

Gene flow in *Brassica napus* on a landscape scale

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Summary Due to the proposed release of genetically modified organisms in Australia, there has been heightened interest in the movement of pollen, particularly on a landscape scale. Canola (*Brassica napus*) pollen has been detected up to 360 metres outside the crop margin, but most research has indicated that the amount of pollen collected rapidly decreases as the distance from the pollen source increases. For example, pollination experiments in Canada in 1994–1995 found that less than 0.5% of the seed was pollinated from genetically modified canola five or more metres away and decreased to less than 0.03% at 30 metres. Most experiments have been carried out using trial scale plots so limited information is available on pollen movement over the whole landscape. On this study, large paddocks were used to examine the gene movement between classically bred Group B herbicide resistant canola and conventional varieties of the same species in the 2000–2001 growing season. These large-scale collections took place in New South Wales, Victoria, South Australia and Western Australia. Seed were collected from conventional canola paddocks at various distances, up five kilometres from the herbicide resistant source. In each paddock, three locations were sampled with approximately 100 000 seeds collected at each point. Three sites were sampled per paddock to allow an average over the paddock to be determined. A total of seventy five locations were sampled with over forty eight million canola seeds tested for the presence of herbicide resistance. In over 30% of the fields tested, no resistance was detected with the majority of the fields recording values under 0.03%. The highest frequencies of resistant seedlings in any one field

recorded per state were 0.0695%, 0.0580%, 0.0472%, 0.0392% for South Australia, Western Australia, New South Wales and Victoria, respectively. This level of adventitious presence is lower than expected and would comply with regulations around the world.

Keywords *Brassica napus*, *Raphanus raphanistrum*, gene flow, pollen movement.

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Footnote

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