

AGRONOMY TESTS

In the Department of Agriculture's laboratory the following services are available to farmers:

1. **Seed germination test** (to measure % viable seed count).
2. **Proximate analysis** of feed samples (e.g. feed hay, silage or brassica crops). This will include % dry matter, crude protein, crude fibre and minerals present (calcium, phosphorus and magnesium).
3. **Soil analysis.** Includes pH test, plant available nutrients (nitrogen, phosphorus and potassium, plus some trace elements).
4. **Estimation of field crop yields.** This is done by sampling (using quadrat) and subsequent dry matter analysis to give the dry matter yield/ha.
5. **Field crop/pasture grass analysis.** This is defined as the diagnosis of mineral disorders in plants/crops by visual and chemical means. Advice can then be provided for countering or preventing such disorders.

There are five stages in the crop analysis programme.

1. **Visual diagnosis** – various trace/major plant nutrient deficiencies often demonstrate changes in plant colouring, morphology and anatomy.

In many crops the visual appearance of a particular symptom at a particular stage of growth is uniquely characteristic of a specific nutrient deficiency.

2. **Sample collection** – obtaining a sample of a crop which is representative of the crop being tested is very important, especially if reliable assessments of the plant nutrient status are to be made.

The elemental content of plant tissue can vary from month to month, so plants are usually always sampled from clearly defined locations on the plant. These are normally mature leaves (exposed to full sunlight), just below the growing tip on main branches/stems.

Plant tissue which has been damaged by insects/machinery or diseased/dead should not be sampled. Likewise tissue covered in soil should not be collected.

Random samples need to be collected from various locations throughout the complete crop area. Separate samples should also be collected from 'good' and 'bad' areas for comparison purposes.

Collected samples should be put in paper bags and kept in a cool place before despatch to the laboratory for testing. It is not advisable to put plant samples in sealed airtight plastic bags.

3. **Analytical testing** – samples are catalogued on arrival before mixing and sub-sampling. Dry matter analysis is carried out first then the sample is ground up finely in a laboratory mill. The various chemical tests can be carried out on the dried, ground sample.
4. **Interpretation of test results for crops** – chemical analysis needs to be interpreted to provide an accurate picture of the plant nutrient status. The 'sufficiency range' system is adopted for this process. The concentration of elements in plant tissue are put into five different categories; (determined from known crop responses/test results). These are as follows: 0= Deficient, 1= Low, 2= Sufficient, 3= High and 4= Excess or Toxic.
5. **Recommendations** – to correct various crop disorders certain fertilisers/foliar feeds may be required to be applied. These are usually based on soil analysis results in conjunction with crop analysis.