

Quick test for infiltration of arable soils

Problem

Driving on arable land with heavy machinery while the soil is too moist leads to soil compaction, which severely impairs airflow and drainage. Especially crops in heavy soils react to this situation with yield losses.

Solution

With the aid of a simple quick test, water infiltration – as one of the characteristics of soil compaction in the field – can be clearly examined. The quick test is also easy to understand and helpful for non-scientists. It is particularly suitable for training farm apprentices and employees, and raising their awareness on the issue.

Advantages

The quick test uncovers the consequences of soil compaction on water infiltration and the yield of arable crops. It promotes an understanding of the effects of soil compaction and the importance of soil conservation.

Procedure

- Hammer the ring into the soil to a depth of about 50 mm.
- Cover the inside of the ring with plastic wrap.
- Pour 500 ml of water onto the foil (corresponds to 25 ml of precipitation).
- Remove the foil and start the stopwatch.
- As soon as the water has completely seeped away, stop the watch.

Applicability Box

Theme

Soil fertility

Geographical coverage

Global

Application time

All year round, not during rainfall

Required time

2-3 hours (incl. repetitions)

Required tools

- Ring made of plastic or metal with a diameter of 160 mm and a height of 150 mm (e.g., section of a drainpipe)
- Wooden slat of approx. 20 cm
- Hammer
- Plastic wrap
- Stopwatch
- 500 ml of water (for every repetition)
- Paper, pencil



Image 1: Material for the quick test
(Image: Boris Liebl, FiBL).



Image 2: The ring is hammered into the ground.
(Foto: Boris Liebl, FiBL).



Image 3: The measured amount of water is poured into the ring on the foil. (Image: Boris Liebl, FiBL).



Image 4: The foil is pulled out of the tube. (Foto: Boris Liebl, FiBL).

Practical recommendation

For training purposes, a direct comparison of several quick tests should be carried out at different areas on the same field. The comparison of tests taken in the tramlines, on the headland and in the untrafficked area might be particularly interesting. In addition, one might also select areas where the crop grows particularly well or poorly in order to check whether the growth of the crop is related to soil compaction.

The moisture status of the soil prior to the test time has a major influence on the ability of the soil to absorb more water. This limits the comparability of the results to a single point in time. To increase comparability, the soil can be thoroughly watered 12-48 hours in advance.

Use the comment section on the [Farmknowledge platform](#) to share your experiences with other farmers, advisors and scientists! If you have any questions concerning the method, please contact the author of the practice abstract by e-mail.



Further information

Video

- A [video](#) in English shows the practical implementation step by step.

Links

The quick test was presented in a brochure from the US Department of Agriculture.

- United States Department of Agriculture (eds.): Soil Quality Test Kit Guide https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_050956.pdf
- United States Department of Agriculture (eds.): Evaluación de la Calidad y Salud del Suelo 199 (Spanish) https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051284.pdf

About this practice abstract and OK-Net Arable

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