Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref HALL BARN RD

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/01

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.5			
Org. Matter - DUMAS (%)	2.4			
C.E.C. (meq/100g)	11.6			
Soil Respiration (mg/kg)	34			
C:N Ratio	10.9			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	27.2			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	27						
Potassium (ppm)	222						
Magnesium (ppm)	56						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2652			
Sulphur (ppm)	10			
Sodium (ppm)	16			
Boron (ppm)	1.63			
Copper (ppm)	3.8			
Iron (ppm)	33			
Manganese (ppm)	63			
Molybdenum (ppm)	0.05			
Zinc (ppm)	6.1			

Released by [redacted] ..Laboratory Manager on behalf of Lancrop Laboratories

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The Industrial Estate
Pocklington, York, YO42 1DN
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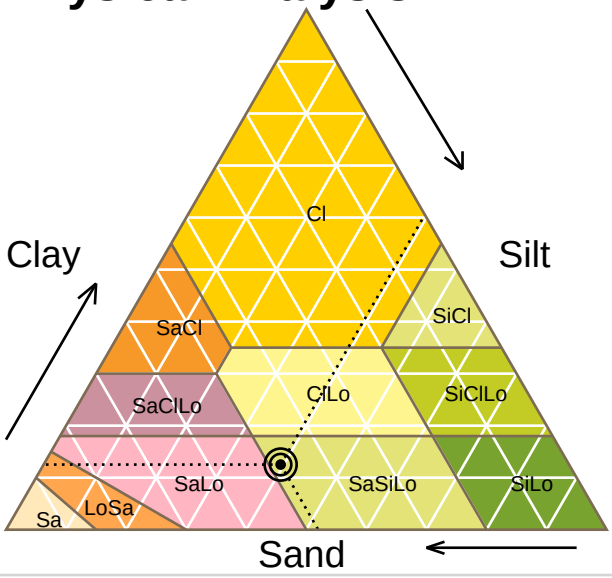
[redacted]

PAAG Professional Agricultural Analysis Group

Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	HALL BARN RD	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/01		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	48.02
Silt	39.46
Clay	12.52
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

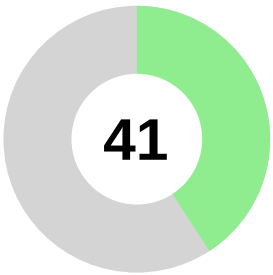
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	34	>70
Organic Carbon (%)	1.4	
Total Nitrogen (%)	0.128	
C:N Ratio	10.9	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	778
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	21
Soil Assessment Score	41/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
Nutrient cycling thrives

Increasing Alkalinity
Fungal activiy declines
Bacteria thrive
Nutrient cycling drops

Lancrop Laboratories, Pocklington, UK, YO42 1DN. soilanalysis@yara.com +44 1759305116

Lancrop Laboratories

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Sample Ref HALL BARN RD
Sample No E130869/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.5	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.4	3.0	Slightly low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	11.6	15.0	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	34	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.9	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	27.2		
Phosphorus (ppm)	27	26	**(Index 3.1)**
Potassium (ppm)	222	241	**(Index 2.8)**
Magnesium (ppm)	56	100	**(Index 2.1)**
Calcium (ppm)	2652	1600	
Sulphur (ppm)	10	10	
Sodium (ppm)	16	90	
Boron (ppm)	1.63	2.10	

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Sample Ref HALL BARN RD
Sample No E130869/01
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	3.8	2.1	
Iron (ppm)	33	50	
Manganese (ppm)	63	110	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	6.1	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted]

Please Note

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Analysis Results (SOIL)

Customer DEMETER

Distributor DEMETER TECHNOLOGY
5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref CHIPPENHAM 4

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/02

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.0			
Org. Matter - DUMAS (%)	2.0			
C.E.C. (meq/100g)	23.9			
Soil Respiration (mg/kg)	41			
C:N Ratio	10.3			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	22.7			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	51						
Potassium (ppm)	506						
Magnesium (ppm)	61						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	4410			
Sulphur (ppm)	4			
Sodium (ppm)	88			
Boron (ppm)	2.00			
Copper (ppm)	8.9			
Iron (ppm)	196			
Manganese (ppm)	154			
Molybdenum (ppm)	0.05			
Zinc (ppm)	11.4			

Released by ... [redacted] Laboratory Manager on behalf of Lancrop Laboratories

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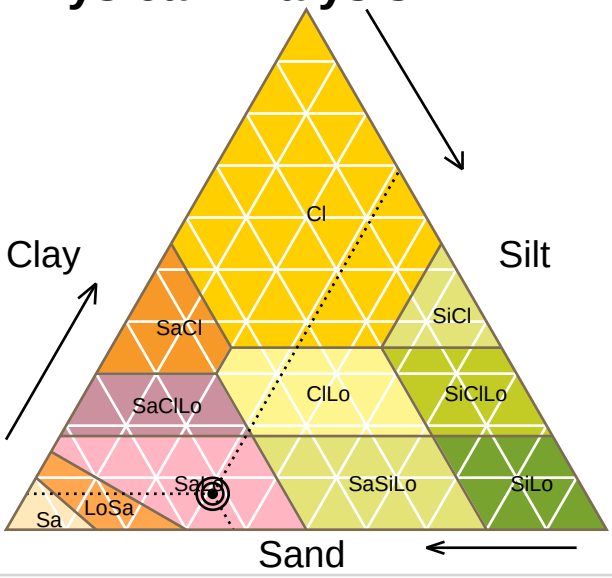
Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	CHIPPENHAM 4	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/02		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	62.14
Silt	30.95
Clay	6.91
Soil Type	SaLo Sandy Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

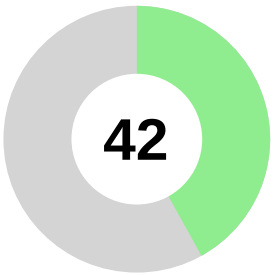
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	41	>70
Organic Carbon (%)	1.2	
Total Nitrogen (%)	0.113	
C:N Ratio	10.3	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	932
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	27
Soil Assessment Score	42/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
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Lancrop Laboratories

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Sample Ref CHIPPENHAM 4
Sample No E130869/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.0	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.0	3.0	Slightly low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	23.9	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	41	70	Slightly low aerobic microbial activity and mineralisation potential. Further investigation of soil conditons is recommended to establish if soil management practices can improve biological fertility.
C:N Ratio	10.3	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	22.7		
Phosphorus (ppm)	51	26	**(Index 4.2)**
Potassium (ppm)	506	241	**(Index 4.5)**
Magnesium (ppm)	61	100	**(Index 2.2)**
Calcium (ppm)	4410	1600	
Sulphur (ppm)	4	10	
Sodium (ppm)	88	90	
Boron (ppm)	2.00	2.10	

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Sample No E130869/02
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Copper (ppm)	8.9	2.1	
Iron (ppm)	196	50	
Manganese (ppm)	154	110	
Molybdenum (ppm)	0.05	0.20	
Zinc (ppm)	11.4	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available a [redacted]

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Analysis Results (SOIL)

Customer DEMETER

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5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref CHIPPENHAM 5

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/03

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	7.8			
Org. Matter - DUMAS (%)	2.2			
C.E.C. (meq/100g)	18.9			
Soil Respiration (mg/kg)	71			
C:N Ratio	10.3			
Texture Class	SASILO			
Org. Carbon Stock (t/ha)	24.9			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	48						
Potassium (ppm)	327						
Magnesium (ppm)	79						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	3490			
Sulphur (ppm)	3			
Sodium (ppm)	23			
Boron (ppm)	1.77			
Copper (ppm)	6.7			
Iron (ppm)	378			
Manganese (ppm)	163			
Molybdenum (ppm)	0.04			
Zinc (ppm)	9.9			

Released by . [redacted] .Laboratory Manager on behalf of Lancrop Laboratories

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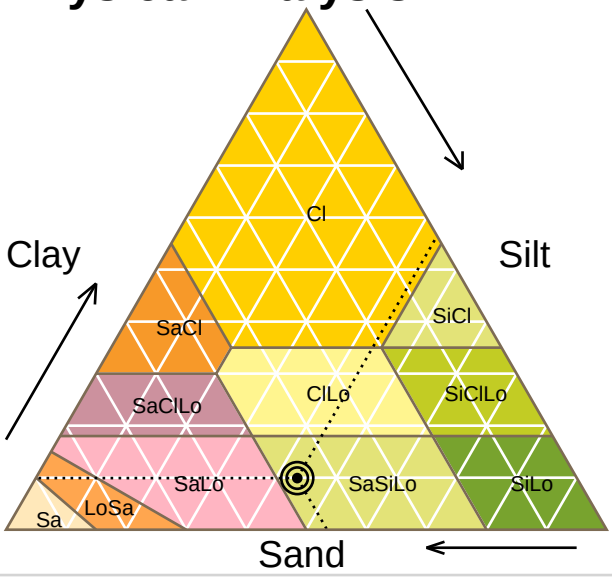
Analysis Results (SOIL)

Customer	DEMETER	**Distributor**	DEMETER TECHNOLOGY
Sample Ref	CHIPPENHAM 5	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/03		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	46.55
Silt	43.53
Clay	9.92
Soil Type	SaSiLo Sandy Silt Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

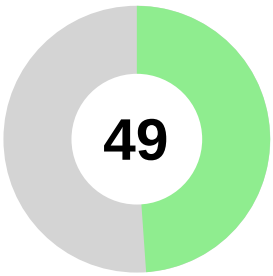
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	71	>70
Organic Carbon (%)	1.3	
Total Nitrogen (%)	0.124	
C:N Ratio	10.3	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	1592
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	46
Soil Assessment Score	49/100

Soil Assessment Score



Microbial Biomass and Potentially Mineralizable N are calculated from the Solvita CO2-C Burst. The Potentially Mineralizable N assumes ideal conditions. Soil Assessment Score is calculated from biological, chemical and physical results.

pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
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Sample Ref CHIPPENHAM 5
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Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	7.8	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.2	3.0	Slightly low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	18.9	15.0	Cation Exchange Capacity indicates a soil with a good nutrient holding ability.
Soil Respiration (mg/kg)	71	70	Typical aerobic microbial activity and mineralisation potential. Soil management practices may further improve biological fertility.
C:N Ratio	10.3	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SASILO		
Org. Carbon Stock (t/ha)	24.9		
Phosphorus (ppm)	48	26	**(Index 4.1)**
Potassium (ppm)	327	241	**(Index 3.5)**
Magnesium (ppm)	79	100	**(Index 2.6)**
Calcium (ppm)	3490	1600	
Sulphur (ppm)	3	10	
Sodium (ppm)	23	90	
Boron (ppm)	1.77	2.10	
Copper (ppm)	6.7	2.1	

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Sample No E130869/03
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
Iron (ppm)	378	50	
Manganese (ppm)	163	110	
Molybdenum (ppm)	0.04	0.20	
Zinc (ppm)	9.9	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
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Analysis Results (SOIL)

Customer DEMETER

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5 ST ANDREWS CLOSE
ISLEHAM
CAMBS
CB7 5TB

Sample Ref CHIPPENHAM 8

Date Received 16/09/2020 (Date Issued: 23/09/2020)

Sample No E130869/04

Crop NON STATED

Soil Characteristics	Result	Low	Normal	High
pH	8.1			
Org. Matter - DUMAS (%)	2.5			
C.E.C. (meq/100g)	10.1			
Soil Respiration (mg/kg)	111			
C:N Ratio	11.5			
Texture Class	SALO			
Org. Carbon Stock (t/ha)	28.3			

Major Nutrients	Result	0	1	2-	2+	3	4+
Phosphorus (ppm)	34						
Potassium (ppm)	326						
Magnesium (ppm)	81						

Secondary and Micro Nutrients	Result	Deficient	Maintenance	High
Calcium (ppm)	2191			
Sulphur (ppm)	5			
Sodium (ppm)	15			
Boron (ppm)	2.23			
Copper (ppm)	5.0			
Iron (ppm)	85			
Manganese (ppm)	148			
Molybdenum (ppm)	0.08			
Zinc (ppm)	9.5			

Released by [redacted] Laboratory Manager on behalf of Lancrop Laboratories

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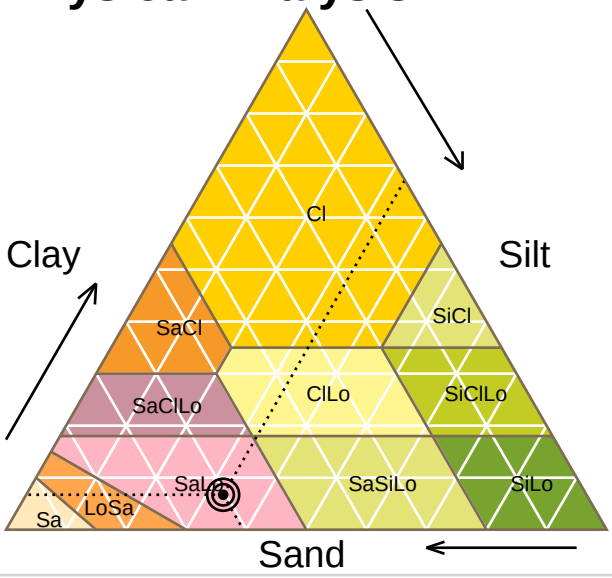
Sample Ref	CHIPPENHAM 8	**Date Received**	16/09/2020 (Date Issued: 23/09/2020)
Sample No	E130869/04		
Crop	NON STATED		

Physical Analysis



Analysis	Result (%)
Sand	60.49
Silt	32.79
Clay	6.72
Soil Type	SaLo Sandy Loam

Property	Assessment
Available Water	Low to Medium
Drainage Rate	Rapid
Inherent Fertility	Low to Medium
Potential C.E.C.	Low to Medium
Leaching Risk	High to Moderate
Warming Rate	Rapid

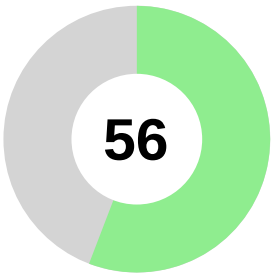
Biological Analysis

SOLVITA®

Analysis	Result	Ideal
Solvita Burst CO2-C (ppm)	111	>70
Organic Carbon (%)	1.5	
Total Nitrogen (%)	0.126	
C:N Ratio	11.5	10-12

Calculated Parameters	Result
Microbial Biomass (mg/kg)	2472
Solvita Potentially Mineralizable Nitrogen (kg N/ha)	65
Soil Assessment Score	56/100

Soil Assessment Score



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pH impact on soil biology

Increasing Acidity
Fungi thrive
Bacterial activity declines
Nutrient cycling drops

Neutral
Desirable fungal and bacterial activity
Good earthworm activity
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Sample No E130869/04
Crop NON STATED

Distributor DEMETER TECHNOLOGY
Date Received 16/09/2020 (Date Issued: 23/09/2020)

Analysis	Result	Guideline	Comments
pH	8.1	6.5	High. An alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn. An elevated pH will also impact on beneficial soil fungal populations and activity.
Org. Matter - DUMAS (%)	2.5	3.0	Slightly low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditons to establish if soil management practices can improve levels of organic matter.
C.E.C. (meq/100g)	10.1	15.0	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Soil Respiration (mg/kg)	111	70	Typical aerobic microbial activity and mineralisation potential. Soil management practices may further improve biological fertility.
C:N Ratio	11.5	10.0	Normal. A low C:N ratio in the soil encourages microbial activity and the amount and rate of nutrients made available to the plants through mineralisation. A ratio of 10 - 12 indicates the potential for a good rate of decompostion of organic residue and retention of applied organic materials.
Texture Class	SALO		
Org. Carbon Stock (t/ha)	28.3		
Phosphorus (ppm)	34	26	**(Index 3.4)**
Potassium (ppm)	326	241	**(Index 3.5)**
Magnesium (ppm)	81	100	**(Index 2.6)**
Calcium (ppm)	2191	1600	
Sulphur (ppm)	5	10	
Sodium (ppm)	15	90	
Boron (ppm)	2.23	2.10	

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[redacted]

PAAG Professional Agricultural Analysis Group

Lancrop Laboratories

Analysis Results (SOIL)

Customer DEMETER
Sample Ref CHIPPENHAM 8
Sample No E130869/04
Crop NON STATED

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Analysis	Result	Guideline	Comments
Copper (ppm)	5.0	2.1	
Iron (ppm)	85	50	
Manganese (ppm)	148	110	
Molybdenum (ppm)	0.08	0.20	
Zinc (ppm)	9.5	4.1	

Additional Comments

Carbon Stock (t/ha) has been calculated with assumed bulk density of 1.3 g/cm3 (if an in-lab bulk density has not been performed) and sampling depth of 15 cm.
To recalculate the Carbon Stock using other depths and bulk densities please use this calculation:
Carbon (%) x Sampling Depth (cm) x Bulk Density (g/cm3) = Carbon Stock (t/ha)
E.g. 4.0% x 15cm x 1.3 g/cm3 = 78 t/ha carbon stock.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at [redacted].

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruitlet sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request. Uncertainty measurements of results are available on request

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