



KLC Presentation 2022

# Presentation

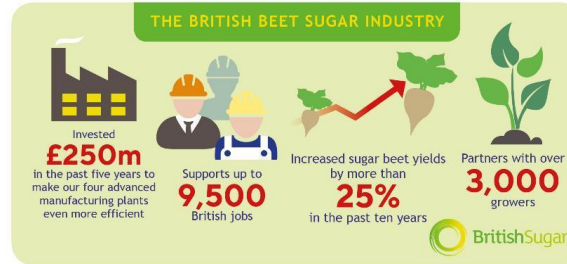
Introduction

What is Topsoil / Market & Sources

Sampling & Analysis

Preparation / Storage & Maintenance

# British Sugar at a glance



## Newark

### Details

- Circa. 200 permanent and seasonal employees
- 700 growers supply 1.6 million tonnes of sugar beet every year

## Wissington

### Details

- Circa. 320 permanent and seasonal employees
- 1,000 UK growers supply over three million tonnes of sugar beet every year
- Largest beet sugar factory in the world

## Bury St Edmunds

### Details

- Circa. 320 permanent and seasonal employees
- Over 700 growers supply over two million tonnes of sugar beet every year
- Bagged sugar packaging facility

## Cantley

### Details

- Circa. 160 permanent and seasonal employees
- Over 700 growers supply over 1.3 million tonnes of sugar beet every year
- Cantley was the first sugar factory built in the UK in 1912





# #BackBritishSugar

Creating a level playing field for the British beet sugar industry

- Buy homegrown British Sugar - look out for the Silver Spoon brand



- Show your support for a great British industry on Twitter (@BritishSugar)
- or Instagram (@BackBritishSugar) using #BackBritishSugar



*Annually we purchase 7.5MT of Sugar Beet from 3K growers between September to February & recycle 200KT-300KT of prime arable topsoil*



*We have 40KT of covered storage:  
Ensuring Quality “On time and in Full year round”*



# R & D, Analysis & Customer Feedback is at the heart of everything that we do

## Why

- Ensure that our products are fit for purpose
- Check that our products meet our customers needs
- Meet the needs of the regulators
- Ensure we sell the right product for the right project
- Drive consistent quality
- Give reputable and un-biased information to our customers
- Give our customers confidence in our products
- 

## Trials

- Must be done by a respected and accredited establishment
- Must be randomised and replicated to ensure a true result

## Analysis

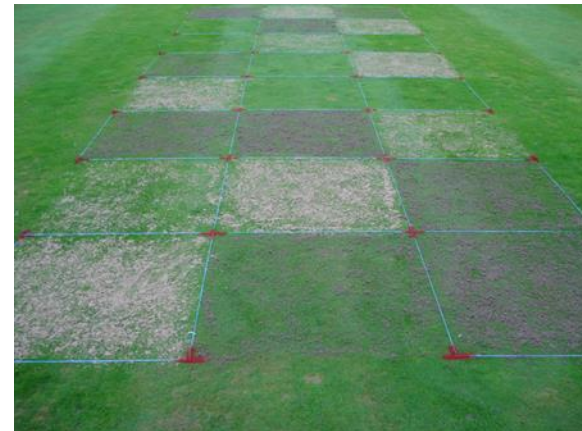
- Must be done by accredited labs, using accredited methods
- Tested and compared against industry standards
- Interpretation of results

## Customer Feedback

- Post delivery calls
  - Product development
- Case studies

Soil Carbon

Soil Health





## We work to protocols & supply interpretative reports



### TOPSOIL Sampling Procedure

1. Samples should be taken in accordance with BS 3882:2015 with reference to BS EN 12579:2000 and BS 5930:1999. Methods for taking the samples are given overleaf.
2. Samples to be taken by the National TOPSOIL Manager.
3. All products should be sampled after screening and at the point of despatch.
4. Analysis certificates shall be kept for a period of 5 years.

### METHOD FOR TAKING A SAMPLE

Quantities are approximate:

- a) Sample points shall be located at regular intervals and samples taken from the surface 1m and the core of the stockpile.
- b) A soil auger shall be used to take a sample from the centre of the stockpile. A minimum of 10 samples, out of the 25, should be taken from the centre of each stockpile.
- c) Sub-samples shall then be combined to form one composite samples (2kg) to represent every 5000m<sup>3</sup> of topsoil produced.
- d) In a wide-necked amber glass jar. Labelled with a sample ID name and reference number.
- e) Despatch the sample to Tim O'Hare Associates LLP requesting the suite of analysis you require.

*Topsoil is a business division of British Sugar plc*

Issue 8  
January 2018

British Sugar is a Product  
LANDSCAPE 20 TOPSOIL Analysis  
Millington - 18-125-1-01

The O'Hare Associates

### Potential Contaminants

With reference to BS3882:2015 - Table 1, Notes 3 and 4, there is a recommendation to confirm levels of potential contaminants in relation to the topsoil proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific criteria, the concentrations that affect human health have been compared with the residential with foreground produce land use in the Suitable For Use Levels (S4ULs) presented in the LQMCIEN S4ULs for Human Health Risk Assessment (2015) and the DEFRA SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination - Policy Companion Document (2014). The concentration of leadum has been compared with the residential land use given in the document ECAGGSCCLARE Soil (Generic Assessment Criteria for Human Health Risk Assessment (2015)).

Of the potential contaminants determined, none was found at levels that exceeded their guideline values.

### Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc) none was found at levels that exceeded the maximum permissible levels specified in BS3882:2015 - Table 1.

### CONCLUSION

The purpose of the analysis was to determine the suitability of the LANDSCAPE 20 TOPSOIL sample for general landscape purposes. In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Topsoil (BS3882:2015 - Specification for topsoil - Table 1, Multipurpose Topsoil).

From the soil examination and laboratory analysis, the sample was described as a strongly alkaline, moderately saline, moderately calcareous, virtually ston-free sandy loam with a weak structure. The sample was well supplied with organic matter and all major plant nutrients. Of the potential contaminants determined, none was found at levels that exceeded their guideline values.

Based on our findings, the topsoil represented by this sample would be considered suitable for general landscape purposes (trees, shrubs and ornamental grasses), provided plant species with a wide pH tolerance or those known to prefer alkaline soils are selected and the physical condition of the soil is satisfactory.

The topsoil was also fully compliant with the requirements of the British Standard for Topsoil (BS3882:2015 - Specification for topsoil - Table 1, Multipurpose Topsoil).

### RECOMMENDATIONS

#### Soil Handling Recommendations

It is important to maintain the physical condition of the soil and avoid structural damage during all phases of soil handling (e.g. stockpiling, spreading, cultivating, planting, seeding or turfing). As a consequence, soil handling operations should be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery and soil handling should be stopped during any heavy rainfall and not continued until the soil is friable in consistency. If the soil is structurally damaged and compacted at any stage during the course of sowing or landscaping works, it should be cultivated appropriately to relieve the compaction and to restore the soil's structure prior to any planting, turfing or seeding.

Further details on soil handling are provided in Annex A of BS3882:2015.

TOPSOIL181251-01

Page 2

TOPSOIL Analysis Report		MILLINGTON	
Sample ID: TOPSOIL181251-01		Client: BRITISH SUGAR	
Date of Analysis: 18/12/2017		Analyst: [Name]	
<b>Soil Description</b>	Strongly alkaline, moderately saline, moderately calcareous, virtually ston-free sandy loam with a weak structure.	<b>pH</b>	8.5
<b>Organic Matter</b>	Well supplied with organic matter.	<b>Loss on Ignition (LOI)</b>	18.5
<b>Major Plant Nutrients</b>	Well supplied with all major plant nutrients.	<b>Total Nitrogen (TN)</b>	0.15
<b>Potential Contaminants</b>	None found at levels exceeding guideline values.	<b>Lead (Pb)</b>	15
<b>Phytotoxic Contaminants</b>	None found at levels exceeding maximum permissible levels.	<b>Copper (Cu)</b>	10
<b>Conclusion</b>	Sample is suitable for general landscape purposes (trees, shrubs and ornamental grasses).	<b>Zinc (Zn)</b>	120
<b>Recommendations</b>	Maintain soil structure, avoid compaction, and use appropriate species.	<b>Nickel (Ni)</b>	15





# British Sugar TOPSOIL Product Range

## Available in bulk loads or bulk bags

### Landscape<sup>20</sup>

Landscape<sup>20</sup> is a fully-analysed and compliant to BS3882:2015, sandy loam, TOPSOIL. It is ideal for general landscaping projects such as seeding and turfing .

### HortLoam

HortLoam is a BS3882:2015 compliant planting topsoil. With optimum reserves of organic matter and nutrients, HortLoam is ideal for planting rootball trees, shrub bed, retained planters and vegetable planting projects.

### LawnDressing

Lawn dressing is ideal for the construction and repair of lawns where a free draining but fertile rootzone is needed.

### SubSoil<sup>20</sup>

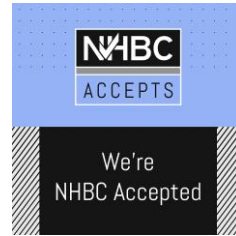
Free Draining subsoil: Suitable where a free draining subsoil is needed i.e. planting beds, lawns, sports pitches & tree pits

# Typical Projects



## To find out more about British Sugar TOPSOIL

To arrange a visit or for more information on TOPSOIL products call 0870 240 2314  
or visit our web site [www.bstopsoil.co.uk](http://www.bstopsoil.co.uk)



LIFE BEYOND THE MILITARY –  
OUTDOORS



The background features a series of overlapping, curved, organic shapes in various shades of green and yellow, creating a sense of movement and depth. The colors transition from a bright yellow on the left to a deep green on the right.

What is topsoil / The Market & Sources



# What is Soil: A blend of sand, silt, clay & organic matter

Topsoil is composed of mineral particles, organic matter, water and air

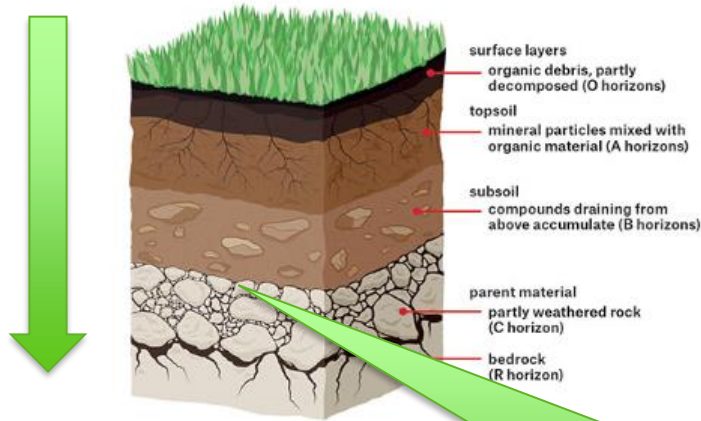
Loam is composed of mineral particles, organic matter, water and air



Muck away is rarely topsoil

# A Soil Profile

A Soil Profile should allow free movement of water, air and roots



Topsoil: Typically the top 30cm, darker and fertile

Subsoil: Directly under topsoil, lighter in colour, less fertility

Parent material / Bedrock: can be solid rock which breaks down with weathering

Dig a pit to understand your soil profile

***Topsoil will only function if it is in sync with its subsoil***

# Soil Structure

What is soil structure?

- Soil structure is the arrangement of soil particles (sand, silt, clay and organic matter) into granules, crumbs or blocks. It is the shape that the soil takes based on its physical, chemical and biological properties. Soil structure is often confused with soil texture, both of which affect the soil's drainage and aeration capabilities.

Well-structured soils are crumbly and friable and have plenty of pore space to allow water and air movement and healthy root development.

Poorly structured are cloddy soil, which will be difficult to work.

Why is structure important?

- To perform effectively as a growing medium soils need an open structure through the soil profile.
- A good soil structure is important to allow air and water into the soil which are vital for healthy plant growth. It will improve drainage and reduce soil erosion caused by excess surface run-off.

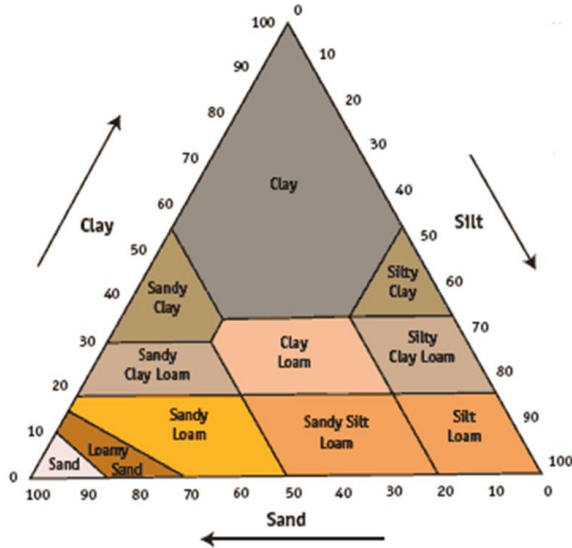
Without structure, soils will suffer from anaerobism, waterlogging and nutrient lock-up and, ultimately, plants will die!



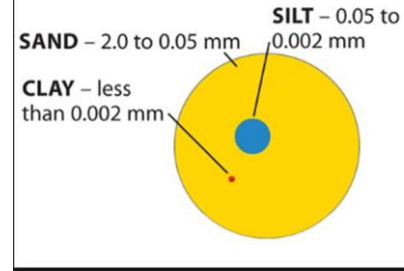
# Soil Texture

Soil Texture indicates the relative content of particles of various sizes, such as sand, silt, clay and organic matter in the soil.

Texture influences the ease with which soil can be worked, the amount of water and air it holds, and the rate at which water can enter and move through soil



Need soil  
particle size  
analysis

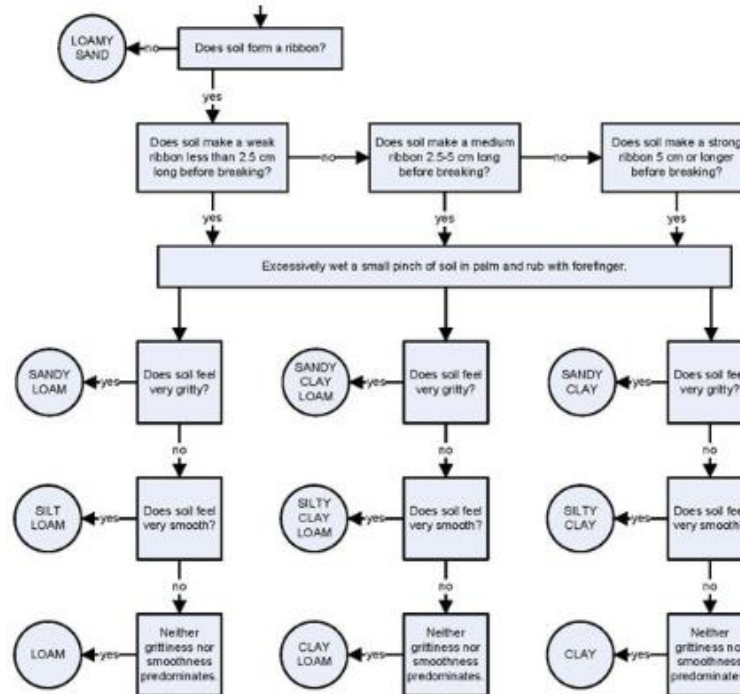




# Soil Texture: Spit & Rub

Soil Texture indicates the relative content of particles of various sizes, such as sand, silt and clay in the soil.

Texture influences the ease with which soil can be worked, the amount of water and air it holds, and the rate at which water can enter and move through soil



# Soil Compaction

**Soil Compaction** is the most common cause for a loss of soil structure on construction sites, and it can occur in the topsoil and subsoil layers.

The result is a soil profile that is impregnable to plant roots, water and air.

Typical causes of soil compaction include:

- Excessive foot trampling and vehicle trafficking over soils;
- Storage of building materials on exposed topsoil or subsoil;
- Handling soils when they are wet and plastic;
- Stockpiling soils inappropriately.

Signs of soil compaction include:

- Surface water 'ponding' and/or waterlogging;
- Soil resistance when pushed with a spade or probe;
- Black/grey, anaerobic topsoil with a sour odour ;

## **Soil Decomaction**

Soil decomaction is therefore necessary on most construction sites to restore the landscape soils back to a suitable condition.

Topsoil is easier to restore than subsoil but the latter must not be ignored.

One method that is effective in smaller areas, such as back gardens, is the use of an excavator fitted with a 'ripper tine' attachment.

This involves ripping the soil profile to depths of between 30cm and 60cm to loosen and break up the compacted layer(s) before doing the final soil cultivations.

## The Market and Sources of Topsoil

Manufactured Soil: Mineral & Organic Blend



Topsoil Market 2.5MT/year



Skip Waste / Muck away: DANGER

Natural Soil : Variable

# BS3882:2015: Good but not always the full answer.

## Don't forget contamination analysis

- Only applies to IMPORTED TOPSOIL
  - Multipurpose Grade
  - Specific Purpose Grade (acid / alkaline / low fertility)
- It is not the 'be all end all'
- A good starting point
- Read the notes below Table 1

*NOTE 3 Attention is drawn to the Environmental Protection Act 1990 [3] (EPA) and to the National Planning Policy Framework (NPPF) [4], under which there is a requirement for topsoil to contain no concentrations of chemical contaminants that would cause a significant risk to human health and the environment.*

*NOTE 4 Attention is drawn to the possibility that Site Specific Assessment Criteria (SSAC) or Generic Assessment Criteria (GAC) might have been set for the intended recipient site under the EPA or NPPF. Further guidance is given in Contaminated Land Exposure Assessment (CLEA) model (EA/DEFRA:2009) Soil Guideline Values [5] and Chartered Institute of Environmental Health (CIEH)/Land Quality Management (LQM) Generic assessment criteria for human health risk assessment (2<sup>nd</sup> Edition, 2009) [6].*

- Build 'project specific' soil specifications for each scheme
- Don't always think that compliance to BS3882:2015 means you will get a good topsoil delivered!



## *Subsoil: Free Draining & BS8601:2013*

### *Don't forget contamination analysis*

- Only applies to IMPORTED Subsoil
  - Multipurpose Grade
  - Specific Purpose Grade (acid / alkaline / low fertility)
- It is not the 'be all end all'
- A good starting point
- Build 'project specific' soil specifications for each scheme
  - Consider the drainage?
  - Consider the topsoil?
  - Consider the planting scheme?
- Don't always think that compliance to BS8601:2013 means you will get a suitable subsoil delivered!

# Questions for suppliers

## Visiting is always recommended

- What is the source of your topsoil is it BS3882:2015 compliant?
  - Greenfield / Brownfield / Skip / Manufactured ?
  - Do you use PAS100 compost?
  - Is there an auditable process ?
  - Are quality ingredients being used?
- How is the topsoil stored?
- What tonnage is available?
  - Period of availability ?
  - Is there enough for my project
- What is their sampling protocol ?
  - Who does your sampling?
  - Can I have a copy of your analysis?
  - Date of last analysis?
  - Suite of analysis ?
  - Analysis and report from a reputable provider?
- Do you have testimonials?
- Affiliation to Trade Organisations? (BALI )





# Sampling & Analysis:

## *An analysis certificate is only as good as the sampling*

- Samples should be taken in accordance to at least BS3882:2015 every 5,000m<sup>3</sup> (8KT)
- 25 sub samples are taken to ensure the bulk sample is representative
- Laboratory analysis is undertaken at a UKAS and MCERT accredited laboratory
- Tim O'Hare Associates report includes
  - Declaration of compliance BS3882:2015
  - Analytical schedule
  - Results of analysis
  - Conclusion
  - Recommendations
  - Certificate of Analysis





# Analytical Schedule: Don't forget contamination testing

- **PSA and stone content**
  - pH and EC values
- **Exchangeable sodium %**
  - Major plant nutrients
- **OM%**
  - C:N ratio
- **Heavy metals**
  - Total cyanide and total (mono) phenols
  - Aromatic and aliphatic TPH (C5-C35 banding)
- **Speciated PAHs (US EPA 16 suite)**
  - Benzene, toluene, ethylbenzene, xylene
- **Asbestos screen**



Potential Contaminants levels are measured against recognised industry standards

# A good analysis report should include

- Compliance to BS3882:20015
  - Date
  - Source of soil
- UKAS and MCERTS accredited lab / Methods
- Horticultural Properties
  - e.g.. pH, drainage, aeration, fertility, organic matter, microbes
- Potential Contaminants - part of BS3882:2015
  - e.g.. Heavy metals, TPH, PAHs, BTEX, phenol, asbestos
- Interpretation and recommendations
  - Sample examination, Analytical schedule, Results
  - PSA, pH, %OM, fertility, Potential Contaminants
  - Conclusion & Recommendations

## Declaration of Compliance BS3882:2015

Soil source: British Sugar TOPSOIL

This declaration confirms that the topsoil represented by the attached Topsoil Analysis Report conforms to the requirements of the British Standard for Topsoil (BS3882:2015).

The sample was sampled and tested in accordance with the requirements of BS3882:2015

- Samples are taken for analysis every 8000 tonnes (5000 m<sup>3</sup>) of product
- Samples are taken from all TOPSOIL products ready for despatch
- *Landscape 10* and *Sports 10* are sampled after screening
- Analysis certificates are retained for a period of 5 years
- Laboratory analysis is undertaken at a UKAS and MCERTS accredited laboratory
- All laboratory methods are in accordance with BS3882:2015
- All British Sugar TOPSOIL products are produced to a Quality Management System approved by Lloyd's Register Quality Assurance to ISO 9001:2008 standard

British Sugar plc Co-Products  
LANDSCAPE 20 TOPSOIL Analysis  
Willington - WJ L10-68KT

Tim O'Hare Associate

### **ANALYTICAL SCHEDULE**

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition and fertility of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- particle size analysis and stone content;
- stone content (2-20mm, 20-50mm, >50mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- major plant nutrients (N, P, K, Mg);
- organic matter content;
- C/N ratio;
- heavy metals (As, B, Ba, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, V, Zn);
- total cyanide and total (mono) phenols;
- specialised PAHs (US EPA15 suite);
- aromatic and aliphatic TPH (US-CMS banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below. The interpretation considers the use of the LANDSCAPE 20 TOPSOIL for general landscape purposes and its compliance/non-compliance with our general landscape specification.

### **RESULTS OF ANALYSIS**

#### **Particle Size Analysis and Stone Content**

The sample fell into the sandy loam texture class, which is usually considered suitable for general landscape applications provided the soil's physical condition is maintained.

The sample was virtually stone-free and as such, stones should not restrict the use of the soil for general landscape purposes.

#### **pH and Electrical Conductivity Values**



# Remember that every project and planting scheme is unique

The aspect of the site. Is it North or South facing?

Is a subsoil needed?

Is the site drained?

What is the texture of the existing topsoil. Is it free draining or moisture retentive?

What is the nutrient content of the existing soil and the needs of your planting scheme?

What is the texture of the subsoil and does it need de-compacting?

Check access to your site



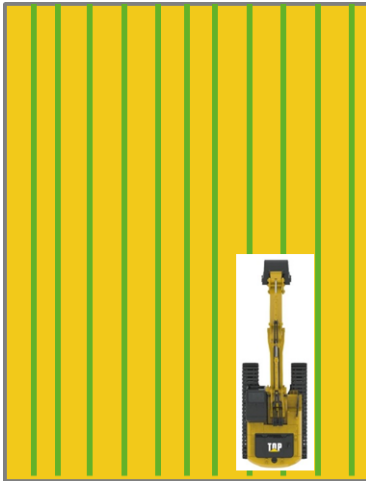
# De-compacting: Ripper Tine, Landscape Rake, Garden Fork



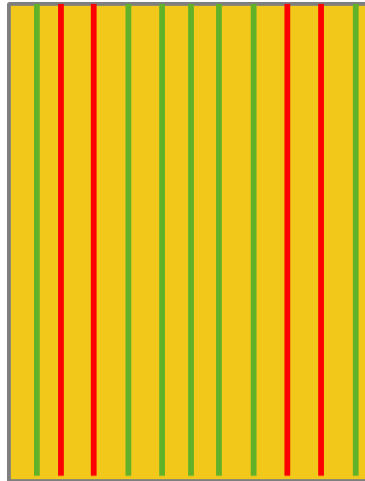


# De-compaction & Placement

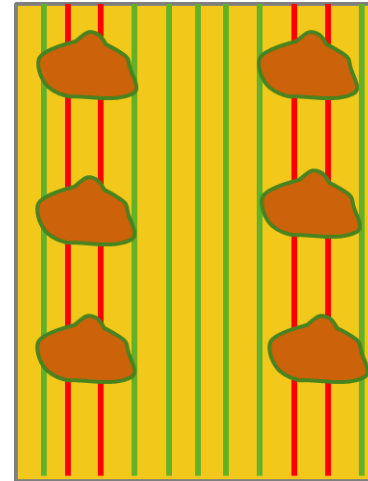
Ripping of subsoil  
400mm



Designated traffic routes



Tipping of topsoil  
Rip traffic route  
Work away from yourself and  
back to the access gate



# Handling & Planting Depths

- Avoid handling soils in wet conditions and minimise all traffic (machinery and pedestrian) on the areas to be landscaped
- Place your soil to the correct depth, lightly consolidating with the back of an excavator bucket between different soil levels
- Subsoil: Tree pits - 500-700mm; Planting areas - 300mm
- Topsoil: Turf and grass areas - 150mm-200mm; Planting areas - 300mm max
- Rake, then plant or turf, before cordoning off freshly landscaped areas.



# Importing TOPSOIL:

We're becoming increasingly aware of soil being rejected at site due to poor quality

Buying soil 'blind' is extremely risky.

- Insist on an up-to-date analysis
- Build a relationship with your supplier like you would a nursery

## Details

- Contact name and Company name
- Phone number, Email address & Site contact
- Product(s) and tonnage / number of bulk bags
- Delivery (with post code and vehicle type) or collection
- Date of delivery
- Site opening times
- Any special delivery instruction, loads per day

## Site Access Considerations

- Bulk deliveries can be made by articulated, 8 wheeler or grab lorries depending on access and availability.
- As a guide the amount of TOPSOIL carried by these lorries is:
  - Articulated lorries approx. 29t
  - 8 Wheeler lorries approx. 20t (17t)
  - Grab lorries approx. 15t



# Site storage / Tipping area:

Segregated / On high ground / Accessible / Clean



# Maintenance

Lawns and planting areas should be de-compacted at least twice a year, in spring and autumn, in dry conditions

When de-compacting lawns and flower beds, try and work off boards to reduce compaction and to help keep the soil level correct

After de-compacting lawns with a fork or aerator, brush a topdressing into the holes to help keep the soil open, to feed the grass and to level any slumped areas. Divots and bare patches can be repaired by mixing grass seed with the topdressing before application

Breaking up 'capping' using a hand tool or cultivator will improve air flow, help young seedlings push through, and make weeding easier. In planting beds add horticultural grit as needed

All good topsoil will contain annual weed seeds. If they are controlled by hoeing, mowing new grass, hand weeding or using a herbicide as soon as they have emerged, they will not re-grow

Yellowing or stunted growth of plants or grass can be an indication of nutrient deficiency in your soil. A simple soil testing kit from a garden centre will show you the levels of potassium, phosphorus and magnesium in your soil as well as its pH, indicating whether you have an acid or limey soil (important to know for plant selection). For a more in-depth soil analysis, contact a professional soil scientist (e.g. Tim O'Hare Associates—[www.toha.co.uk](http://www.toha.co.uk))



Topsoil 'capping'



Breaking up capped soil with a  
3-prong cultivator



Organic matter added to soil





# Top ten tips for soil sourcing and on-site management

To give your landscape project the best chance of success:

- Assess the quality and suitability of the site soils (preferably before stripping the topsoil) by conducting a Soil Resource Survey (separate from a normal Ground Investigation);
- If imported soils are required, use only BS 3882:2015 compliant topsoil and BS 8601:2013 compliant subsoil from reputable suppliers who must provide a valid load-specific Declaration of Analysis (including contamination analysis);
- Refer to both the above Standards for advice on correct soil sampling, handling, storage, soil preparation and depths;
- Avoid handling topsoil in wet conditions;
- Create a dry, clean, segregated holding area for storing topsoil, and seal in or cover the heap;
- Minimize the amount of human and mechanical traffic from the area to be landscaped to avoid compaction;
- Set levels for topsoil application - minimum depth 150mm, maximum depth 300mm;
- Avoid compacting newly laid topsoil;
- Slightly consolidate the new topsoil by lightly pressing with the back of a excavator bucket;
- Work off a board when planting or turfing.

# Useful guidance documents

Defra *Construction Code of Practice for the Sustainable Use of Soils on Construction Sites*, 2009

- BS 3882:2015 Specification for topsoil
- BS 8601:2013 Specification for subsoil and requirements for use

The Essential Guide to Topsoil

Site Managers Guide

TOPSOIL Academy

Go to our website  
[www.bstopsoil.co.uk](http://www.bstopsoil.co.uk)



## TOPSOIL Academy

Free-to-access learning resource



Welcome to the TOPSOIL Academy, a free-to-access learning resource for anyone specifying, buying or using soils, or simply wanting to improve their soil knowledge.

As a responsible supplier of subsoil, topsoil, and top dressing products, British Sugar TOPSOIL has always strived to provide useful, technically correct and reliable information and it is our aim to develop the TOPSOIL Academy into a comprehensive resource that holds all you need to know about subsoils, topsoils, and top dressings.

Initially the Academy will be content based but, as it evolves, we intend to offer webinars with industry speakers, and visits.

**Need FREE advice?**  
Talk to the TOPSOIL team



@Topsoil\_BS