

EGU22-2989

<https://doi.org/10.5194/egusphere-egu22-2989>

EGU General Assembly 2022

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## Insights into using HAIR2014 tool for estimating soil pesticide risks in Irish grasslands for selected herbicide active substances

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In this study we used the HAIR (HARmonized environmental Indicators for pesticide Risk) modelling tool <sup>[1],[2]</sup> for estimating the risks of pesticide use in Irish grassland soils, as part of the PROTECTS research project <sup>[3]</sup>. This project aims to provide baseline information in an Irish context to build towards mitigating the effects of pesticide use on terrestrial ecosystem services, focusing on pollinators and soils. Our study focused on estimating the potential terrestrial risks posed by pesticides on soils in the form of earthworm terrestrial risk-indicators (ETR<sub>e</sub>) using the HAIR2014 <sup>[2]</sup> for selected herbicide active substances (ASs). The work involved a refinement of the HAIR2014 tool for Irish conditions, as explained in Premrov et. al (2021) <sup>[4]</sup>. In brief, this included upgrading the spatial (GEO) database, climate data inputs and 'crop-regions' for Ireland <sup>[4]</sup>. An Irish grassland land-use (LU) map was derived from PERSAM data/maps <sup>[5]</sup> and the remaining inputs (i.e. soil inputs) were obtained from the HAIR2014 default databases <sup>[2]</sup> (assigned to the new grid <sup>[4]</sup>). The pesticide application/usage inputs were derived from published national surveys on plant-protection product (PPP) usage for Ireland <sup>[6]</sup>. Recent advancements include work on building a compound-database for HAIR2014 for the selected ASs of interest (e.g. glyphosate, MCPA, MCPP, 2,4-D, 2,4-DB, etc. ). This requires information for a number of physico-chemical and other parameters for these ASs, which are sourced from EU regulatory and evaluation data and EFSA publications, in addition to other relevant sources. We will present the generated HAIR2014 simulation outputs in the form of ETR<sub>e</sub> risk indicator maps for selected herbicide ASs for Irish grasslands. The aim of this work is to generate pesticide risk indicator output maps for soils in Irish grasslands that will inform an area-based risk assessment, as well as assist the development of recommendations for potential future national soil-monitoring and sampling needs.

### Acknowledgements

Thanks go to Irish Department of Agriculture, Food and the Marine (DAFM) for funding the PROTECTS project.

## Literature

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