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MINAGRIS Micro and NAno plastics in AGRicultural Soils & Mikroplastik aus Strassenverkehr und Biogasgülle im Boden

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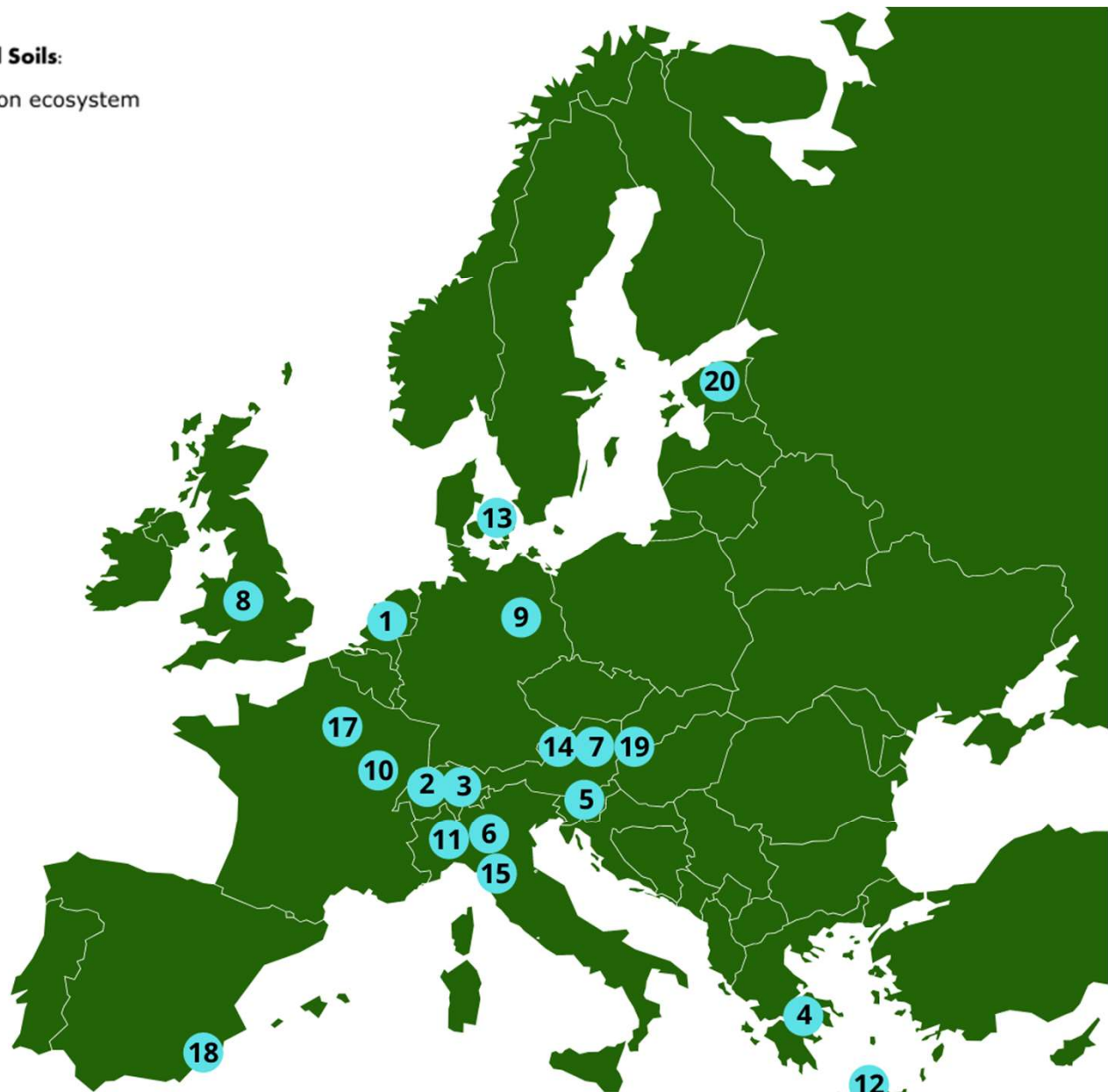
MINAGRIS **Micro- and NA**no-Plastics in **AG**Ricultural Soils:

(<http://minagris.eu/>)

Sources, environmental fate and impacts on ecosystem services and overall sustainability

MINAGRIS partner organisations

1. Wageningen University (NL)
2. University of Bern (CH)
3. FiBL Switzerland (CH)
4. University of Thessaly (GR)
5. University of Ljubljana (SL)
6. Università Cattolica del Sacro Cuore (IT)
7. FiBL Austria (AU)
8. University of Gloucestershire (UK)
9. Freie University Berlin (DE)
10. INRAE (FR)
11. Polytechnic of Turin (IT)
12. CHQ Technologies (PC) (GR)
13. Technical University of Denmark (DK)
14. Austrian Agency for Health and Food Safety (AU)
15. NOVAMONT (IT)
16. Wageningen Food and Biobased Research (NL) (same as 1)
17. Euroquality (FR)
18. Camposeven (ES)
19. Spotteron (AU)
20. Estonian University of Life Sciences (EN)



MINAGRIS overall objective

The overall aim of MINAGRIS is to contribute to **healthy soils** in Europe by providing a deeper understanding and tools to assess the

- **impact of MP and NP in agricultural soils** on
- **biodiversity, plant productivity and ecosystem services** and
- their **disaggregation fate** in the environment and
- provide recommendations for **sustainable use of plastic** in agriculture at the farm and field levels for
- ensuring **safe and economically viable food systems** in Europe.



WP3 – Assessment of the use of plastics accross Europe and the resulting MNP levels in soils

Inventory of plastics sale & use at national and EU level based on 3 reports from 2021 with knowledge gap analysis

Survey on intentional & unintentional plastics on farms in 11 Case Study Sites

Soilplastic app development for data collection & raising farmer and citizen awareness

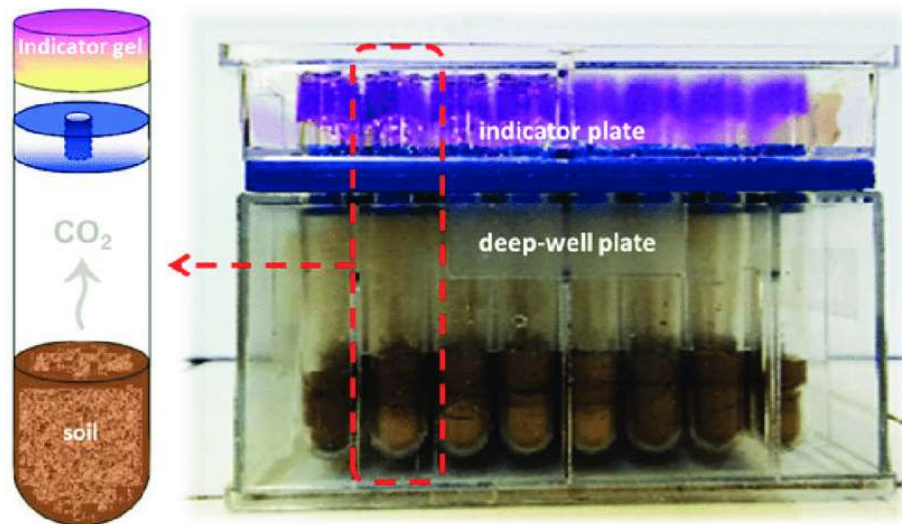


Development & validation of methods for MNP quantification in soil



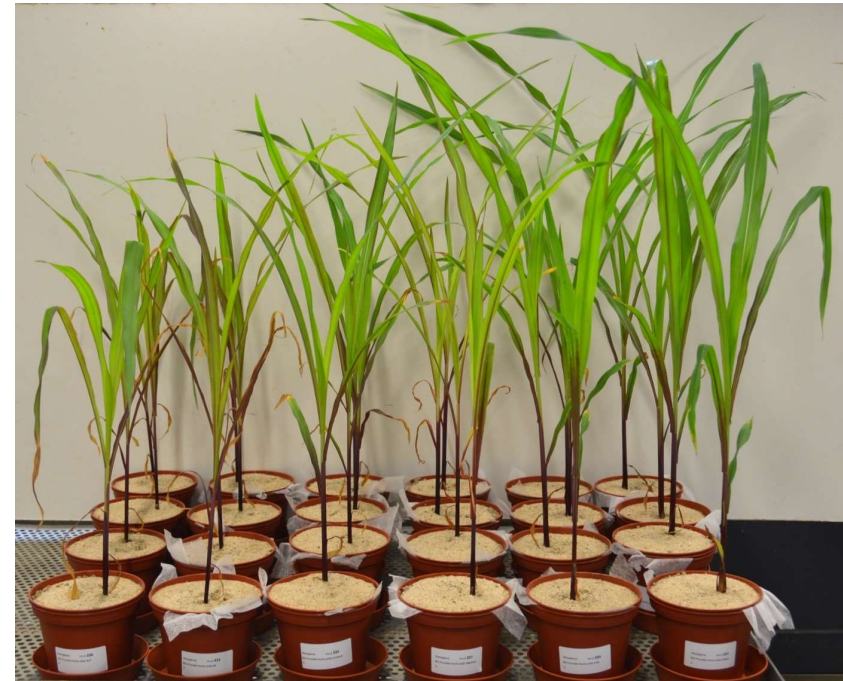
Impact of plastics, its additives and their combination with pesticides and veterinary drugs on soil microbiota, plant growth and plant physiology

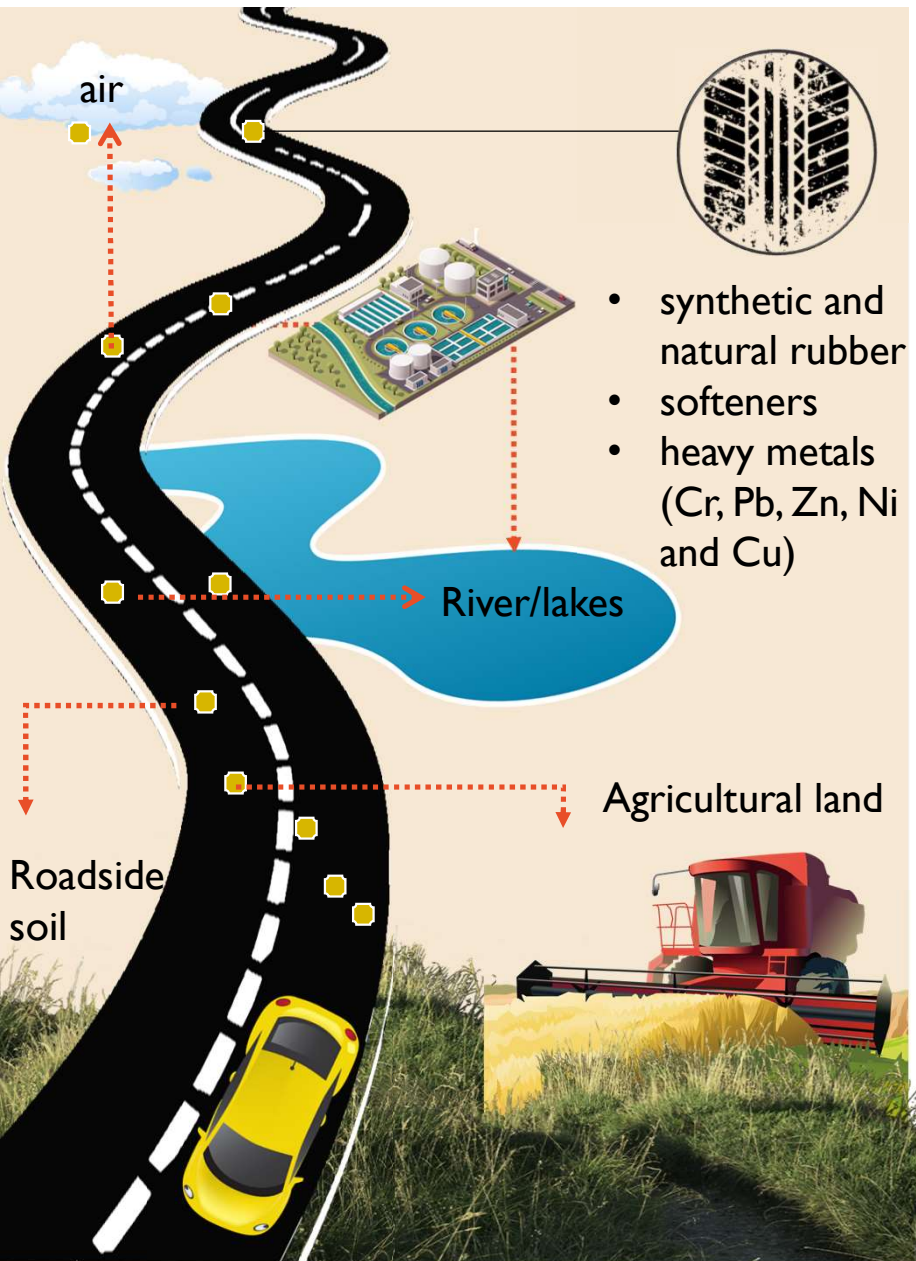
WP4 MicroResp Substrate Utilisation assay



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WP5 Controlled pot trials with test plants

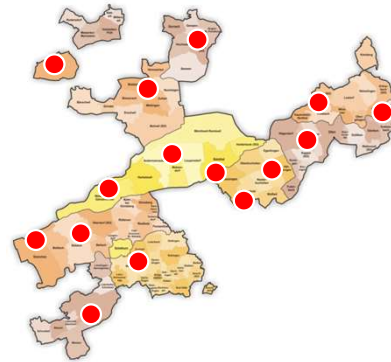




Microplastic from tyre wear particles (TWP)

- Tyre wear particles (TWP) contribute to around 94% of microplastic emissions into the Swiss environment²
- There are <10 studies that actually measure TWP in the environment³
- Hardly any data on the effects of TWP on agricultural productivity and soil functioning

Project 1: Assess TWP contamination in soils near roads



Project 2: Assess effects of TWP contamination on plant performance and soil functioning



TWP concentration →

¹Baensch-Baltruschat et al., 2021, ²Sieber et al., 2020, ³Mennekes et al. 2022

Thank you – Questions?

Specific objectives of MINAGRIS

- Establish a comprehensive overview of plastic (un)intentional use and the resulting MNP concentrations in soils through monitoring in 11 carefully chosen Case-Study Sites (CSS) across Europe (WP3)
- Co-create a harmonized and standardized methodology for coherent analysis of the use and fate of plastics and the impact of MNP on European agriculture (WP2, WP3)
- Build a strong multi-actor approach (MAA) involving a large community of relevant stakeholders that will guarantee and enable a robust assessment of the impact of MNP on agricultural soils with direct impact on policy and EU regulatory frameworks (WP2)
- Assess the impact of MNP on soil biodiversity (WP4), physical and chemical soil properties (WP5) agricultural productivity (WP5) and related ESS (WP7)
- Assess the impact of MNP, in interaction with pesticides, veterinary drugs and additives on soil biodiversity (WP4), soil physics and chemistry (WP5), agricultural productivity (WP5) and related ESS (WP7).
- Determine the contribution of different processes to the disaggregation and degradation of plastics in agricultural soils and to the transport of MNP to other environmental compartments (WP5, WP6)
- Identify benefits and risks linked to various un-/intentional uses of plastics in agricultural production across Europe in an overall sustainability analysis (WP7)
- Inform a large audience of stakeholders and the wider public on the new knowledge produced by MINAGRIS on environmental and socio-economic impacts of MNP ensuring maximum impact of MINAGRIS in decision-making, policymaking, and innovation concerning the use of plastics in agriculture (WP8)
- Provide farmers with operational knowledge and tools to assess their MNP exposure, and support them in adopting sustainable agricultural practices in an informed manner (WP3, WP7 and WP8)