

Introduction

By adopting in January 2000 the Cartagena Protocol on Biosafety, the Parties to the Convention on Biological Diversity have created an essential tool to facilitate the development of regulatory and technical frameworks for an appropriate risk assessment and management of genetically modified organisms (GMOs).

The Italian Ministry for the Environment has therefore considered the importance of the availability of validated scientific information to support the decision-making process, according to the provisions of the Cartagena Protocol and to the legislation developed in the European Union. In order to collect the best available information in the field of Biosafety, the obvious choice was to enhance the collaboration, established since 1999, with the International Centre for Genetic Engineering and Biotechnology (ICGEB).

The promotion of the safe use of biotechnology is one of the main goals of the ICGEB; in this respect, the complexity of the issues related to the environmental release of GMOs, which raise concerns of scientific, industrial, commercial and political character, calls for a wide diffusion of information. ICGEB provides its institutional services to the international community by disseminating scientific information through its Biosafety Web Pages, featuring the Biosafety Database (a scientific, bibliographic, searchable database containing the scientific papers published in the most relevant international journals in this field), the Risk Assessment Searching Mechanism (an index providing on-line access to all available scientific documentation related to risk assessment implemented world-wide, and developed with the financial support of the Italian Ministry for the Environment), as well as through comprehensive capacity building programmes, that include specific training and technology transfer activities.

The scientific literature included in the ICGEB Biosafety Database is classified according to a number of items (or "topics of concern"), relating to human health, quality of food, environmental protection, enhancement of agriculture and other general concerns. This database shows that, in spite of the considerable volume of available scientific information, the number of research fields, that are critical for the assessment of the risk of the use of GMOs and are identifiable through a thorough analysis on the issues related to the risks of the release of specific GMOs into the environment and of the traits carried by the most common GMOs, is relatively limited.

Accordingly, ICGEB has been requested by the Italian Ministry for the Environment to collect a number of scientific studies on areas of major interest for biosafety and risk assessment, to be dealt with by internationally recognised scientists. The Centre has therefore approached several potential authors, asking them to produce scientific reviews summarising the state of the art in their field of expertise. This first issue of the "Collection of Biosafety Reviews", to be followed by further publications that will be co-ordinated by ICGEB in collaboration of the Italian Ministry for the Environment, therefore contains three technical reports focused on the following issues:

- 1) The dynamics and the effects in the soil of the *Bacillus thuringiensis* insecticidal toxin, expressed in transgenic plants (effects on earthworms, nematodes, protozoa, bacteria and fungi) and uptake by other plants.
- 2) The risks associated with virus-resistant transgenic plants, with particular attention to plant-to-plant gene flow and virus recombination.
- 3) The likelihood of transfer of cloned genes from GMOs to bacteria, either in the soil or in the phytosphere, and the factors affecting this process.

The next issues of the "Collection of Biosafety Reviews" will include subjects dealing with concrete examples of GMO release (e.g. release of transgenic fishes and related environmental risks), as well as with more general problems connected to these releases (e.g. the risk of genetic pollution from GMO crops or the potential impacts of herbicide-tolerant plants), but will also include some theoretical aspects relevant to biosafety (as the possible use of predictive models for the invasiveness and impacts of introduced alien species for GMO risk assessment).

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