Special Issue

Herbicide Resistance in Weeds: Detection, Mechanisms, and Management

Message from the Guest Editor

Weed control is essential in ensuring the sustainable production of food, feed, and fibres. Currently, there is a consensus that we should be developing integrated weed management (IWM) strategies that are adapted to local conditions and cropping systems. These strategies rely on the right combination of agronomy techniques and chemical treatments. Over the last 35 years, the overuse of herbicides has led to a worldwide development of resistance in weeds to most known herbicide modes of actions and chemistries. In addition, more and more cases of multi-resistant populations can be observed. Our aim for this Special Issue is to review (1) the worldwide weed resistance situation, continent by continent, including a summary of existing databases, (2) the mechanisms involved in the evolution of weed herbicide resistance, (3) methods to detect and validate resistance, as well as modelling approaches to predict its evolution, (4) the management of resistance, including the best ways to combine agronomy and chemical treatments at reasonable costs, and (5) perspectives inspired by recent progress in weed genomics.

Guest Editor

Dr. Roland Beffa

Executive Department, European Weed Research Society, Liederbach, Germany

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Agriculture
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
agriculture@mdpi.com

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Prof. Dr. Les Copeland
Sydney Institute of Agriculture, School of Life and Environmental Sciences, The University of Sydney, Sydney, NSW 2006, Australia

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