



# MINAGRIS

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## Hello, and a warm welcome...

...to the second edition of our newsletter!

It has been a busy period since our last edition. In this edition we share news on our first field campaign, our 2022 plenary in Ljubljana, several successfully completed deliverables and our newly launched citizen science app, SoilPlastic, amongst other things.

We hope you enjoy reading our newsletter. Please get in touch if you have any questions or comments: [coordination@mail-minagris.eu](mailto:coordination@mail-minagris.eu).



Professor Violette Geissen,  
Project coordinator



# FIELD SAMPLING CAMPAIGN



Since our last edition, MINAGRIS partners working at our 11 case study sites across Europe have completed a substantial field sampling campaign. This involved setting researchers and willing recruits loose in the field to take samples from 10 different farms.

Wild weather, including heatwave and drought conditions (making digging a real challenge!) were braved to get samples from high- and low-plastic fields at each site. These will be analysed in line with our multiscale experiment protocol.

The last samples are now making their way across Europe to their respective labs, where analysis has already begun. We are hoping to have our first results from this stage of the project out next Spring.

Site number	Geographical Region	Country
1	Alpine	Slovenia
2	Atlantic	Netherlands
3	Atlantic	United Kingdom
4	Boreal	Estonia
5	Continental	Switzerland
6	Pannonian Continental	Austria
7	Humid subtropical	Italy
7	Temperate subcontinental	Italy
8	Mediterranean	Greece
9	Pannonian	Austria
10	Semiarid	Spain
11	Continental	France





Back in October, partners travelled from across Europe to meet for our annual plenary. It was hosted this year by the Slovenian partners in the beautiful city of Ljubljana.

This is our annual opportunity to gather and discuss where we stand as a project, our next steps, and the best ways to navigate the hurdles and opportunities that we might meet along the way.

We also heard guest speakers from the University of Ljubljana. They presented cutting edge research on plastic additives bisphenols, and big data management for better research outcomes.



A view from the farm  
with Andrej Turk,  
Dolenjska,  
Slovenia



A view from the farm  
with Pavel Hrovat,  
near Šentjernej,  
Slovenia



In addition to talking through the various work packages, we had the chance to visit two of the Slovenian case study's farms to get a better understanding of the challenges they face and their reasons for taking part. Click the videos (left) to view a short interview with the farmers Pavel and Andrej.

Overall, everyone left better connected, brimming with ideas, and with an even bigger jobs list than when they arrived! We look forward to meeting again next year.



# NEW MINAGRIS SoilPlastic APP



The SoilPlastic app has landed! Dr Taru Sanden of MINAGRIS (known for her work on the Teabag Index) and team co-developed it with citizen science app specialist Spotteron. The app will enable citizen scientists to survey plastics in soils, and join others in mapping them across Europe and beyond. Scan your QR code to download now!

 **SoilPlastic**  
powered by  MINAGRIS

 GET IT ON  
**Google Play**

 Download on the  
**App Store**

 **SPOTTERON**  
www.spotteron.net



## WORLD SOIL DAY 2022

MINAGRIS co-ordinated the launch of our new SoilPlastic app with this year's World Soil Day, Monday 5th December, and made quite a splash. Well over 8,000 people engaged with our work on Twitter alone this week, and partners FiBL, AGES, and the CCRI helped spread the message further through their own platforms. As a result, we have high hopes for downloads of the app and ongoing engagement with our wider work.



Food and Agriculture  
Organization of the  
United Nations

**World Soil Day**  
5 December 



EU Horizon 2020 grant agreement  
no. 101000407



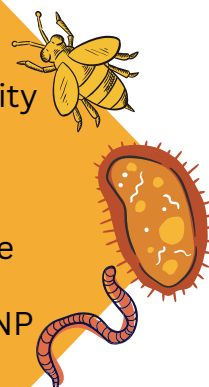
## Multiscale Experiment Protocol (Deliverable 4.1)

This document sets out a series of experiments at different scales that we will use to define the effects of micro- and nano-plastics (MNP) on agricultural soils. We will assess the impacts of MNP both alone and in combination with other organic pollutants including pesticides and veterinary drugs.

This report gives a detailed overview of the experiments that will be performed at each experimental scale, who will be responsible for the experiments, how these experiments will be organised and what measurements and endpoints will be targeted at each experimental scale.

### BIOLOGICAL ASSESSMENT

1. Toxicity of MNP on:
  - a. soil microbial function and diversity
  - b. soil fauna
  - c. the soil food web
2. Toxicity of MNP in combination with pesticides and veterinary drugs on the above
3. Indicators of soil biota affected by MNP
4. Characterisation and monitoring of sublethal effects of MNP on bees



### PHYSICAL / CHEMICAL ASSESSMENT

1. Effects of MNP on physical properties related to water
2. Effects of MNP on soil chemical properties
3. Impact of MNP on crop productivity / plant physiology



### PLASTIC DEGRADATION AND TRANSPORT

1. Degradability of MNP in soils
2. Biotic and abiotic transportation of MNP

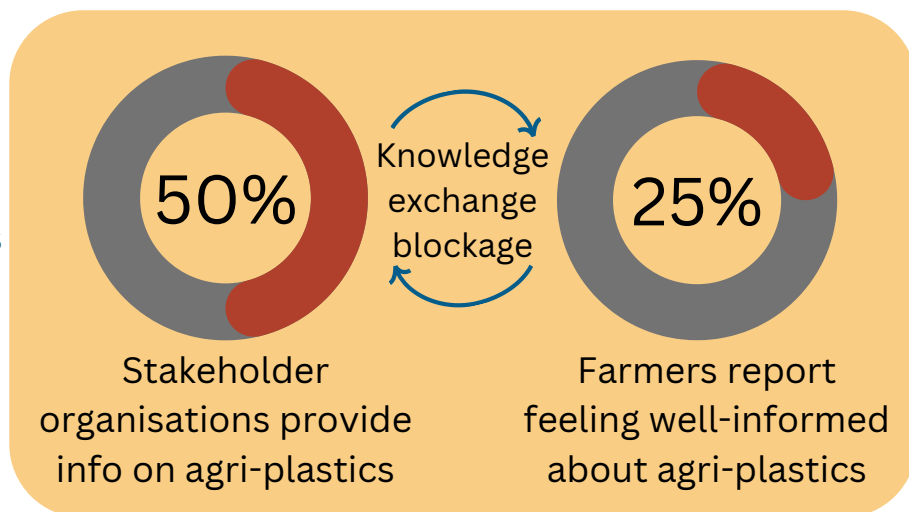


## Assessment of Agricultural Knowledge and Innovation Systems on Farmer Plastic Use and User Needs (Deliverable 8.2)

Working with farmers and stakeholders, this deliverable assesses the state of knowledge held and shared by people involved with agri-plastic use across the value chain.

It considers what information is currently available to them on agri-plastics, contamination of soils by them, best practices, recycling, and the knowledge gaps on these. It sheds light on key practices for better knowledge exchange between producers, suppliers and users of agri-plastics.

It appears that long value chains, complexity around plastic types and recyclability, issues around trust and false claims, and tensions between research and industry act as barriers to improving knowledge on agri-plastics. Key enablers to overcoming these challenges and making real-world change on soil plastics are proposed. Critical amongst these is building strong relationships between farmers, stakeholders and researchers through-project and beyond.

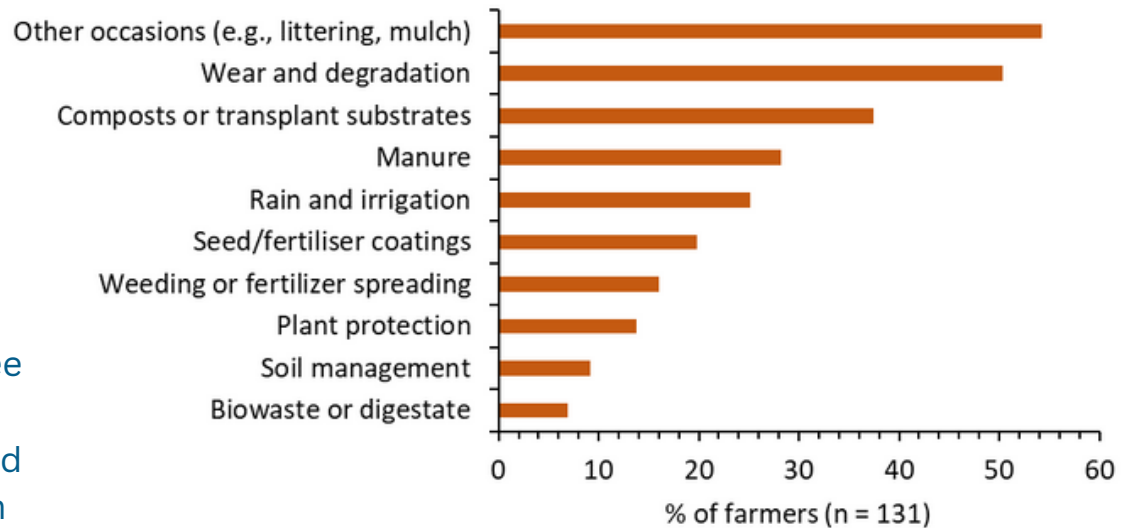




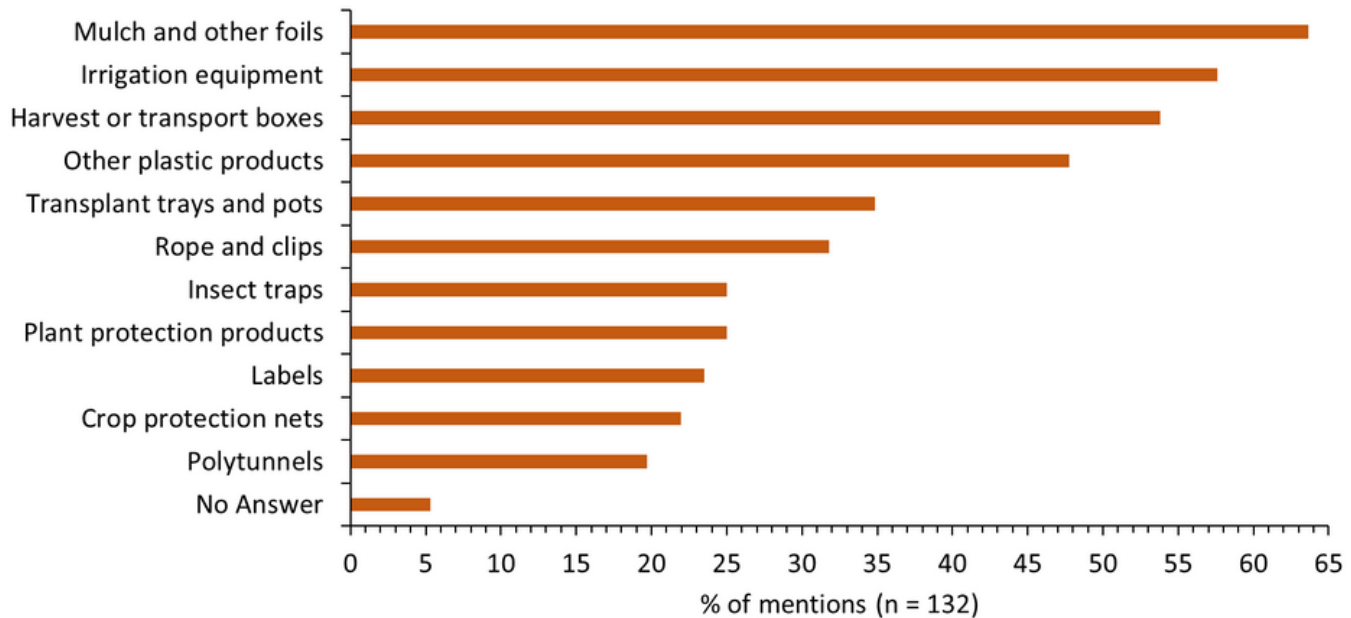
## Report on Typology of Case Study Farms and their Plastics Use (Deliverable 3.1)

All 133 of our case study farmers from Europe were interviewed. We found that the main farm types included cereals, horticulture, orchards, and olive groves. Participants were asked how much plastic is being used in their fields and the extent to which they see this as a problem. Farmers were also asked about their information needs.

On which occasions do you think plastic could have entered your production system unintentionally over the past 10 years?



What types of plastics have you used on the farm over the past 10 years?



It appears that many farmers across Europe rely on plastic-based products for many of their activities. The main plastics used include mulches, irrigation equipment, and plastic transport boxes. In addition, there are clear information needs surrounding agricultural plastics, with 75% of surveyed farmers not feeling well informed about their potential impacts on soil health. MINAGRIS will attempt to address some of these knowledge gaps.

# PAPILLON-MINAGRIS STAKEHOLDER FORUM



In October, a joint MINAGRIS-PAPILLONS stakeholder forum on soil plastics was hosted by our sister project Papillons. The subject of focus was "Plasticulture: An International Perspective on Environmental Sustainability".

Hosted both at the Greek museum of agriculture, Athens and online, partners, stakeholders and organisations presented from across the world, including the FAO, UNEP, and European Bioplastics. To watch the full event click [here](#):

The next joint stakeholder forum will be held in March 2023 and hosted by MINAGRIS.



@PapillonsUe



<https://www.papillons-h2020.eu>

## KEY READING



Congratulations to Esperanza and team for their new paper out in Environmental Pollution. They found that soils exposed to mulch films had the highest microplastic content, whilst ditches surrounding fields that have had compost applied contained the highest microplastic load.

[Huerta Lwanga, E. et al. \(2023\). Microplastic appraisal of soil, water, ditch sediment and airborne dust: The case of agricultural systems. Environmental Pollution.](#)

The UN FAO have a new report out on the levels of microplastics in food commodities. This review sets out the state of our existing knowledge on what foods are known to contain plastics, and what the effects of this are thought to be on human health, alone and in combination with other contaminants.

[Garrido Gamarro, E. & Costanzo, V. 2022. Microplastics in food commodities – A food safety review on human exposure through dietary sources. FAO.](#)



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no. 101000407



There are many threads to the MINAGRIS tapestry. These new shorts give an overview of all the different elements of our work, and how they weave together.

Click the link to watch, or subscribe to our YouTube channel [here](#).



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 1

Co-ordination and project management

With Dr Esperanza Huerta Lwanga, Wageningen University, the Netherlands



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 2

Harmonisation of monitoring and methodologies

With Dr Dr. Abdallah Alaoui, University of Bern, Switzerland



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 3

Assessment of the use of plastics across Europe and resulting micro- and nano-plastic concentrations in soils

With Dr Joelle Herforth-Rahmé, FiBL, Switzerland



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 4

Assessment of the impact of micro- and nano-plastics, and combined effects with other stressors, on soil biodiversity

With Prof Dimitrios Karpouzas, University of Thessaly, Greece



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 5

Assessment of the impact of micro- and nano-plastics, and combined effects with other stressors, on soil physical and chemical properties, and crop productivity.

With Dr Špela Železnikar, University of Ljubljana, Slovenia



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 6

Degradability, mobility and fate of micro- and nano-plastics, and other stressors, in the soil environment

With Prof Edoardo Puglisi, Università Cattolica del Sacro Cuore, Italy



## MINAGRIS

Micro- and nano- plastics in agricultural soils

### Introducing work package 7

Synthesis of the impact of micro- and nano-plastics, and other stressors, on ecosystem services, and overall sustainability analysis

With Ildiko Heim, FiBL, Austria



MINAGRIS featured in Swiss independent newspaper 'WOZ'.



The CCRI, FiBL, AGES and the University of Gloucestershire all launched press releases on the SoilPlastic app, collectively receiving good traction.



Dr Esperanza Huerta Lwanga spoke at a roundtable event with industry group European Bioplastics.



Dr Huerta Lwanga also gave a lecture on microplastics and human health.



Dr Charlotte Chivers introduced MINAGRIS and the SoilPlastic app on BBC News.


**Steve Kitchen - 05/12/2022 - BBC Sounds**

Trusted local news, information and advice, and Make A Difference for your afternoon.




Popular UK website 'Countryside Jobs Service' publicises SoilPlastic app.



 [@minagris\\_EU](https://www.youtube.com/@minagris_EU)

   [@minagriseu](https://www.instagram.com/minagriseu)

 [@MINAGRIS - H2020 project](https://www.linkedin.com/company/minagris-h2020-project)

 [coordination@mail-minagris.eu](mailto:coordination@mail-minagris.eu)

**Stay in touch!**

# MINAGRIS PARTNERS



University of Ljubljana



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DARMSTADT



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