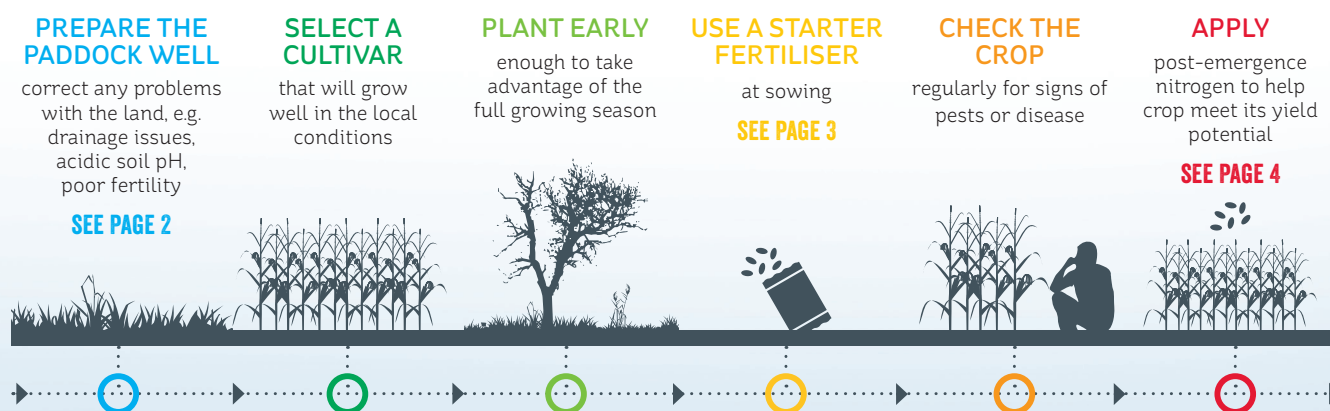


MAIZE

Maize is widely grown as a silage crop and is mainly used as a supplementary feed for dairy cows. The area planted in maize appears to be increasing yearly, as although the protein content of maize silage is insufficient for ruminants, it does supply adequate digestible fibre and carbohydrate. Maize crops can be planted into land coming out of permanent pasture or they can be planted in rotation, e.g., with a winter ryegrass. They are also useful if planted into effluent blocks, as they help to use up the high levels of potassium (K) and nitrogen (N) that can develop in these paddocks.

Maize competes with other dairy feeds, which means that any given season, there is a cap on the price that can be achieved for the crop. Good management is important if the maize crop is to give a respectable economic return. This includes the following steps:



BEFORE SOWING

Like many crops, maize performs best when sown into high-fertility soils. Maize is a depletive crop (i.e. it depletes the soil's nutrient status) and since it is frequently planted into the same land for several rotations, it's essential that soil fertility is carefully managed, to ensure that crops perform as desired. Unless both the physical state and the nutrient status of maize paddocks are addressed before crops are sown, yields will be low.



What
Soil test.



When
At least 6 months before sowing. If possible, 12 months before sowing.



Why
Soil pH has an impact on crop yield. The ideal pH range is 5.6-6.2 in the top 150 mm of soil. If soil pH needs adjusting, lime needs to be applied – it will take at least 6 months to have an effect on soil pH. Soil testing early also allows time to correct the nutrient levels with a suitable base fertiliser.

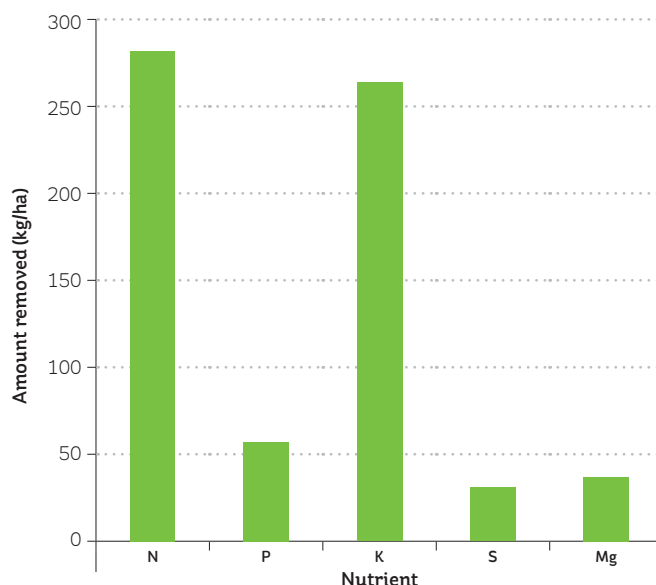


How
Use a 150 mm auger. Soil test a transect (line) across the paddock. Avoid areas that are not typical of the paddock, e.g. fence lines, stock camps, urine patches. Take the samples in either autumn or spring. Do not sample within 3 months of applying fertiliser or lime, or when soil is saturated.

Test	Target Levels
pH	5.6-6.2
Phosphorus (Olsen P)	>15
Potassium (QTK)	>4
Sulphur (sulphate S)	6-10
Magnesium (QTMg)	8-10

Target soil test results for growing a maize crop. If levels are lower than this, address with lime and/or base fertiliser applications.

Nutrient uptake by 22 t/ha maize silage crop



PRODUCTS

Lime

Choose good-quality ag-lime. As a rule of thumb, it takes 1 tonne lime/ha to raise the soil pH by 0.1 unit. So if soil pH is 5.4, apply at least 2 tonne lime/ha. To achieve the desired pH throughout the top 150 mm of the soil, the lime may have to be incorporated by cultivation.

Base fertiliser

The actual product needed and the rate to be applied will depend on soil test results. However, products in the Superten range are generally suitable, as they supply most of the soil nutrients needed to support crop growth.

AT SOWING



What

Use a starter fertiliser.



When

At sowing.



Why

Poor growth conditions early in the lifecycle of maize can impair root development, which means the crop will not grow to its potential. A nutrient deficiency is one of several factors that can cause poor growth conditions – using a starter fertiliser means the maize crop will not want for phosphorus (P) or nitrogen (N) during its early days.



How

Drill with the seed (in a separate box). Avoid direct contact with the seed.

PRODUCTS

YaraMila 12-10-10

The preferred product in most situations, YaraMila 12-10-10 provides all of the nutrients needed for healthy crop establishment. As it's a compound fertiliser, every granule contains the same ratio of nutrients, so every plant receives a similar spectrum and concentration of nutrients. Its even-sized granules and hardness make it ideal for drilling. Typical application rates would be 200-400 kg/ha.

DAP

Often used for maize crops, DAP supplies both N and P and is suitable for drilling. The typical application rate is 250 kg/ha.

Cropzeal Boron Boost

An alternative starter fertiliser that would be a good choice if soil boron (B) levels were low. Although Ballance has no scientifically tested guidelines for B for grain crops, a minimum hot water-soluble boron (HWSB) of 0.8 ppm is recommended to protect against disease and to help meet the reproductive potential of the plant. Cropzeal Boron Boost supplies N, P and B, and is suitable for drilling. The typical application rate is 250 kg/ha.



POST EMERGENCE



What

Apply post-emergence nitrogen.



When

At six true-leaf stage (i.e. when the crop is at knee height).



Why

Nitrogen is a key driver of crop yield. Applying N helps the crop reach its agronomic potential. However, applying too much N is not economic and risks causing environmental harm.



How

Soil test to 60 cm depth to determine the amount of available N in the soil. Calculate the anticipated yield of the crop. Talk to your Ballance representative about using the AmaizeN calculator to determine the amount of N required to optimise the economic yield of the crop. Typical rates of N required range from 0-40 kg N/ha for a crop in a paddock with high levels of available N (>200 kg N/ha) to 150-200 kg N/ha for a crop in a paddock with low levels of available N (<100 kg N/ha). Post-emergence N is frequently knifed in; if it is to be broadcast, SustaiN should be used in preference to urea.

CAUTION!

When deep N soil sampling for available N, sample between the rows and away from any fertiliser applied with the drill, otherwise you will get inaccurate results.

Effluent paddocks

Maize crops that are planted into effluent paddocks will not require as much N as those that are planted into non-effluent paddocks. Deep N soil testing will show whether any post-emergence N is required.



PRODUCTS

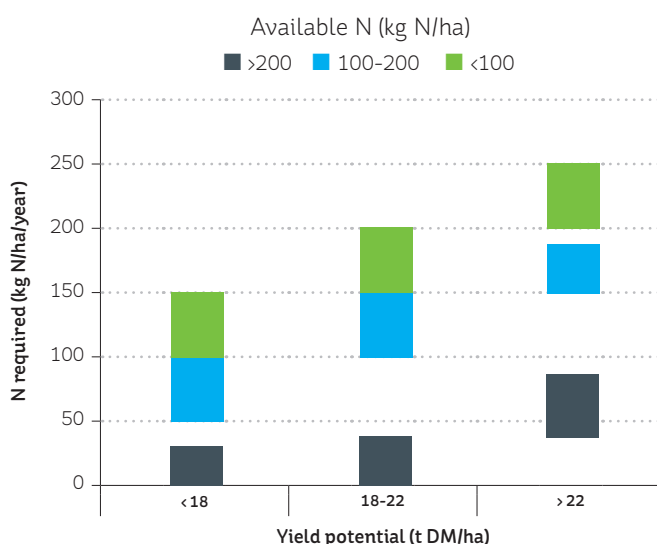
SustaiN

This is the product of choice when applying high rates of N. It reduces the loss of N by volatilisation, which can exceed 30% when urea is used for side-dressing crops. Volatilisation means N is lost as a gas; using SustaiN helps to keep some of that N in the soil, where it can be used by plants. Suitable for broadcasting and knifing in.

Nrich Urea

If N is going to be knifed in, then volatilisation losses will be less substantial, so Nrich Urea may be used.

HOW MUCH N?



The amount of N required by a maize crop depends on both the potential yield and the soil available N levels. For example, a crop that is expected to yield 20 t DM/ha will require 100-150 kg N/ha if it is planted into soil with a moderate level of available N (100-200 kg N/ha).



What

Check trace element status.



When

Once crop is growing vigorously.



Why

Trace element deficiencies can restrict crop growth. Maize can be prone to zinc, molybdenum and occasionally boron deficiencies, especially if pH is >6.5.



How

Any suspected trace element deficiency must be confirmed by herbage testing. Contact your Ballance field consultant for specialist advice.