

# Using iMETOS MobiLab

1. Take the soil sample.
2. Mix the sample, remove stones and plant debris, and then sieve it.
3. Weigh 10 g of the sieved sample into a falcon tube.
4. Add 20 g (= 20 ml) of the extraction buffer.
5. Close the falcon tube and put it on the shaker for 20 minutes.
6. Insert the chip into the iMETOS MobiLab.
7. Close the chip clamp by pushing the lever down.
8. Connect the iMETOS MobiLab to electricity and USB for data processing.
9. Now remove the falcon tube from the shaker. Take some ml of its content with a syringe and press it through a syringe filter into an Eppendorf.
10. Mix the content of the Eppendorf with the internal standard and fill it into the iMETOS MobiLab analysis slot. Push play at the program button.



Photo: Results of soil sample analysis shown as a graph in iMETOS MobiLab application.

## TECHNICAL SPECIFICATIONS

<b>Sample volume</b>	50-100 $\mu$ l
<b>Measurement range</b>	3,5-125 kg N/ha
<b>Accuracy</b>	For measurements of liquid concentrations (ppm): $\pm 3$ %
	For measurements of soil concentrations (mg/kg): $\pm 15$ %
<b>Chip lifetime</b>	Approximately 300-500 tests
<b>Battery capacity</b>	2 hours of measuring time



### MORE INFO:

[metos.at/imetos-mobilab](https://metos.at/imetos-mobilab)



# METOS MobiLab



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# Why iMETOS MobiLab?

Whether it is row crops, vegetables or fruits, every farmer knows that fertilizer is essential for a wealthy harvest, but determining when and how much to fertilize is sometimes a struggle.



Fertilizers, as well as their distribution in the field, cost money. Furthermore over-fertilization seriously damages the environment. The new laws for fertilizer use also limit the maximum use per season. **Doing your own measurements of nutrient levels is the answer!** By using the iMETOS MobiLab you minimize over-fertilization and still meet the actual needs of the crop.



A conventional laboratory measurement gives the highest precision results, however it takes time before results are delivered and the method is expensive.

**iMETOS MobiLab IS THE IDEAL ANSWER THAT INTEGRATES SOIL NUTRIENT ANALYSIS INTO A SINGLE MICROFLUIDIC CHIP.**

# About iMETOS MobiLab

**MEASURE YOUR FERTILIZER REQUIREMENTS, SAVE TIME AND MONEY AND PROTECT THE ENVIRONMENT.**



**Prevent over-fertilization**



**Resource efficiency**



**Save money**

iMETOS MobiLab is a **simple and innovative soil macro-nutrients analyzer** based on capillary electrophoresis, which gives you quick and precise indications on **the level of nitrate (NO<sub>3</sub>) and ammonium (NH<sub>4</sub>)**. The measured data can be related to GPS coordinates via mobile app (available for Android and iOS) and can therefore support precision farming systems.

Crop macro-nutrient needs are easily satisfied with pre-drilling or post-emergence fertilization. A real adequate fertilization can not be based on empirical evaluation; plant needs are satisfied by the actual presence of chemical elements in the soil.

# How Does It Work?



**Lab on a chip**

iMETOS MobiLab is a **mobile soil lab**. It is a completely new concept which integrates soil nutrient analyses into a single microfluidic chip. After the soil samples are extracted from the field, the sample preparation is done right on the field or in the office.

The filtered sample is injected into a microfluidic capillary where a **strong electric field is applied**. All important nutrients are in fact electrically charged molecules, and therefore react to the electrical field. They are separated in the chip according to their chemical nature and finally measured by a detector at the end of the capillary.



1. Sieve the soil.

2. Add the extraction buffer to the soil.

3. Inject the sample into iMETOS MobiLab.

This technology also works for on-site measurements in field conditions and **can be operated by users without prior laboratory knowledge**. The measured data is related to GPS coordinates (using a mobile app) and sent to our web-cloud FieldClimate, where it is safely stored and accessible for the user.

The data is easily converted into machine-readable formats, allowing the automatic site-specific variable rate application with precision farm machinery (e.g. fertilizer spreaders, sprayer etc.).