

www.bio-link.eu

**BioLink Cost Action** 



www.cnr.it

CNR



www.iamb.it CIHEAM IAMB Mediterranean Agronomic Institute of Bari



# SOIL BIODIVERSITY IN TREE CROPS TRAINING SCHOOL

### 25-29 September 2017

### CIHEAM-IAMB, Bari, Italy

### Introduction and aim

This training school is organized by BioLink (Linking belowground biodiversity and ecosystem function in European forests – COST FP1305), and in particular by WG3 participants (WG3: *Belowground biodiversity in plantations and tree crops*). The main aim of the school is to provide updated concepts and methodologies on soil biodiversity in tree crops with a multidisciplinary approach embracing theoretical and practical lectures.

The school will take pace at the International Center of High Agromonic Mediterranean Studies - Mediterranean Agronomic Institute of Bari that is a centre for post-graduate training, applied scientific research and design (<u>CIHEAM IAM</u>, Via Ceglie, 9, 70010 Valenzano, Bari, Italy), in the context of the intended purposes of the framework agreement between CIHEAM-IAM and CNR. The course (5 days) includes a field trip to the Nature Reserve of Torre Guaceto (a protected area between the Ostuni and Brindisi coasts, in the territories of the Carovigno and Brindisi municipalities). A number of experts participating in the Biolink COST Action have kindly agreed to act

A number of experts participating in the Biolink COST Action have kindly agreed to act as trainers for this school.

We are looking forward to receiving your application and to seeing you in Bari

# Participation & Registration

Who can attend?	<ul> <li>MSc and PhD students or Early Career Investigators (see COST Vademecum for definition). Due to space limitations, the training school is limited to 15 participants.</li> </ul>
How to apply	<ul> <li>✓ <u>Motivation letter</u> (max 1 page) with an expression of interest and a paragraph describing the relevant scientific activities related to this Training School;</li> <li>✓ <u>Curriculum Vitae</u> (max 1 page).</li> <li>Applications should be sent <u>by 20 August 2017</u> to: Mauro Gamboni (mauro.gamboni@cnr.it) and Paola Grenni (grenni@irsa.cnr.it).</li> <li>Mail subject: Application for BioLink Training School" Successful applicants will be contacted directly by e-mail.</li> </ul>
Selection criteria	A selection panel will consider added value of attending the school to the researcher's career, as evidenced by the motivation letter and the CV.
Costs	<ul> <li>✓ Registration fee (582 €) which includes: airport shuttle A/R (if necessary); Lodging at the CIHEAM-Bari students' guesthouse (Single rooms with bathroom); breakfast, lunches and dinners at CIHEAM-Bari restaurant; field trip to Torre Guaceto (Bus and packed lunch); Equipped classroom; Training material; CIHEAM costs (secretariat and overheads).</li> <li>✓ 10 students from FP1305 Biolink member countries ( (http://www.cost.eu/COST_Actions/fps/FP1305?parties) will be offered a fixed grant of €900 to cover transportation and registration fee</li> <li>✓ There is space for further 5 students with their own funds</li> <li>✓ Travel must be arranged by each participant after the acceptance e-mail.</li> </ul>

### **Topics and draft programme**

Training school (5 days) from

Monday 25 September (9:00) to Friday 29 September (18:30).

Topics include theoretical (T) and practical (P) lectures.

Topic	Hours	
General concepts on biodiversity	2	Т
Soil ecology: basic principles	2	Т
<b>Biodiversity: analytical methods</b>	2	Р
<b>Biodiversity conservation plans</b>	3	Т
Ecosystem management	3	Т
Practices for biodiversity management	3	Р
Soil metagenomic and bioinformatics approaches	3	Т, Р
Modeling	3	Р
Data management	3	Р
Aboveground-belowground interactions	3	Р
Soil web and services in agroecosystem	3	Р

## **Draft Programme**

The definitive programme will be send to the participants.

Monday	25.09.2017
09:00 - 09:15	Welcoming remarks - The BIOLINK COST Action
09.15 - 11:00	Theoretical session
11.00 - 11:30	Coffee break
11.30 - 13:00	Theoretical session
13.00 - 14.30	Lunch
14.30 - 17:00	Practical session
Tuesday	26.09.2017
09.00 - 17:00	Field trip (Torre Guaceto)
Wednesday	27.09.2017
09.00 - 11:00	Theoretical session
11.00 - 11:30	Coffee break
11.30 - 13:00	Theoretical session
13.00 - 14.30	Lunch
14.30 - 17:00	Practical session
Thursday	28.09.2017
09.00 - 10:30	Theoretical session
10.30 - 11:00	Coffee break
11.00 - 13:00	Practical session
13.00 - 14.30	Lunch
14.30 - 17:00	Practical session
Friday	29.09.2017
09.00 - 10:30	Theoretical session
10.30 - 11:00	Coffee break
11.00 - 13:00	Practical session
13.00 - 14.30	Lunch
14.30 - 17:00	Practical session
17:00 - 18:30	Oral presentation by students and discussion of articles
18:30	Concluding remarks

#### Theoretical sessions

- The living soil Introduction. The soil biodiversity from bacteria to earthworms. Intraspecific and interspecific associations. Soil biological, physical and chemical properties.
- Standardise methods for the assessment of global soil biodiversity. Sampling methods (soil and plants).
- Methods to assess the diversity, structure and function of microbial communities (culture-based, biochemical and molecular).
- Factors influencing belowground microbiomes (environmental (sudden/long-term) changes, physical-chemical soil properties, anthropogenic actions, climatic factors, developmental stage, (a)biotic stresses, etc.).
- Interactions between soil biota, soil structure, and SOM dynamics. Negative effectors of tree health (fungus-like organisms and higher fungi). Protection of tree crop plantations-biocontrol approaches (bacterial and fungal pathogens, nematodes and insect larvae). Soil amendment with compost and biochar for microbial enrichment and increasing in fertility.
- Soil food webs, soil functions and services and examples of how biodiversity directly influences ecosystem services
- New molecular methodologies available to evaluate the microorganism diversity, such as fingerprint analysis, the amplification and determination of its phylogenetic affiliation by the use of the gene 16s rRNA or as the analysis of metagenomes of soils

#### **Practical sessions**

- Fieldwork Soil and plant sampling to explore the hidden biodiversity. Processing samples collected.
- Characterisation and identification of the main groups (morphological, biochemical and molecular markers)
- Study of the belowground rhizomicrobiomes by microscopic visualisation, biochemical (enzymatic measurements or/and Phospholipid fatty-acid analysis PLFA/Total Ester-linked Fatty Acid -ELFA/Fatty acid methyl ester analysis FAME) and molecular (Genetic fingerprinting techniques DGGE/TGGE, TRFLP or/and qPCR, RT-qPCR) approaches. Whole community analysis.
- New molecular methodologies available to evaluate the microorganism diversity, such as fingerprint analysis, the amplification and determination of its phylogenetic affiliation by the use of the gene 16s rRNA or as the analysis of metagenomes of soils