

## Weed control

Weed control during the first 6 to 8 weeks after planting is crucial, as weeds compete vigorously with the crop for nutrients and water during this period. The presence of weeds during harvest may hinder the process, pollute grain with seeds, transmit odours to grain causing down-grading, or incur additional costs for removal of seeds.

## Disease control

Primary control strategies are the use of disease resistant cultivars, chemical control, conservation tillage, crop rotation, planting and harvesting at the right time and biological control.

## Harvesting

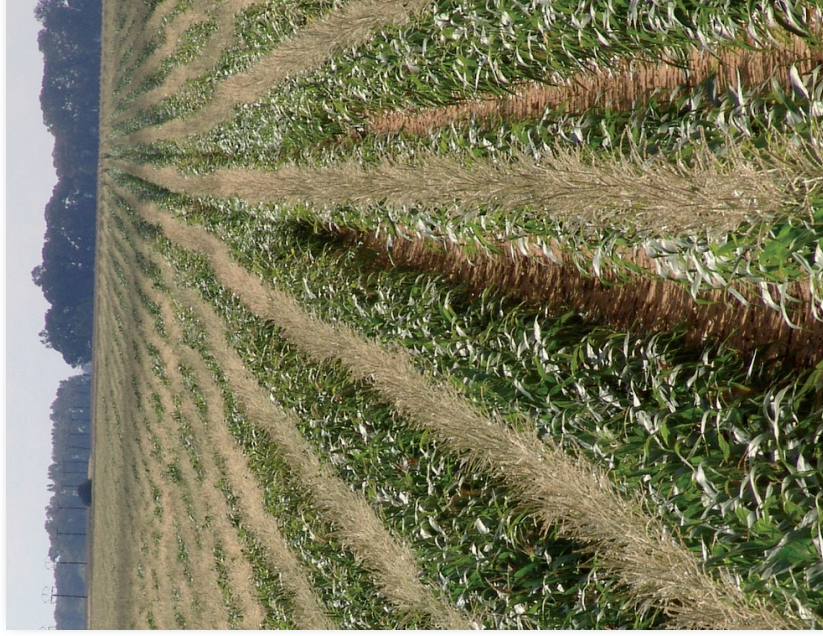
The visible sign of the maturing maize plant is senescence – dying back of leaves starting from the lower leaves continuing upwards. This is the period of grain drying, which can progressively be monitored through the kernel milk-line. The disappearance of the milk-line denotes that the grain has reached physiological maturity. The appearance of the black layer at the tip of the kernel (detachment of kernel from the cob) denotes harvestable maturity.

## IMPORTANCE AND USES

**Human uses:** White maize is a staple food in the country. It is utilised in the form of grain, meal and green mealies. Processed maize is consumed as a snack and cereal.

**Industrial uses:** Millers, livestock industry, probably even some snack industries rely on the planting and production of maize.

**Livestock uses:** Both white and yellow maize can be fed to livestock as hay or silage. Yellow maize contributes significantly to the production of white and red meats and dairy products.



# Maize



Further information can be obtained from:

Directorate Plant Production  
Private Bag X250  
PRETORIA 0001

Tel: +27 12 319 6072  
Fax: +27 12 319 6353

2008

Printed and published by:  
Department of Agriculture

Obtainable from:

Resource Centre  
Directorate Agricultural Information Services  
Private Bag X144  
PRETORIA  
0001



agriculture,  
forestry & fisheries

Department:  
Agriculture, Forestry and Fisheries  
REPUBLIC OF SOUTH AFRICA

**Scientific name:** *Zea mays*

**South African names:** mafela, mielies, mmopo, umbila, mavhele, umbona, mmidi.

## BACKGROUND

Maize is only known in the cultivated state, and is believed to have originated in Mexico in prehistoric times. It has currently worldwide distributed and is grown wherever summers are reasonably warm. Africa, Asia, and America are mentioned as the most likely countries of origin of maize.

## Production areas

Province	District
Mpumalanga	Gert Sibande
Northern Cape	Kgalagadi, Frances Baard
Free State	Motheo, Lejweleputswa, Thabo Mofutsanyane, Northern Free State
North West	Bojanala, Ngaka Modiri Malema, Dr Ruth Segomodi Mompoti
Gauteng	Sedibeng, Metsweding, West Rand
KwaZulu- Natal	uMgungundlovu, UGu

## AGRONOMIC REQUIREMENTS

### Soil requirements

Maize grows on a great variety of soil types, however, deep; naturally rich, easily tilled soil is preferred. The soil should be free from restrictive layers (hardpan) and soils with a pH of lower than 4,5 should be avoided or can be corrected by the application of lime. The most suitable soil type for maize production is a soil with a good effective depth, favourable physical properties (especially texture and structure), good internal drainage, an optimal

moisture regime, sufficient and balanced quantities of plant nutrients and chemical properties.

### Climatic requirements

The critical temperature, which, if exceeded, is detrimental to yield is 32 0C. Flowering occurs best at temperatures ranging from 19 to 25 0C. Frost can damage maize at all growth stages and a frost-free period of 120 to 140 days is required to prevent damage.

### Rainfall

Annual rainfall of 500 to 750 mm or more is required for adequate moisture. Water deficiency is usually the most yield-limiting factor where efficient maize cultivation practices are applied. A yield of 3152 kg ha<sup>-1</sup> requires between 350 and 450 mm of rain per annum.

### Cultivars

There are many registered cultivars in the seed companies that are adapted to various maize producing areas of the country. The most important characteristics which are of assistance in cultivar selection include yield potential, length of growing season, lodging, tillering, prolificacy and percentage grain moisture. To fully utilise these different aspects, it is important that the producer be familiar with the positive and negative properties of each cultivar. For this reason additional information regarding cultivar characteristics, long-term yield data and relative yields is made available to the producer, by either public or private agents.

## CULTURAL PRACTICES

### Propagation

Maize is propagated from seeds

### Soil preparation

A deep, firm seedbed, free of clods, trash and surface irregularities should be prepared, either in the spring, or

preferably on moderately heavy to heavy soil, in the autumn and left rough over winter, thus allowing be worked and planting in spring. Soil should be worked and disked about 3–4 weeks before planting, thus allowing for partial decomposition or organic material.

### Fertilisation

It is of the utmost importance that the correct soil sampling methods be used when submitting samples for laboratory analysis. Recommended sampling methods to be used are available in the “Fertiliser Guidelines for Maize”, and can be obtained from the **Director, ARC-GCI, Private Bag X1251, Potchefstroom 2520**. Recommendations supplied by the Institute should be strictly adhered to, to obtain the required results in the field.

### Planting

Generally, broad optimum planting dates are as follows: for the cooler eastern producing areas, from the beginning of October to the first week of November, for the central regions from the last week in October to mid-November, for the drier western areas from the last two weeks in November to mid-December. Planting depth of maize varies from 5 to 10 cm, depending on the soil type and planting date. Generally, planting should be shallower in heavier soils than in sandy soils. If plantings are made early, it can be shallower.

### Irrigation

Maize can be regarded as an important grain crop under irrigation, as it produces very high yields. Yield of 80 to 100 ton ha<sup>-1</sup> green material can be achieved within a relatively short period (100 to 120 days). It is therefore one of the most efficient grain crops in terms water usage.