

## Complete Fertiliser Analysis

### Sustainable Soil Management with the Mikhail Balance System

FILE NO : 2211172590

LANDTASIA ORGANIC FARMS P/L  
PO BOX 116

BUNGENDORE, NSW 2621

SAMPLE ID : 50028

DATE ISSUED : 8/11/2022

DATE RECEIVED : 2/11/2022

CLIENT ID : LAN055

PHONE : 02 6238 0565

REFERENCE :

REFERENCE PHONE :

ANALYSIS REQUIRED : Complete  
Fertiliser Analysis

### CONTENTS:

|                                       | <i>page</i> |
|---------------------------------------|-------------|
| 1. Total Analysis, Microbial Analysis | 2           |
| 2. Notes on Biology Management        | 3           |
| 3. Analytical Methods                 | 3           |

## Total Analysis

| ITEM | UNIT | RESULT |
|------|------|--------|
|------|------|--------|

### Basic Measures:

|                         |      |       |      |
|-------------------------|------|-------|------|
| pH (1:5 Water)          |      |       | 7.7  |
| Electrical Conductivity | EC   | µS/cm | 937  |
| TOTAL SOLUBLE SALT      | TSS  | ppm   | 3090 |
| MOISTURE CONTENT        | MC % | %     | 45.7 |

### Major Nutrients:

|                  |   |      |      |                                  |
|------------------|---|------|------|----------------------------------|
|                  |   |      |      | (Major Nutrients in percentages) |
| TOTAL NITROGEN   | N | kg/t | 13.1 | 1.31 %                           |
| TOTAL PHOSPHORUS | P | kg/t | 3.3  | 0.33 %                           |
| TOTAL POTASSIUM  | K | kg/t | 8.5  | 0.851 %                          |
| TOTAL SULPHUR    | S | kg/t | 2.1  | 0.212 %                          |

### Total Cations:

|                 |    |   |        |
|-----------------|----|---|--------|
| TOTAL CALCIUM   | Ca | % | 1.71   |
| TOTAL MAGNESIUM | Mg | % | 0.384  |
| TOTAL SODIUM    | Na | % | 0.0401 |

### Trace Minerals:

|                  |    |     |      |
|------------------|----|-----|------|
| TOTAL COPPER     | Cu | ppm | 29.9 |
| TOTAL ZINC       | Zn | ppm | 115  |
| TOTAL IRON       | Fe | %   | 1.06 |
| TOTAL MANGANESE  | Mn | ppm | 337  |
| TOTAL COBALT     | Co | ppm | 3.06 |
| TOTAL MOLYBDENUM | Mo | ppm | 1.65 |
| TOTAL BORON      | B  | ppm | 24.5 |

### Carbon Content:

|                       |     |   |      |
|-----------------------|-----|---|------|
| TOTAL ORGANIC MATTER  |     | % | 37   |
| TOTAL ORGANIC CARBON  |     | % | 18.5 |
| CARBON/NITROGEN RATIO | C/N |   | 14.1 |

## Microbial Analysis

| ITEM | UNIT | RESULT | % of Total Active Bacteria |
|------|------|--------|----------------------------|
|------|------|--------|----------------------------|

|                                |       |  |        |         |
|--------------------------------|-------|--|--------|---------|
| ACTIVE LACTIC ACID BACTERIA    |       |  | 1,000  | 1.07 %  |
| Active Fungi                   | cfu/g |  | 30,000 |         |
| Cellulose Utilisers            | cfu/g |  | 30,000 |         |
| TOTAL ACTIVE FUNGI             | cfu/g |  | 60,000 | 64.45 % |
| ACTIVE YEASTS                  | cfu/g |  | 2,000  | 2.15 %  |
| ACTIVE ACTINOMYCETES           | cfu/g |  | 30,000 | 32.22 % |
| ACTIVE PHOTOSYNTHETIC BACTERIA | cfu/g |  | 100    | 0.11 %  |
| Total Active Population:       | cfu/g |  | 93,100 |         |

See notes on Biology Management (page 3).

*No bacterial colonies were detected on the culture media, if the result is 1000 cfu/g for Lactic Acid Bacteria and Actinomycetes or 100 cfu/g for Yeast, Fungi, Cellulose and Photosynthetic Bacteria.*

ppm = parts per million = milligrams per kilogram  
1 % = 10,000 ppm

cfu/g = colony forming unit per gram of material

## Notes on Biology Management

The first thing to remember is that SWEP results are for ACTIVE micro-organisms only. This means only those that will immediately grow under ideal conditions (generally about 7-10% of total soil biomass). This allows us to analyse samples year round, since the microbes that are active in spring will still be present in summer or winter, but at very reduced levels of activity. Given the ideal conditions in our cultures, they will spring back to life and grow much more quickly than others.

### **Active Indicator Organisms**

**Photosynthetic bacteria** like *Rhodospseudomonas spp* and *Bradyrhizobium spp* require only sunlight, carbon dioxide and mineral nutrients to survive. They are important in recycling organic matter, particularly compounds that are difficult to break down - such as pesticide and petrochemical residues. They are also important for synthesis of bio-active compounds that are known to stimulate plant growth.

**Yeasts** such as *Saccaromyces spp*, *Debaryomyces spp*, *Torulopsis spp* and *Rhodotrula spp* synthesise plant growth substances from amino acids and sugars that are produced by photosynthetic bacteria. These substances also promote the growth of Lactic acid bacteria and Actinomycetes.

**Lactic acid bacteria** such as *Lactobacillus spp*, *Leuconostoc spp*, *Lactococcus spp* and *Pediococcus spp* produce Lactic Acid from sugars and carbohydrates. Lactic acid is a strong bio-suppressive compound that helps control harmful micro-organisms. This effect, together with other trace nutrients produced by members of this group, is particularly beneficial to the growth of Photosynthetic bacteria and Yeasts.

**Actinomycetes** such as *Actinomyces spp* and *Streptomyces spp* produce antibiotic compounds that are effective suppressants of pathogenic organisms. They have also been shown to produce plant hormones - especially when treated with kelp extracts.

**Fungi** such as *Aspergillus spp*, *Penecillium spp*, *Mucor spp* and *Rhizopus spp* have many beneficial effects on plant growth. These include the production of enzymes, antibiotics and various growth regulators. They are also important in the conversion of organic matter to humic substances. Some of the less complex compounds produced from this process are also important food sources for some bacteria.

**Cellulose Utilisers** like *Trichoderma spp* require only minerals and cellulose for growth. These fungi break down plant remains into organic materials that are beneficial to other micro-organisms such as Protozoa.

### ANALYTICAL METHODS

|                  |                        |                         |                               |
|------------------|------------------------|-------------------------|-------------------------------|
| TOTAL NITROGEN   | Dumas method, LECO     | TOTAL COBALT            | Acid digestion, ICPAES        |
| TOTAL PHOSPHORUS | Acid digestion, ICPAES | TOTAL BORON             | Acid digestion, ICPAES        |
| TOTAL POTASSIUM  | Acid digestion, ICPAES | TOTAL MOLYBDENUM        | Acid digestion, ICPAES        |
| TOTAL SULPHUR    | Acid digestion, ICPAES | pH                      | Method 4A1, water suspension* |
| TOTAL CALCIUM    | Acid digestion, ICPAES | Electrical Conductivity | Method 3A1, water extract*    |
| TOTAL MAGNESIUM  | Acid digestion, ICPAES | TOTAL ORGANIC CARBON    | Method 6B2b*                  |
| TOTAL SODIUM     | Acid digestion, ICPAES | MOISTURE CONTENT        | Gravimetric method            |
| TOTAL IRON       | Acid digestion, ICPAES | CARBON / NITROGEN RATIO | Calculation                   |
| TOTAL MANGANESE  | Acid digestion, ICPAES |                         |                               |
| TOTAL ZINC       | Acid digestion, ICPAES | Microbial Analysis      | SWEP Methods                  |
| TOTAL COPPER     | Acid digestion, ICPAES |                         |                               |

\* Rayment, G.E. & Higginson, F.R. (1992). Australian Laboratory Handbook for Soil and Water Chemical Methods. Inkata Press, Port Melbourne, Australia.