn Leaf Blight are typically long and cigar-shaped. Coalescing lesions often being brownish to greyish in colour can form large areas of dead leaf tissue no longer contributing to yield. Under high humidity, dark-greyish spores are formed within lesions on lower leaves which finally are dissipated by wind or rain-splash to upper leaf levels or to other plants.
<b>Outcome if not controlled:</b>	The fungus can infect the plant at any growth stage but yield losses of up to 40% occur due to premature limitation of photosynthetic activity.
<b>Control:</b>	Early fungicide application to protect the upper leaves will decrease the potential yield losses. <b>Nativo</b> ® followed by <b>Zantara</b> ®

These main diseases can be effectively controlled with a fungicide program approach.

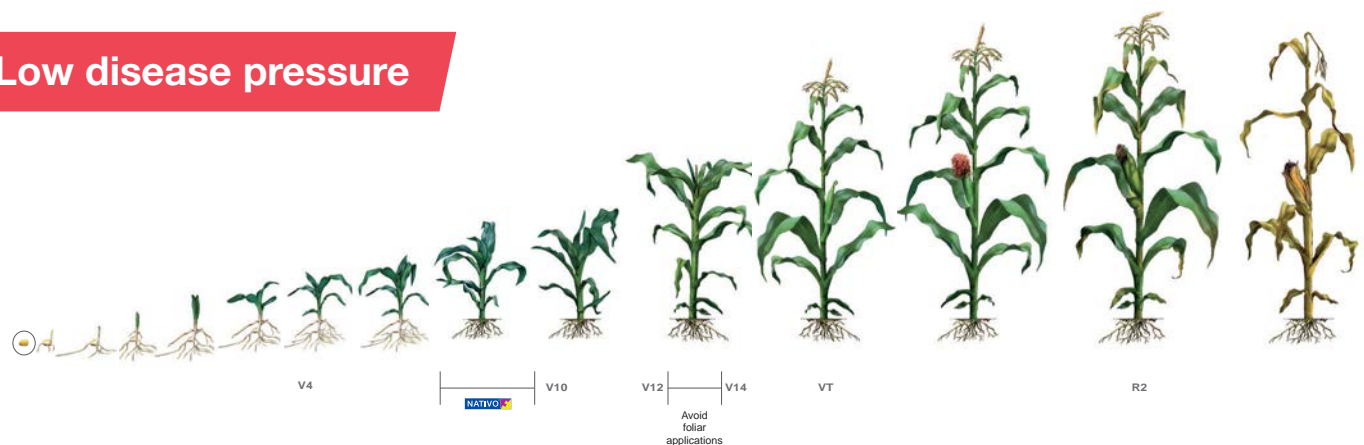
As the old saying goes: "Prevention is better than cure" – this remains true for protecting and developing the full yield potential of your maize crop.

At Bayer we recommend to keep your maize crop clean from disease spores from as early as the V4 stage.



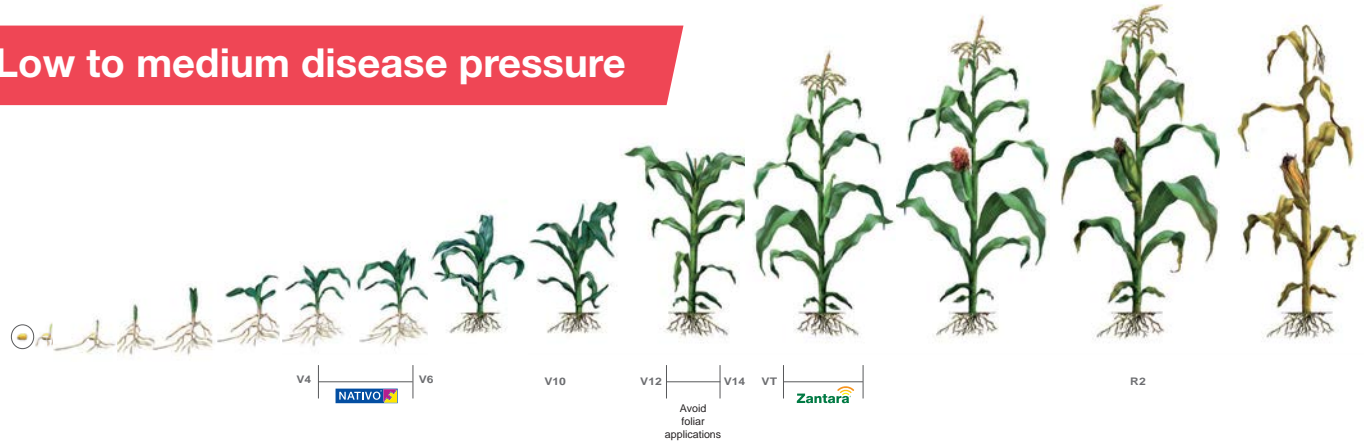
## The Bayer fungicide spray programme to reach your crop's maximum yield potential

### Low disease pressure

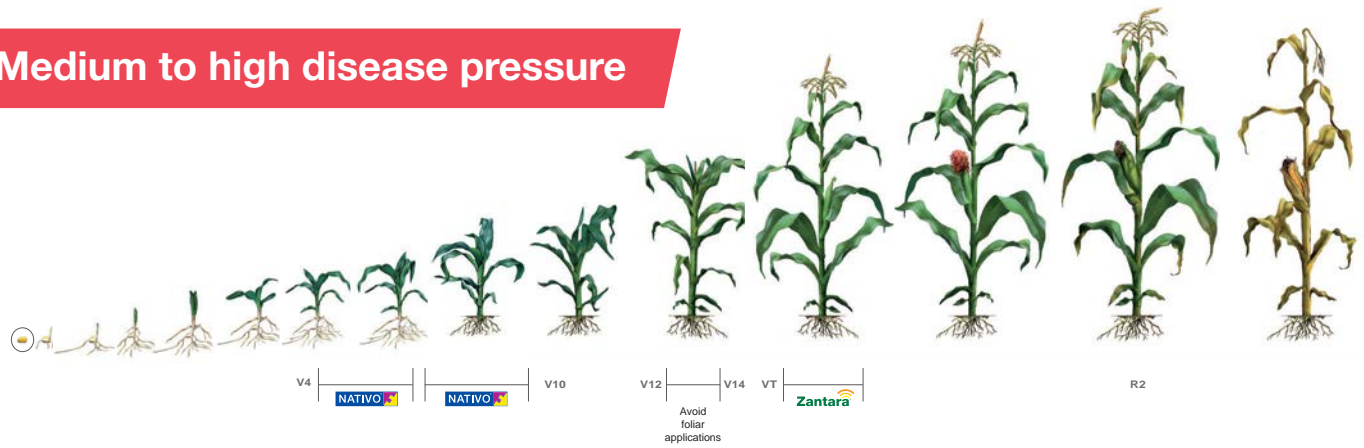




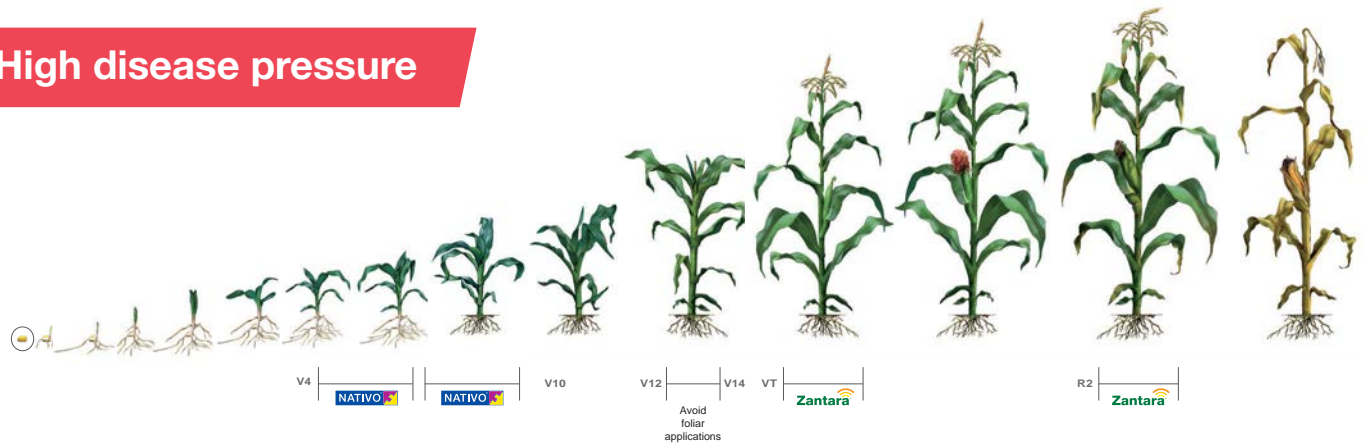
## Low to medium disease pressure



## Medium to high disease pressure



## High disease pressure



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