



Soil Survey

Objectives

To collect information on soil characteristics relevant to the description of the quality of survey fields as habitat for waders.

Method

Equipment

- A Soil Survey recording sheet and SAC soil registration form for each field
- A clipboard and pencil
- A spade
- A small board or tray
- A soil compaction tester/penetrometer ([manual](#))
- A bucket
- Large freezer bags and waterproof pen

Carry out the soil survey in the same fields as other habitat surveys.

If there are distinct habitats in a field (e.g. improved grassland and wetland) or large fields (>4 ha), survey them separately and mark the boundary on a map.

Worm survey

- 5 pits per field following a W-shape
- Dig a pit a square pit with a spade (20x20x20 cm)
- Hand-sort the soil, placing each worm in a pot or tray
- Separate into adults and juveniles
- Count and record the number of each type (surface worms, topsoil worms, deep burrowers), and the total number of worms
- Return the worms to the pit and backfill with soil.

Soil compaction

Ideally, the readings should be taken when the soil profile is at field capacity (24 hours after rain), in the spring.

The penetrometer simulates root growth. Root growth decreases linearly with increasing penetration resistance. Above 300 pounds per square inch (psi), the soil is compacted, and root growth stops.

- 5 readings per field following a W-shape
- Select one of two tips: a small tip (1/2" diameter) for use in firm soil or a large tip (3/4" diameter) for use in soft soil. The dial has a scale for each tip, calibrated in psi of the base area of the cone-shaped tip.
- Push the tip of the tester in the ground, applying even pressure on both handles.
- The shaft is marked at three-inch intervals. Record the gauge readings or cone index at the marked depths.



Soil sample

Soil samples can be taken at any time of year but avoid sampling within two years of applying lime or within two months of applying a compound fertiliser, organic manure or more than 50 kg/ha nitrogen.

- Walk across the field in a W pattern, aiming to collect 25 cores with the sampling tool.
- Using a spade, remove a slice of soil about 2.5 cm wide to sample depth and collect in a clean bucket. Further slices should be taken in the same way from different parts of the field until all samples have been collected.
- For arable land and temporary grass, the typical sampling depth is to plough depth approximately 20 cm. For permanent grassland sampling depth should be shallower, approximately 10 cm, with extra care taken to exclude any vegetation from the sample.
- Avoid sampling “hot spot areas” such as around gates, areas where lime or manure has previously been dumped and areas where livestock gather such as water troughs. Field margins should also be avoided as there tends to be variations in fertiliser applications in these areas.
- Label the sampling bag with Land Parcel Identifier, field name, farm name and address.
- The sample should be thoroughly mixed in the bucket before taking a representative amount of soil to fill the bag (1 kg). Large stones, roots and plant materials should not be placed in the bag.
- Send the sample to the SAC lab as soon as possible with clear instructions on the analysis required: pH (PH) and organic matter (LOI).