

# Soil sampling protocol

## Soil Crop Monitor

Testing for Life

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## Definitions

Soil Check	Analysis of field moist soil for readily available macro- and micro- nutrients
Crop Check	Analysis for nutrients in oven-dried plant material. The analyzed nutrients have been taken up by the crop
Soil Crop Monitor	A combination of the Soil Check and Crop Check analyses. It provides an insight into the condition of both the soil and the crop.
Soil sample	Final material of the sampling procedure; it can consist of combined subsamples, in total about 750 grams or 1 liter
Plant sample	Final plant material for analysis (old or young leaves)
Subsample/increment	1 subsample taken with the sampling device (or by hand); several subsamples together make a sample
Heterogeneity	Variation in 1 or more constituents in the field (soil and or plant material)
GPS	Global Position System: this system will provide coordinates with which you can relocate earlier sampled locations.

## When to sample

- Soil Crop Monitor: sample when sufficient plant material is available above ground. If there is no plant material, use the product Soil Check
- Soil Check: sample when you want to know the amount of available nutrients in your soil. This is applicable at any stage in the growing season.
- Crop Check: sample when you want to know the nutrient status of your crop. This is applicable at any growth phase of the crop.
- Take extra samples when the weather conditions have been different than expected (for instance more or less rain, or colder/warmer than usual), thereby affecting the availability and uptake of nutrients.

## How to take a sample?

### Preparation

- Use Table 1 (Table 1: sampling method specifications per product) for collecting the correct material and following the right sampling methods.
- Know the location and its heterogeneity.
- Gather your material
  - soil sampler
  - clean bucket
  - 2 sample bags (1 for soil, 1 for leaves)
  - marker
  - optional: GPS or phone with GPS app

### Overview

- The analysis result of the sample needs to be representative of the complete area that has been sampled.
- Within your field, select a representative area of maximum 1 ha (Figure 1). If you want, you can also select a certain spot in the field (point sampling)
- Do not select areas like the entrance to the field, drinking spots, local shaded areas, old storage locations etc.

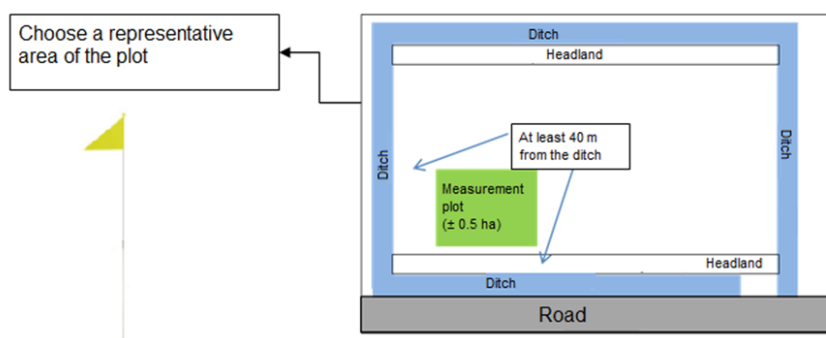


Figure 1: selecting a representative area of the plot

- Make sure that you eventually can resample the same location in the short or longer term
- If you have the opportunity record the field location with a GPS (WGS84 system).
- For finding the GPS coordinates you can use a GPS device or a GPS app on your smartphone. Record the coordinates of the middle point of the sampled area

## Soil sampling method

- Use a gouge auger which can sample to the recommended depth of 30 cm (see figure 2)

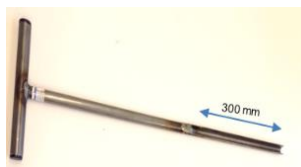


Figure 2: gouge auger

- To prevent side effects for instance due to trampling, heavy traffic, sample at least 40 meters from the field borders.
- In case of potato ridges, the auger should be inserted at an angle at half the height of the ridge to a depth of 30 cm (i.e. not at the top of the ridge and also not along the gullies) (see figure 3).
- When sampling the selected area, walk in a zig-zag (W) motion across the area (see figure 4 below), making sure that you take at least 6 subsamples in each leg.

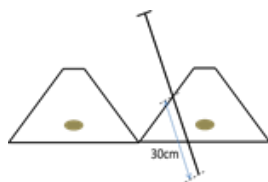


Figure 3: sampling potato ridges

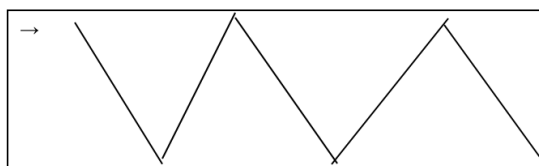


Figure 4: W-patterns (zig-zag) for collecting soil samples

- Before taking the sample remove as much as possible crop residues or other (organic) material that is present on the soil surface.
- In total about 40 subsamples are to be taken. For peaty soils collect at least 50 subsamples. In total about 1 liter of soils needs to be collected.
- Collect all subsamples in a bucket; mix well and put a representative amount in a clean, dry bag.

## Crop sampling method

- When gathering material for the Soil Crop Monitor (Crop + Soil) Ensure that you always collect a crop sample and a soil sample at the same time, as they belong together.
- Preferably collect the crop sample in the morning (not in the heat of the midday sun).
- Use table 'Soil Crop Monitor list of crops', to download from <https://www.eurofins-agro.com/en/soil-crop-monitor> for collecting the correct plant material.
- Collect the fresh crop sample from different parts of the designated sub-plot/measurement plot. In other words, collect material from a number of plants within this sub-plot/measurement plot according to the table.

## After sampling

- As soon as you have finished sampling, label the sample bags correctly
- Sampling date
- Location name
- Name: sample taker
- Material and if applicable sampling depth
- Current crop
- Optional: Location coordinates (WGS84)
- For the Soil Crop Monitor: put on both bags (soil and plant) a similar code (object code) so it is clear that both are from the same location and belong together.
- Fill in the order form and mention the same code on this form as put on the bags.
- Keep the sample bags clean and dry; close the bag (prevent contamination and water loss)
- Protect from sunshine
- Keep the samples cool (preferably in a cool box/fridge), so no changes will occur
- Send the samples as soon as possible to the lab, with the correct paper or digital order information.

## Product specifications

Table 1: Sampling method specifications per product

Product	Sampling depth	Sampling area	Additional comments
Soil Crop Monitor	Soil: 0-30 cm Plant: young or old leaves	Max. 1 ha	Sample a representative area of the field. Record area with gps
Soil Check	0-30 cm	Max. 1 ha	Sample a representative area of the field. Record area with gps
Crop Check	Plant: young or old leaves	Max. 1 ha	Sample a representative area of the field. Record area with gps

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