

Research on organic layers and soil samples: Overview on equipment and methods

	Location:	In charge of:
1. Field Experiments & Instrumentation/Workshop	B01	O. Kolle
2. Tools for soil sampling		
a. Good Lab Practices: Labeling and data management	Greenhouse	A.Fastnacht I.Kuhlmann M.Pöhlmann I.Kuhlmann I.Kuhlmann
b. Shovel, spade, ...		
c. Split tube		
d. Motor drill“COBRA”		
e. “Pürkhauer” soil corer		
f. Bulk density corer		
3. Soil sample processing		
a. Drying soil samples in 40 °C chamber or in drying oven.	Floor Z1	I.Kuhlmann
b. Storing soil samples at 2 °C or -20 °C, -80°C	Floor Z1	
c. Weighing and sieving (2 mm) facility	Greenhouse/B01.34	
d. Sub sampling	B1.008/GH ¹	A.Fastnacht I.Kuhlmann
4. Sample preparation for different analyses		
a. Grinding with the ball mill	B1.008	I.Kuhlmann
b. Weighing and //Minerva/balance	B1.010	I.Kuhlmann
c. Basic wet chemistry (N.min, CEC, Al/ Fe oxides, pH, CFE, Enzyme activity, PLFA)		Soil Group
d. Determination of the water content and data correction		
e. Physical fractionation, Heavy fractionation and Ultra sonic		I.Kuhlmann
f. Particle Size Analysis, different Methods	B2.002	
g. Lyophilisation	B2.004 /B2.002	I.Kuhlmann & S.Rühlow
5. Monitoring and manipulations‘.		
a. <u>Growth & Incubation chambers</u> used for incubation experiments to monitor the CO ₂ exchange or C isotope ratios	Phytochamber IsoLab	I.Kuhlmann H. Moosen P.Linke
b. <u>Thermogravimetry (TGA)</u> Thermogravimetric is a technique that measures the change in weight of a sample as it is heated, cooled or held at constant temperature.		G.Gleixner

¹ GH Greenhouse

	Location:	In charge of:
c. <u>Li-Cor Environmental equipment</u> Making Soil CO ₂ flux measurements with the LI-6400XT		O.Kolle
6. Working with labeled material	A3.024	I.Kuhlmann
<ul style="list-style-type: none"> a. Access and availability b. Drying oven, balance, cooling facility c. Centrifuge d. Wet chemistry 		
7. Service departments		
<ul style="list-style-type: none"> a. RoMA Routine Measurements & Analysis b. Stable Isotopes (GasLab) “IsoLab” c. Laboratory for Spectrometry d. 14C Lab 		I.Hilke H.Moosen M.Raessler A.Steinhof

8. Information

- **Webpage Service Groups**
- <https://www.bgc-jena.mpg.de/Freiland/index.php/Greenhouse/TheChambers>
- <https://www.bgc-jena.mpg.de/bgp/index.php/Internal/Methods>
Poster: Guideline for Sampling and Preparation
- Schedule for the phytochamber \\Minerva\BGP\projects\Phytochamber schedule

For further comments and literature please check:

- **Minerva\people\methods and descriptions**
- Schlichting, E. et al. (1995): Bodenkundliches Praktikum, 2. Auflage, Blackwell Wissenschaftsverlag, ISBN: 3-8263-3042-0
- BGR (Bundesamt für Rohstoffe) – AG Boden
- SSSA (Soil Science Society of America), <https://www.soils.org/>
- Carter, M.R. & Gregorich, E.G. (2007): Soil Sampling and Methods of Analysis, Second Edition, Canadian Society of Soil Science, ISBN: 9780849335860
- (3) DIN 19747 (2009): Investigation of solids - Pre-treatment, preparation and processing of samples for chemical, biological and physical investigations, 2009-07
- (4) VDLUFA (1991): Methodenbuch I, Die Untersuchung von Böden, 1.Teillieferung, ISBN: 3-922712-42-8