Summer crops and the impact of pesticides on surface and underground water in the southeast of the province of Buenos Aires, Argentina

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INTRODUCTION

Agricultural land is the first pesticide recipient after application. Even if the pesticides are applied in accordance with the regulations, only a smaller amount reaches their objectives (weed or pest), while the rest represents possible environmental pollutants (Hvězdová et al., 2018). In this case, the pesticides they become the non-point source of contamination.

The objective of this work was to evaluate the impact of summer crop practices on the concentration of pesticides in surface water and groundwater

MATERIALS AND METHOD

In soybean and corn crops, next to surface water courses, 2 freatimeters were installed.
Groundwater depth was evaluated in 19/12/2018, 4/1/2019, 14/1/2019, 8/2/2019, 15/2/2019 and 25/2/2019.
Water samples were extracted and the concentration of 45 organic molecules (pesticides and degradation products) was determined with a UPLC MS / MS.

RESULTS

The groundwater was always at a depth greater than 1.30 m in the freatimeters.
On average, the proportion of the sum of molecules was:
glyphosate metabolite > atrazine metabolite > 2.4D > other organic molecules.
The sum of molecules ranged from 0.17 to 39.1 µg l^{-1}.

On the other hand, in surface water the sum of molecules ranged from 1.3 to 12.5 µg l^{-1} during the evaluation period.
On average, the proportion of the sum of molecules was: **glyphosate + metabolite > Atrazine + metabolite > 2.4D other organic molecules**.

CONCLUSION

These preliminary results indicate that the grain production system generates an impact evidenced by the presence of synthetic organic molecules in the water. It is important to adjust crop management practices to avoid and / or minimize that impact and its environmental consequences.