



CONSORTIUM
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Assessment of the impact of copper on the health of terrestrial and aquatic ecosystems

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Keywords

Copper
Low dose
Ecotoxicity
Multi-targets
Multi-environmental compartments

Thematics involved

Biogeochemistry
Functional ecology
Community ecology
Ecotoxicology
Agronomy

Departments involved

[AgroEcoSystem](#)

[AQUA](#)

[ECODIV](#)

[SPE](#)

Units involved

[UMR ISPA](#)

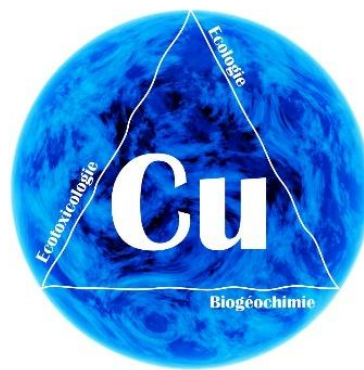
[UR EABX](#)

[UMR ECOSYS](#)

[UMR SAVE](#)

Backgrounds and challenges

COP26 aims to build an interdisciplinary consortium around a comprehensive approach to assessing the environmental impact of the use of copper fungicides in agriculture. By inviting agronomists, biogeochemists, ecotoxicologists and ecologists to initiate a joint discussion on copper, its uses in crop protection, its dynamics in soils and waters, its effects on soil and aquatic organisms, and on the ecological functioning of soils and waters, this project aims to support INRAE on issues related to global health, in particular by bridging biodiversity, ecosystem services, plant health and animal health.



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Objectives

Copper (Cu) contained in copper fungicides used to protect crops (especially vines) against mildew is a fungicide that agriculture can hardly do without (at least in the medium term). It is therefore necessary, in addition to the search for alternatives to Cu, to accurately assess the impact of copper on environmental health and the functioning of wine-growing ecosystems at the realistic doses at which it accumulates. To date, there is a lack of data on Cu speciation in natural waters and on the toxicity of realistic doses of Cu for aquatic organisms or soil macroorganisms, as well as on the impacts of Cu on the trophic interaction networks involving these communities and the ecological functions they support.

The main objective of COP26 is therefore to i) build an interdisciplinary consortium (agronomists, biogeochemists, ecotoxicologists and ecologists) around a global approach to assess the environmental impact of the use of copper fungicides in agriculture and ii) initiate a common discussion on copper, its uses in crop protection, its dynamics in soils and waters, its effects on soil and aquatic organisms, and finally on the ecological functioning of soils and waters.

Approaches

By discussing visions of partners in assessing the effects of copper, COP26 will enable the sharing of approaches (methodologies, concepts) and of diverse expertises related to the low dose" issue, differences between environmental compartments (soils and soil drainage waters), and the understanding of bioavailability, bioaccumulation, and ecotoxicity at different scales of impact. The organization of a writing retreat will lead to the preparation of an opinion article in which we will provide an state-of-the-art overview of Cu effects on communities and the functioning of agroecosystems, at the concentrations (and forms) at which it accumulates. The conceptual and methodological bottlenecks to better understand Cu effects on the overall health of the agroecosystems where it is applied will also be described. Through the consortium's interdisciplinary expertise, COP26 will provide a reflection on the environmental impact of copper useful for the agricultural world and for regulators, on the diagnostic tools for assessing copper pressure in soils and drainage waters of wine-growing soils, as well as on the models used to predict the ecotoxicological impact of copper fungicides by considering the relationships between bioavailability, bioaccumulation and ecotoxicity of Cu for a wide range of targets and traits.