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## ABSTRACT

Pesticide registration in EU (Reg. 1107/2009 EC) requires, among others, appropriate risk assessment for birds. The bird species currently used in risk assessment are the ones considered the most sensitive to all pesticides. In this work a realistic approach has been developed to correlate the avian population at local level, derived from a monitoring survey, with the land-use (Corine land-cover) and the relative pesticide treatments.

A GIS analysis was performed to identify peculiar combinations crop/bird species in order to determine which species is most likely to be exposed to a specific active substance.

The area considered was the North of Italy characterised by an intensive agriculture and, consequently, high load of pesticides.

These results can be considered an useful tool to display risk maps taking into the combination bird/ crop exposed to specific pesticides.

## **MATERIAL & METHODS**

Lombardy - the case study of Pavia, Lodi and Cremona districts

The main crops considered were: rice, maize, grape and other cereals.

Active substances applied on these crops were selected according to amount sold in 2010; the top five (highest amount sold) for each functional class (herbicide, fungicide and insecticide) were considered.

The risk for birds was evaluated following the European Guidance Document (EFSA Guidance) at Tier 1.

Toxicological data and GAPs were extrapolated from official documents as Review Report or EFSA Conclusions for each active substance.

Local species identified as relevant for the area selected from database Gisbau REN and literature data were associated, according to diet and body weight, to the focal species considered in the guidance document. The peculiar case of rice has been associated to cereal crop, therefore aquatic birds were not taken into account due GIS is the basic instrument used to collect the geographic database and to elaborate them.

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- 1. Cartographic data :
- ESRI Coverage or Shapefile format
- ESRI ArcGIS 9.2 software

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- 2. Crop distribution:
- SIARL database
- 3. Birds information and national distribution:
- Coverage files database Gisbau REN

to the different diet. Crop distribution in the three analysed districts Pavia Chlorpyrifos МСРА I odi Legend: SIARI d active substance < 1500 Other Cereal Table of investigated active substances Cremona 1500 - 5000 🗆 Maize 5000 - 10000 Herbicides Insecticides Fungicides Rice 10000 - 20000 Vines 20000 - 30000 Glyphosate Mancozeb Chlorpyrifos > 30000 Chlorpyrifos S- Metolachlor Metiram

## RESULTS

Two of the fifteen analysed active substances highlighted a potential unacceptable risk for birds at Tier 1 calculation: MCPA (applied in: maize, rice and other cereals) and Chlorpyrifos (applied in vines). Chlorpyrifos and MCPA revealed a potential risk for 10 and 20 bird species respectively. Maps represent in red the areas where birds exposed to the 2 substances can be considered at risk.





The knowledge of the peculiar bird species in a territory is an essential information for a correct management of the risk in areas intensively cultivated and a support for the development of adequate preservation policies to prevent a decrease in bird populations density and loss of biodiversity

This approach is a starting point to identify local bird species at risk when active substances are applied to specific crops. In the future, further works will be performed: - To better associate the combination relevant crops/applied active substances with foraging birds

- To better define areas of risk for birds when specific substances are applied.

- To clarify the potential risk of the minor species

 References
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Totababase on-line for birds : www.blo.org ; www.oiseauw-birds.com ; www.gisbau.uniroma1.it
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GUIDANCE OF EFSA. Risk Assessment for Birds and Mammals. European Food Safety Authority (EFSA), Parma, Italy. EFSA Journal 2009; 7(12):1438
Canova, R. Groppali, N. Saino; Gii Uccelli del Parco Adda Sud – I libri del parco Adda Sud 1. ristampa grafica della Grafica GM, Spino d'Adda (CR) Gen naio 1995

