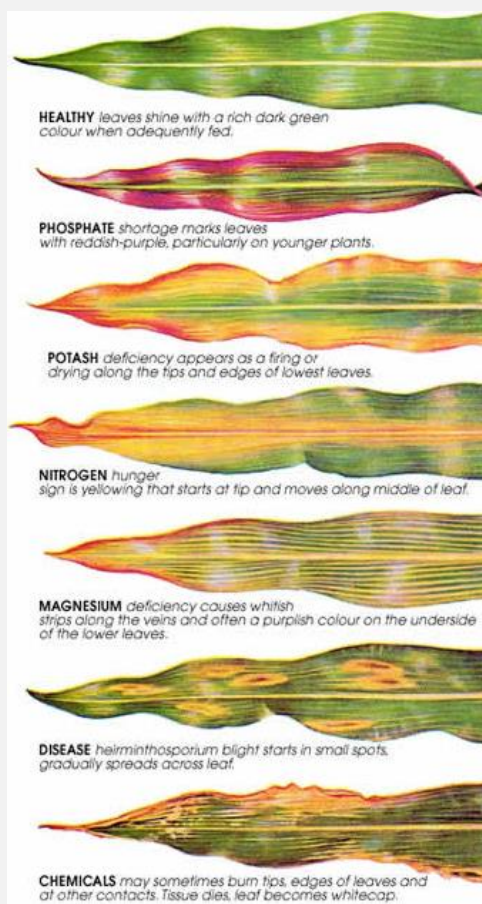


MAIZE

Growing quality maize silage

No single feed can meet the changing nutrient requirements of high producing dairy cows. For most of the year, New Zealand dairy pastures have high levels of crude protein but carbohydrate levels are below cow requirement. Maize silage is the perfect partner for pasture because it is a high carbohydrate lower protein feed. Maize silage delivers an excellent source of rumen - available carbohydrates which allows the rumen microbes to convert more of the pasture protein into milk, increasing rumen efficiency and decreasing the amount of nitrogen excreted by the cow.

Osflo differs from other fertilisers in the sense that the elements are in different forms. Some are quick release and some are slow. For example 18 to 20% of the Nitrogen would be available immediately and the balance would be released over time. The same applies for the phosphate in OSFLO. This has an advantage as it supplies Nitrogen and other elements for the entire growing period of the crop. If this was released all at once Nitrogen would be lost into the ground water and would be of little use to the crop.



BE YOUR OWN MAIZE DOCTOR

By K. C. Berger

CHANCES ARE that if you find "trouble" signs on maize like those illustrated on this and the next two pages, it's too late to do much about them this year. In the case of nutrient deficiencies, it probably means that availability of one or more of the plant food elements in the soil has dropped below the level required for economic returns.

Nevertheless, every maize grower should be able to recognise these danger signs—should check his fields several times during the growing season. Nutrient deficiencies which show up when the maize is young frequently can be corrected by side dressing. Spraying or dusting will help control maize borers and other insects. In any case, a good knowledge of how this year's crop has fared will make it possible to plan for a better crop next year.

Phosphate deficiencies usually appear when the plants are very young. The symptom is a reddish-purplish marking of the leaves. Phosphate also controls stalk size and ear set. Weak, spindly stalks, either barren or with small, twisted ears are a pretty good indication of phosphate shortage.

POTASH DEFICIENCY

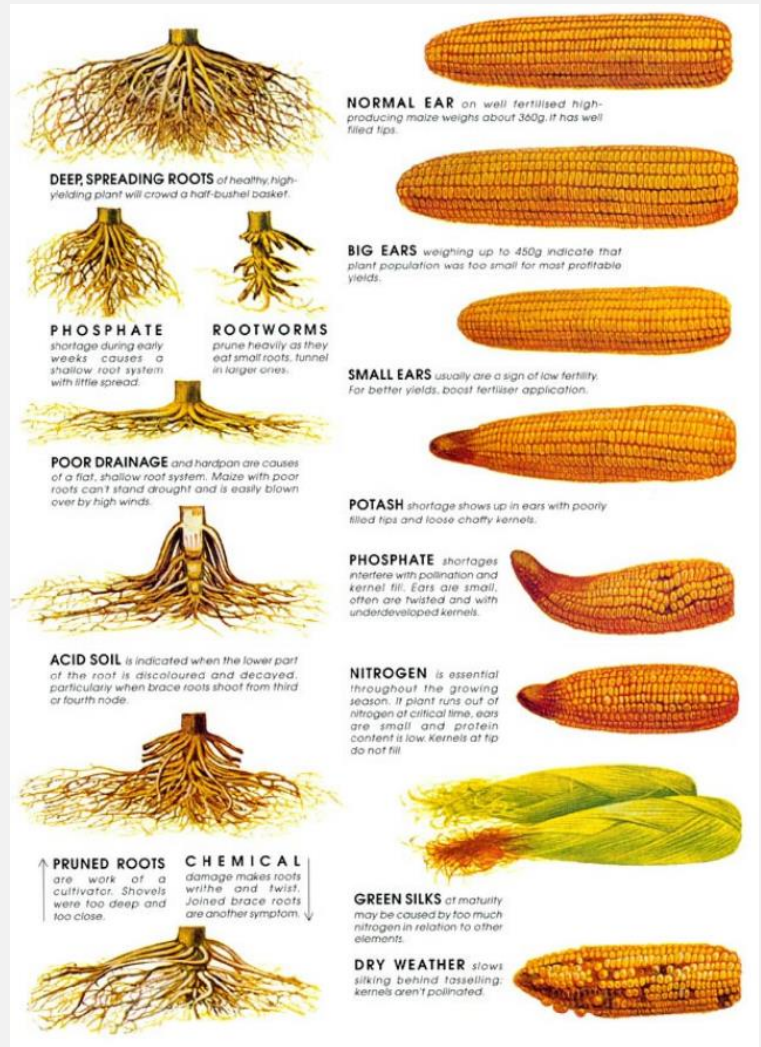
Potash deficiency shows up as a firing or browning along the edges of the leaves nearest the ground. Another symptom is darkish-brown discoloration of the nodes of the stalk which may be revealed by slicing the stalk lengthwise. While lack of potash may not have as much effect on the size of the ears as either phosphate or nitrogen shortage, kernels at the tip do not develop and nubbins are chaffy.

Acid soil will seriously affect the uptake of plant food elements, and may cause deficiency symptoms to appear even though the soil is well fertilised. Acid soil also may cause discoloration and decay of the lower part of the root, particularly when the brace roots shoot from the third or fourth node. A soil test is, of course, the simplest method of checking for soil acidity which should be corrected by adequate liming. Lime also is a source of calcium, and of magnesium in the case of dolomitic limestones.

In checking maize fields for "trouble" signs, it's a good idea to be thorough. First, observe the general appearance of the field and compare with appearance of a "normal" healthy field. Then pull plants here and there and inspect leaves, stalks, and roots carefully. Later in the season, make an examination to see how the ears are developing. Compare findings with the illustrations on this page. Watch particularly for pruned roots caused by too-close cultivation. Slash the stalks, watching for maize borer or disease.

At harvest time, check the ears as they come from the picker. Watch particularly for poorly filled, shortened and twisted ears and for barren stalks, signs that indicate severe hunger in maize.

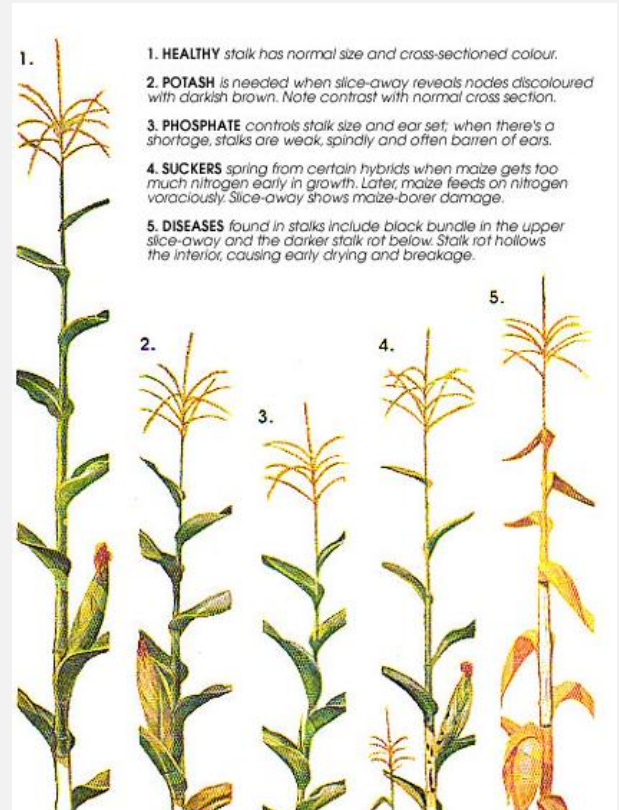
Remember when hunger signs appear, particularly of the primary plant food elements, the soil is sadly depleted. A good farmer never permits his plant food bank account to become so seriously overdrawn. Even such seriously depleted soil may be restored and yields raised to profitable levels by proper fertilisation and liming. Disease and insect problems can be controlled with sprays and dusts. The combination of proper fertilisation, based on soil tests, with other good management practices will raise maize profits to new highs.



NITROGEN DEFICIENCY

Nitrogen deficiencies are not so easy to detect in the early stages of growth, and severe symptoms rarely appear until after plants have passed the knee-high stage. Nevertheless, if young plants tend to have a light yellowish-green appearance as contrasted with the dark green of healthy plants, a nitrogen shortage is indicated. This usually can be corrected by sidedressing. Special nitrogen testers for maize also can help with the diagnosis.

By the time maize has reached the knee-high stage, it needs about 3.5kgs of nitrogen per Ha per day. It is at this stage that many maize fields run out of nitrogen. The symptom is yellowing at the tips of the lower leaves, gradually spreading down the midribs of the leaves and to leaves higher on the plant. By the time maize has reached this height, it is past the sidedressing stage, but at least fertilisation for next year's crop can be planned accordingly.



NUTRIENT UPTAKE

Most of the dry weight of the plant consists of organic carbonaceous materials resulting from photosynthesis and subsequent processes. At least 12 nutrient elements must be taken up for the maize plant to grow and develop normally. An adequate supply of each nutrient at each stage is essential for optimum growth at all stages.

The seasonal pattern of nutrient accumulation in the plant is similar to that of dry matter accumulation. However, nutrient uptake begins even before the plant emerges from the soil. The amounts of nutrients taken up early in the growing season are small, but the nutrient concentrations in the soil surrounding the roots of the small plant at that stage often must be high.

Uptake of potassium is completed soon after silking, but uptake of the other essential nutrients such as nitrogen and phosphorus continues until near maturity. Much nitrogen and phosphorus and some other nutrients are translocated from vegetative plant parts to the developing grain later in the season. This translocation can result in nutrient deficiencies in the leaves unless adequate nutrients are available to the plant during that period.

A large portion of the nitrogen and phosphorus taken up by the plant is removed in the grain that is harvested. But most of the potassium taken up is returned to the soil in the leaves, stalks, and other plant residues, unless these plant parts are removed for silage or other forms of feed.

FERTILISER APPLICATIONS

Although only relatively small amounts of fertiliser nutrients are required in the very early stages of plant growth, high concentrations of nutrients in the root zone at that time are beneficial in promoting early plant growth. This is the period when all the different plant parts are being initiated and begin to grow. Even though the amount of nutrients taken up is relatively small, final size of the leaves, ear and other plant parts depends to a large degree upon having an adequate supply of nutrients available to the plant during this early part of the growing season.

During early growth, the root system is limited and the soil is often cold. The seminal (seed) root system which is elongating when the plant emerges from the soil, serves as the main root system during the first weeks after plant emergence. Fertiliser placement in a band about 5.0cm to the side and slightly below the seed is important so the seminal roots may intercept the band of fertiliser. Roots will branch and proliferate in and near the band of fertiliser after they contact it; but they are not attracted towards the fertiliser band, so fertiliser must be placed where the roots are going to be. Placing the fertiliser too near the seed can result in salt injury to the young plant.

At later stages of growth, the plants require much larger amounts of nutrients. These nutrients must be in moist soil for effective root uptake. For all tillage systems, a soil testing high in P and K should provide adequate nutrients and placement is not a major concern. Conservation tillage systems on soils low in P and K, a starter band or injection 15cm to 20cm deep may be advantageous over broadcast applications. Time and placement of nitrogen fertilisers should be based on greatest efficiency, minimising potential loss, and fitting into the production system.

Care should be taken that roots are not destroyed by cultivation or by sidedressing of fertiliser after the root systems of the plants become established.

NUTRIENTS REMOVED IN A WHOLE SILAGE & MAIZE GRAIN CROP Kg Nutrient Per Hectare						
		N	P	K	S	Mg
25+	Silage	275	50	225	25	50
12+	Grain	132	24	108	12	24

If you have any questions or concerns about growing quality maize silage, give the team at Osflo Fertiliser a call

0800 467 356