

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: Overview of the 1705 studies included in the meta-analysis of the impact of pesticides (i.e., insecticides, herbicides and fungicides) on non-target organisms (i.e., animals, plants and microorganisms)

File Name: Supplementary Data 2

Description: Classification of old and new pesticides

File Name: Supplementary Data 3

Description: Classification of model and nonmodel species

File Name: Supplementary Data 4

Description: Environmentally relevant concentrations of pesticides in aquatic ecosystems

File Name: Supplementary Data 5

Description: Results of the meta-regression analysis for the responses of taxonomic groups (animals, plants and microorganisms) and their response categories (growth, reproduction, behaviour and biomarker) to insecticide categories. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 6

Description: Results of the meta-regression analysis for the responses of taxonomic groups (animals, plants and microorganisms) and their response categories (growth, reproduction, behaviour and biomarker) to fungicide categories. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 7

Description: Results of the meta-regression analysis for the responses of taxonomic groups (animals, plants and microorganisms) and their response categories (growth, reproduction, behaviour and biomarker) to herbicide categories. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 8

Description: Statistical values for the relationship between added application rates in the treatments of pesticides, insecticides, fungicides or herbicides over the control without any pesticides and the different effect sizes of animals, plants or microorganisms along with fitted meta-regression lines across all studies. Absolute values of 'biomarker' values were taken

File Name: Supplementary Data 9

Description: Results of the meta-regression analysis for the responses of each 560 animal species and their response categories (growth, reproduction, behaviour and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 10

Description: Results of the meta-regression analysis for the responses of each 192 plant species and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 11

Description: Results of the meta-regression analysis for the responses of each 78 microorganism species and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 12

Description: Results of the meta-regression analysis for the responses of each animal family and their response categories (growth, reproduction, behaviour and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 13

Description: Results of the meta-regression analysis for the responses of each plant family and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 14

Description: Results of the meta-regression analysis for the responses of each microorganism family and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 15

Description: Results of the meta-regression analysis for the responses of each animal order and their response categories (growth, reproduction, behaviour and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 16

Description: Results of the meta-regression analysis for the responses of each plant order and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 17

Description: Results of the meta-regression analysis for the responses of each microorganism order and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 18

Description: Results of the meta-regression analysis for the responses of each animal class and their response categories (growth, reproduction, behaviour and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 19

Description: Results of the meta-regression analysis for the responses of each plant class and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 20

Description: Results of the meta-regression analysis for the responses of each microorganism class and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 21

Description: Results of the meta-regression analysis for the responses of each animal phylum and their response categories (growth, reproduction, behaviour and biomarker) to 298 insecticides, 129 fungicides and 141 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 22

Description: Results of the meta-regression analysis for the responses of each plant phylum and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 23

Description: Results of the meta-regression analysis for the responses of each microorganism phylum and their response categories (growth, reproduction and biomarker) to 243 insecticides, 104 fungicides and 124 herbicides. Absolute values of 'biomarker' values were taken. In addition to the estimated mean effect sizes, test-statistics (t-value), and the associated P-values, the number of studies and observations available for each predictor category are also presented

File Name: Supplementary Data 24

Description: Statistical values for the relationship between added application rates in the treatments of 243 insecticides, 104 fungicides and 124 herbicides over the control without any pesticides and the different effect sizes of each 560 animal species along with fitted meta-regression lines across all studies. Absolute values of 'biomarker' values were taken. The absolute value of pesticide application rates was transformed into a relative value. Specially, the lowest pesticide application rate (not zero) among multiple pesticide application rates with the same unit was considered to be 1, and the value of the other pesticide application rates with the same unit (excluding the lowest and zero application rates of pesticides) were considered to be the multiples of 1, and finally log2-transformation was conducted for all the relative value of multiple pesticide application rates to show the log-transformed value on the x axis. Threshold application rate over the control denotes the pesticide application rate that make the growth, reproduction, behaviour and biomarker of each animal species begins to decrease

File Name: Supplementary Data 25

Description: Statistical values for the relationship between added application rates in the treatments of 243 insecticides, 104 fungicides and 124 herbicides over the control without any pesticides and the different effect sizes of each 192 plant species along with fitted meta-regression lines across all studies. Absolute values of 'biomarker' values were taken. The absolute value of pesticide application rates was transformed into a relative value. Specially, the lowest pesticide application rate (not zero) among multiple pesticide application rates with the same unit was considered to be 1, and the value of the other pesticide application rates with the same unit (excluding the lowest and zero application rates of pesticides) were considered to be the multiples of 1, and finally log2-transformation was conducted for all the relative value of multiple pesticide application rates to show the log-transformed value on the x axis.

Threshold application rate over the control denotes the pesticide application rate that make the growth, reproduction and biomarker of each plant species begins to decrease

File Name: Supplementary Data 26

Description: Statistical values for the relationship between added application rates in the treatments of 243 insecticides, 104 fungicides and 124 herbicides over the control without any pesticides and the different effect sizes of each 78 microorganism species along with fitted meta-regression lines across all studies. Absolute values of 'biomarker' values were taken. The absolute value of pesticide application rates was transformed into a relative value. Specially, the lowest pesticide application rate (not zero) among multiple pesticide application rates with the same unit was considered to be 1, and the value of the other pesticide application rates with the same unit (excluding the lowest and zero application rates of pesticides) were considered to be the multiples of 1, and finally log2-transformation was conducted for all the relative value of multiple pesticide application rates to show the log-transformed value on the x axis. Threshold application rate over the control denotes the pesticide application rate that make the growth, reproduction and biomarker of each microorganism species begins to decrease