ENVIRONMENTAL SCREENING OF AGRICULTURAL CONTAMINANTS IN FRESH WATER ECOSYSTEMS AS PART OF AMPHIBIAN BIODIVERSITY CONSERVATION

T. GOESSENS[*1], M. HOUBRAKEN[2], J. DE ROP[2], P. GOETHALS[3], F. PASMANS[4], P. SPANOGHE[a2], S. CROUBELS [a1]

[1]Ghent University, Department of Pharmacology, Toxicology and Biochemistry, Laboratory of Pharmacology and Toxicology, Faculty of Veterinary Medicine, Merelbeke, Belgium ([a] shared senior author)
[2]Ghent University, Department of Plants and Crops, Laboratory of Crop Protection Chemistry, Faculty of Bioscience Engineering, Gent, Belgium
[3]Ghent University, Department of Applied Ecology and Environmental Biology, Laboratory of Environmental Toxicology and Aquatic Ecology, Faculty of Bioscience Engineering, Gent, Belgium
[4]Ghent University, Department of Pathology, Bacteriology and Avian Diseases, Laboratory of Veterinary Bacteriology and Mycology, Faculty of Veterinary Medicine, Merelbeke, Belgium

In recent years the presence of agricultural contaminants such as pesticides, mycotoxins and heavy metals in the aquatic environment have gained more interest as research has shown negative effects on fertility and vitality of aquatic amphibians as well as growth impairment of microorganisms that are important for the ecological balance of the food chain. Furthermore, because most amphibians are exposed to aquatic habitats at one point during their life cycle, for example during breeding season, and because they have a highly permeable skin, these species tend to be more sensitive to environmental toxins than other aquatic and terrestrial vertebrates. The overall objective of this project is to assess the contamination of amphibian breeding ponds as part of biodiversity conservation. For this reason, 18 amphibian breeding ponds were selected across East Flanders and sampled at three different locations in the pond for the determination of pesticides, mycotoxins and heavy metals. Pesticides (n=83) and mycotoxins (n=15) were analyzed by a multi-residue method using solid phase extraction (SPE) followed by liquid chromatography-tandem mass spectrometry (LC-MS/MS). Gas chromatography with electron capture detection (GC-ECD) was used to detect the heavily chlorinated or fluorinated pesticides (n=16). Inductively coupled plasma-optical emission spectrometry (ICP-OES) was used for the determination of cadmium, copper, arsenic, chromium, mercury, nickel, lead and zinc. Results of the field sampling will be presented at the conference. This research is supported by the Special Research Fund of Ghent University grant number BOF16-GOA-024.08.

*: corresponding author: tess.goessens@ugent.be[1]