

Metadata for

Pesticide mixtures in soil: a global outlook

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Description

This data set includes four global maps of aggregated pesticides: (1) the total pesticide content in the topsoil of global croplands expressed in the unit of mg/kg-soil; (2) the number of pesticides detected in the topsoil; (3) the pesticide leaching rate to below the root zone expressed in the unit of mg/m²/year; and (4) the number of pesticides that exceeded a leaching rate of 1 mg/m²/year. This data set also includes two zip folders containing the topsoil residue and leaching rate of individual pesticide substances in nine different cropping systems. The surface area of the nine cropping systems can be obtained from the PEST-CHEMGRIDS dataset (Maggi et al., 2019).

A zip folder containing an example of input files required to run the model is attached together with this data set. Details of the methods used to produce these maps and the tabulated data can be found in Tang F.H.M and Maggi F. (2021). Pesticide mixtures in soil: a global outlook, Environmental Research Letters.

Data products

Total pesticide content in the topsoil of global croplands Units : [mg/kg-soil] Value range: 0 – 806.32 File name: Topsoil_pesticide_residue.tif	Pesticide leaching rate to below the root zone Units : [mg/m ² /year] Value range: -8×10^{-10} – 1.6×10^4 File name: BRZ_leaching_rate.tif
Number of pesticides detected in the topsoil Units : [-] Value range: 0 – 18 File name: Topsoil_number_of_pesticides_detected.tif	Number of pesticides exceeding 1 mg/m²/year Units : [-] Value range: 0 – 16 File name: BRZ_leaching_number_of_pesticides_detected.tif
Topsoil_Residues_CROP_ACTIVE_INGREDIENT.zip Description: Residue of 92 active ingredients in the topsoil in 9 cropping systems Units : [mg/kg-soil] Value range: 0 – 538.22 File name: Topsoil_residue_[Crop type]_[Active ingredient name].tif	BelowRootZone_Leaching_CROP_ACTIVE_INGREDIENT.zip Description: Leaching rate of 92 active ingredients to below the root zone in 9 cropping systems Units : [mg/m ² /year] Value range: -1×10^{-11} – 6.22×10^3 File name: BRZ_leaching_[Crop type]_[Active ingredient name].tif
Model_input_files.zip “Param_PSTMIX.inp” – input file defining the model structure and parameters for BRTSim “Table_PSTMIX.txt” – table file defining all boundary fluxes	

Maps details

Resolution: 0.5° x 0.5° (about 55 km at the equator)

Pixel resolution: 360 by 720

Coordinates: standard WGS84

Bounding box: 180°E-180°W; 90°S-90°N

Value for non-cropland: -1 Value for water: -2 Value for no data: -3

Recommended Citation

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Use Agreement

This data set is licenced by CC BY 4.0. Data can be freely downloaded for research, study, or teaching, but must be cited appropriately.

Reference

Maggi F., F. H.M. Tang, D. la Cecilia and A. McBratney (2019) PEST-CHEMGRIDS, global gridded maps of the top 20 crop-specific pesticide application rates from 2015 to 2025, *Scientific Data*, vol. 6, no. 1, pp. 1-20.