1. Record Nr. UNINA9910253879303321

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Titolo	Effects of Herbicide-Tolerant Crop Cultivation : Investigating the Durability of a Weed Management Tool / / by Michel Beckert, Yves Dessaux
Pubbl/distr/stampa	Dordrecht : , : Springer Netherlands : , : Imprint : Springer, , 2016
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (XXI, 146 p. 19 illus., 16 illus. in color.)
Disciplina	630
Soggetti	Agriculture Plant breeding Environmental toxicology Environmental chemistry Agriculture - Economic aspects Environmental law, International Plant Breeding/Biotechnology Ecotoxicology Environmental Chemistry Agricultural Economics International Environmental Law
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Foreword -- 1. Mechanisms of herbicide resistance and HTV breeding techniques -- 1.1. From herbicide modes of action to genetic determinants of the HT trait -- 1.2. Introducing the HT trait into the genome of a cultivated species -- 1.3. Perspectives on the evolution of HTV breeding techniques -- 1.4. Existing HTVs -- Conclusions -- 2. HTV diffusion and use -- 2.1. HTV adoption worldwide -- 2.2. Possible drivers of HTV adoption -- 2.3. The North American example: the expansion of transgenic HTVs and its consequences -- 2.4. Specificities of the social and regulatory context of HTV adoption in Europe -- Conclusions -- 3. Diffusion of the HT trait and the appearance of herbicide resistance -- 3.1. Mechanisms and consequences of HT trait

diffusion -- 3.2. The spontaneous appearance of resistant weeds -- Conclusions -- 4. The development of HTV cropping systems -- 4.1. Effects on weed flora of HTV adoption and associated practices -- 4.2. Conditions specific to the introduction of HTVs in France -- Conclusions -- 5. Effects on the environment -- 5.1. Environmental contamination: wetlands and soil -- 5.2. Herbicide residues in and on crop plants -- 5.3. Impacts of HTVs on wild biodiversity -- Conclusions -- General conclusions -- Annex 1. Mission statement for the HTV ESCo -- Annex 2. HRAC classification of herbicides according to site of action.

Sommario/riassunto

In France in 2009, several crop destruction campaigns targeted herbicide-tolerant (HT) sunflowers obtained by mutagenesis. Facing this emerging debate on HT crops, the French Ministries in charge of Agriculture and of Ecology asked INRA and CNRS to gather analytical elements with regard to the real effects, both medium and long-term, of the cultivation of HT crops. This book presents the results of a multidisciplinary expert report on these questions, based on a review of the international literature. HT crops may seem to be useful complementary tools when farmers are facing certain difficult weed-management situations or in the context of a diversification of weed-control strategies. Their repeated use, however, can rapidly induce changes int he weed flora that can constitute more complex challenges in terms of weed control. Issues coming up with the development of agricultural production systems including HT crops are the objects of this expert report: what are the perceptions of these varieties by society and the reasons for the adoption by farmers? Are the savings on herbicides promoted by seed companies long-lasting? Can the cultivation of HT crops impact biodiversity? Overall, this work identifies key points to be taken into account when drawing up guidelines that govern the use of HT crops in order to preserve the effectiveness of this innovation over time. A working group was set up from July 2010 to November 2011, including specialists in ecology, agronomy, herbicide chemistry, genetics, economics, sociology and law. the full report is supported by a bibliographic corpus of more than 1,500 references, assembled by three documentation specialists. it is composed primarily of international peer-reviewed scientific articles, complemented by statistical data, monographs and technical reports. From these references, the experts have extracted, analysed and assembled the relevant elements to clarify the questions at hand.