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Pesticides multi-matrix exposition in a cereal plain of South-West France and relationships with pression and ecotoxicological indicators

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Résumé

The massive use of pesticides in modern agriculture has led to their presence in ecosystems with residuals found in the environment as well as in various taxa. But, few studies have investigated the contamination levels of pesticides in diverse taxa as well as several compartments of the environment in the same farmland, and even less have concomitantly related the levels of contamination to the pression indicators and the ecotoxicological data of these pesticides. Here, we present for the first-time data on pesticides residuals detected in different environment matrices (air, soil, water, pollen) and taxa (birds, earthworms, rodents) of an intensive cereal plain located in the South of Niort (South-West France). Among the pesticides studied, epoxiconazole, s-metolachlor and pendimethalin were the most frequently detected in all types of samples. Some of the detected pesticides were among the most frequently and heavily sold in the studied area. Pesticides known to be harmful for biodiversity and human health such as neonicotinoids and fungicides from the SDHI families were also detected, as well as banned or restricted ones. Ecotoxicological characterisation showed pesticides concentrations higher than toxicological thresholds of several organisms. Finally, this study rises up the importance of investigating the interconnections between environment, biodiversity and humans, and highlights the interest of the Pression-Exposition-Impact approach.

Mots-Clés: Pesticides, ecotoxicology, indicators, biodiversity, Onehealth

*Intervenant