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Origin, mechanism and molecular basis of weed resistance to herbicides

Daniela Chodová, Jan Mikulka, Marie Kočová, Jaroslav Salava

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This review summarises information from the literature and experimental experience of the authors in research on weed resistance to herbicides. Factors conditioning the origin of resistance are described. The origin of resistant weeds to nine active ingredients with a different mode of action is presented chronologically, and the distribution of resistant weeds around the world outlined. The fundamental modes of action: reduction of the target site sensitivity, so-called "target site resistance", and the mode by which a herbicide is metabolised into inactive products, are listed. Function and genetic modifications of target sites of selected herbicides are described. Czech biotypes of resistant weeds with a mutation at codon 264 of the psbA gene encoding the D1 protein and at codon 574 of the acetolactate synthase gene are presented.

Keywords:

resistance to herbicides; origin and spread of resistant weeds; target site; metabolic resistance; molecular basis of resistance

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