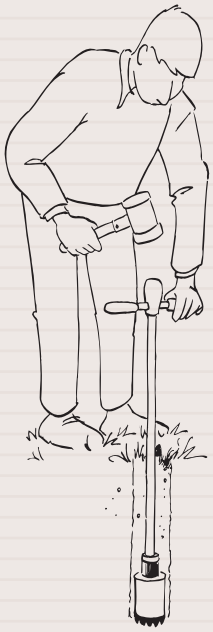
You will return to the contents of P1 SOIL by clicking the pictogram

PLANT ROOT SAMPLING

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

You will return to the contents of P1 SOIL by clicking the pictogram

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

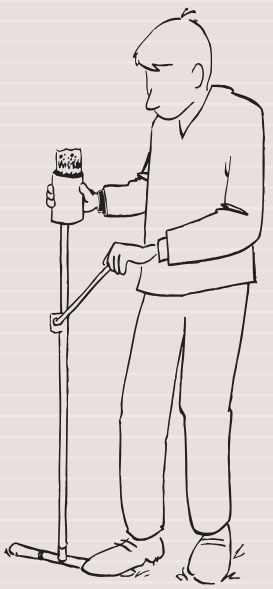
- In built-up areas minimal ground disturbance is needed; the removal of one single paving stone is sufficient to take a sample.
- Almost completely undisturbed soil sampling.
- Because of the robust, heavy construction the root auger is also suitable for heavier soils.
- The samples taken are equal concerning surface and contents.
- Less disturbance (and faster operation) by comparison to digging a profile pit.

Applications

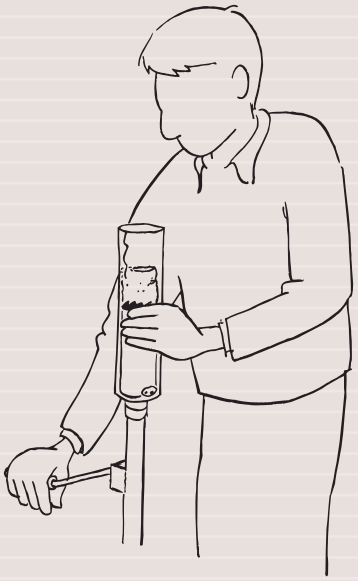
- Research to determine the possibilities to develop a root system and to determine the depth and the density of the root system.
- The root auger can be used in virtually all types of soil.
- Compound manure sampling.

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

Eijkelkamp Agrisearch Equipment

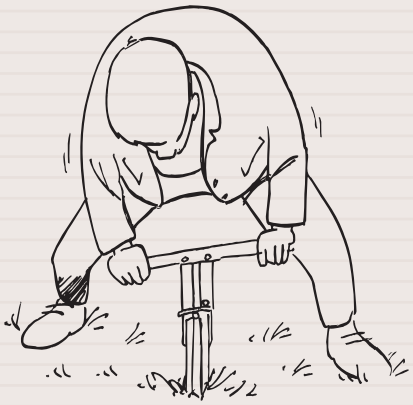
www.eijkelkamp.com

PLANT ROOT SAMPLING

You will return to the contents of P1 SOIL by clicking the pictogram

P1.32

By alternatingly pushing one of both U-shaped gutters, the profile sampler cuts itself into the soil.



Once the required depth has been reached, the profile sampler is extracted from the soil in a clamped position.

05.08 Profile sampler

The profile sampler allows taking of a sizeable and virtually undisturbed sample up to a depth of approximately 40 cm (10 cm wide and 5 cm across). All roots, up to a cross-section of 2 cm, are included in the sample.

When sampling, both U-shaped gutters are pushed alternatingly into the soil, until the required depth is reached, after which one side of the handle is pulled sharply upwards and the other pushed downwards, thus clamping the profile.

The profile sampler may now be extracted and opened to sample or describe the profile.

Also replacing the sample taken (in order to reduce the disturbance of the location to be researched to a minimum) is easily executed.

Advantages

- Compaction and integration of the various soil layers does not occur.
- Simple determination of the volume/weight of various differing layers.
- Sampling individual layers is no problem because the layers do not become disturbed.
- The observation of quantity and distribution of the root growth is both accurate and quick.
- A sizeable volume of the soil may be sampled, whereby the horizons of the samples are easily observed.
- Because sampling is efficiently executed it is possible to observe the fauna.

Applications

- Root growth research.
- Ecological/biological research of a strip layer in the forest.
- Soil surveying.
- Creating monoliths without the necessity of digging a profile pit.
- Suitable for almost all soils.

Profile sampler

Profile sample

PLANT ROOT SAMPLING

You will return to the contents of P1 SOIL by clicking the pictogram

05.09 Peat profile sampler, type Wardenaar

Until recently, sampling undisturbed peat profiles in peat lands, was a very difficult activity. Digging and sampling profile pits in most peat lands is difficult (if not impossible) as they would immediately fill with water and the walls would slump.

Researching the ecology of peat land environments and the dynamics and stratigraphy of peat profile requires undisturbed samples, especially of the top layers, where most biological activity takes place.

The peat profile sampler, type Wardenaar, is an apparatus for sampling intact, undisturbed peat profiles in peat lands up to a depth of 1 meter.
The peat profile sampler consists of a rectangular stainless steel box casing, divided lengthwise into two halves, with very sharp specially shaped cutting edges at the base.
The handgrip hinging with both halves allows both halves to be pushed into the soil alternatingly.
A clamp mechanism on the grip allows the profile to be clamped in the sampler when it is extracted from the soil. A small diameter tube is fitted to break the suction of the sample.
The standard set contains, among other items: the peat profile sampler, tools, lever beam with support and a hand pump.

Advantages

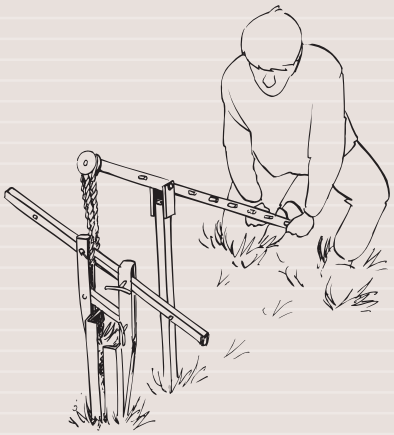
- One person is capable of extracting a 1 meter long profile in less then 10 minutes.
- Sizeable, undisturbed samples from (wet) peat lands are possible.
- After opening the profile can be sampled or researched immediately.

Applications

The profile is used for:

- Root growth studies.
- Pollen analysis.
- Macro-fossil studies (paleo-ecology).
- Creating soil monoliths.

The peat profile sampler is extracted from the soil by means of a lever and a support.



Peat profile sampler set

Peat profile

Peat profile sampler, type Wardenaar

Eijkelkamp Agrisearch Equipment

www.eijkelkamp.com

PARTS LIST

Art.no.	Description	Qty. in set
P1.32	**Plant root sampling**	
	To take undisturbed soil samples for root research two various systems are supplied: - root augers (single and bi-partite, extendable type) - profile samplers (for mineral and peat soils)	
05.01	**Single root auger, Ø 8 cm, contents 750 cc, operational length 15 cm, total length 114 cm**	
05.02	**Bi-partite root auger, standard set for sampling to a depth of 2 m.**	
**01.10.10.C	Handle, normal, 60 cm, with all synthetic, detachable grip, conical screw thread	1
**01.10.11.C	Handle, short, 10 cm, with beating head, c.sc.	1
**01.02.02.10.C	Edelman auger, bottom part, comb.type, c.sc., Ø 10 cm	1
**01.04.00.10.C	Riverside auger, bottom part, c.sc., Ø 10 cm	1
**05.02.00.C	Root auger, bottom part, c.sc., Ø 8 cm, op. length 15 cm, contents 750 cc, with exchangeable drilling-crown	1
**05.02.10	Drilling-crown for root auger	1
**01.10.12.C	Extension rod, 100 cm, c.sc.	1
**04.05.05	Steel hammer with nylon heads, Ø 70 mm, 2 kg, impact absorbing design	1
**99.50.22	Spanner 20x22 mm	2
**01.11.04	Field data registration set	1
**01.11.03	Work gloves, pair, oil- and grease resistant, sturdy, with short sleeve	1
**01.11.01	Maintenance kit (brush, oilpad, vaseline)	1
**04.05.01.16	Bent spatula, breadth 16 mm	1
**01.15.01	Utility probe with cone Ø 19 mm, fibre glass, length 105 cm, Ø shaft 12.5 mm. For safely checking the substratum for cables, tubes and pipes	1
**01.11.02	Aluminium transport case, dim. 108x23x14 cm (outside)	1
**01.11.02.01	Padlock	1
05.08	**Profile sampler, to take samples of 10x5 cm, length 50 cm, incl. tools**	
05.09	**Peat profile sampler, type Wardenaar. Standard set for taking undisturbed peat profiles to a depth of 1 m**	
**05.09.01	Peat profile sampler to take samples of 10x10 cm, length 100 cm (incl. bag and tools)	1
**04.05.05	Steel hammer with nylon heads, Ø 70 mm, 2 kg, impact absorbing design	1
**05.09.05	Handpump	1
**05.09.07	Support for lever beam	1
**04.05.01.20	Bent spatula, breadth 20 mm	1
**01.11.03	Work gloves, pair, oil- and grease resistant, sturdy, with short sleeve	2
**01.14	Carrying bag for field equipment, with two shoulder straps (backpack model), (inside) Ø 17x150 cm	1