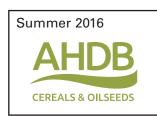
An introduction to earthworms



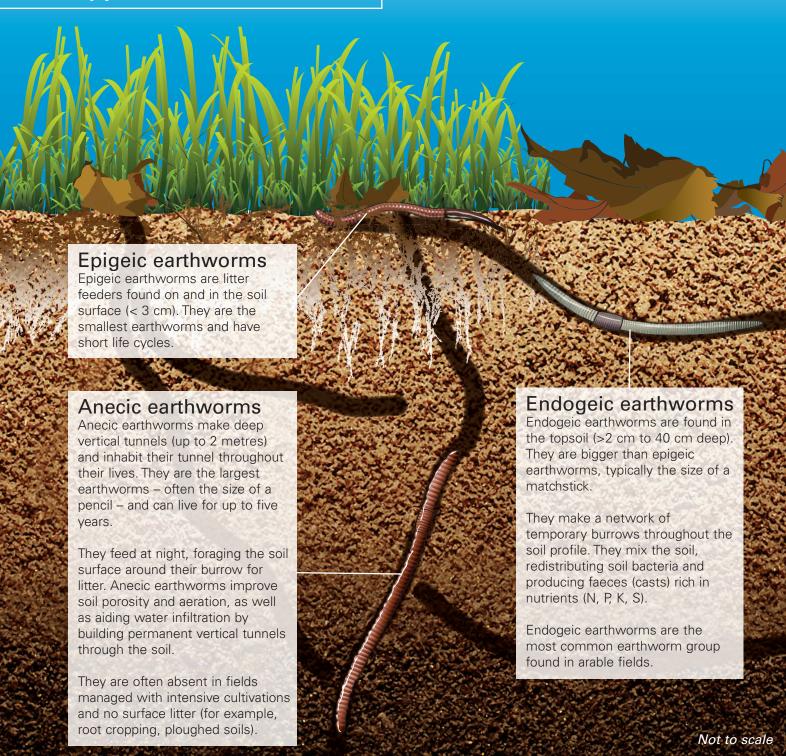
Importance

Earthworms can be used as an indicator of soil quality because worms are uncommon in soils that are compacted, waterlogged, have extremes in soil pH or are very sandy.

Many arable management practices have an impact on the number of earthworms present in soil, particularly tillage intensity, food supply (soil cover, residue management) and agrochemical applications.

Earthworms provide free labour (nature's ploughs) and fertiliser by breaking down organic matter, allowing bacteria and fungi to release the nutrients into the soil. Increasing earthworm populations in arable fields can be beneficial to crop production.

Types of earthworm



Assessing earthworm populations

When to assess earthworm populations

Spring and autumn are the best times to do earthworm assessments. Timing the sampling after warm, wet conditions often provides the best earthworm estimates.

How to assess earthworm populations

Hand sorting

One way to assess earthworm populations is to dig a 20 cm x 20 cm x 20 cm hole and hand sort through the soil.

As earthworm populations are patchy, 20 measurements per field are recommended.

To estimate the number of earthworms per m², multiply the number counted in each measurement by 25.

Most conventionally managed arable fields will have around 150 earthworms (matchstick size) per m².



20 cm x 20 cm is a typical tool width and depth

Mustard extraction

The mustard method can be used to get a snapshot of earthworm populations without damaging crops. Mustard is irritating to earthworms, so burrowing earthworms will come to the surface within about 10 minutes.

Pour a mustard solution (1.5 litres of water to 2 tablespoons of mustard powder) over a 50 cm x 50 cm patch of soil and count the number of worms that emerge.

Midden counting (anecic earthworms)



Middens are the distinctive piles of organic residues (twigs, leaves, straw, stones) gathered by each anecic earthworm from its nightly foraging activities A fast way of assessing anecic earthworm populations is to count the numbers of middens on the soil surface (per m² area).

Field edges that receive tree litter often have higher anecic earthworm populations than in the centre of the field.

	Typical number of middens per m ² (in spring)
Ploughed soil	0–3
Minimum tilled soil	3–15
Zero tilled soil	>15–60



Moving the midden will reveal the entrance to the earthworm's permanent tunnel (up to 1 cm in diameter)

Images and videos of earthworms, midden building and sampling techniques are available on Instagram #wormhunters2015

Further information

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