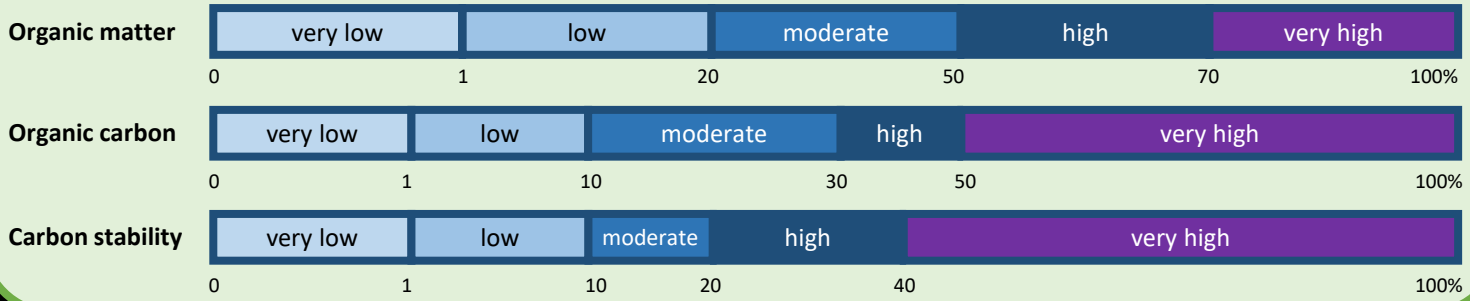
Material Cards

Each material screened as part of the ReCon Soil project has a dedicated Material Card.
These Material Cards provide:

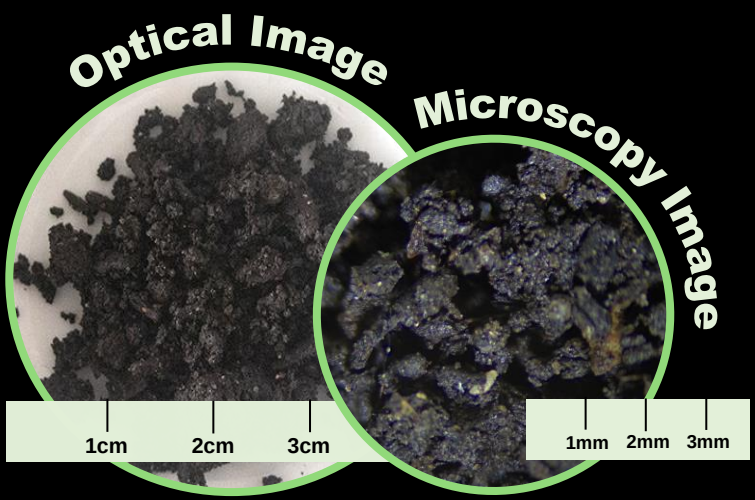
- An optical image & a microscopy image of the material
- A table detailing key properties of the material:
  density, organic matter content, total nitrogen content, total hydrogen content and C:N ratio
- A visual depictions of proportions of non-carbon, inorganic carbon, organic carbon and the proportions of relatively unstable organic carbon and relatively unstable organic carbon

Values stated are per unit dry mass of material

Material Highlights ascribe organic matter contents, organic carbon content and carbon stability to bands of very low, low, moderate, high and very high. For each category the boundaries are defined below:



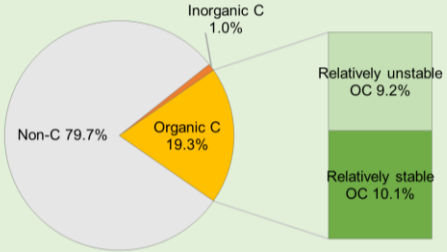
UK GREEN WASTE COMPOST (UK GWC)



Material Highlights

- ❑ Moderate organic matter
- ❑ Moderate organic carbon
- ❑ Moderate carbon stability

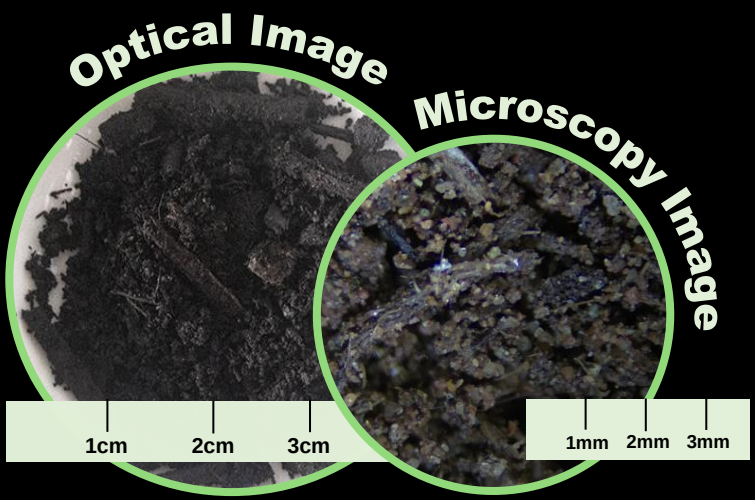
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.51	39.4 ± 0.7	1.5 ± 0.2	2.5 ± 0.2	14:1

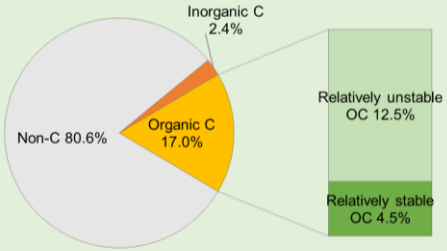
CATE COMPOST (FR GWC)



Material Highlights

- ❑ Moderate organic matter
- ❑ Moderate organic carbon
- ❑ Low carbon stability

Carbon Stability



Key Properties

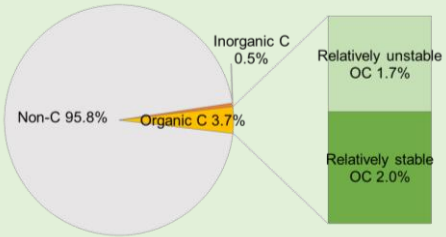
Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.57	31.7 ± 2.1	3.0 ± 0.3	2.3 ± 0.1	6:1

SEED SOWING COMPOST (SSC)

Material Highlights

- ❑ Low organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

Carbon Stability

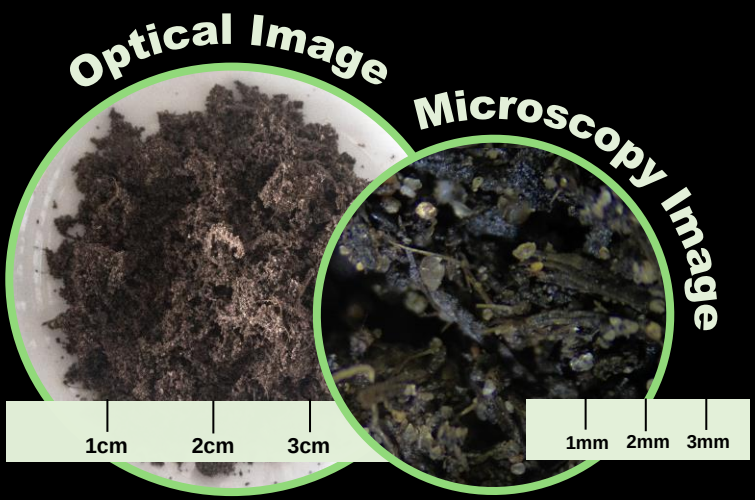


Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.75	10.8 ± 1.3	BLD*	0.5 ± 0.2	-

*BLD: below the limit of detection.

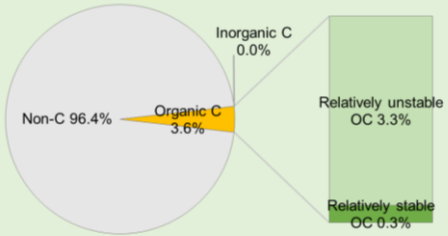
MATURE PLANT COMPOST (MAPC)



Material Highlights

- ❑ Low organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

Carbon Stability

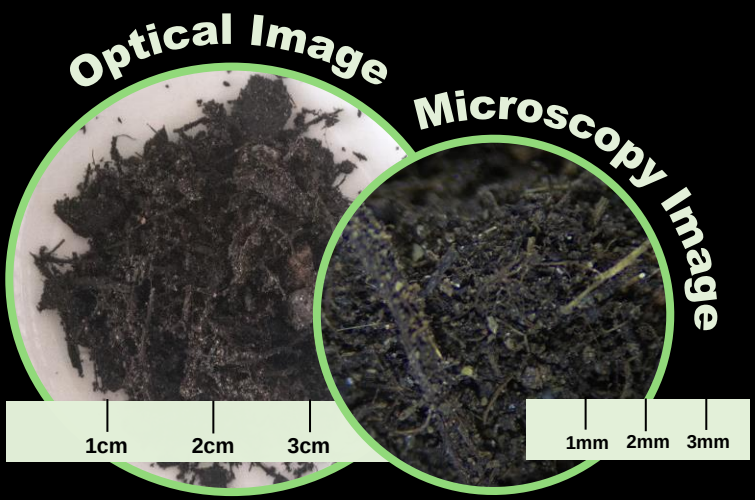


Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.66	14.3 ± 1.9	BLD*	0.5 ± 0.1	-

*BLD: below the limit of detection.

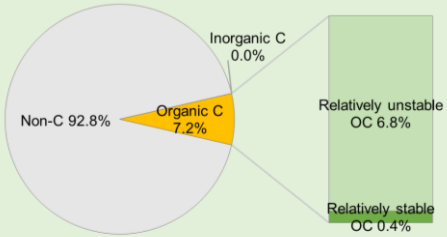
MULTI-PURPOSE COMPOST (MUPC)



Material Highlights

- ❑ Moderate organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

Carbon Stability

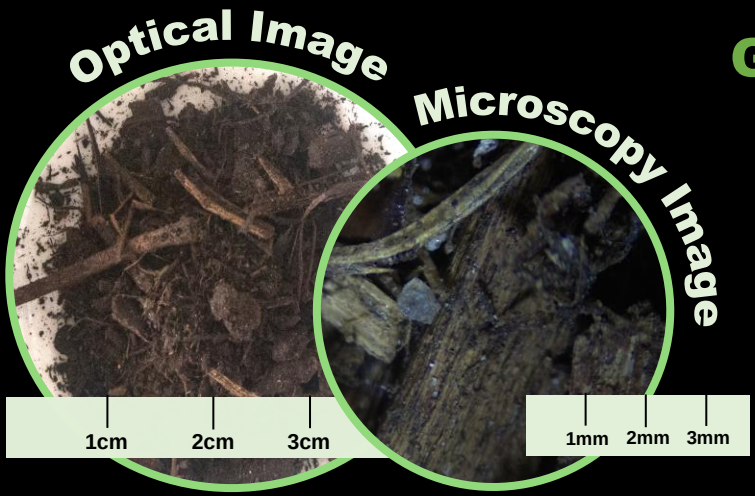


Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.60	30.6 ± 7.5	BLD*	0.7 ± 0.1	-

*BLD: below the limit of detection.

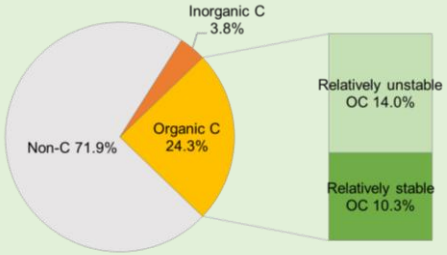
GREENWORLD GREEN WASTE COMPOST (GW GWC)



Material Highlights

- ❑ Moderate organic matter
- ❑ High organic carbon
- ❑ Moderate carbon stability

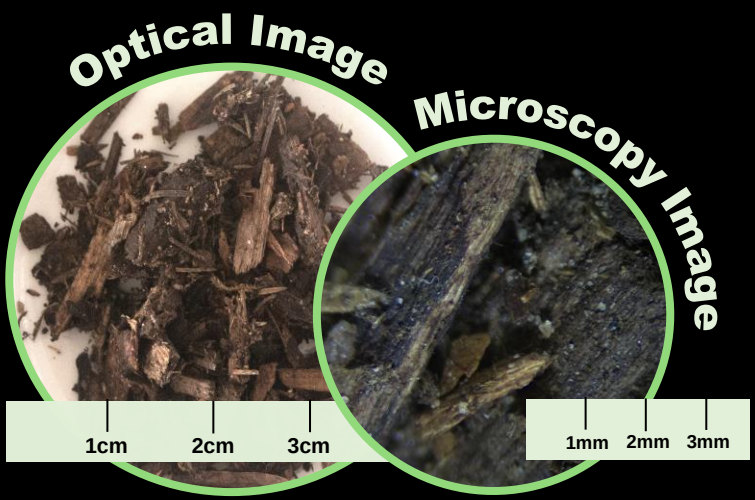
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.43	47.9 ± 2.3	1.8 ± 0.1	3.4 ± 0.5	16:1

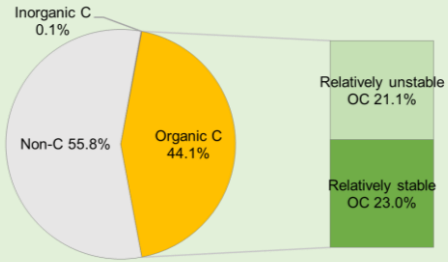
COMPOSTED BARK (CB)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ High carbon stability

Carbon Stability



Key Properties

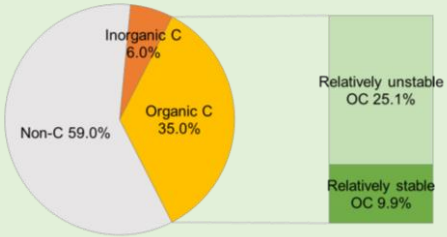
Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.27	88.6 ± 0.9	0.8 ± 0.1	4.2 ± 0.1	55:1

MAURICE MASON ANAEROBIC DIGESTATE (MM AD)

Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ Low carbon stability

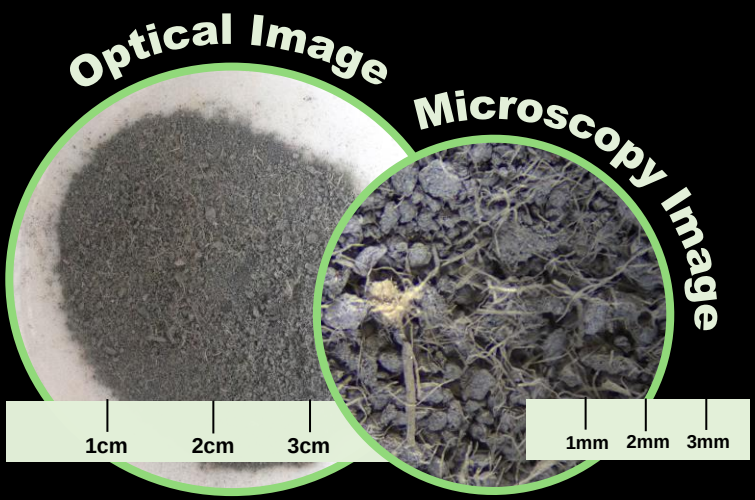
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.22	83.0 ± 0.3	2.4 ± 0.2	5.0 ± 0.04	17:1

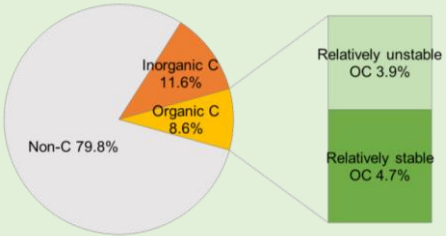
PAPER CRUMBLE (PC)



Material Highlights

- ❑ Moderate organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

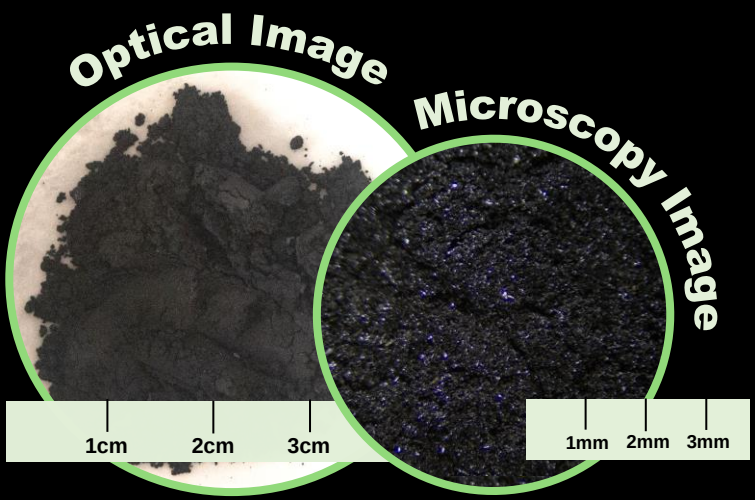
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.74	23.5 ± 0.1	0.5 ± 0.1	1.7 ± 0.1	44:1

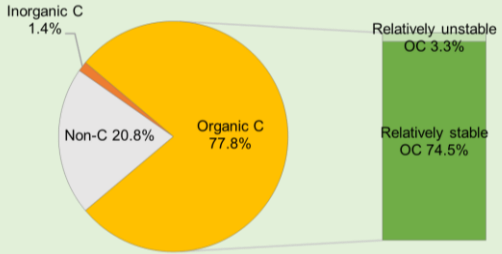
HARDWOOD OAK BIOCHAR (HW BC)



Material Highlights

- ❑ Very high organic matter
- ❑ Very high organic carbon
- ❑ Very high carbon stability

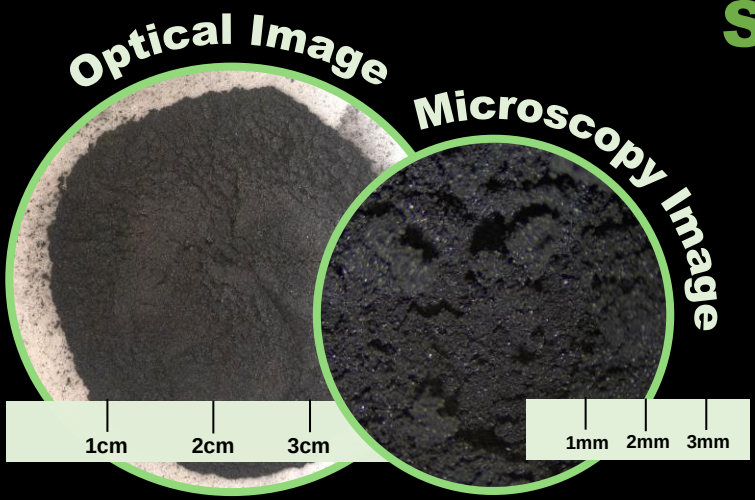
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.34	93.9 ± 0.3	0.6 ± 0.02	1.3 ± 0.04	127:1

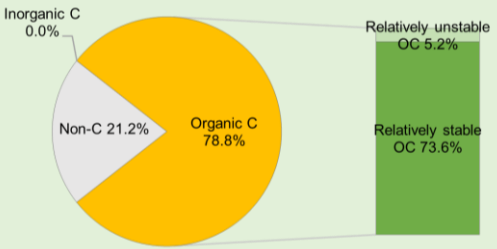
SOFTWOOD BD (CUØ) BIOCHAR (SW BC)



Material Highlights

- ❑ Very high organic matter
- ❑ Very high organic carbon
- ❑ Very high carbon stability

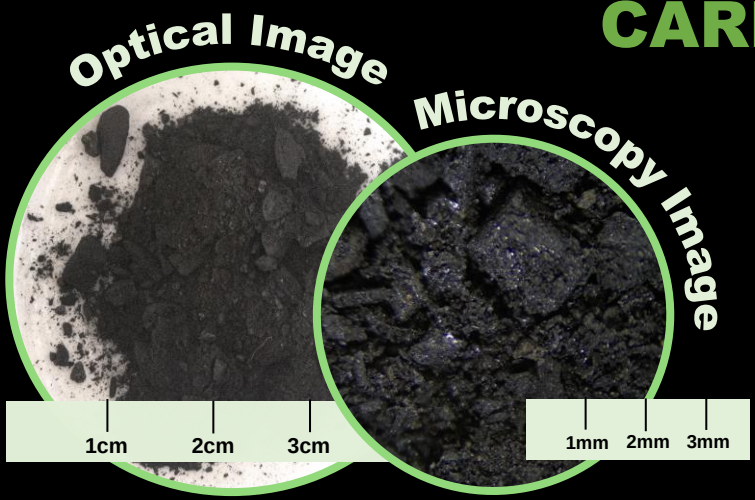
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.16	100.0 ± 1.4	0.5 ± 0.1	1.3 ± 0.7	168:1

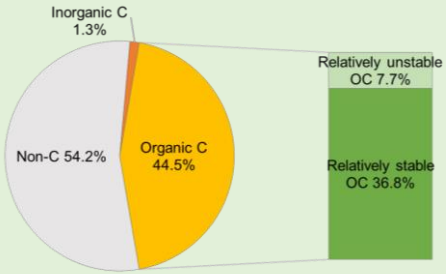
CARBON GOLD BIOCHAR (CG BD)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ High carbon stability

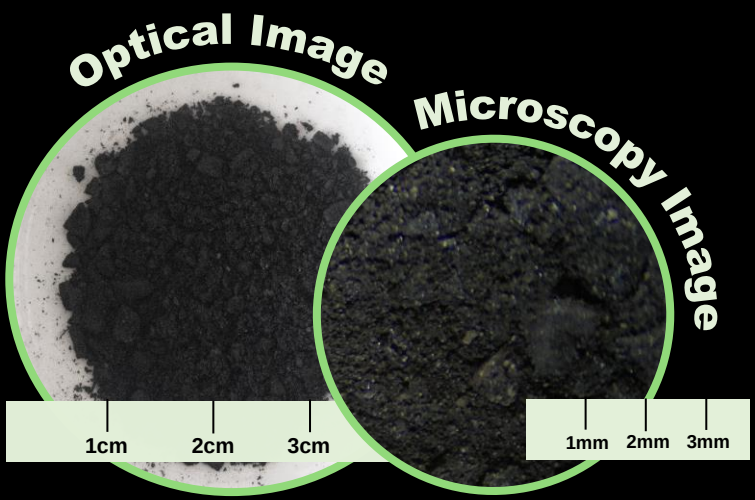
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.62	72.8 ± 1.1	0.8 ± 0.1	2.4 ± 0.1	58:1

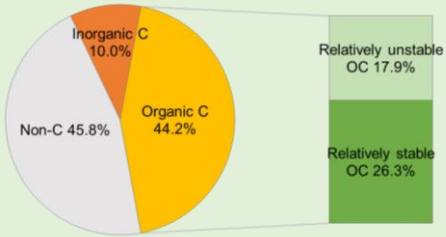
UK BIOCHAR (UK BC)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ High carbon stability

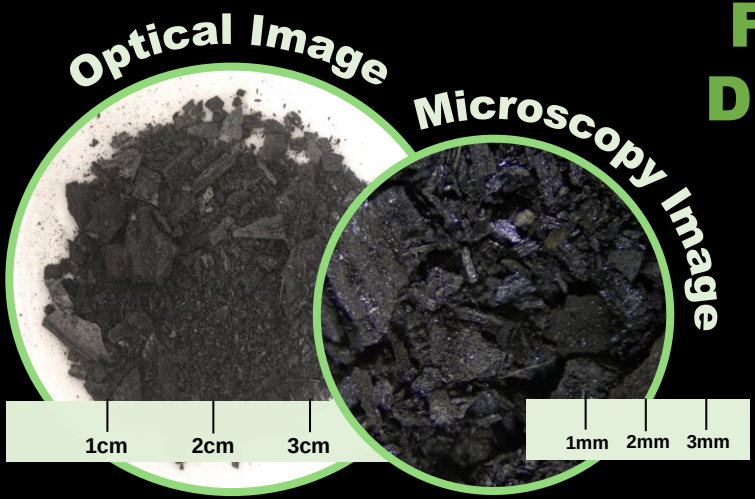
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.52	73.5 ± 1.6	1.3 ± 0.1	1.6 ± 0.1	43:1

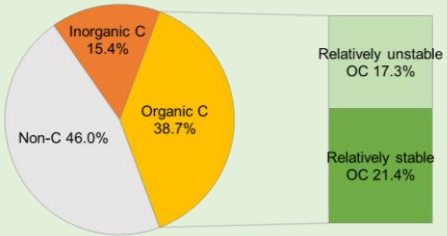
FACTOR X-CHARCOAL DUST/BIOCHAR (FXBC)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ High carbon stability

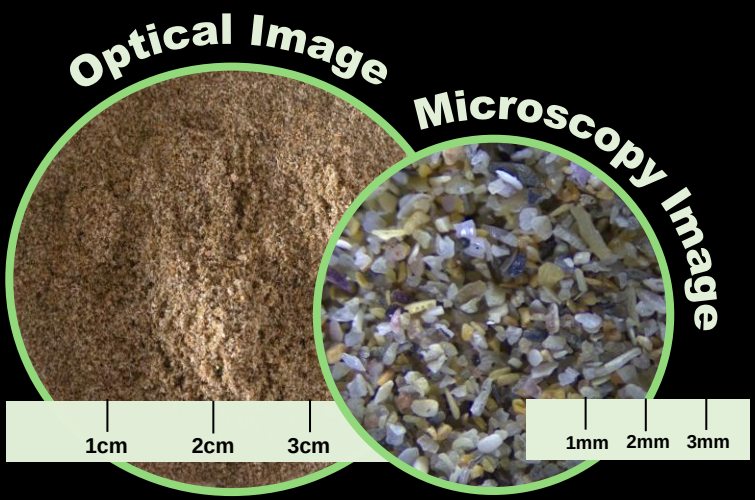
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.41	76.4 ± 5.3	1.2 ± 0.1	1.7 ± 0.1	45:1

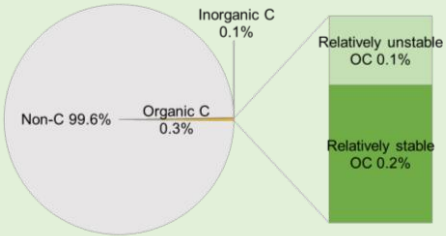
SHARP SAND (SS)



Material Highlights

- ❑ Very low organic matter
- ❑ Very low organic carbon
- ❑ Very low carbon stability

Carbon Stability

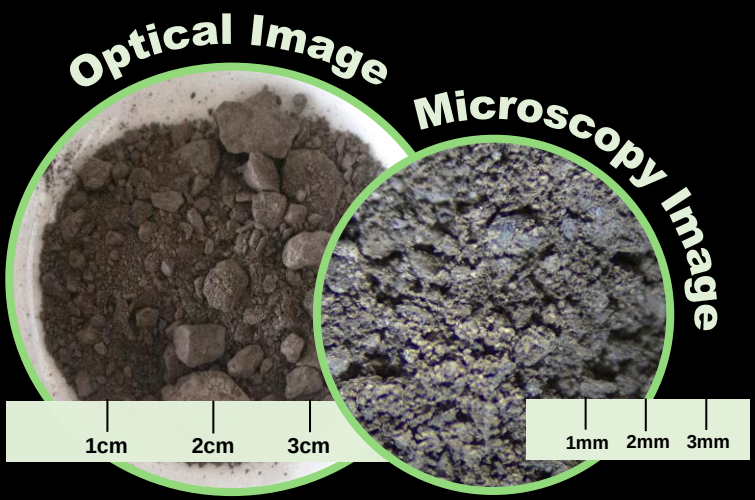


Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
1.23	0.4 ± 0.1	BLD*	BLD*	-

*BLD: below the limit of detection.

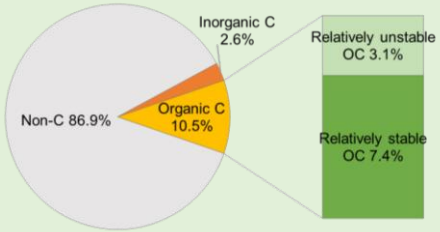
LIGNITE CLAY (LC)



Material Highlights

- ❑ Moderate organic matter
- ❑ Moderate organic carbon
- ❑ Low carbon stability

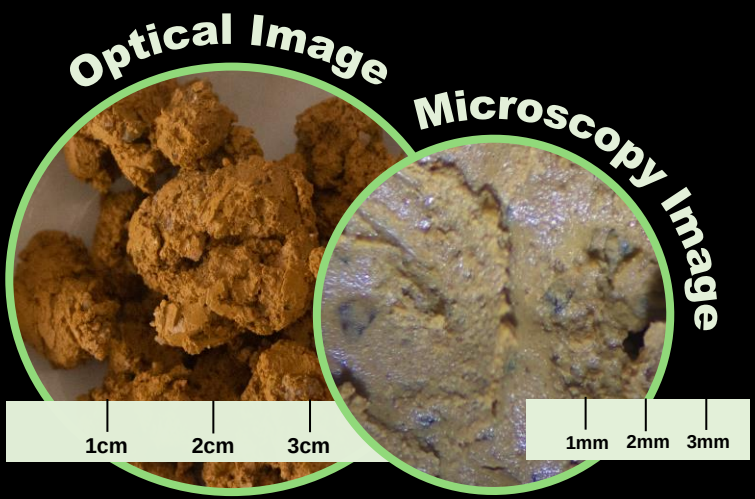
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.99	27.5 ± 1.0	0.3 ± 0.02	2.2 ± 0.2	46:1

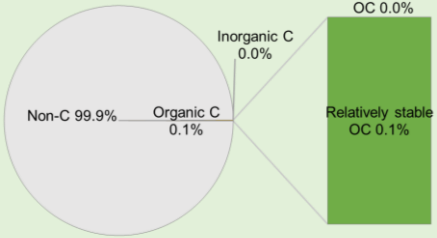
QUARRY MINERAL SLUDGE (QMS)



Material Highlights

- ❑ Low organic matter
- ❑ Very low organic carbon
- ❑ Very low carbon stability

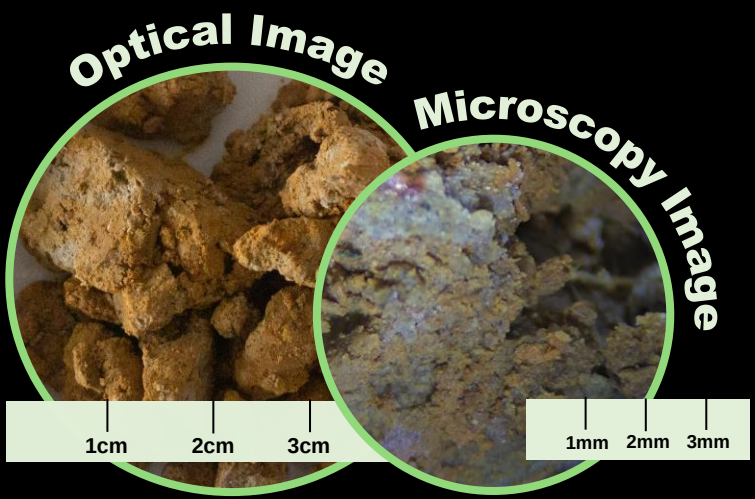
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
1.07	4.3 ± 0.1	0.04 ± 0.03	1.0 ± 0.03	2:1

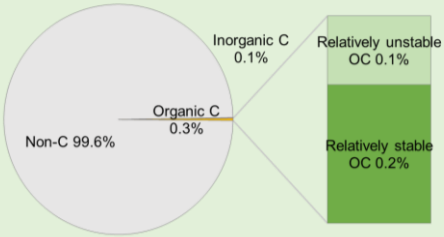
EXCAVATED CLAY SOIL (ExS)



Material Highlights

- ❑ Low organic matter
- ❑ Very low organic carbon
- ❑ Very low carbon stability

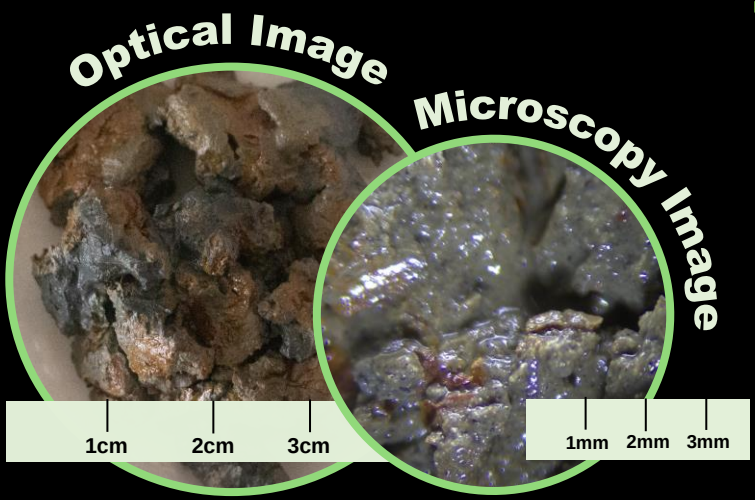
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.83	4.0 ± 0.3	0.1 ± 0.02	0.7 ± 0.01	3:1

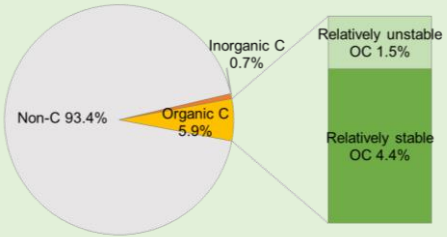
TREATED SEDIMENT (TS)



Material Highlights

- ❑ Low organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

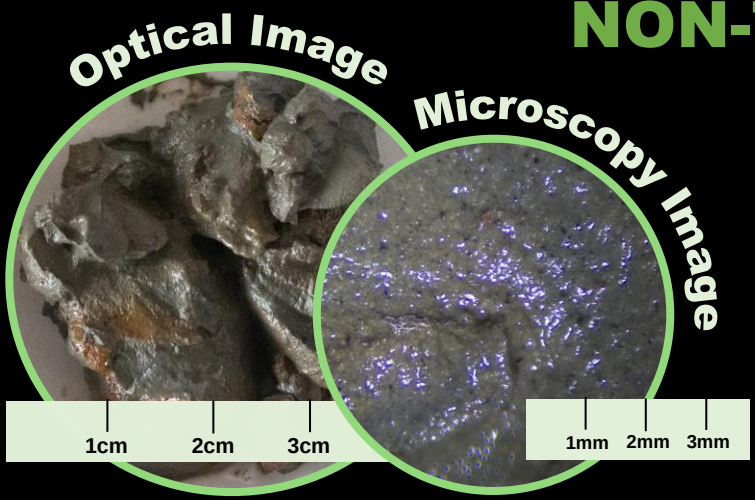
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
1.12	6.0 ± 0.8	0.6 ± 0.1	0.7 ± 0.04	11:1

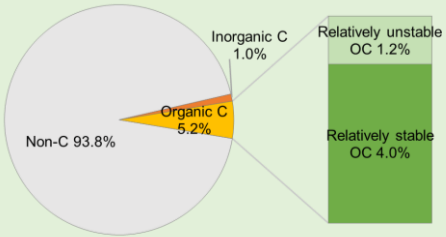
NON-TREATED SEDIMENT (NTS)



Material Highlights

- ❑ Low organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

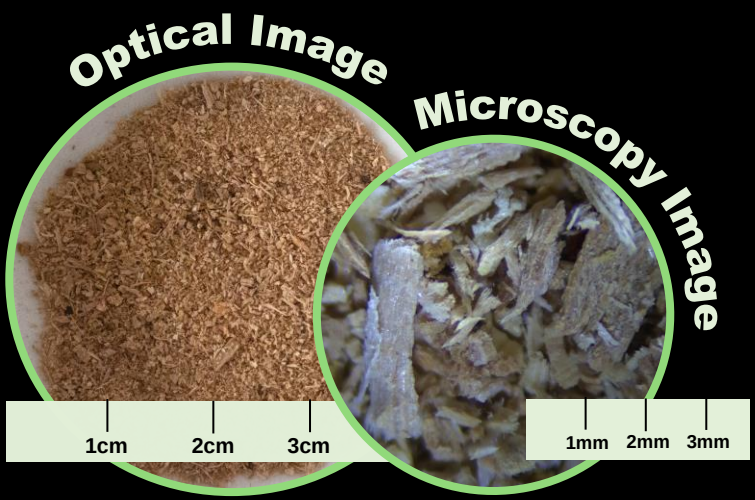
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
1.24	6.3 ± 0.3	0.8 ± 0.2	0.7 ± 0.01	8:1

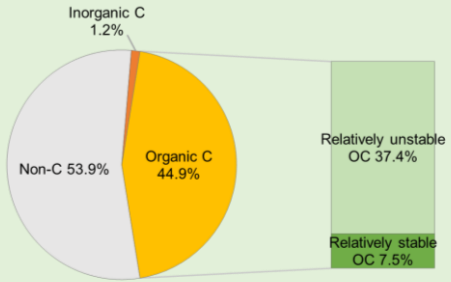
MIXED HARDWOOD SAWDUST (MHS)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ Low carbon stability

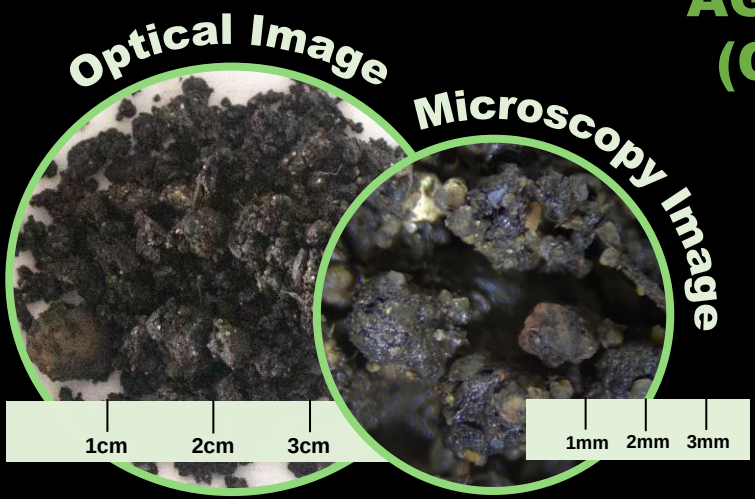
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.26	100.0 ± 3.1	1.2 ± 0.1	4.2 ± 0.2	38:1

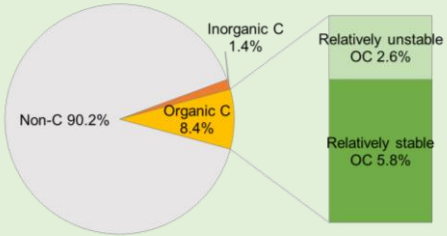
AGRICULTURAL RESIDUES (COMPOST LIKE OUTPUT) (CLO AR)



Material Highlights

- ❑ Moderate organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

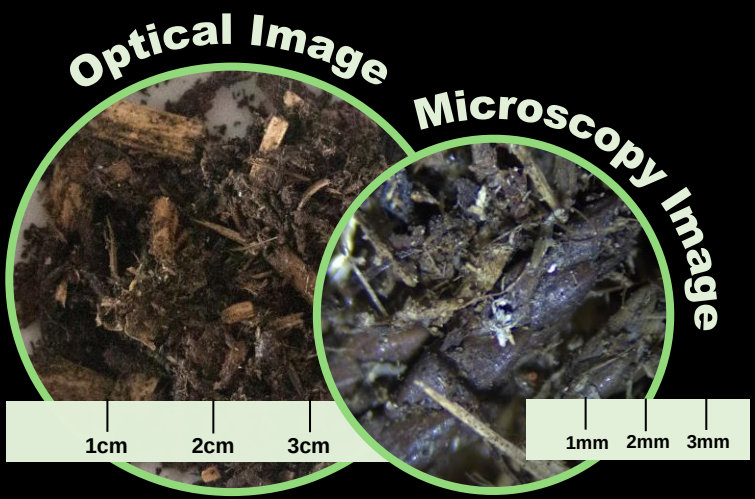
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.86	14.7 ± 1.3	0.6 ± 0.1	1.2 ± 0.1	16:1

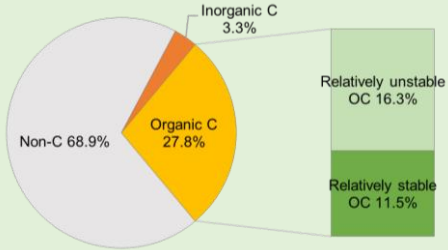
BRASH CHIPPINGS (BRC)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ Moderate carbon stability

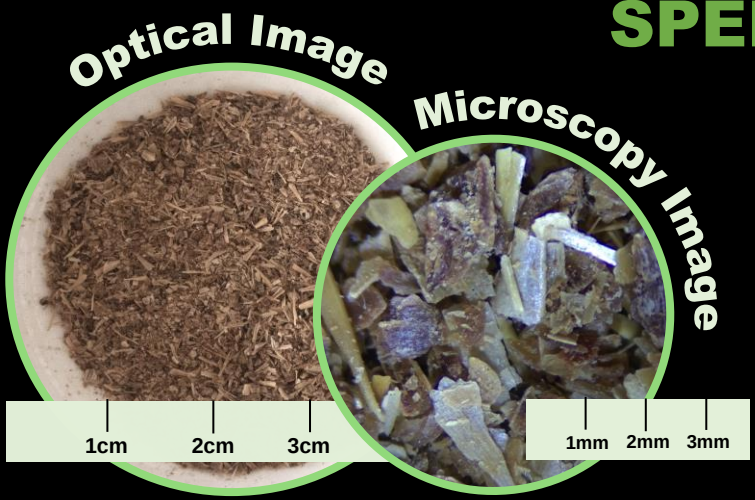
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.32	58.7 ± 5.7	1.2 ± 0.1	4.0 ± 0.2	26:1

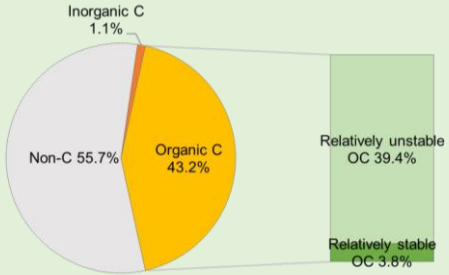
SPENT BREWERY GRAIN (SBG)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ Low carbon stability

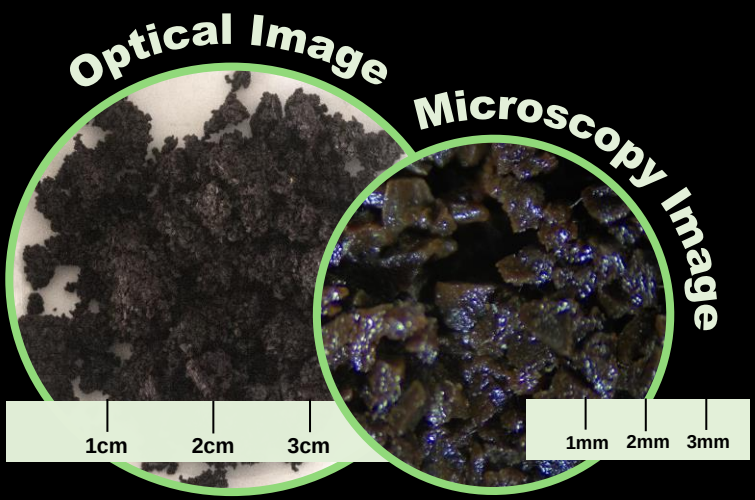
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.51	98.2 ± 0.3	3.6 ± 0.2	5.3 ± 0.1	12:1

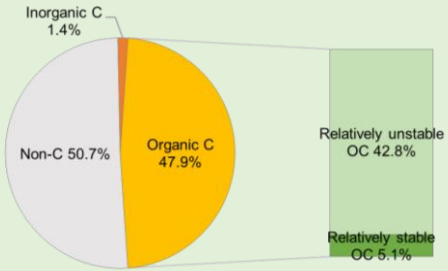
COFFEE GROUNDS (CG)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ Low carbon stability

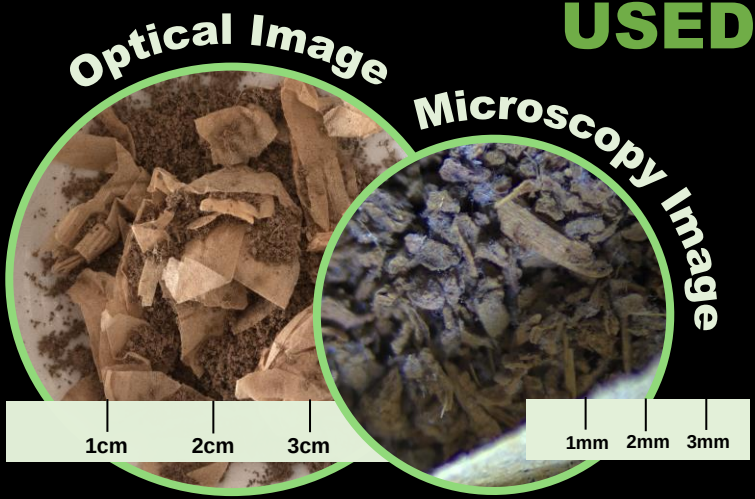
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.45	100.0 ± 27.6	3.2 ± 0.1	5.6 ± 0.04	15:1

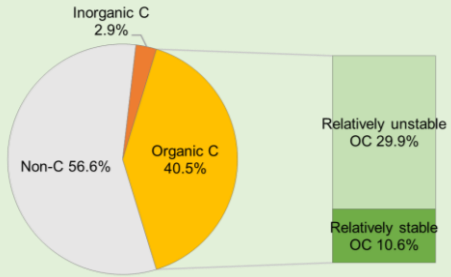
USED TEA AND TEA BAGS (T&TB)



Material Highlights

- ❑ Very high organic matter
- ❑ High organic carbon
- ❑ Moderate carbon stability

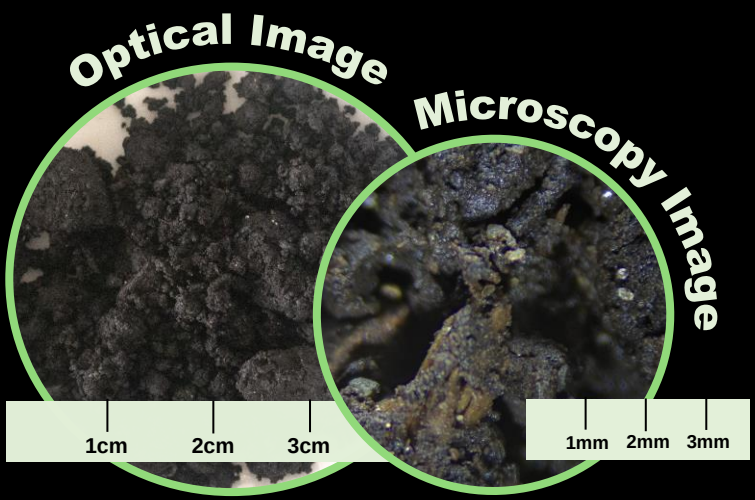
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.18	90.4 ± 1.5	3.8 ± 0.3	4.1 ± 0.1	11:1

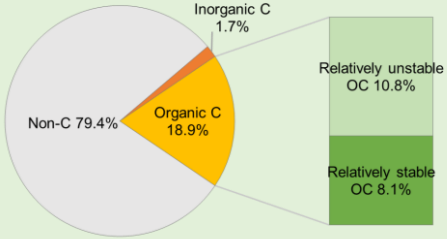
SUB SOIL PEAT (SSP)



Material Highlights

- ❑ Moderate organic matter
- ❑ Moderate organic carbon
- ❑ Low carbon stability

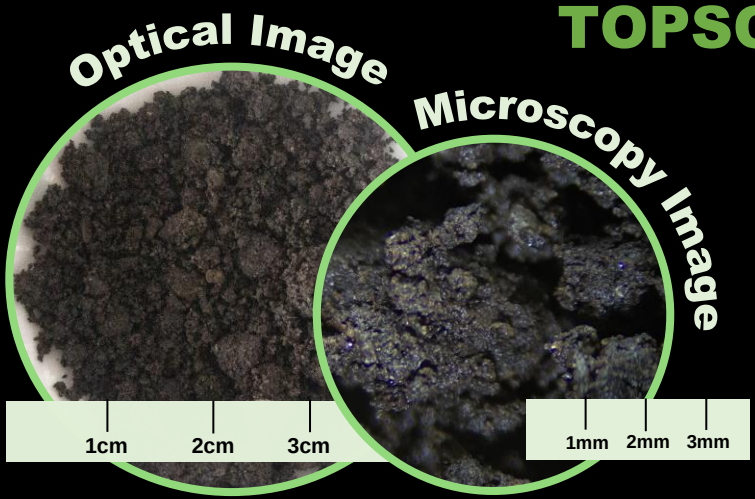
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.73	47.5 ± 5.3	1.2 ± 0.04	2.4 ± 0.1	18:1

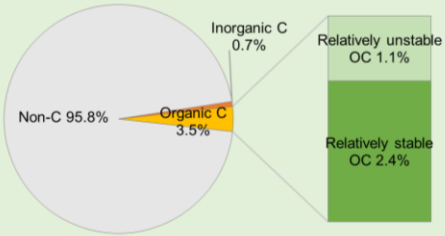
TOPSOIL (20mm SCREENED) (STS)



Material Highlights

- ❑ Low organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

Carbon Stability



Key Properties

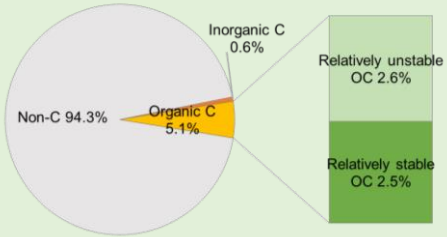
Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
1.02	8.6 ± 0.4	0.3 ± 0.04	0.6 ± 0.05	12:1

TOPSOIL (WH TS)

Material Highlights

- ❑ Moderate organic matter
- ❑ Low organic carbon
- ❑ Low carbon stability

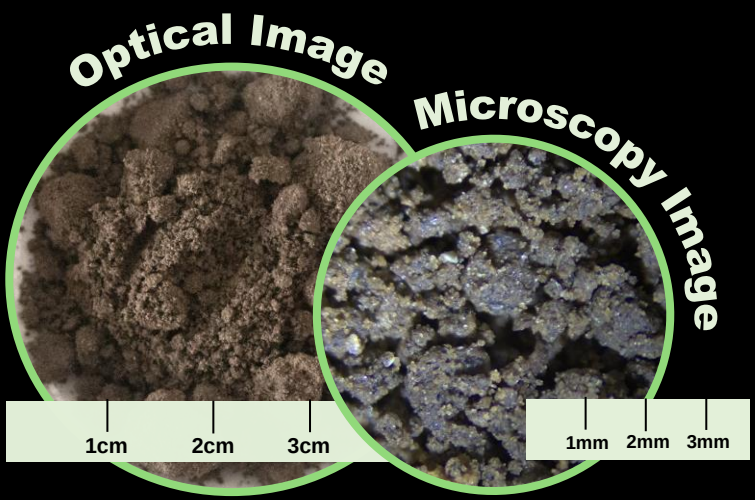
Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
0.67	30.6 ± 7.5	0.4 ± 0.02	0.7 ± 0.03	16:1

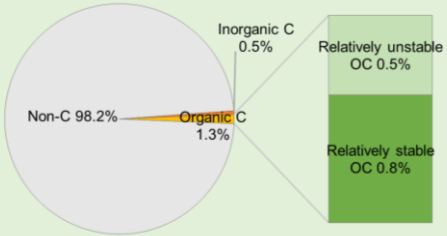
SURFACE HORIZON AGRICULTURAL SOIL (SHS)



Material Highlights

- ❑ Low organic matter
- ❑ Low organic carbon
- ❑ Very low carbon stability

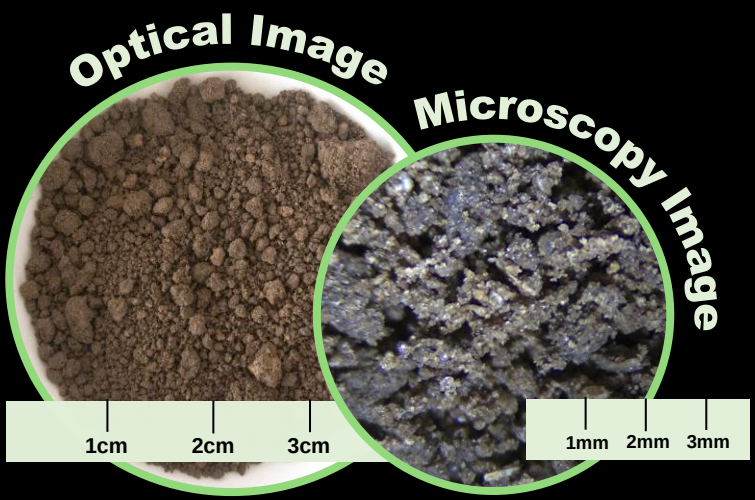
Carbon Stability



Key Properties

Density (g cm^{-3})	Organic Matter (%$_{dry\ matter}$)	Total N (%$_{dry\ matter}$)	Total H (%$_{dry\ matter}$)	C:N ratio
1.13	2.3 ± 0.1	0.1 ± 0.01	0.3 ± 0.03	35:1

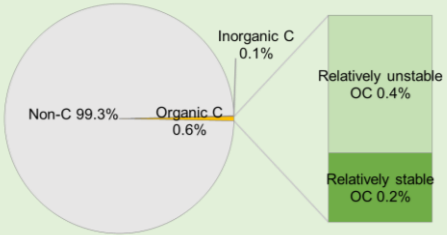
DEEP HORIZON AGRICULTURAL SOIL (DHS)



Material Highlights

- ❑ Low organic matter
- ❑ Very low organic carbon
- ❑ Very low carbon stability

Carbon Stability



Key Properties

Density ($g\ cm^{-3}$)	Organic Matter ($\%_{dry\ matter}$)	Total N ($\%_{dry\ matter}$)	Total H ($\%_{dry\ matter}$)	C:N ratio
1.14	3.2 ± 0.3	BLD*	0.3 ± 0.03	-

*BLD: below the limit of detection.