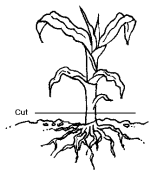
Crop Guide KB Item 3470v6

Maize

Sampling Notes

It is important that each sampling area is of the same soil type, has a similar cropping and fertiliser history. When leaf sampling, ensure that different varieties of maize are sampled separately.

Leaf (1) - Seedling



Sampling Time: When less than 30 cm tall.

Plant Part The whole above ground portion of the plant.

Collect From: 1-2 cm above the ground.

Quantity per Sample: 20 - 25 plants selected at random from the affected area.

Recommended Tests: Basic Plant (BP).

Comments: Sampling at the seedling stage is not recommended for routine monitoring, as the plant nutrient status will be greatly influenced by the nearby starter fertiliser. General soil deficiencies will not become apparent until later in the growth cycle, when the plant is sourcing the nutrients from the soil reserves.

Sampling at the seedling stage is only recommended if a nutritional disorder is suspected, and the grower intends to take remedial action.

Care should be taken to prevent soil contamination when collected whole plant samples.

Leaf (2) 5-6 Weeks

Sampling Time: 35-40 days after emergence (V4 to V5 leaf stage)

Plant Part Youngest mature leaf (blade)

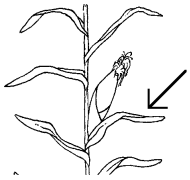
Collect From:

Quantity per Sample: 20 - 25 plants selected at random from the affected area.

Recommended Tests: Basic Plant (BP)

Comments:

Leaf (3) - 50% Silk



Sampling Time: When approximately half the crop is in silk.

Plant Part Whole leaf.

Collect From: The ear node.

Quantity per Sample: 20-25 leaves.

Recommended Tests: Basic Plant (BP).

Comments: Avoid sampling the outside rows of the crop, which are often atypical, and exclude leaves showing obvious signs of mechanical, insect or disease damage.

Sampling within 2-3 weeks of the recommended sampling time is acceptable, as the nutrient levels would not change significantly during this period.

Soil

Sampling Time: Prior to crop establishment.

Core Depth 15cm.

Collect From: Select at random from the sampling area.

Quantity per Sample: 12 - 20 cores.

Recommended Tests: Basic Soil (BS), Sulphur profile (S), Available Nitrogen (AN)

Comments: Available N is the most important additional test for maize growing. Others that may be useful are Organic Matter and Trace Metals.

Comments

As for many crops, high yields are dependent on successful weed control, favourable climatic conditions and suitable variety selection, as well as the fertiliser practices adopted.

Extensive fertiliser trials on grain production in this country in the early 1980's produced few positive responses; nitrogen being the only element identified to give a response. However, nutrient removal by silage crops is much higher, particularly for potassium, and consequently higher input levels are necessary to maintain optimum nutrient levels during repeat silage cropping.

Maize is a particularly hardy crop, and nutrient deficiencies are not common. As well as nitrogen responses, potassium and magnesium deficiencies have been identified, but only on soils inherently low in these nutrients and having been cropped for a number of years. Zinc and iron deficiencies have also been observed on certain peat soils.

Varietal differences can be important as different varieties have different abilities to harvest nutrients from the soil. One variety may show clear magnesium deficiencies, while another variety growing in the same soil may show no deficiency symptoms at all.

Sometimes seedlings will develop a purpling coloration, which is indicative of a phosphorus deficiency (certain varieties are especially prone to this). It is a transient condition, possibly due to low soil temperature, and usually corrects itself without the need for any further action. If the plants are also very stunted, then the absence of phosphorus starter fertiliser should be suspected.

New Zealand trials have also indicated an Olsen P level of 14 ug/mL as adequate for maize cropping in New Zealand, presuming starter fertiliser is being used.

The soil Normal Ranges shown above are for mineral soils. Much of New Zealand's maize production is on peat soils, which will have different nutrient levels.

References

Blackmore, L.C; Searle, P.L and Daly, B.K. 1987. Methods for chemical analysis of soils. NZ Soil Bureau Scientific Report 80. NZ Soil Bureau, DSIR.

Cornforth, I.S. and Steele, K.W. 1981: Interpretation of maize leaf analysis in New Zealand. N.Z. Journal of Experimental Agriculture 9:91-96.

Jones, J.B. and Eck, H.V. 1973. Plant analysis as an aid in fertilising corn and grain sorghum. In Walsh, L.M. & Beaton, J.D. eds. Soil testing and plant analysis. Soil Science Society of America, Madison, Wisconsin, pp349-364.

Disclaimer

Normal Range levels shown as histograms in test reports relate specifically to the sampling procedure provided in this crop guide. The Normal Range levels in test reports and Comments provided in this Crop Guide are the most up to date available, but may be altered without notification. Such alterations are implemented immediately in the laboratory histogram reports. It is recommended that a consultant or crop specialist be involved with interpretations and recommendations.