



Plant Nutrition Laboratory

Thulani (Vincent) Zuma

Introduction

The Plant Nutrition Laboratory of the KwaZulu-Natal Department of Agriculture and Rural Development provides an analytical service that can assist in the assessment of the nutritional status of crops. This lab is one of the five labs in the Analytical Services Sub-directorate.

Services offered

The lab offers analysis of plant tissues (usually leaves), composts and manures. Depending on their needs, clients can request a range of tests including those for moisture and ash content, pH, and elemental concentration. The following elements can be analysed: aluminium, boron, carbon, calcium, copper, iron, potassium, magnesium, manganese, nitrogen, sodium, phosphorus, sulphur and zinc. Our services are available to everyone in the KZN province. We currently receive samples from commercial farmers, subsistence farmers, advisors and from researchers in different institutions.

Analytical instruments

In order to provide an efficient service to our clients, the laboratory strives, where possible, to use advanced analytical instruments employing the latest technologies. Currently, the laboratory uses an ICP-OES for mineral analysis(see Figure 1), a Dumas CNS analyser for carbon, nitrogen and sulphur determination, temperature controlled ovens for sample drying and a hammer mill.



FIGURE 1: ICP-OES instrument

Quality assurance

The Plant Laboratory strives to provide high quality and accurate results for its clients. This is achieved by adhering to tested, documented standard operating procedures for instrument calibration, instrument maintenance and record keeping, and with the inclusion of quality control and blank samples for each analytical batch tested.

The laboratory also participates in the AgriLASA proficiency scheme, in which over 60 laboratories participate nationally (AgriLASA, 2018). This scheme serves to assess the ability and accuracy of the laboratories to provide credible testing services. To date, the results confirm that the laboratory is proficient and highly competent to offer analytical services.

Sample submission

Samples can be submitted in person to the laboratory at Cedara (see address below). Alternatively, samples can be couriered to us. When submitting samples clients should complete a submission form, which is obtainable at Cedara or at:

<http://www.kzndard.gov.za/quick-links/167-soil-analysis> .

For further information on sample submission contact:

Lisa Padayachee: 033 355 9455

Lisa.Padayachee@kzndard.gov.za

or

Sbongile Shongwe: 033 343 8226

Sbongile.Shongwe@kzndard.gov.za

Physical address:

Soil Fertility & Analytical Services

1 Cedara Road, HILTON, 3245

The purpose of plant analysis

The analysis of plant material is generally undertaken with one or more of the following objectives in mind:

- To diagnose nutrient deficiencies, toxicities and imbalances;
- To evaluate the effectiveness of fertilization practices;
- To evaluate aspects of plant quality as a management tool;
- To assess nutrient removals in crops with a view to replacing them and thus maintaining soil fertility.

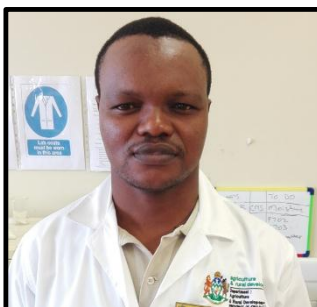
Notes on sample collection

Sampling is critical and each type of plant should be sampled correctly with attention to:

- Growth stage
- Plant part
- Each plant sample submitted should be a composite of samples from 25-100 plants
- Each sample must have sufficient material to fill a 1 litre container
- Avoid plants damaged by pests, diseases or chemicals.

Adherence to these guidelines is essential for the successful comparison of the results with published norms.

The Plant Lab Team



Mr Lucky Sithole

Scientific Technician:
Laboratory Supervisor



Mr Billy Zondi

Laboratory Assistant



Mr Lungelo Mabaso

Auxiliary Support



Mr Phillip Ndlovu

Laboratory Aide

Contact

Thulani (Vincent) Zuma

Control Scientific Technician

Tel: 033 355 9506

Thulani.zuma@kzndard.gov.za.

KZN Department of Agriculture and Rural Development

Directorate: Agricultural Crop Research Services

Sub-directorate: Analytical Services

Division: Soil Fertility, Cedara

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