

Risk of gene-flow in oilseed rape and possible ways of its avoidance

Josef Holec, Josef Soukup, Dept. Agroecology and Biometeorology, Faculty of Agrobiological, Food and Natural Resources, Czech University of Life Sciences Prague, Kamycka 129, Prague 6 – Suchbát, 165 21 Czech Republic. holec@af.czu.cz

The risk of gene-flow in oilseed rape and potential gene escape was studied a decade ago in relation to former activities associated with possible introduction of genetically rape cultivars into European agriculture. In case of conventional herbicide tolerant varieties we deal mostly with risks associated to agricultural production. Risks for the environment are considered to be relatively low as the genes for herbicide tolerance do not pose any selective advantage in populations of wild species in natural habitats. When assessing pollen as a vector of gene flow there is a high risk of introgression of HT genes into non-HT rape cultivars. This risk can be minimised by keeping proper isolation distances in seed production, which is a standard method used by seed producers. Oilseed rape can also hybridise with sexually compatible plant species. High risk of hybridisation was identified in case of closely related Brassica species, such as *B. rapa* and *B. oleracea* (parental species of oilseed rape) and also *B. juncea*. Most of weed species from *Brassicaceae* family do not crossbreed with oilseed rape and thus the risk of gene-flow is equal to zero. Lower risk of introgression can be found in case of *Brassica nigra*, *Hirschfeldia incana*, and *Raphanus raphanistrum*. Cross-pollination can occur but even in experimental conditions the rate of hybrid plants is very low. Genes can also disperse in time via seed survival in soil seed bank. Volunteer rape plants can emerge in subsequent crops where herbicide tolerance can be problem in volunteer management. To prevent this, harvest losses should be minimised and proper field post-harvest management should be adopted by farmers to prevent soil seedbank creation/enrichment.

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