

EGU2020-581

<https://doi.org/10.5194/egusphere-egu2020-581>

EGU General Assembly 2020

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The comparison of smartphone, Vis- and atomic emission spectrometers for soil P analysis by Mehlich 3 method

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The possibilities of analytical instruments are growing rapidly and the precision of analysis is increasing pidevalt. On the parallel with the development of high tech instrumentation, we can find large number of solutions for analytical determinations using simple, non analytical equipment. One of the trends in the development of analytical techniques and solutions is to find possibilities for a simple and cheap method for providing analysis. This has been made possible due to rapid development of biochemical, chemical, physical sciences and computer technology during the last decade.

In many scientific articles we can find solutions using digital cameras and smartphones as spectrometers and data collecting devices. And it is not only a few single experiments. There is already a term known in scientific literature as „lab on phone“.

This has raised a question such as in which cases do we have the confidence in the results obtained from the usage of smartphones and when is it required to have the precision of spectrometrial measurements.

We have been working on the development of a method for determination of plant available phosphorus from extracts obtained by Mehlich 3 method for some years. During our work many soils have been analysed by diferent methods: digital image analysis and spectroscopical analysis. In our presentation we compare the results of soil P analysis obtained by smartphone, Vis-spectrometry and atomic emission spectrometry.