



EcoStack

Develop and support ecologically, economically and socially sustainable crop production
via stacking and protection of functional biodiversity

Annual General Meeting 2022

21-23 September

 **UNIVERSITY OF BARCELONA - FACULTY OF BIOLOGY**
EDIFICI MARGALEF, Aula Magna
Diagonal Avenue 643, 08028 Barcelona




- **Time is CEST TIME**
- **On the following pages you will find:**
 - The programme
 - Zoom links for online attendance (stakeholders only)
 - An overview on the project's work packages


For any assistance please contact: info@ecostack-h2020.eu



Annual Meeting DAY 1: Wednesday 21 September 2022



12:00 - 13:00 **EcoStack Management Board Meeting***
***Management Board members only**


14:00 - 14:15  **Welcome & Introduction to EcoStack**


14:15 - 15:00  **WP2** Actor groups and actor interactions for co-designed practices and innovation



Introduction to WP2
 5 minutes presentation

Farmers' intention to adopt environmentally friendly farming practices in France and Germany
 15 minutes presentation +  5 minutes Q&A

Updates on WP2 work – Green week event and feedback workshops with actor groups
 15 minutes presentation +  5 minutes Q&A

15:00 - 15:45  **WP3** Linking crop yields with off-crop functional biodiversity

Introduction to WP3
 5 minutes presentation

Attractiveness of wild flower field margin species for ecosystem service providers: developing regionally suited mixes
 15 minutes presentation +  5 minutes Q&A

Francesco Pennacchio UNA

Alexander Wezel ISARA

Alexander Wezel ISARA
Sharmila Pun ISARA

Alexander Wezel ISARA
James H. Williams AU



Samantha Cook RRes


Milan Plečaš FBUB

Annual Meeting DAY 1: Wednesday 21 September 2022


15:45 - 16:30

Stacking ecosystem services in ecological networks with molecular tools to optimise agricultural habitat management



 15 minutes presentation +  5 minutes Q&A

 **WP4** Agronomic practices for in-crop generation of ecosystem services



Introduction to WP4

 5 minutes presentation



Can cultivar mixtures per se affect aphids in cereals or specific genotype interactions?

 10 minutes presentation +  3 minutes Q&A

Stacking agricultural practices in enhancing ecosystems services in arable cropping systems

 10 minutes presentation +  3 minutes Q&A

The potential of undersown 'nurse' companion plants to protect oilseed rape from cabbage stem flea beetle

 10 minutes presentation +  3 minutes Q&A

16:30 - 17:00

 **Break**

Jordan Cuff UNE

Sascha Kirchner UKA


Jannicke Gallinger SLU
Alba Tous Fandos UB

F. Xavier Sans Serra UB


Gaetan Seimandi Corda RRes

Annual Meeting DAY 1: Wednesday 21 September 2022


17:00 - 17:45

 **WP5** Plant microbial communities and endophytes as in-crop ecosystem service providers



Introduction to WP5

 5 minutes presentation

Management of soil microbiomes for improved plant health

 15 minutes presentation +  5 minutes Q&A

Endophytes for improved plant health


 15 minutes presentation +  5 minutes Q&A

Hanna Friberg SLU

Joan Romanyà UB

Traci Birge UTU



17:45 - 18:30

 **WP6** Bio-inspired tools to support functional biodiversity for pest control



Introduction to WP6

 5 minutes presentation

Beyond systemin: prosystemin harbours other biologically active peptides

 15 minutes presentation +  5 minutes Q&A

Biosafety of fusion proteins as novel biopesticides

 15 minutes presentation +  5 minutes Q&A

Angharad Gatehouse UNE

Rosa Rao UNA

Ryszard Laskowski UJA

J. Paulo Sousa UC

20:00

 **Dinner at Port Vela La Cervecería del Rompeolas**
Passeig de Joan de Borbó, 103, Local 7/8

Annual Meeting DAY 2: Thursday 22 September 2022



09:30 - 10:15

WP7 Ecotoxicology of ecosystem service providers



Introduction to WP7

 5 minutes presentation



Database of biology and ecology of the most important ESPs in study areas across the EU

 10 minutes presentation +  3 minutes Q&A

Assessment of the in-field status of ESP sensitivity to agrochemicals and compatibility for IPM

 10 minutes presentation +  3 minutes Q&A

Sublethal (eco)toxicology and interactions between plant protection products

 10 minutes presentation +  3 minutes Q&A

Ryszard Laskowski UJA

J. Paulo Sousa UC

Ryszard Laskowski UJA

Agnieszka Bednarska UJA



10:15 - 11:00

WP8 Integrative modelling of multiple drivers for ecosystem service providers



Introduction to WP8

 5 minutes presentation

Advances in species modelling

 15 minutes presentation +  5 minutes Q&A

First international EcoStack scenarios

 15 minutes presentation +  5 minutes Q&A


Chris J. Topping AU

Chris J. Topping AU

Elżbieta Ziólkowska UJA

Annual Meeting DAY 2: Thursday 22 September 2022



11:00 - 11:30  **Break**

11:30 - 12:15  **WP9** Social and economic aspects of enhancing functional biodiversity



Introduction to WP9

 5 minutes presentation



Costs and benefits of EcoStack measures


 10 minutes presentation +  3 minutes Q&A

Modelling complexity in farmers behaviour for EcoStack



 10 minutes presentation +  3 minutes Q&A

Assessing expected societal-level impacts from the case of andalusian organic transition

 10 minutes presentation +  3 minutes Q&A

12:15 - 13:00  **WP10** Policy options and dissemination of project results

WP10 Objectives and major outcomes

 30 minutes presentation +  15 minutes Q&A

13:00 - 14:00  **Lunch**

14:00 - 15:30  **Workshop with Stakeholders***

15:30 - 16:00  **Break**

Hella Kehlenbeck JKI

Bettina Wenzel JKI

Antonio Paparella UNA

Pedro Mendonça UC

Luigi Cembalo UNA

Moderators


Alexander Wezel ISARA

James H. Williams AU

Annual Meeting DAY 2: Thursday 22 September 2022

16:00 - 17:30  **Workshop with Stakeholders***

17:30 - 18:00 **Break**

18:00 - 19:00  **Stakeholder Consultation Platform
Actor Group dialog session***

- Introduction to Stakeholder Learning Platform: on-line tools to keep in touch with project members give feedback and hold discussions
- Guest welcomed to give their input and feedback on project results and activities

19:30  **Buffet Dinner at the meeting venue**

Luigi Cembalo UNA

Moderators

James H. Williams AU

Alexander Wezel ISARA

**Simultaneous interpretation
available ENG><CAT*

Annual Meeting DAY 3: Friday 23 September 2022

09:00 - 10:00  **General Assembly**

10:00 - 11:00  **Consortium discussion on work planning**

11:00 - 11:30  **Break**

11:30 - 12:30  **Consortium discussion on dissemination**

12:30 **Wrap-up**

12:30 - 14:00  **Lunch**

Francesco Pennacchio UNA



Links for the online meeting (by Zoom)

[Join the meeting on 21/09](#) password: 718253



[Join the meeting on 22/09](#) password: 399388



[Join the meeting on 23/09](#) password: 114769



Work packages: overview

WP2

Actor groups and actor interactions for co-designed practices and innovation

Engagement and active participation of key stakeholders is of crucial importance for the creation and transfer of knowledge. To this end, we have pursued the engagement with multi-level actor groups and farm networks to guide the development of new systems and concepts for maximizing benefits from ecosystem service providers, as well as to create new ideas and innovative solutions regarding pollination, plant production and protection. So far, a survey on farmers' practices and a first phase of actor workshops were carried out in 10 and 9 European countries, trying to define the future of farming reconciling productivity and biodiversity.

WP3

Linking crop yields with off-crop functional biodiversity

Off-crop semi-natural habitats such as hedgerows, treelines, grasslands and wildflower margins are known to support invertebrates which provide pollination and pest regulation ecosystem services in-crop but on-off crop plant-insect interactions are complex and poorly understood, limiting our ability to manage agricultural landscapes to maximize yield with minimum input. Improved understanding of how different landscape features affect neighbouring crop yield is being investigated by identifying the landscape features which border fields and linking them to yield monitor data from GIS-enabled combines. Plant-insect interactions between on-off crop plants are being investigated by developing metabarcoding approaches and novel image-based tools to automatically detect invertebrates and combining with network analysis.

WP4

Agronomic practices for in-crop generation of ecosystem services

Field experiments in different pedoclimatic regions, inspired and driven by laboratory evidence, are currently being developed to show if and how agronomic practices within the crop, such as variety mixtures, companion cropping, the use of organic mulching materials and soil cover management, can enhance in-crop generation of ecosystem services. The “ecostacking” of the “best bets” in integrated approaches, to be tailored and implemented at farm level with the help of the modeling tools developed by EcoStack, will allow to exploit at the best the obtained results in different agricultural scenarios across Europe.



Work packages: overview

WP5

Plant microbial communities and endophytes as in-crop ecosystem service providers

Management of microbial communities in agricultural crops constitutes promising possibilities for sustainable crop protection, but strategies on how to include them in the cropping practices to utilize their full potential needs to be further developed. In WP5 of EcoStack, we are studying how cropping practices and introduced microorganisms can be used and combined for optimal crop protection, in experiments ranging from laboratory to field scale, and from mechanisms at gene level up to changes in community structure and how this is reflected on crop yield.

WP6

Bio-inspired tools to support functional biodiversity for pest control

The overarching objective is to enhance the impact of natural antagonists through biologically-inspired technologies, which will enable the pest management capacity of biological control agents (BCA) to be taken beyond the organism level. This has been pursued by (1) generating new biopesticides from natural antagonists of pests and pathogens; (2) developing bioinspired technologies for reducing pest fitness and enhancing BCA impact; (3) using plant signaling molecules to enhance both direct and indirect defence barriers. The risk associated with the use of the new insect control tools and technologies is currently being assessed.

WP7

Ecotoxicology of ecosystem service providers

To maintain high productivity in modern agriculture and secure long-term biodiversity in agricultural landscapes it is necessary to know in detail the biology, ecology and (eco)toxicological sensitivity to pesticides of non-target organisms, in particular those having key roles in ecosystem service provision – the ESPs. This has been pursued by: (1) collecting information on biology and ecology of key ESP species to feed the modelling studies; (2) assessing the sensitivity to major pesticides of major biological control agents in different European Countries; (3) assessing the impact on honey bees and other pollinators of major pesticides and of their combinations.



Work packages: overview

WP8

Integrative modelling of multiple drivers for ecosystem service providers

To predict impacts of EcoStack proposed strategies on agriculture, functional biodiversity and environment, integration of agricultural management, landscape characteristics, organism ecology and behaviour is performed using ALMaSS. This has been pursued by: (1) developing landscape models to support simulation of ecosystem service providers in 11 European countries and in collaboration with other H2020 projects; (2) developing/expand ALMaSS models of ecosystem service provider such as aphids, lacewings, bees, and beetles; (3) evaluating the management strategies of EcoStack at local and regional scales with the aim it to identify the best, complimentary management strategies to support ecosystem service providers.

WP9

Social and economic aspects of enhancing functional biodiversity

A combination of region specific cost-benefit analysis of the innovations generated by EcoStack, along with the innovative use of ALMaSS to define suitable “realistic uptake scenarios” are the most innovative aspects of an in-depth evaluation and effective enhancement of the socio-economic impact of EcoStack. Over the first 18 months, identified economic, environmental and social effects of EcoStack strategies and measures were systematically compiled in an “Effect Matrix”. A description of the status quo scenario of the current farming situation and implementation of agri-environmental measures as the baseline for the cost-benefit-analysis was designed, so far, for Germany and Portugal.

WP10

Policy options and dissemination of project results

To promote new policy options for the current regulatory frameworks dealing with microbial products used for enhancing functional biodiversity to the benefit of plant production and protection, we first developed an inventory of the European regulatory systems and, then, a proposal for improving policies. To ensure dissemination, uptake and widespread implementation of EcoStack results, we produced a number of products all available from EcoStack website (<https://www.ecostack-h2020.eu/>). Social media channels have been established to enhance communication. The Stakeholder Learning Platform was set to maximize the impact of the two-way interaction between EcoStack and a variety of stakeholders.



EcoStack

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