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# Feral GM oilseed rape a potential source of herbicide resistant genes

**New research suggests** that feral oilseed rape poses little risk of contaminating crops, but if the oilseed is genetically modified (GM), it could be a minor source of GM traits in weeds. Throughout Europe, feral oilseed rape is now widespread on waysides and wasteland, making it potentially more problematic than some other crops, such as maize, which do not easily establish feral populations.

**Concerns have been raised** about the contamination of conventional crops by GM crops. This could occur through cross-pollination, volunteer plants (growing in fields but not planted deliberately) or from feral plants (which have 'escaped' from agricultural land and become partly wild) in nearby landscapes. The European Commission has produced guidelines designed to minimise the risk of cross-contamination and these recommend taking into account cross-pollination, seed mixing during and after harvest and the potential role of volunteers in successive years[1]. Widespread feral plants, such as oilseed rape, could contribute to all of these sources of contamination.

Research conducted under the EU SIGMEA project[2], however, finds that feral oilseed rape poses little immediate risk to the purity of crops. The study across five sites in Denmark, Germany, France and the UK over 16 years in total found that feral seed contributed to less than 0.0001 per cent of the seed in oilseed rape crops in each region. This is well below the EC threshold of 0.9 per cent for accidental contamination. In areas where there are very large numbers of feral plants, such as in derelict fields, there is the possibility of higher levels of contamination, but since these sites are easily identified they can be managed to avoid risks to nearby fields or farms.

However, when the persistence of feral crops was considered, the researchers found that GM ferals could potentially introduce impurities in later years to non-GM crops. Using biochemical and molecular testing techniques, SIGMEA found that feral populations with the same profile as the original variety recurred at all five sites for at least three years. Studies of the seedbank also showed that feral plants could recur even when no feral plants were detected for a year.

The potential risk of contamination from these GM ferals depends on whether the GM trait brings a benefit to plants containing the modified gene. The researchers suggest that even in low numbers, feral populations of GM oilseed rape could pose a longer term risk of contaminating conventional crops if there was a strong selective pressure that favoured the feral plants. For example, if the GM ferals were tolerant to a specific herbicide and that herbicide was widely used on waysides and field margins, then the GM ferals could increase, possibly joining volunteer populations in nearby fields. Such volunteer weeds containing the modified gene could prove more costly to control and potentially could present a risk to the purity of subsequent crops.

1. The European Commission recommendation (Recommendation 2003/556/EC) on guidelines is available from: http://ec.europa.eu/agriculture/publi/reports/coexistence2/guide_en.pdf
2. Sustainable Introduction of GMOs into European Agriculture (SIGMEA) was supported by the European Commission under the Sixth Framework Programme. www.inra.fr/sigmea

**Source:** Squire, G.R., Breckling, B., Dietz Pfeilstetter. A., *et al.* (2011). Status of feral oilseed rape in Europe: its minor role as a GM impurity and its potential as a reservoir of transgene persistence. *Environmental Science and Pollution Research*. 18:111-115.

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