GREEN PIGEON CONSULTING

YOU WANT A BIGGER BUDGET? MANAGE CARBON NOT GRASS!

Presented by
JUSTIN SMITH
Green Pigeon Consulting

UNLOCKING THE HIDDEN POTENTIAL OF AMENITY SPACES

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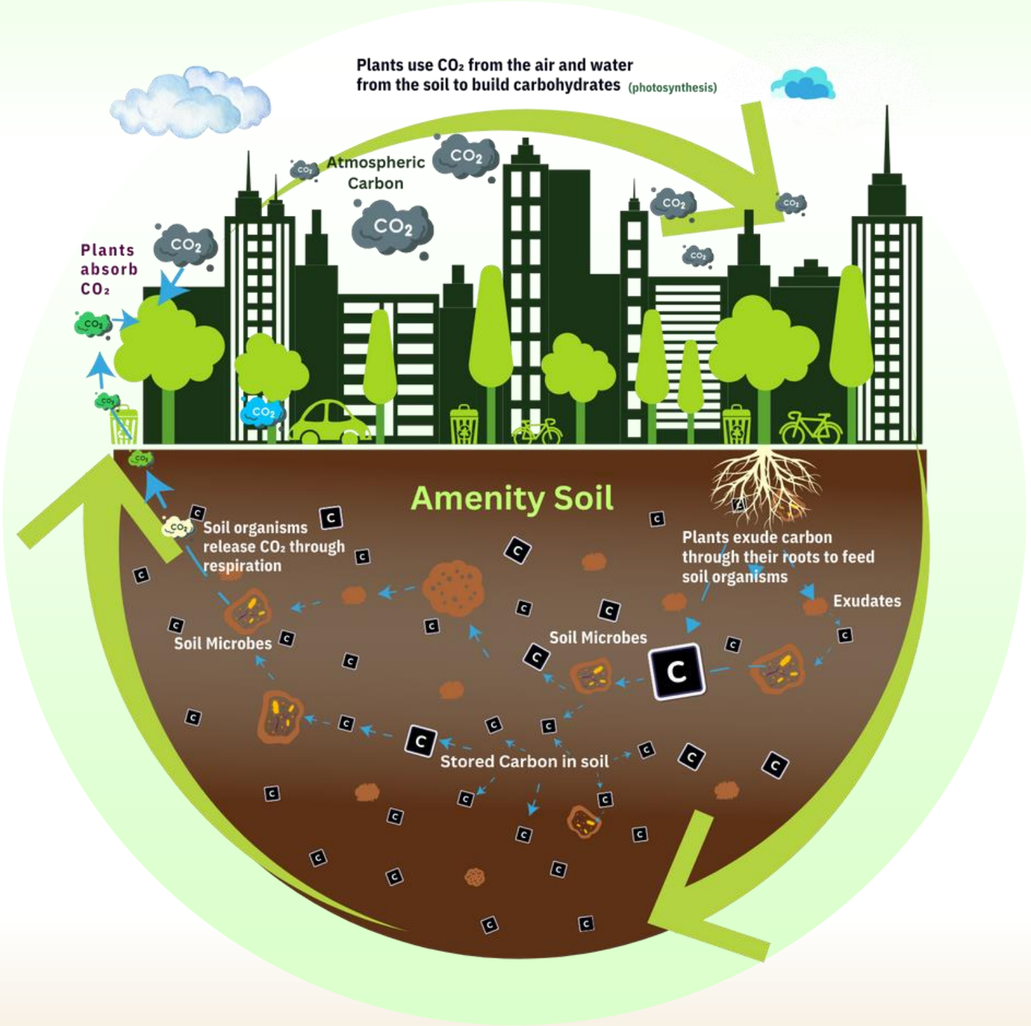
Grassland amenity spaces represent a vast, often overlooked opportunity for carbon sequestration and soil carbon storage



THE UNTAPPED POWER BENEATH OUR FEET

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- One teaspoon of soil = 10 billion^{++} micro-organisms
- 66% of living beings on earth live in the soil
- Soil is technically a living entity
- 95% of all food production relies on soil
- It takes 500 years to produce 25 mm of topsoil
- >33% of world soil is degraded
- Topsoil is a non-renewable resource
- Topsoil is depleting 4 x faster than its being regenerated

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“YOU CAN’T MANAGE WHAT YOU DON’T MEASURE!”

IMPROVING SOIL HEALTH

GREEN PIGEON CONSULTING

“You can't manage what you don’t measure!”

EMI Mapping for Soil Variability

IMPROVING SOIL HEALTH

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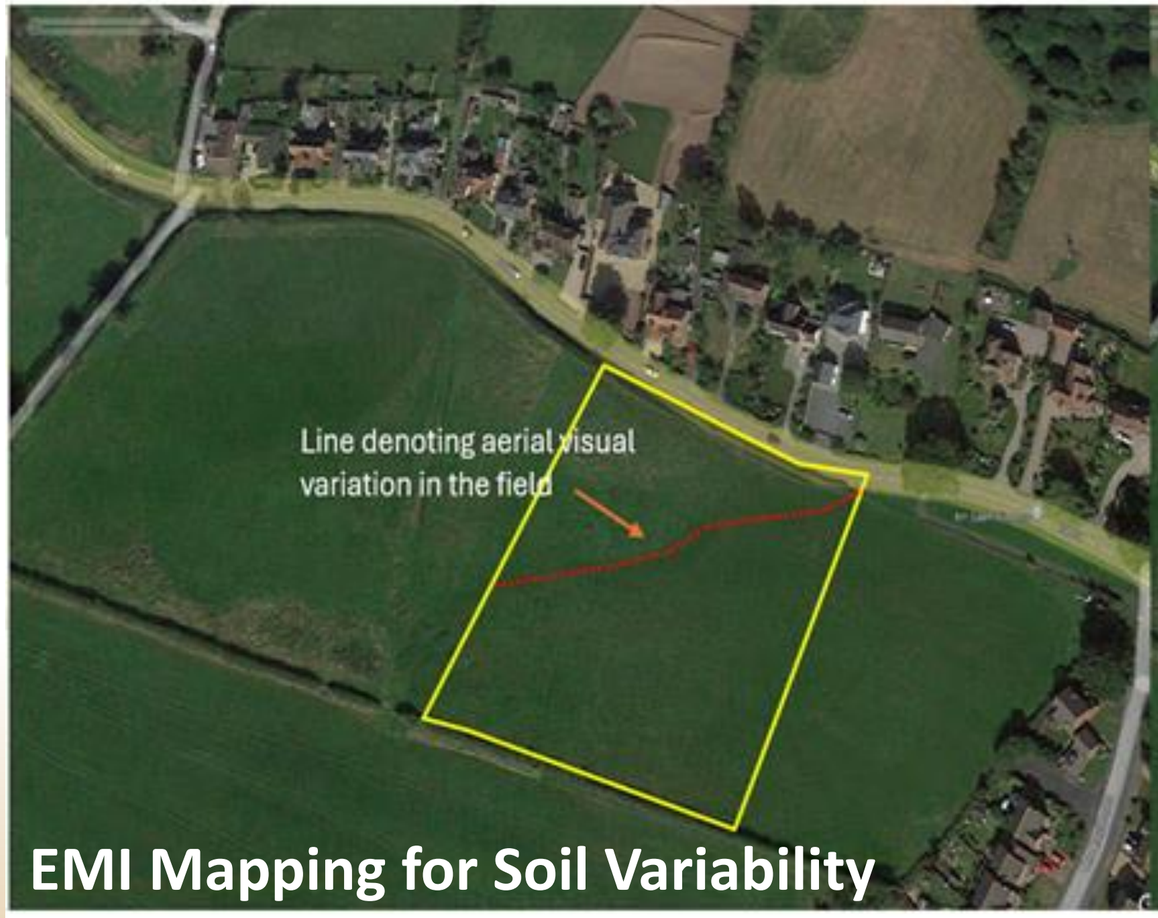

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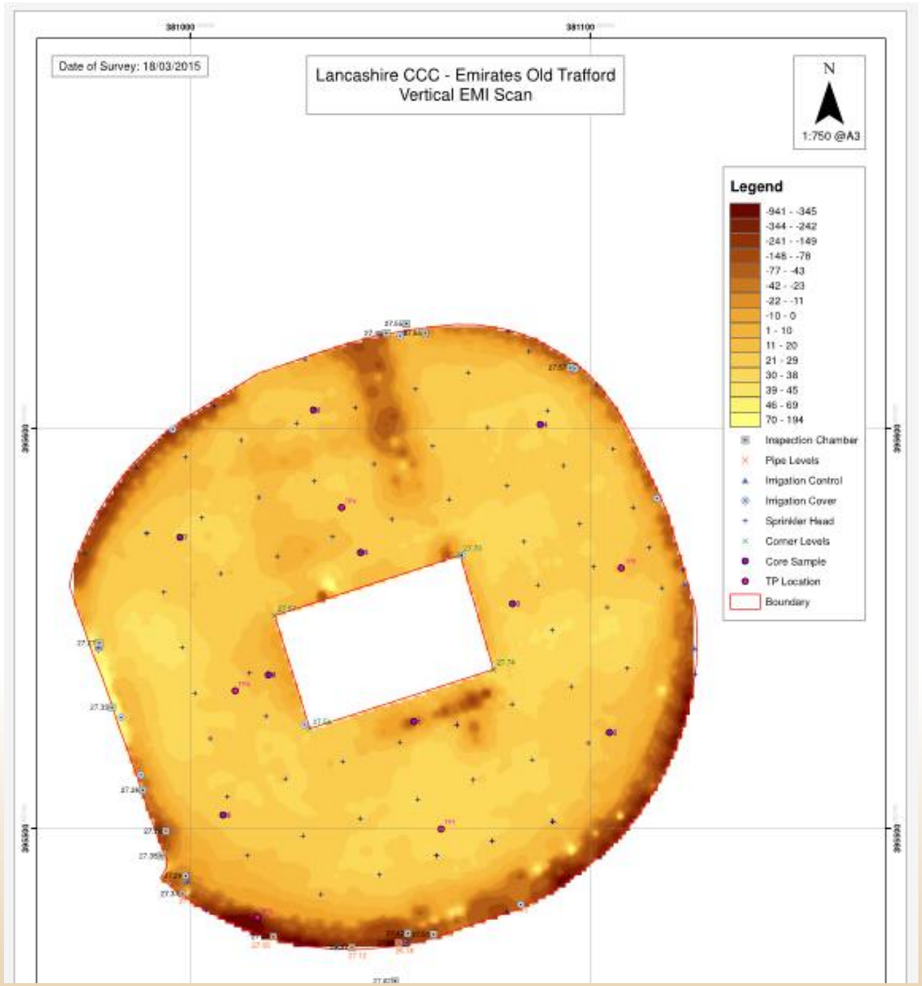

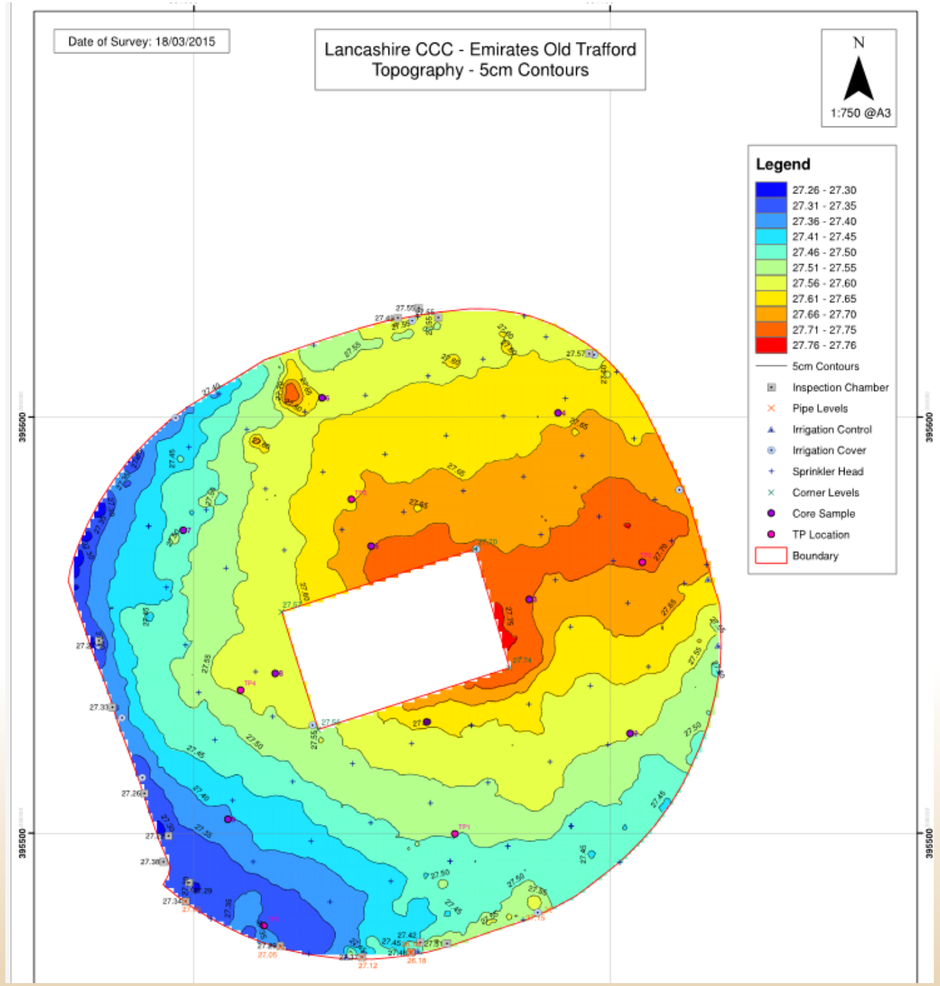

Provided by TGMS

SOIL CARBON

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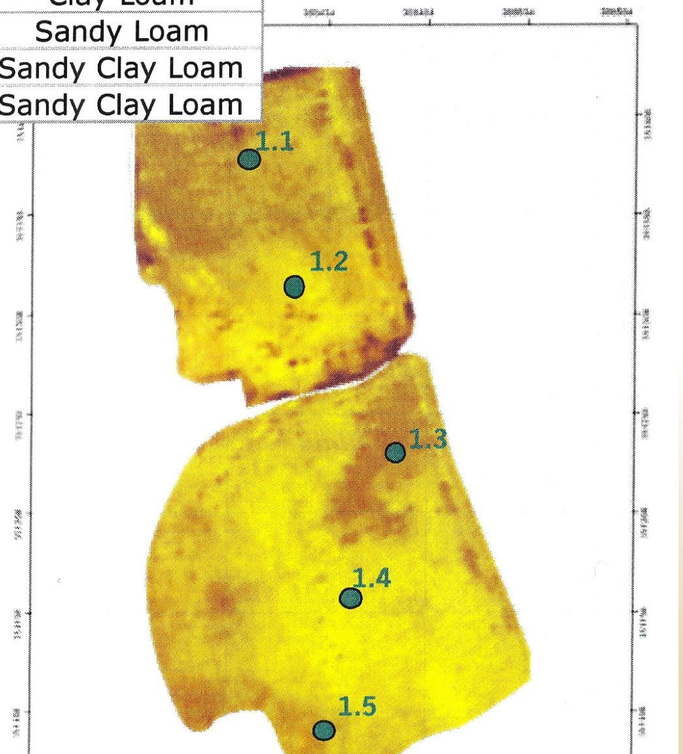
Point No	Depth	Sand %	Silt %	Clay %	Textural Class
1	Top	42	33	25	Clay Loam
	Sub A	40	27	33	Clay Loam
	Sub B	16	32	52	Clay
2	Top	49	31	20	Clay Loam
	Sub	47	28	25	Clay Loam
3	Top	46	34	20	Clay Loam
	Sub	60	19	21	Sandy Clay Loam
4	Top	58	27	15	Sandy Loam
	Sub A	63	16	21	Sandy Clay Loam
	Sub B	21	46	33	Clay Loam
5	Top	63	21	16	Sandy Loam
	Sub A	59	15	26	Sandy Clay Loam
	Sub B	68	11	21	Sandy Clay Loam

Mean clay 37%
Mean sand 32%

Mean Clay 23%
Mean sand 47%



SOIL CARBON

GREEN PIGEON CONSULTING

“You can't manage what you don’t measure!”

Understanding the **BASELINE** and **ATTAINABLE** carbon stock levels is crucial to be able to demonstrate the carbon storage and removal achieved from various practices and management techniques.

Green Pigeon have been developing ways for councils to monitor carbon stocks on their sites, that are repeatable, accurate and affordable.

SOIL CARBON

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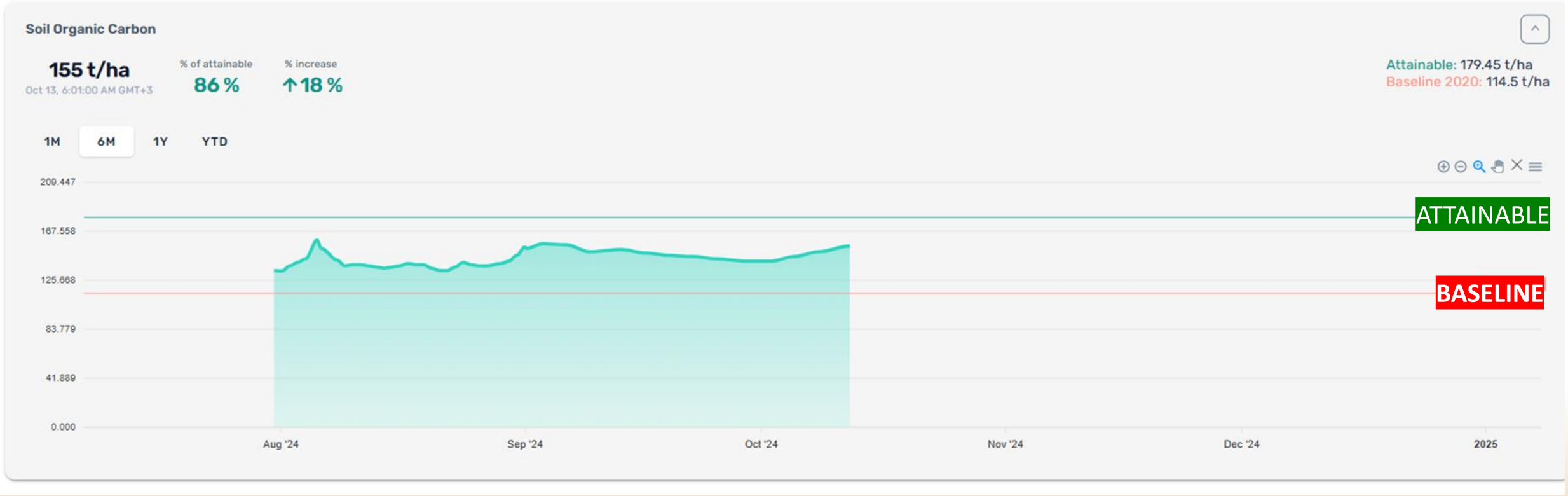

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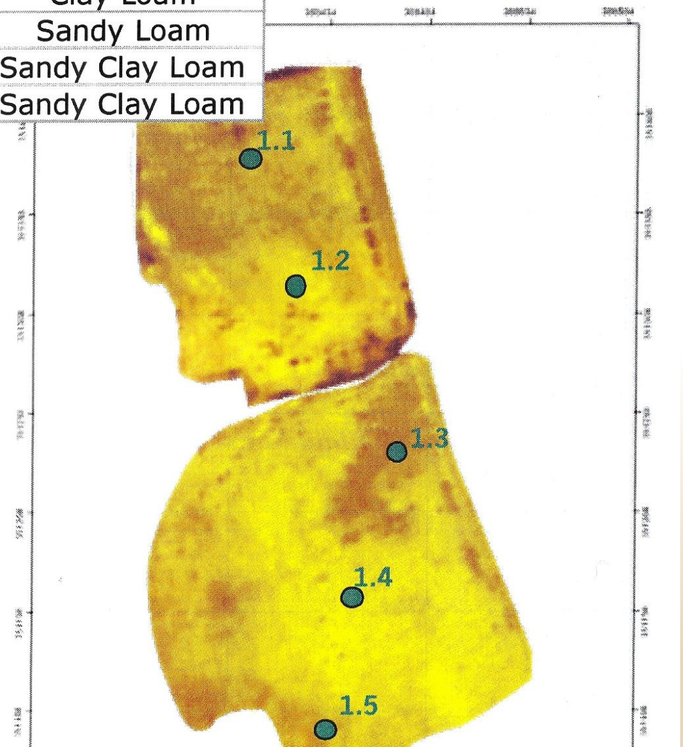

Layer	Depth Range (mm)	Depth (m)	Clay (%)	BD (t/m³)	SOC (%)	SOC Stock (t/ha)	SOC_max (%)	Attainable SOC Stock (t/ha)	Deficit (t/ha)
Top	0-150	0.15	25	1.09	0.95	15.5325	1.7	27.795	12.2625
Sub	150-350	0.3	52	1.72	0.5	25.8	1.8	92.88	67.08
Total						41.3325		120.675	79.3425

SOIL CARBON

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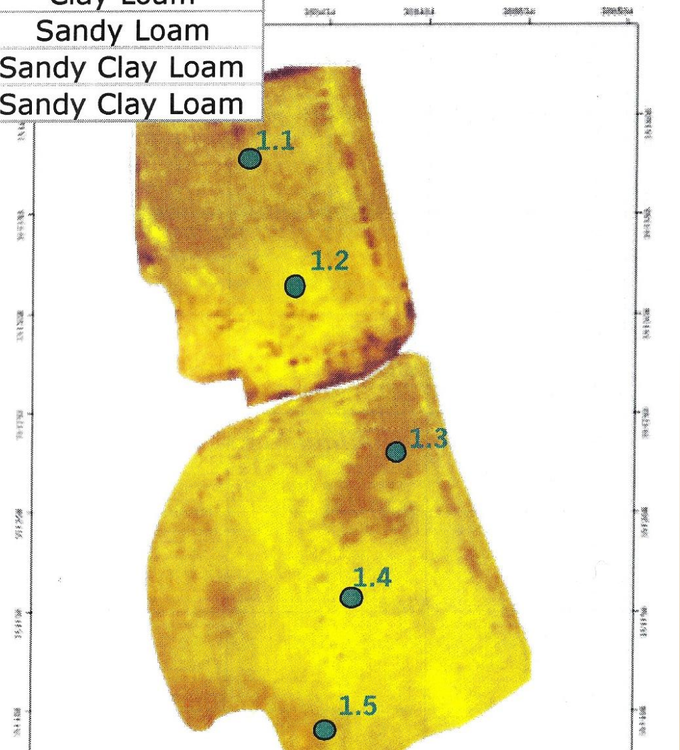
Top	0-150	0.15	25	1.1	0.95	15.675	1.6	26.4	10.725
Sub	150-350	0.3	33	1.41	0.5	21.15	1.5	63.45	42.3
Total						36.825		89.85	53.025



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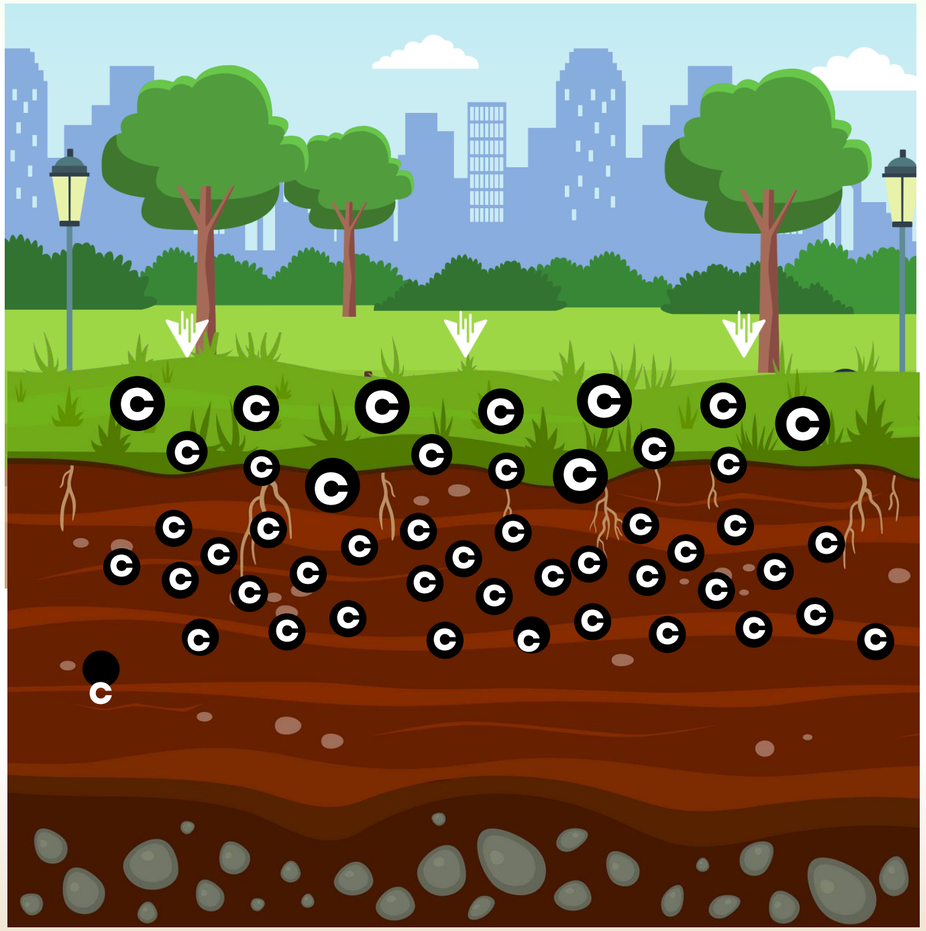
“IMPROVED SOIL HEALTH = IMPROVED SOIL CARBON!”

INCREASING SOIL ORGANIC CARBON

GREEN PIGEON CONSULTING

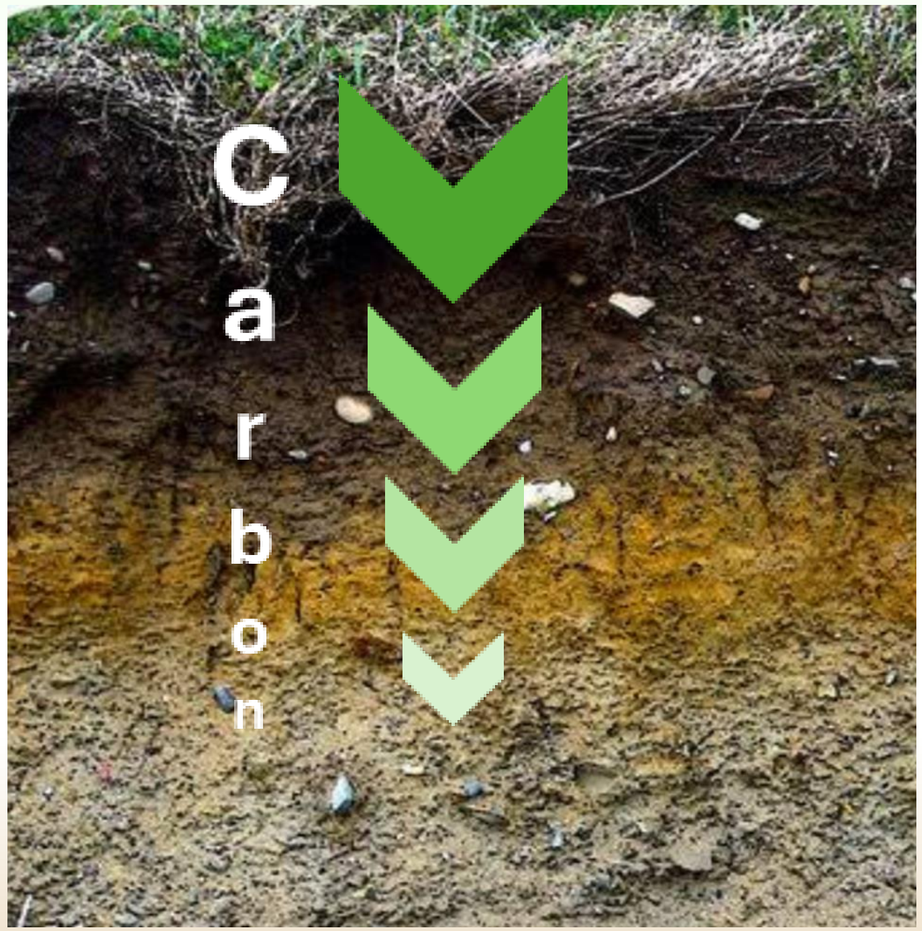


Organic matter is the key to carbon sequestration and soil health.

Every 1% increase in soil organic matter can sequester tonnes of carbon per hectare increasing Soil Organic Carbon.

INCREASING SOIL ORGANIC CARBON

GREEN PIGEON CONSULTING



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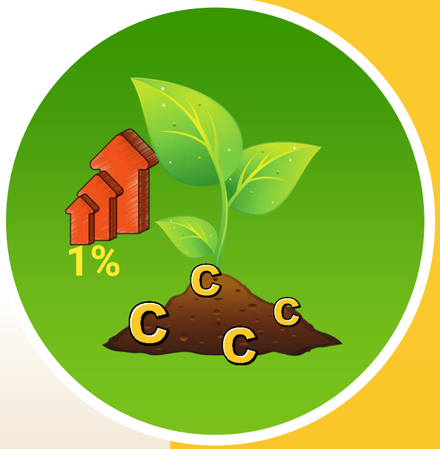
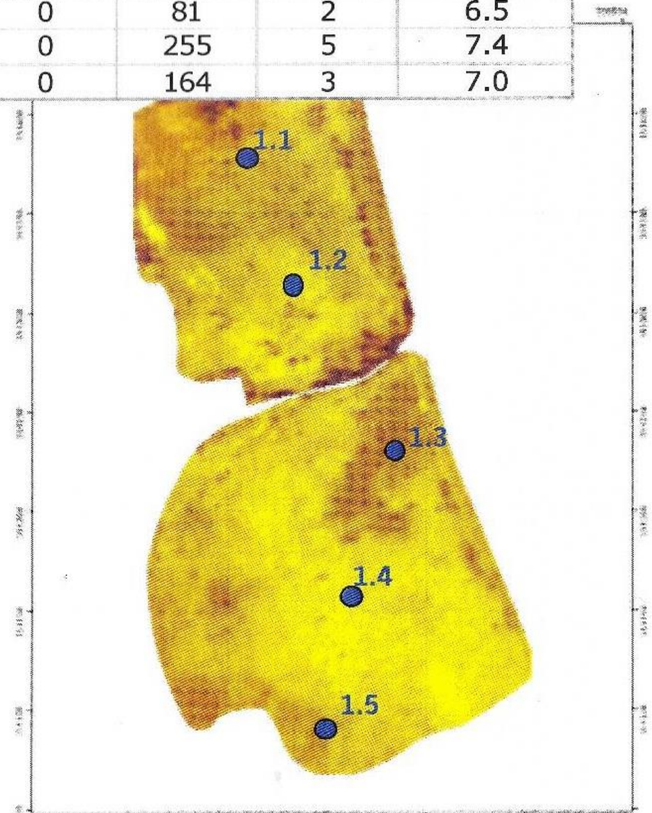


Every 1% increase in soil organic matter can sequester tonnes of carbon per hectare increasing Soil Organic Carbon.

IMPROVING SOIL HEALTH

GREEN PIGEON CONSULTING

Point No	Depth	Phosphate		Potassium		Magnesium		pH
		mg/l	Index	mg/l	Index	mg/l	Index	
1	Top	7.2	0	66	1	137	3	6.7
	Sub A	5.0	0	44	0	184	4	7.0
	Sub B	3.8	0	37	0	194	4	6.8
2	Top	7.8	0	51	0	60	2	6.1
	Sub	4.8	0	34	0	54	2	5.9
3	Top	8.0	0	60	1	78	2	6.2
	Sub	6.0	0	41	0	67	2	6.6
4	Top	10.4	1	50	0	67	2	6.2
	Sub A	8.0	0	34	0	50	2	7.2
	Sub B	1.8	0	126	2-	170	3	5.3
5	Top	7.2	0	33	0	81	2	6.5
	Sub A	6.6	0	58	0	255	5	7.4
	Sub B	6.8	0	46	0	164	3	7.0



SOIL CARBON

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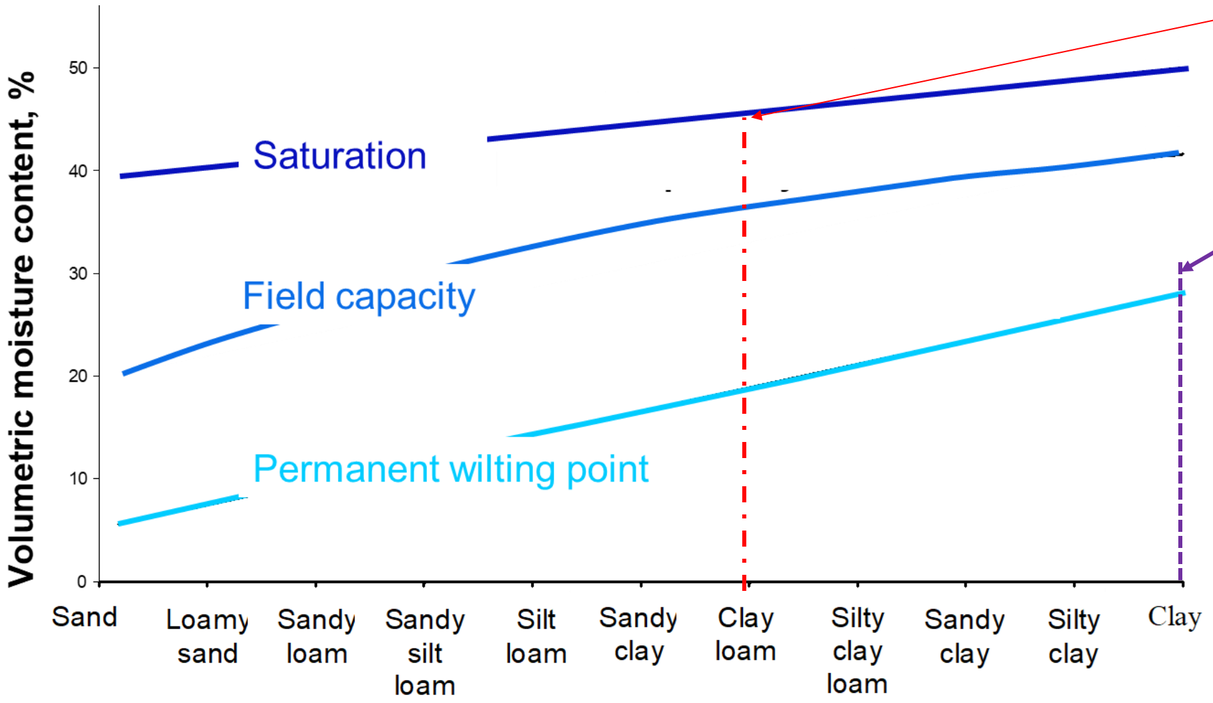
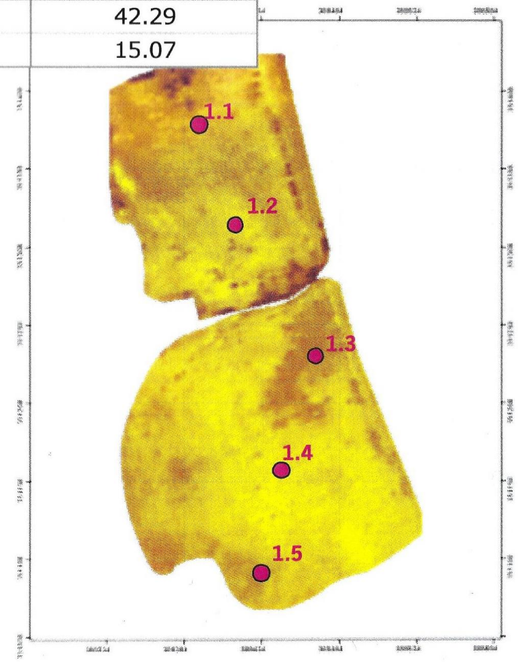


Sample ID	Depth	Dry Bulk Density (g/cm^3)	Volumetric Moisture %	Moisture Content %
0130.1.1	top	1.09	41.51	38.08
	sub	1.72	29.11	16.90
0130.1.2	top	1.30	40.53	31.20
	sub	1.49	33.59	22.50
0130.1.3	top	1.00	44.23	44.45
	sub	1.73	26.81	15.52
0130.1.4	top	1.11	41.91	37.64
	sub	1.41	33.62	23.85
0130.1.5	top	1.13	48.00	42.29
	sub	1.64	24.75	15.07



SOIL CARBON

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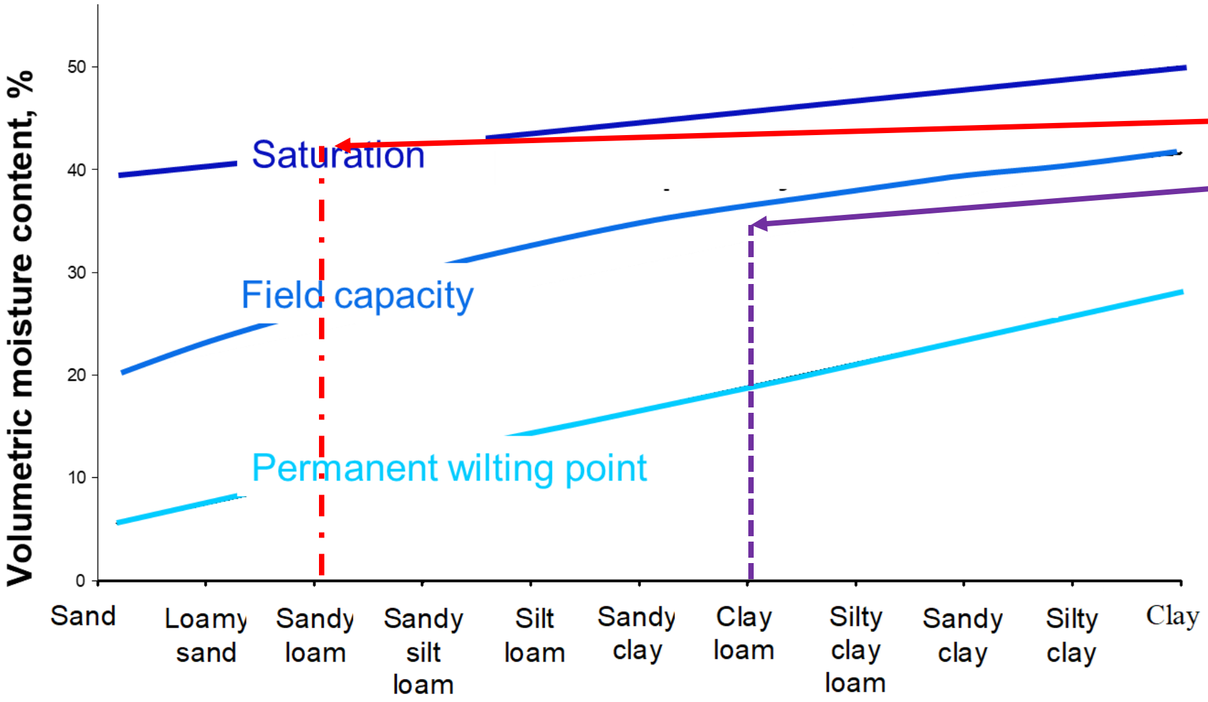

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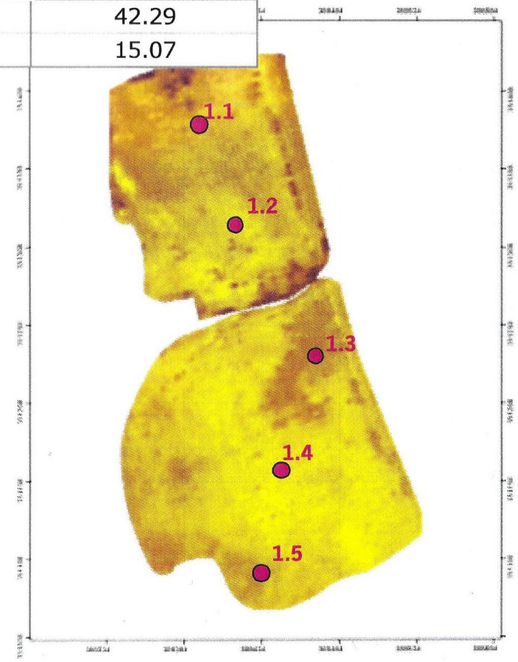
0130.1.3	top	1.00	44.23	44.45
	sub	1.73	26.81	15.52
0130.1.4	top	1.11	41.91	37.64
	sub	1.41	33.62	23.85
0130.1.5	top	1.13	48.00	42.29
	sub	1.64	24.75	15.07



SOIL CARBON

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good structure

Sandy Loam

poor structure

SOIL CARBON

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good structure

Clay

poor structure

INCREASING SOIL ORGANIC CARBON

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Aeration can help to increase organic matter and SOC

Organic matter is the key to carbon sequestration and soil health.

Improving aeration increases micro-organism activity, root development and rooting depth.

INCREASING SOIL ORGANIC CARBON

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Humic and Fulvic Acids can be found in the following organic compounds

Leonardite

Compost Pellets

Clinoptilolite

Organic matter is the key to carbon sequestration and soil health.

Increasing organic matter and SOC by introducing humic and fulvic acids bio-stimulants and zeolites.

INCREASING SOIL ORGANIC CARBON

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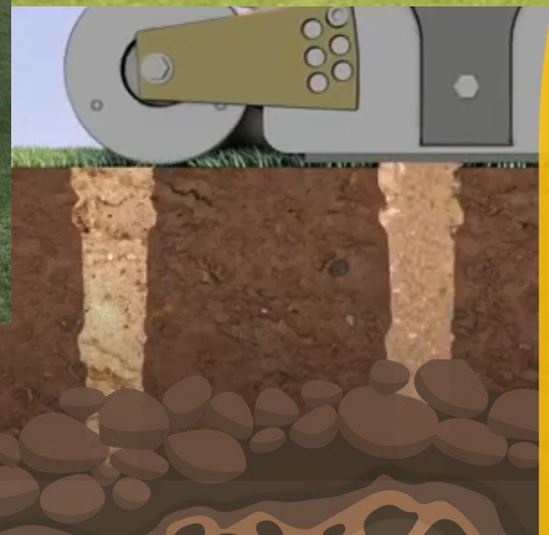
Minimal disturbance incorporation



Organic matter is the key to carbon sequestration and soil health.

New technology is being developed to input organic material into the soil without disturbing the surface.

INCREASING SOIL ORGANIC CARBON

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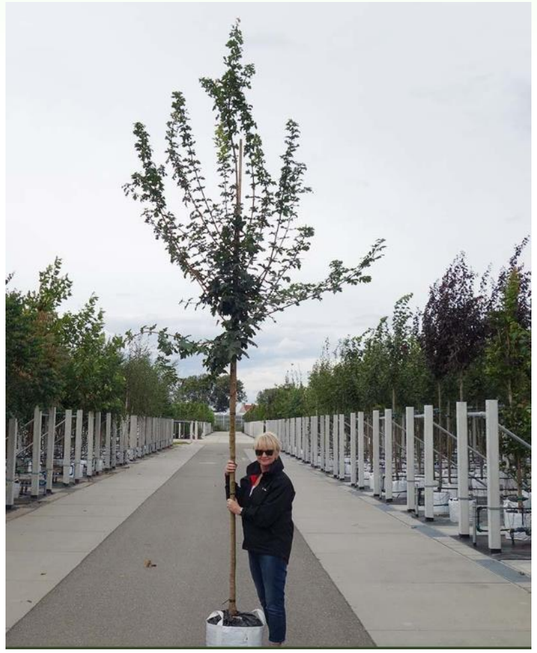

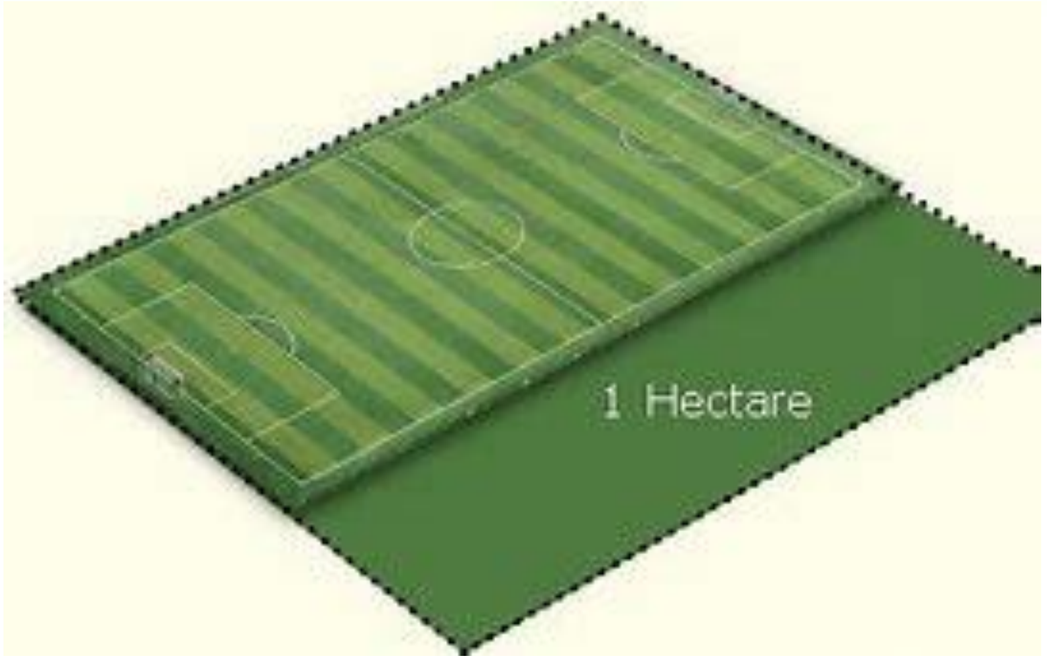

Cost £800++
10 to 18kg C02 per annum

Cost £800 to £2,850
3,700 kg to 13,000kg C02 per annum

INCREASING SOIL ORGANIC CARBON

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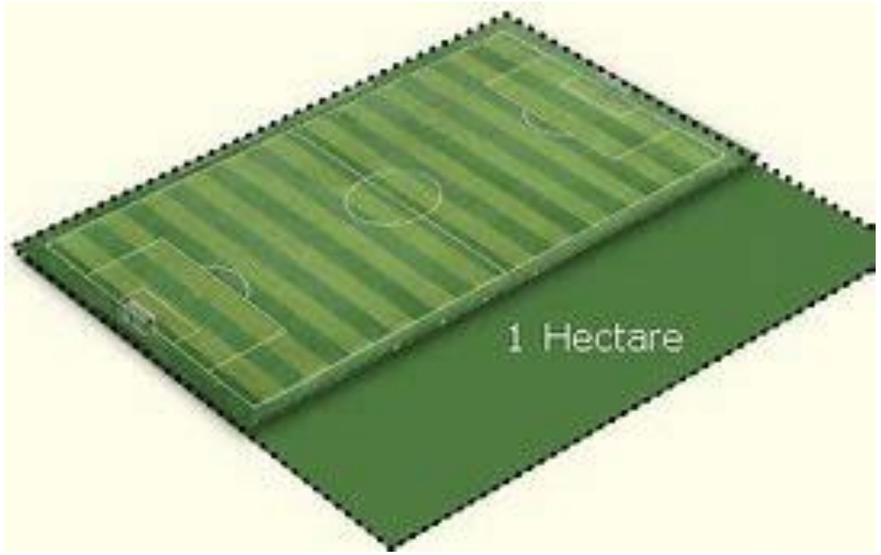

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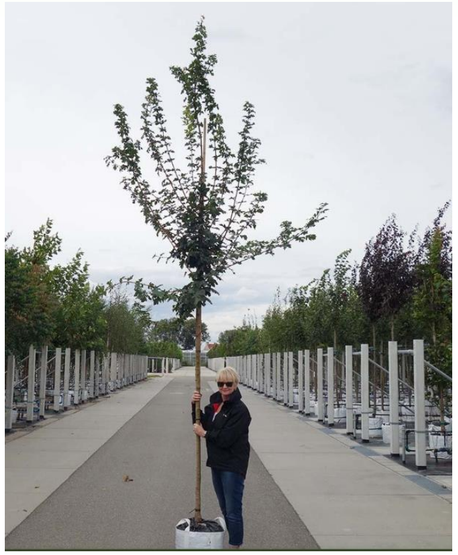

Equivalent CO2 reduction
= 3,700kg /18kg x £800 to 13,000kg/10kg x £800
= £164,000 to £1,04,000

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Now Build on this Foundation!

CARBON GRASSES™

GREEN PIGEON CONSULTING

The carbon mixes include a range of grass varieties that include tetraploid cultivars, these tetraploid varieties have deeper roots and greater root mass and are up to 40% slower growing.

Tetraploid Ryegrass

Diploid Ryegrass

(Images DLF France; Top Green and Origin Group).

CARBON GRASSES™

GREEN PIGEON CONSULTING

Cocksfoot (Dactylis glomerata): Known for its deep roots **(1.5 to 2m)** and drought tolerance, cocksfoot is one of the few grasses that can regrow after being grazed down during dry spells

Tall Fescue (Festuca arundinacea): This grass is well-suited for drier soils and has good drought tolerance due to its deep root system **(0.6 to 1.0m)**

Meadow Fescue (Festuca pratensis): On lower fertility soils, meadow fescue can match ryegrass in terms of production and benefits from deep roots **(60 to 90 cm)**

Timothy (Phleum pratense): Typically found in heavier and wetter soils, Timothy has a dual-purpose use and benefits from a deep root system **(0.5 to 1m)**

Smooth Stalked Meadow Grass (Poa pratensis): While lower yielding, this grass is palatable and helps create a dense sward, growing well on dry soil with deep and rhizomatous roots **(0.5 to 0.7m)**

CARBON GRASSES™ SWARD SWAP™

GREEN PIGEON CONSULTING

Pesticide free old sward removal and reseeding with Carbon Grasses™

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SUMMARY

CARBON MANAGEMENT SUMMARY

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Data Collection	Diagnosis	First Level Treatment	Second Level Treatment	Maintain
Mapping EMI Mapping OM Data Inorganic C Organic C Soil Nutrient Maps CEC Soil Texture	**Reports** Soil Carbon Reports Baseline Carbon Stocks Attainable Soil Carbon Carbon Audits Sensor Installation Recommendations	**Management** Basic Soil Management Aeration Leonardites Compost Zeolites	**Management** Sward Swapping • Low Maintenance • High Sequestration	**Monitor** Further Sampling Sensor Reports

SOIL CARBON STOCK

CONCLUSION

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Investing in soil health is a vital investment for carbon capture.

Together we can reveal the untapped potential of amenity spaces and get the funding we deserve!

Thank You!