Analysis Results (SOIL)

Customer AVONMORE ASSOCIATES
ORCHARD COTTAGE
DORSINGTON ROAD
LONG MARSTON
STRATFORD UPON AVON
CV37 8RW

Distributor ORIGIN AMENITY SOLUTIONS LTD - DAVID CARVEY

Sample Ref DEVIZES - TOP

Date Received 12/12/2023 (Date Issued: 14/12/2023)

Sample No G070450/02

Crop GRASS (AMENITY)

Soil Characteristics	Result	Low	Normal	High
pH	6.1			
C.E.C. (meq/100g)	6.9			
Major Nutrients	**Result**	**Deficient**	**Maintenance**	**High**
Phosphorus (ppm)	27			
Potassium (ppm)	89			
Magnesium (ppm)	82			
Secondary and Micro Nutrients	**Result**	**Deficient**	**Maintenance**	**High**
Calcium (ppm)	958			
Sulphur (ppm)	4			
Sodium (ppm)	8			
Boron (ppm)	0.95			
Copper (ppm)	3.0			
Iron (ppm)	1643			
Manganese (ppm)	12			
Molybdenum (ppm)	0.04			
Zinc (ppm)	9.5			

Released by ...Chris Lindley..Laboratory Manager on behalf of Lancrop Laboratories

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

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Date Received 12/12/2023 (Date Issued: 14/12/2023)

Sample No G070450/01

Crop GRASS (AMENITY)

Soil Characteristics	Result	Low	Normal	High
pH	6.0			
C.E.C. (meq/100g)	6.2			
Major Nutrients	**Result**	**Deficient**	**Maintenance**	**High**
Phosphorus (ppm)	25			
Potassium (ppm)	73			
Magnesium (ppm)	75			
Secondary and Micro Nutrients	**Result**	**Deficient**	**Maintenance**	**High**
Calcium (ppm)	831			
Sulphur (ppm)	7			
Sodium (ppm)	10			
Boron (ppm)	0.89			
Copper (ppm)	1.5			
Iron (ppm)	3083			
Manganese (ppm)	8			
Molybdenum (ppm)	0.02			
Zinc (ppm)	6.0			

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Sample No G070450/02

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Analysis	Result	Guideline	Comments
pH	6.1	5.5	MAINTAIN A balanced soil pH will maximise soil nutrient availability and the efficiency of any applied fertilisers, reducing nutrient losses and environmental impact. A balanced pH will also enhance soil microbial and fungal populations and rates of activity.
C.E.C. (meq/100g)	6.9	5.0	MAINTAIN CEC (cation exchange capacity) is a measure of the soils buffering capacity - in essence its resistance to change. Sands which have a low organic matter content have an inherently low CEC, and are unable to retain soil nutrients. Therefore a 'little and often' approach to fertilisation is required. Foliar feeds can support nutrient programmes where the CEC is low.
Phosphorus (ppm)	27	16	MONITOR Phosphorus is required for root development and carbohydrate transfer within the plant. Adequate phosphorus availability is critical when establishing new turf and when emerging from winter dormancy. High levels of soil phosphorus can reduce the availability of micronutrients such as iron and zinc. Consider reducing the use of phosphate containing fertiliser until optimum levels are reached.
Potassium (ppm)	89	80	MAINTAIN Potassium is important for the control and regulation of plant water; it balances water within the cells and loss through transpiration. Potassium also helps increase heat, cold, drought, wear, and pest tolerance. Continue a balanced fertiliser programme to ensure applications match removal.
Magnesium (ppm)	82	50	MAINTAIN Magnesium is an key constituent of chlorophyll, acts as a carrier of phosphorus, and activates plant enzymes for carbohydrate and phosphate utilisation. Magnesium also promotes winter hardiness and early growth. Use a balanced fertiliser programme to ensure magnesium inputs match plant removal.
Calcium (ppm)	958	600	MONITOR Calcium is a key constituent of cell walls and, as a result, provides plant strength and integrity. Low levels of plant calcium can lead to the leaching of sugars and, therefore, increased incidence of disease. Calcium is also required for the regulation of transpiration, especially during periods of high heat and humidity. High levels of calcium can reduce the availability of other nutrients such as phosphorus, iron and zinc, and other cations such as potassium and magnesium.

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Analysis	Result	Guideline	Comments
Sulphur (ppm)	4	10	INVESTIGATION REQUIRED Sulphur is required for nitrogen utilisation and is used in the formation plant proteins. Soil supplies have become exhausted as deposition of atmospheric solution has fallen. Ensure fertiliser programme provides adequate application of sulphur. However plant available sulphur is readily leached through the soil profile so excessive applications should be avoided.
Sodium (ppm)	8	<25	MAINTAIN No problems anticipated.
Boron (ppm)	0.95	0.50	MAINTAIN Boron is required primarily for the formation of plant growth regulating hormones and the translocation of sugars. Turf that is deficient in boron may be discoloured and suffer from poor structural integrity leading to increased risk of disease. Boron leaches rapidly from light soils of low CEC. Low levels of boron cab restrict the uptake of calcium.
Copper (ppm)	3.0	1.5	MAINTAIN Copper is important as a catalyst in photosynthesis and respiration. Copper is also used in the lignification of cell walls, therefore influencing plant cell integrity and resistance to fungal attack. Deficient turf will be stunted and withered, often with a dark green/blue colour. Because copper is absorbed the same way as zinc, an excess of one can inhibit the uptake of the other. It may be necessary to apply foliar copper if signs of deficiency are evident.
Iron (ppm)	1643	500	MONITOR Iron is essential for chlorophyll formation and function, and therefore turf colour. Present at adequate levels in most soils, it is rare to see deficient turf but deficiency symptoms include general yellowing, particularly in new growth. Excessive iron can reduce the availability of phosphorus. High levels can also be an indicator of poor soil conditions and further investigation may be required.
Manganese (ppm)	12	25	INVESTIGATION REQUIRED Manganese is involved in chlorophyll synthesis, photosynthesis processes and the activation of enzymes. It is also required for lignification of cell walls so is an important constituent of the plants natural disease defences. Availability is closely linked to soil acidity and reduces as soil pH rises. Availability can also be reduced followed soil aeration practises when insoluble manganese oxides can be formed. Ensure adequate manganese is applied to match plant requirement.

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Analysis	Result	Guideline	Comments
Molybdenum (ppm)	0.04	0.60	INVESTIGATION REQUIRED Molybdenum is required for the utilisation of nitration. It plays a specific role in the conversion of nitrate into N-compounds such as proteins. Molybdenum availability increases as soil pH increases and is very sensitive to soil acidity. Compared with other micronutrients molybdenum is needed in very small quantities only. As it is associated with nitrogen, deficient plants will often appear nitrogen deficient.
Zinc (ppm)	9.5	4.0	MAINTAIN Zinc is a catalyst in the enzyme systems used for plant protein and carbohydrate metabolism. It is also required for disease resistance and for the formations of auxins which regulate key cell development processes and, therefore, uniform growth, particularly in new grass. Deficiency shows as withered, creased blades and symptoms are exacerbated when soil temperatures are low or where phosphate levels are high. Ensure zinc applications are limited to requirement only.

Additional Comments

Individual elements can be treated with foliar sprays of the appropriate nutrient. Where multi-element deficiencies exist consider applications of a general foliar feed. Equivalent rates of other fertilisers can be used if those quoted above are unavailable.

Please Note

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Crop GRASS (AMENITY)

Analysis	Result	Guideline	Comments
pH	6.0	5.5	MAINTAIN A balanced soil pH will maximise soil nutrient availability and the efficiency of any applied fertilisers, reducing nutrient losses and environmental impact. A balanced pH will also enhance soil microbial and fungal populations and rates of activity.
C.E.C. (meq/100g)	6.2	5.0	MAINTAIN CEC (cation exchange capacity) is a measure of the soils buffering capacity - in essence its resistance to change. Sands which have a low organic matter content have an inherently low CEC, and are unable to retain soil nutrients. Therefore a 'little and often' approach to fertilisation is required. Foliar feeds can support nutrient programmes where the CEC is low.
Phosphorus (ppm)	25	16	MAINTAIN Phosphorus is required for root development and carbohydrate transfer within the plant. Adequate phosphorus availability is critical when establishing new turf and when emerging from winter dormancy. Phosphorus is often immobile in the soil, therefore consider the use of soluble phosphate fertilisers at appropriate timings.
Potassium (ppm)	73	80	MONITOR Potassium is important for the control and regulation of plant water; it balances water within the cells and loss through transpiration. Potassium also helps increase heat, cold, drought, wear, and pest tolerance. Potassium is very mobile in the soil and can be quickly leached out therefore check fertiliser programme to ensure sufficient is being applied to raise soil levels.
Magnesium (ppm)	75	50	MAINTAIN Magnesium is an key constituent of chlorophyll, acts as a carrier of phosphorus, and activates plant enzymes for carbohydrate and phosphate utilisation. Magnesium also promotes winter hardiness and early growth. Use a balanced fertiliser programme to ensure magnesium inputs match plant removal.
Calcium (ppm)	831	600	MAINTAIN Calcium is a key constituent of cell walls and, as a result, provides plant strength and integrity. Low levels of plant calcium can lead to the leaching of sugars and, therefore, increased incidence of disease. Calcium is also required for the regulation of transpiration, especially during periods of high heat and humidity. Use foliar calcium to satisfy plant requirement.

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Analysis	Result	Guideline	Comments
Sulphur (ppm)	7	10	MONITOR Sulphur is required for nitrogen utilisation and is used in the formation plant proteins. Soil supplies have become exhausted as deposition of atmospheric solution has fallen. Ensure fertiliser programme provides adequate application of sulphur. However plant available sulphur is readily leached through the soil profile so excessive applications should be avoided.
Sodium (ppm)	10	<25	MAINTAIN No problems anticipated.
Boron (ppm)	0.89	0.50	MAINTAIN Boron is required primarily for the formation of plant growth regulating hormones and the translocation of sugars. Turf that is deficient in boron may be discoloured and suffer from poor structural integrity leading to increased risk of disease. Boron leaches rapidly from light soils of low CEC. Low levels of boron cab restrict the uptake of calcium.
Copper (ppm)	1.5	1.5	MAINTAIN Copper is important as a catalyst in photosynthesis and respiration. Copper is also used in the lignification of cell walls, therefore influencing plant cell integrity and resistance to fungal attack. Deficient turf will be stunted and withered, often with a dark green/blue colour. Because copper is absorbed the same way as zinc, an excess of one can inhibit the uptake of the other. It may be necessary to apply foliar copper if signs of deficiency are evident.
Iron (ppm)	3083	500	INVESTIGATION REQUIRED Iron is essential for chlorophyll formation and function, and therefore turf colour. Present at adequate levels in most soils, it is rare to see deficient turf but deficiency symptoms include general yellowing, particularly in new growth. Excessive iron can reduce the availability of phosphorus. High levels can also be an indicator of poor soil conditions and further investigation may be required.
Manganese (ppm)	8	20	INVESTIGATION REQUIRED Manganese is involved in chlorophyll synthesis, photosynthesis processes and the activation of enzymes. It is also required for lignification of cell walls so is an important constituent of the plants natural disease defences. Availability is closely linked to soil acidity and reduces as soil pH rises. Availability can also be reduced followed soil aeration practises when insoluble manganese oxides can be formed. Ensure adequate manganese is applied to match plant requirement.

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Analysis	Result	Guideline	Comments
Molybdenum (ppm)	0.02	0.60	INVESTIGATION REQUIRED Molybdenum is required for the utilisation of nitration. It plays a specific role in the conversion of nitrate into N-compounds such as proteins. Molybdenum availability increases as soil pH increases and is very sensitive to soil acidity. Compared with other micronutrients molybdenum is needed in very small quantities only. As it is associated with nitrogen, deficient plants will often appear nitrogen deficient.
Zinc (ppm)	6.0	4.0	MAINTAIN Zinc is a catalyst in the enzyme systems used for plant protein and carbohydrate metabolism. It is also required for disease resistance and for the formations of auxins which regulate key cell development processes and, therefore, uniform growth, particularly in new grass. Deficiency shows as withered, creased blades and symptoms are exacerbated when soil temperatures are low or where phosphate levels are high. Ensure zinc applications are limited to requirement only.

Additional Comments

Individual elements can be treated with foliar sprays of the appropriate nutrient. Where multi-element deficiencies exist consider applications of a general foliar feed. Equivalent rates of other fertilisers can be used if those quoted above are unavailable.

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