Erasmus+ Strategic Partnership

The Educational Network on Soil and Plant Ecology and Management

Eva Keppner - Ulm University - "EduSaPMan"
What is an Erasmus+ Strategic Partnership?

• Partnership between different European Universities (+ sometimes enterprises)
• Part of internationalization strategies
• Improvement of overall quality of education and research
• 3 years funding for different activities and “Intellectual Outputs”
Soil science
Root ecology
Wetland ecology
Soil zoology
Effects of soil degradation on soil organisms

Plant stress ecophysiology
Soil-plant-atmosphere continuum
Soil degredation
Protection and sustainable use of soils

Ecosystem Biology
Microbial processes in different soil types
Wetland ecology and constructed wetlands
Hydrobiology

Functional ecology
Terrestrial and aquatic Mediterranean environment
Gas exchange between the atmosphere and plants
Global change
Plants under drought
Eva Keppner - Ulm University - "EduSaPMAn"
Intellectual Outputs

• **WP1**: Summer School „Soil & Water“

• **WP2**: Continuation of a jointly managed teaching module and agreement on a list of automatically accepted modules for regular exchange/student exchange between all partners.

• **WP3**: Enhancing teaching and networking potential for teachers

• **WP4**: Transposing the educational network into future research and teaching activities.
„Intellectual Outputs“

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### Summer Schools

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
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<tbody>
<tr>
<td>2014</td>
<td>Marseille - France</td>
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<tr>
<td>2015</td>
<td>Ulm - Germany</td>
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<tr>
<td>2016</td>
<td>Budweis – Czech Republic</td>
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<tr>
<td>2017</td>
<td>Tartu - Estonia</td>
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Eva Keppner - Ulm University - "EduSaPMan"
Schedule of the Summer School "Soil & Water" 2016

Sun 04.09. - Fri 16.09.:
- **Introduction to South Bohemian region (TP)**
- **Introduction to soil water relations (MK)**
- **Soil water relations I (MK)**
- **Soil water relations II (MK)**
- **Introduction to soil ecology (MW)**
- **Wetland Ecology I (TP)**
- **Wetland Ecology II (TP)**
- **Plant-soil relationships: leaf litter decomposition, a key process for ecosystem functioning (TV)**
- **Secondary metabolism of plants (CF)**
- **Wetlands and carbon fluxes (ZU)**
- **Soil degradation (ER)**
- **Sustainable environmental management (MW)**
- **Microbial processes in soil I (HS)**
- **Microbial processes in soil II (HS)**
- **Soil-plant interactions or Soil organic matters (AA)**
- **Role of soils in sensing environments (LA)**
- **Experimental climate change (IR)**
- **ERASMUS Mobility & Outlook (LI)**
- **Synthesis (MK)**
- **Feedback session**
- **Why should one go to...?**

**Arrival**:
- How to write reports and give presentations (PvW)
  - group formation & allocation of topics

**Departure**:
- Farewell party with Barbecue

**Lunch**:
- Whole day excursion - Sumava mountain (spruce forests, management, succession, ...)

**Welcome event**:
- Presentation of topics (10 min. each group)

**Bus transfer to Sumava**
- Bus transfer to Bodenweis

**Free day in Sumava**
- Free day

**Free afternoon**
- Preparation of presentations
- Farewell party with Barbecue

**Ref. Eva Keppner - Ulm University - "EduSaPMan"
Summer Schools – Lectures

O$_3$HP: Evaluating the responses of downy oak forest to Climate Change

Research Facilities/Institutions

Eva Keppner - Ulm University - Project "EduSaPMan"
**Pinus halepensis**: plant species producing high amount of Plant Secondary Metabolites (PSM)

### Three ways of release

- **Biosphere atmosphere relationship**
  - Volatilization

- **Biotic interactions**
  - Leachates, Root exudates

- **Biogeochemical cycles**
  - Leaf litter decomposition

**Basic Knowledge e.g. on Plant Secondary Metabolites**
Summer Schools - Lectures

Up-to-date research results

Summer Schools - Projects

Allelopathy experiment realizable in less than two weeks time!

- Allelopathy Bioassay in Petri dishes
- Experimental Design of allelopathy process
- Donor plant: young *Pinus halepensis*
- Needles macerates
- Different target species (seeds)
- Measured parameters after one week (germination rates, size of seedlings)
- Statistical analyses
Consortium
How can you benefit?

• Online available teaching material (Including Video-Lectures)
• Online available project descriptions
• Online available guides for excursions around the aforementioned areas

• [https://www.uni-ulm.de/nawi/nawi-edusapman/](https://www.uni-ulm.de/nawi/nawi-edusapman/)
Intellectual Output 3

Virtual Learning Aid
Virtual Learning Aid (IO 3)

**Question 5**
Not complete
Marked out of 1.00

Which environmental factor is the driver of the Mediterranean terrestrial ecosystem functioning?

Select one:
- a. Water
- b. Wind
- c. Temperature

[Check]
Virtual Learning Aid (IO 3)

Question 5
Correct
Mark 1.00 out of 1.00

Which environmental factor is the driver of the Mediterranean terrestrial ecosystem functioning?

Select one:
- a. Water ✓
- b. Wind
- c. Temperature
Virtual Learning Aid (IO 3)

Please, match the numbers to the organisms' role in the food chain associated to leaf litter.

1. Mesofauna, detritivorous, able to feed on decomposed litter, mainly microorganisms and small pieces of leaves
2. Predators of mesofauna
3. Decomposers, able to remineralize the organic matter

Your answer is correct.

The correct answer is: Mesofauna, detritivorous, able to feed on decomposed litter, mainly microorganisms and small pieces of leaves – 2, Predators of mesofauna – 3, Decomposers, able to remineralize the organic matter – 1.
Virtual Learning Aid (IO 3)

**Question 21**
Not complete
Marked out of 2.00

Please match the terms with the definitions.

Chemical substances secreted by plants which can affect the growth, behavior and population biology of other living beings.

Any direct or indirect effect by one plant, including microorganisms, on another through the production of chemical compounds that escape into the environment and subsequently influence the growth and development of neighboring plants; it includes both inhibitory and stimulative reciprocal biochemical interactions.

Choose...

Choose...

Allelopathy
Abiotic stress
Allelochemicals

Check
Virtual Learning Aid (IO 3)

Please match the terms with the definitions.

Chemical substances secreted by plants which can affect the growth, behavior and population biology of other live beings.

Any direct or indirect effect by one plant, including microorganisms, on another through the production of chemical compounds that escape into the environment and subsequently influence the growth and development of neighbouring plants. It includes both inhibitory and stimulative reciprocal biochemical interactions.
Virtual Learning Aid (IO 3)

• https://www.uni-ulm.de/nawi/nawi-edusapman/work-packages/work-package-1/virtual-learning-aid/
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