

# Environmental validation of the sustainable management of olive effluents as an herbicidal agent

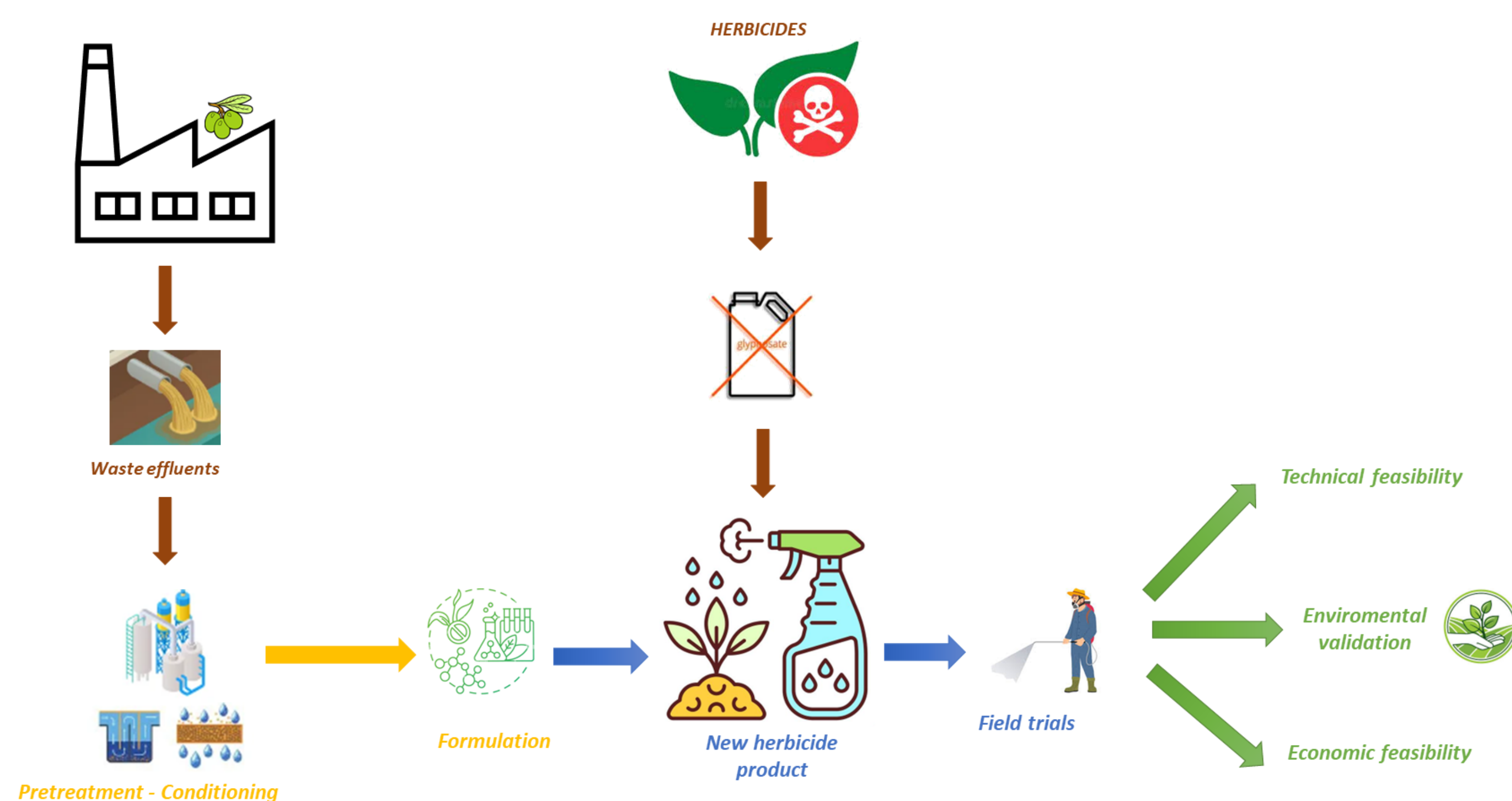
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## INTRODUCTION

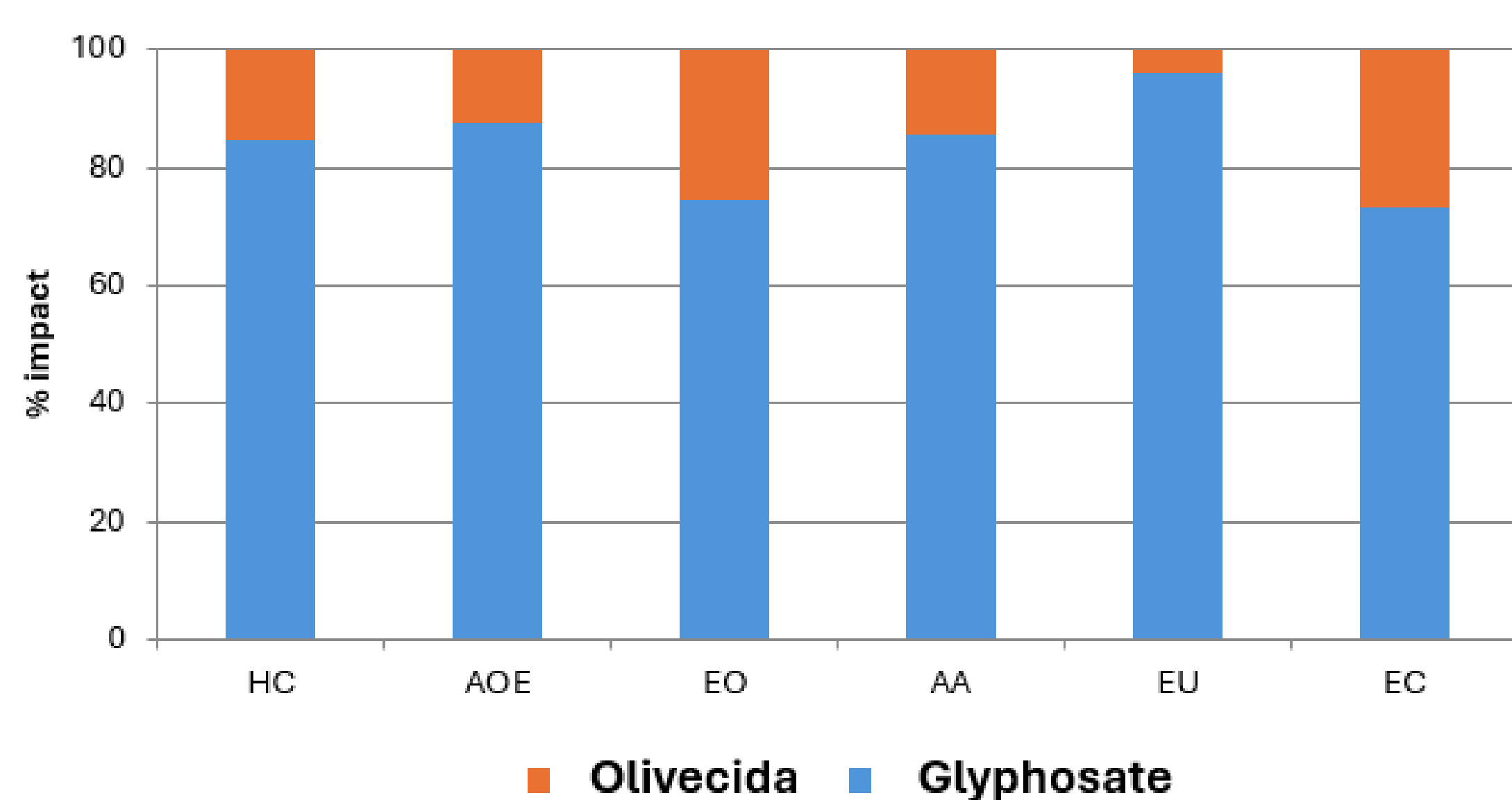
Table olive processing industries generate large volumes of wastewater with a high pollution load due to their content of organic matter, suspended solids, fats, acidic and basic pH, phenolic compounds and high conductivity associated with excess salt. There are procedures for the purification of these waters, but at present they are not economically profitable, and the solution is storage in ponds, which have limitations. On the other hand, the use of herbicides, particularly glyphosate, entails environmental and human health risks due to their persistence, bioaccumulation and possible contamination of water and soil. Its indiscriminate application affects organisms essential to ecosystems, such as pollinators and aquatic species, generating a large-scale environmental problem. Both sectors require more sustainable treatment and management strategies to mitigate their impacts.



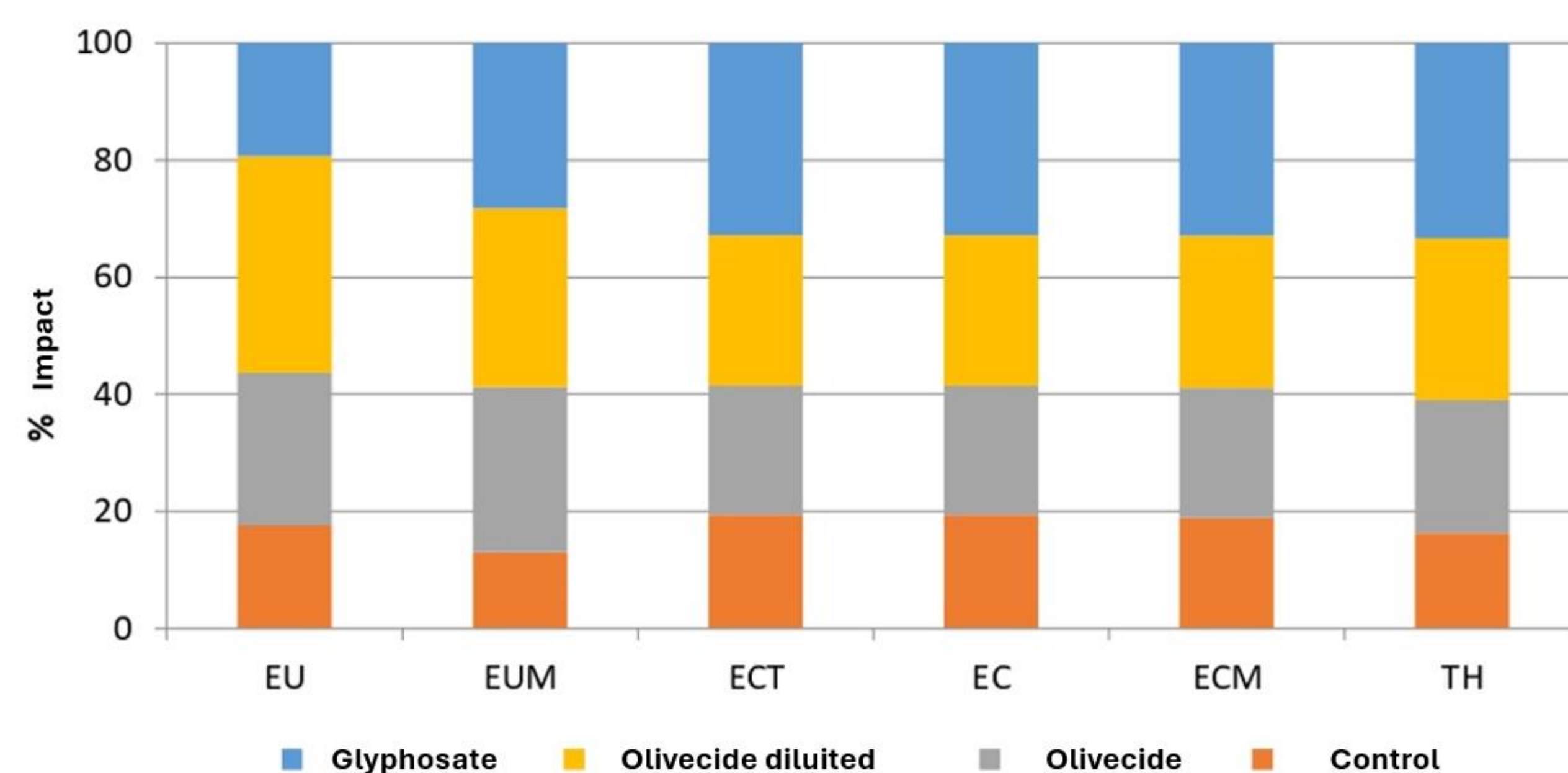
## RESULTS



1. Control
2. Glyphosate
3. Olivecida
4. Olivecida diluted



Carbon footprint HC, Stratospheric ozone depletion AOE, Effect of ozone on human health EO, Acidification AA, Eutrophication in freshwater EU, Ecotoxicity in freshwater EC



Freshwater Eutrophication EU, Marine Eutrophication EUM, Terrestrial Ecotoxicity ECT, Freshwater Ecotoxicity EC, Marine Ecotoxicity ECM, Human Toxicity TH

## CONCLUSIONS

- The best pre-treatment is filtration, economically and technically.
- The F3 formulation (Olivecida) was identified as the most suitable among all, as it presents a favorable balance in its properties, making it the best candidate for application.
- From an environmental point of view, the Life Cycle Assessment revealed that the production of Olivecida has significant impacts, especially in the transport and materials stage. In addition, filtration generates a water cost that is not sustainable.
- In terms of soil application, although ecotoxicity and toxicity impacts were lower than with glyphosate, eutrophication remains a problem. Further studies are recommended to assess its long-term impact and to optimize its application.
- The economic study indicates that industrial-scale production of the herbicide Olivecida could generate a net benefit from being a by-product.

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