

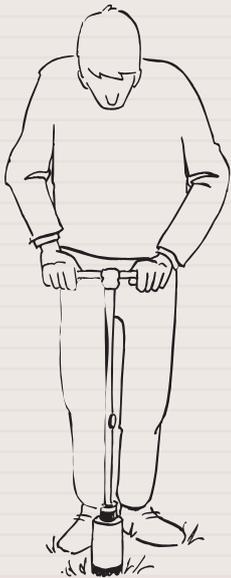


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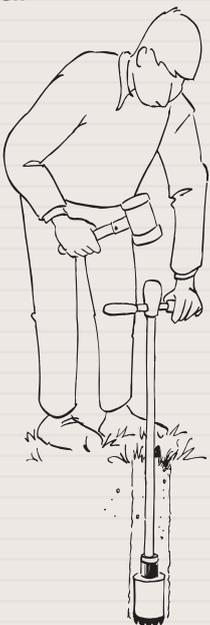
PLANT ROOT SAMPLING

P1.32

The root auger is pushed into the soil from the surface by simply turning and pushing downward at the same time.



After reaming out the bore hole (to avoid the auger friction in the bore hole) the auger is hammered in the bottom of the bore hole applying an impact absorbing hammer.



Root research is executed to improve the insight in the possibilities for root growth (depth and concentration) of the root system of trees and plants.

In general it is important to all plants to have a dense and extensive root system in the soil. An extensive root system allows the plant to benefit from a large volume of soil. If sufficient quantities of nutrients and water are present the absorption will be larger if the root system is more extensive.

Measuring the root system also is a useful means of localizing physical and/or chemical barriers in the soil profile.

If the root system researched deviates substantially from an 'ordinary' root system, then this is usually due to the following profile characteristics:

- Presence of layers that are hard to penetrate by roots, for example plough layers, bog ore, heavy clay and loam layers.
- Sharp contrast in profile, e.g. clay to sand, a soil rich of humus to a soil poor of humus (sand), etc.
- High groundwater level.

- Strongly fluctuating groundwater levels.
- Acidic layers.
- Poor oxygen content in the sub soil.

When comparing the root density of different soil samples, it is essential to compare samples of equal surface and contents.

05.01 Single root auger

The single root auger is used to take undisturbed samples for root investigations in soils with low penetration resistance. Samples with a length of 15 cm can be taken to a depth of max. 1 m.

05.02 Bi-partite root auger, standard set for sampling to a depth of 2 m

By applying the bi-partite root auger almost undisturbed, uniform soil samples can be taken in layers of maximal 15 cm. The bi-partite root auger consists of a bottom part fitted with an exchangeable drilling-crown and a short unscrewable top part (handle) with a beating head.



Bi-partite root auger set

PLANT ROOT SAMPLING



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P1.32

In lighter soil the auger can be pushed and turned into the soil. In heavier soils an impact absorbing hammer can be used.

In the standard set an Edelman- and a Riverside auger have been included for reaming out the bore hole and levelling the bottom (making it even). A conical threaded connection is used.

The root auger is fitted with a sample extruder unit which forces the soil sample from the cylinder of the auger. The extruder unit is operated by means of a crank handle.

The complete root auger set, including all accessories, is packaged in an aluminium transport case.

Advantages

- In built-up areas minimal ground disturbance is needed; the removal of one single paving

stone is sufficient to take a sample.

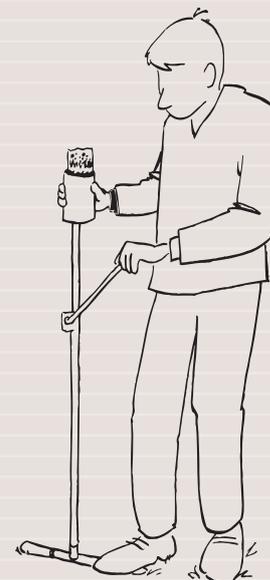
- Almost completely undisturbed soil sampling.
- Because of the robust, heavy construction the root auger is also suitable for heavier soils.
- The samples taken are equal concerning surface and contents.
- Less disturbance (and faster operation) by comparison to digging a profile pit.

Applications

- Research to determine the possibilities to develop a root system and to determine the depth and the density of the root system.
- The root auger can be used in virtually all types of soil.
- Compound manure sampling.

By applying extension rods the auger can be used to a depth of approximately 2 meter.

The sample is pushed out of the auger by means of a handle.



The sample can be pressed into a collecting reservoir for transportation to the laboratory.



Bi-partite root auger



Drilling-crown, extruder in upper position



Drilling-crown, extruder in lower position