Canterbury Organic 'Soil Testing & Fertility Workshop'

March 2007
Location: Biological Husbandry Unit, Lincoln.
Presenters: Rueben Allan of Quinphos

Background

- Grew up in South Canterbury on a farm.
- Completed a BSC at Otago University.
- Travelled extensively for 4 years.
- Managed a 7000su Beef farm for 3 years.
- SQ nutrient management specialist for 2 years.

Outline

- Why establish a testing program?
- What types of tests are there?
- What are our methods for carrying out these tests?
- Tests to request, in an organic system.
- Interpreting a soil test-the basics.
- A basic organic fertiliser plan.
- Summary
- SQ Bio-Gro approved products.

Why establish a testing Program?

- Remove nutrient restrictions to enable optimum pasture or crop growth.
- Provide a long-term plan to maintain and/or improve soil fertility.
- Maximise financial opportunities.
- Minimise environmental and animal health impacts.
- To gain confidence in the direction of the farm fertility.

What types of tests are there?

- Soil test- consisting of 20 cores over a paddock or area.
    - Gives an overview of soil nutrient status and highlights trends over time.
    - Soil test every 2 years.
    - Measurers the 6 major nutrients vital to plant growth.
    - Should be GP's.
- Herbage test-over a paddock area.
    - Herbage tests are used to fine-tune a fertiliser program.
    - Highlight trace element status and allow us to access how the major nutrients are being mobilised from the soil to the pasture.
    - Cover/crop test for plant performance.
    - Mixed pasture (grass and clover) for animal health issues.
    - Measure 16 nutrients.

Method of testing- Soil

- Try to collect samples at the same time each year, preferably when the weather is stable ie: Not too wet/dry.
- Avoid testing for 3 months after application of fertiliser.
- Avoid urine/dung patches or camp patches.
- Test different land use areas and/or soil types as well as specialist crop paddocks.
- Use 75 mm core for pasture and 150 mm for crops.

Method of testing –Herbage

- For pasture select grass and clover avoiding urine/dung patches.
- Very important to avoid soil contamination of pasture.
- For crop select the younger growing leaves of the plant ie: Kale, Lucerne.

Tests to request

- In an organic farming situation it is important to test:

  - Resin P as well as Olsen P, as the Olsen P will not accurately measure P fertility on RPR fertilised soils.
  - Organic sulphur as well as sulphate sulphur, as sulphur applied in the elemental form will not be accurately measured by the sulphate test.

Interpreting a soil test- the basics

- pH –Potential hydrogen
  - measures soil acidity.
  - affects availability of nutrients to plants.
  - optimum in pastoral situation 5.8-6.0.

- CEC-Cation exchange capacity
  - a characteristic of the soil
  - indicates quantities of Ca, Mg, K and Na a soil can hold.
  - A sand may have a CEC of 1-14, whereas an organic peat may have a CEC of 100-120 due to high levels of organic matter.

- Base saturation
  - Measure of how balanced a soil is in regards to Ca, Mg, K and Na.
  - Low base saturation= acid conditions=shortage of essential nutrients.
  - High BS= near neutral pH=good supply of nutrients.
  - Usually between 50-75%, majority taken up by Ca.

- Resin PV's Olsen P
  - Olsen P performed under high pH 8.5
  - Can over estimate P levels in low pH soils with high Al.
  - Underestimate P levels in higher pH soils that have recently been limed.
  - As a general rule resin P values relate to 2.5 times that of Olsen P values.
  - Resin P far more accurate test on areas fertilised with RPR.
  - Pastoral values OP 15-25, RP 40-75.

Basic Organic Fertiliser Plan

- Soil and herbage test!
- Get pH right-lime appropriately.
- Concentrate on Phosphorus and Sulphur as these are of the greatest deficiency in Canterbury.
- Then rectify other deficient major elements (Mg, K) and trace elements (Moly, Co, Cu etc).
- As N cannot be applied in an organic system it is important to have your clovers performing at their peak.

In Summary

- Having a regular testing program extremely important if maximum production to be gained.
- Soil test every 2 years, herbage every year.
- Best to get advice from fert. Rep as this free and they are trained to interpret this information.

Summit Quinphos Bio Gro approved products.

- Major Nutrients:

- RPR-reactive phosphate rock from Tunisia, naturally mined rock. 13% P, 35% Ca
- Elemental sulphurs-97% Elemental sulphur.
- Dolomite-20% Ca, 12% Mg.
- Gypsum-18% S, 23%Ca.
- Lime-38% Ca.
- Sulphate of Potash-42% K, 18% S.
- Salt

- Trace elements:

- Borate-Boron
- Cobalt Sulphate-Cobalt
- Copper Sulphate-Copper
- Iron Sulphate-Iron
- Manganese Sulphate-Manganese
- Sodium Molybdate-Molybdenum
- Zinc Sulphate-Zinc

- SQ is the only large fertiliser company that is Bio-gro certified.

Points of Interest

- Fertiliser is the easy part; animal health is a far greater challenge.
- Organic products-an up and down shelf life, eg: Safeways in the UK.
- 2 types of organic farmers
    - Excuse for poor farming/production.
    - Extremely good farmers producing high quality products.
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- SQ feels Organic farming has a very strong and exciting future.