UNIT SAINS TANAH DAN NUTRIEN TANAMAN

Unit Sains Tanah dan Nutrien Tanaman menganalisa sampel tanah, daun dan air secara rutin bagi menyediakan perkhidmatan khidmat nasihat kesuburan tanah dan nutrient tanaman kepada peladang. Dilengkapi dengan makmal kimia tanah bagi memberi perkhidmatan dokongan bagi penganalisaan kimia tanah, daun tanaman, air, larutan baja hidroponik dan Jaminan Kawalan Mutu Baja yang dibekalkan melalui Skim Insentif Pertanian dan Agrimakanan (SIPA) bagi petani perusahaan kecil dan sederhana. Selaras dengan kemajuan teknologi masa kini, perkhidmatan penganalisaan kimia makmal unit ini juga digunakan bagi analisa logam berat di Kawasan Kemajuann Pertanian (KKP) dan Amalan Perladangan Baik Brunei (Brunei GAP)

Pada masa ini perkhidmatan makmal analisa kimia diberi secara percuma kepada peladang yang kecil dan sederhana (PKS) yang berdaftar dengan Jabatan Pertanian & Agrimakanan. Caj perkhidmatan dikenakan kepada peladang dan pengusaha berskala besar dan komersial.

Fungsi Utama

1. Menyediakan perkhidmatan khidmat nasihat kesesuaian tanah, kesuburan tanah dan nutrien tanaman.
2. Menyediakan perkhidmatan makmal untuk analisa kimia tanah, tanaman, kualiti baja dan air.
3. Membuat penyelidikan dan ujian asas kesuburan tanah dan nutrien tanaman.
4. Menjalankan Kawalan Jaminan Mutu baja untuk program Skim Insentif Pertanian dan Agrimakanan (SIPA)
5. Pemindahan pengetahuan dan teknologi asas sains tanah dan nutrien tanaman
6. Pemantauan logam berat bagi Kawasan Kemajuann Pertanian (KKP) dan Amalan Perladangan Baik Brunei (Brunei GAP)
7. Mengumpul data kajicuaca pertanian dan fokal utama bagi perubahan iklim pertanian
8. Fokal utama bagi pembangunan piawaian organik pertanian

Alamat

Unit Sain Tanah dan Nutrien Tanaman
Pusat Penyelidikan Pertanian Brunei Kilanas, BG1121

Jenis-Jenis Perkhidmatan Yang disediakan

1. Penganalisaan Kimia Tanah

Bil	Jenis Analisis	Kaedah	Harga ($)	TPOR (Hari Waktu Bekerja)
A	Penyediaan sampel	Pengeringan, pengisaran dan saringan	12	11 hari
B	**Analisa Sampel**			
1	Kandungan air	Pengeringan Oven	7	
2	pH	pH meter	6	
3	Kekonduksian Elektrik (Ec)	EC meter	6	
4	Aluminium bertukar	Titration	22	
5	Organik Karbon	Kaedah Walkey Black Titration	16	
6	Jumlah Nitrogen	Macro-Kjeldahl	12	
7	Nitrate - Nitrogen	Kolorimetri UV	20	
8	Fosforas tersedia	Kolorimetri UV	20	
9	Sulfur tersedia	Tubidometric UV	16	
10	Boron larut air	Kolorimetri UV	16	
11	Potassium bertukar	Atomic Absorption Spektrofotometri	30	
12	Sodium bertukar			
13	Kalsium bertukar			
14	Magesnium bertukar			
15	Zink tersedia	Atomic Absorption Spektrometri	16	
16	Mangan tersedia		16	
17	Kupram tersedia		16	
18	Iron tersedia		16	

2. Penganalisaan Daun Tanaman dan Baja Organik

Bil	Jenis Analisis	Kaedah	Harga ($)	TPOR (Hari Waktu Bekerja)
A	Penyediaan sampel	i.Pengeringan Oven dan pengisaran	8	11 hari
		ii. Pencernaan Asid	12	
		iii. Pengabuan	6	
B	**Analisa Sampel**			
1	Kandungan Lembapan	Oven	20	
2	Jumlah Nitrogen	Kjedahl Distillation	22	
3	Jumlah Fosforas	Kolorimetri UV	12	
4	Jumlah Potassium	Atomic absorption Spektrometri	6	
5	Jumlah Kalsium		6	
6	Jumlah Magesnium		6	
7	Jumlah Sodium		6	
8	Jumlah Iron		6	
9	Jumlah Zink		6	
10	Jumlah Mangan		6	
11	Jumlah Kupram		6	
12	Jumlah Sulfur	Turbidometric UV	12	
13	Jumlah Boron	Kolorimetri UV	12	
14	Organik Matter (Baja Organik)	Pengabuan	7	

3. Penganalisaan Baja Kimia

Bil	Jenis Analisis	Kaedah	Harga ($)	TPOR (Hari Waktu Bekerja)
A	Penyediaan sampel	i) Pengisaran	8	11 hari
		ii) Pencernaan asid	12	
B	Analisa Sampel			
1	Jumlah Nitrogen (Ammonical/ Nitrate / Urea)	Kjeldahl Distillation/ Kolorimetri UV	22	
2	Jumlah Fosforas	Kolorimetri UV	12	
3	Jumlah Potassium	Atomic absorption Spektrofotometri	6	
4	Jumlah Kalsium		6	
5	Jumlah Magnesium		6	
6	Jumlah Sodium		6	
7	Jumlah Iron		6	
8	Jumlah Zink		6	
9	Jumlah Mangan		6	
10	Jumlah Kupram		6	
11	Jumlah Sulfur	Turbidometri UV	6	
12	Jumlah Boron	Kolorimetri UV	12	
13	CCE (untuk baja kapur)	Titration	22	
14	Kandungan Lembapan	Karl Fisher Titration / Oven	20	
15	Saiz Butiran	Ayak (Sieve)	10	

4. Penganalisaan Kualiti Air, Baja Cecair dan Larutan Hidroponik

Bil	Jenis Analisis	Kaedah	Harga ($)	TPOR (Hari Waktu Bekerja)
A	Penyediaan sampel	Penapisan	6	11 hari
B	Analisa Sampel			
1	pH	pH meter	5	
2	Electrical Conductivity	EC meter	5	
3	Ammonical Nitrogen	Kjedahl Distillation	12	
5	Nitrate - Nitrogen	Kolorimetri UV	12	
6	Fosforas	Kolorimetri UV	12	
7	Potassium	Atomic absorption Spektrofotometri	6	
8	Kalsium		8	
9	Magnesium		8	
10	Sodium		6	
11	Iron	Atomic absorption Spektrofotometri	6	
12	Zink		6	
13	Mangan		6	
14	Kupram		6	
15	Sulfur	Turbidometric UV	12	
16	Boron	Kolorimetri UV	12	
17	Bicarbonate	Titration	6	

SOIL SCIENCE AND PLANT NUTRIENT UNIT

The unit is analyzing samples of soil, leaves and water on a regular basis to provide advice on soil fertility and plant nutrients to farmers. The unit equipped with soil chemistry laboratory to provide support services for the chemical analysis of soil, plant leaves, water, nutrient solution and conducting Quality Control Assurance for fertilizer under Agriculture and Agrifood Incentive Scheme (SIPA) distribute for small and medium enterprises farmers. In accordance with current technological advancements, the laboratory also equipped for the analysis of heavy metals in Agriculture Development Areas (ADAs) and sampling for Brunei Good Agriculture Practices (Brunei GAP)

At present a chemical analysis laboratory services provided free of charge to small and medium enterprises farmers (SMEs) that are registered with the Department of Agriculture and Agrifood. Service charges apply to large-scale and commercial farmers and entrepreneurs.

Main function

1. Provide advisory service and recommendations on soil suitability, fertility and crops nutrient requirements.
2. Provide laboratory services for chemical analysis of soil, crops, fertilizer and water quality
3. Conducting basic research and trials on soil fertility and crops nutrient requirements.
4. Conducting quality control of fertilizers imported for Agriculture and Agrifood Incentive Scheme (SIPA).
5. Technology and knowledge transfer for the fundamentals of soil science and plant nutrients.
6. Monitoring heavy metal for Agriculture Development Areas (ADAs) and Brunei Good Agricultural Practices (Brunei GAP)
7. Collection for agro-meteorological data and focal point for agricultural climate change
8. As focal point for development of agricultural organic standard

Address

Soil Science and Plant Nutrient Unit
Brunei Agriculture Research Centre, Kilanas BG1121

Types of Services Provided

1. Soil Chemical Analysis

No	Type of Analysis	Methodology	Price ($)	TPOR (Working Days)
A	**Sample preparation**	Drying, grinding and filtering	12	11 day
B	**Sample analysis**			
1	Water Content	Drying Oven	7	
2	pH	pH meter	6	
3	Electrical Conductivity (Ec)	EC meter	6	
4	Exchangeable Aluminum	Titration	22	
5	Organic Carbon	Methodology Walkey Black Titration	16	
6	Total Nitrogen	Macro-Kjeldahl	12	
7	Nitrate - Nitrogen	UV Spectrophotometer	20	
8	Available Phosphorus	UV Spectrophotometer	20	
9	Available Sulphate	UV Spectrophotometer	16	
10	Total Boron	UV Spectrophotometer	16	
11	Exchangeable Potassium	Atomic Absorption Spectrophotometer	30	
12	Exchangeable Sodium			
13	Exchangeable Calcium			
14	Exchangeable Magnesium			
15	Available Zinc	Atomic Absorption Spectrophotometer	16	
16	Available Manganese		16	
17	Available Copper		16	
18	Available Iron		16	

2. Plant Leaf and Organic Fertilizer Analysis

No	Type of Analysis	Methodology	Price ($)	TPOR (Working Days)
A	**Sample preparation**	i.Drying Oven and grinding	8	11 day
		ii. Acid Digestion	12	
		iii. Ashing	6	
B	**Sample analysis**			
1	Moisture Content	Oven	20	
2	Total Nitrogen	Kjedahl Distillation	22	
3	Total Phosphorus	UV Spectrophotometer	12	
4	Total Potassium	Atomic absorption Spectrophotometer	6	
5	Total Calcium		6	
6	Total Magnesium		6	
7	Total Sodium		6	
8	Total Iron		6	
9	Total Zinc		6	
10	Total Manganese		6	
11	Total Copper		6	
12	Total Sulfur	UV Spectrophotometer	12	
13	Total Boron	UV Spectrophotometer	12	
14	Organic Matter (Organic Fertilizer)	Ashing	7	

3. Chemical Fertilizer Analysis

No	Type of Analysis	Methodology	Price ($)	TPOR (Working Days)
A	Sample preparation	i) Grinding	8	11 day
		ii) Acid Digestion	12	
B	Sample analysis			
1	Total Nitrogen (Ammonical/ Nitrate / Urea)	Kjeldahl Distillation/ Kolorimetri UV	22	
2	Total Phosphorus	UV Spectrophotometer	12	
3	Total Potassium	Atomic absorption Spectrophotometer	6	
4	Total Calcium		6	
5	Total Magnesium		6	
6	Total Sodium		6	
7	Total Iron		6	
8	Total Zinc		6	
9	Total Manganese		6	
10	Total Copper		6	
11	Total Sulfur	UV Spectrophotometer	6	
12	Total Boron	UV Spectrophotometer	12	
13	CCE (for dolomite fertilizer)	Titration	22	
14	Moisture Content	Karl Fisher Titration / Oven	20	
15	Particle Size	Sieving	10	

4. Water Quality, Liquid Fertilizer and Hydroponic Solution Analysis

No	Type of Analysis	Methodology	Price ($)	TPOR (Working Days)
A	Sample preparation	Filtering	6	11 hari
B	Sample analysis			
1	pH	pH meter	5	
2	Electrical Conductivity	EC meter	5	
3	Ammonical Nitrogen	Kjedahl Distillation	12	
5	Nitrate - Nitrogen	UV Spectrophotometer	12	
6	Phosphorus	UV Spectrophotometer	12	
7	Potassium	Atomic absorption Spectrophotometer	6	
8	Calcium		8	
9	Magnesium		8	
10	Sodium		6	
11	Iron	Atomic absorption Spectrophotometer	6	
12	Zinc		6	
13	Manganese		6	
14	Copper		6	
15	Sulfur	UV Spectrophotometer	12	
16	Boron	UV Spectrophotometer	12	
17	Bicarbonate	Titration	6	