



Root Sciences

(Resource ID: 118)

Univ.Prof. Dipl.-Ing. Dr.nat.techn. Willibald Loiskandl

Dipl.-Ing. Isabella Schalko

Dipl.-Hydrol. Dr.nat.techn. Gerlinde Scholl

Dipl.-Ing. Alexandra Strauss-Sieberth

Alexandra Strauss-Sieberth

alexandra.strauss-sieberth(at)boku.ac.at

This teaching resource is allocated to following University:

BOKU - University of Natural Resources and Life Sciences Vienna

Institution:

Institute for Hydraulics and Rural Water Management

<http://www.sustainicum.at/en/modules/view/118.Root-Sciences>



**Work in pairs
Group work**



**Independent of
the number of
students**



**Up to 3 lecture
units**



**Internet
connection
necessary**



English, German

This building block is designed to explore the topic of roots and should provide a look into research on roots. A founded knowledge base of the “hidden half” of plants, their roots, can contribute to an increased use of their ecological and agronomic potential for practical uses such as drought tolerance of plants, slope stabilization or improved humus balance in soils. This building block includes a “root experience kit” and optionally root unearthing in the field or laboratory. Application in the classroom allows students a playful and sensory-oriented encounter with the topic of roots. In this way the construction, functions, diversity and qualities of various roots and root systems can be approached.

Gleaning an understanding of the material in this way provides the basis for a sustainable practical application. In a concluding discussion open questions can be discussed and the connections to sustainability worked out.

Please note:

This English translation of the „Baustein Wurzelpädagogik“ is a service provided by the *Sustainicum team*. Currently, it has not been approved by the authors.

This building block was created in cooperation with Dr. Monika Sobotik of the Institute for Plant Sociology, Klagenfurt.

Basic idea of the building block

This building block is designed to explore the topic of roots and should provide insight into research on roots.

The building block is comprised of the following elements:

- Root-unearthing exercise in the field or laboratory
- Appointments for the root-unearthing workshop in the field or laboratory can be made upon request at IHLW*
- Root experience kit:
- Root “Memory” (card game); including instructions
- Recipes – culinary
- Herbarium puzzle
- Article on roots
- Instructions to unearthing roots
- Provided material: PowerPoint presentation and instruction for implementation

Description of the building block

Unearthing roots in the field or laboratory

The technique of unearthing roots, for example as used for the root atlas series, will be explained within the framework of a workshop. The location of the unearthing is selected with consideration to the target group in question (e.g. soil profiles with different soil cultivation, test fields, mountainous locations). Alternatively the root unearthing can be carried out using “flowerpot” trials. For this purpose the appropriate plants are raised in the climatic exposure cabinet of IHLW.

Wurzelfreilegung

7. Symposium der International Society of Root Research (ISRR)
„Root Research and Applications“
Exkursion am 5. September 2009



Root experience kit

The root experience kit includes multiple components, all of which deal with root-plant interactions. The kit more closely illustrates root systems and plants that are of great importance, particularly in agriculture. The components of the root experience kit can be used in the course depending on time and target group constraints.



Root "Quartet": The game is comprised of eight groups of four matching cards and can be played with three or four persons. "Quartet" playfully shows the different root systems of plants.

Root "Memory": The game is made up of 16 pairs that depict selected plants and their root systems. The pairs are matched by the root system of the

plant, the card's colored border, or soil profile.

Further components of the root experience kit include: *culinary recipes*, *herbarium puzzle (5 versions)*, *an article on roots*, and *instructions to unearthing roots*.

Provided materials

Presentation material (PowerPoint presentation) for the presenter
Implementation instructions for use during the course

Application during the course

The application of this building block can be individually adjusted for each course and is explained in the instructions for implementation.

The following agenda is recommended (see presentation material)

Lecture on the subject of roots
Explanation of root-unearthing
Root experience kit
Follow-up talk and discussion

Aha- effect for students

Application in the classroom allows students a playful and sensory-oriented encounter with the topic of roots. In this way the building block broaches the topics of composition, functions, diversity and qualities of various roots and root systems. Gleaning an understanding of the material in this way provides the basis for a sustainable practical application (for example water management, agriculture, engineering, and forestry amongst others).

--> Roots ≠ Roots

Teaching Tools & Methods



Game



Written material



formteaching_experiment

Contact details for borrowing physical devices

IHLW:

+43-1-47654-5450;

E-Mail: [ihlw-office\(at\)boku.ac.at](mailto:ihlw-office(at)boku.ac.at)

Learning Outcomes

- Acquiring knowledge (growth, functions, diversity and particularities of various roots and root systems)
- Understanding the material as basis for sustainable and practical application
- Raising awareness

Relevance for Sustainability

Having a founded basic knowledge of the "hidden half" of plants- their roots- reinforces the ecological and agronomical potential of roots for practical goals including drought tolerance, incline stabilization or amelioration of the soil's humus balance.

Related Teaching Resources

No specific previous knowledge / related resources required

Preparation Efforts

Medium

Access

Free

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