Environmental risk assessment (ERA) and ecosystem monitoring associated with genetically modified (GM) organisms is a topic of broad interest. In Europe, the Directive 2001/18/EC foresees a case-by-case assessment of the risks on the bases of the step-by-step approach. Nevertheless, researches are still needed to implement the EU Directive within a standardized methodological reference framework. The aim of this work was the development of a method to assess the environmental risk generated by four transgenic plants: maize, sunflower, oilseed rape, and poplar.

To this end, the effects of GM plants on target/non target species, biodiversity, gene flow, and the evolution of resistance were considered. The proposed method integrates the quantitative approach developed by de Jesus et al. (2006) with the guidelines on ERA provided by the European Food Safety Authority (EFSA, 2010).

The potential hazards caused by selected GM plants in the following areas of concern were identified: persistence and invasiveness of GM plants, interaction of GM plants with microorganisms, interaction of GM plants with target and non target organisms. A index of risk and a index of significance were computed for each potential hazard using data from literature. The indexes were combined using a matrix in order to assess the risk for the environment and the measures required to prevent adverse effects of GM plants.

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Keywords: genetically modified plants, environmental risk assessment, oilseed rape, poplar