

UNDERSTANDING GENE FLOW BETWEEN CANOLA CROPS IN THE AUSTRALIAN ENVIRONMENT. Christopher Preston and Jeanine Baker, Senior Lecturer and Postdoctoral Fellow, CRC for Australian Weed Management and School of Agriculture & Wine, University of Adelaide, PMB 1, Glen Osmond SA 5064 Australia.

Gene flow between crops has been an often-voiced concern of those groups opposed to the introduction of genetically engineered canola (*Brassica napus* L.) into Australia. In order to address such concerns an extensive survey was conducted in 2000 using Clearfield canola resistant to the imidazolinone herbicides. This survey determined that the levels of gene flow that could be detected were small and sporadic. The average data generated in the survey was used to build a model that considered the potential impact of having different frequencies of genetically engineered crops in the environment. However, such models tend to average the effects. Where sporadic events occur, a higher than anticipated level of gene flow could occur. Therefore, we set up an experiment to examine the behaviour of honeybees near canola crops. A section of crop, and bees, was sprayed with fluorescent paint. Bees were collected from the adjacent field and examined for traces of fluorescent paint. When crops were in full flower, less than 7% of bees in the unsprayed crop contained fluorescent paint. However, once flowering had started to decline, more fluorescent bees were detected outside the sprayed area and some up to 2 km away. A second experiment was established where bees were followed once they had alighted on a specific plant. Bees could then be observed to visit plants nearby. The distribution of plants visited was a normal distribution with more than 66% of visits within 5 m of the target plant. Together these observations suggest that bees are faithful to a nectar source and unlikely to spread large amounts of canola pollen from one field to another. The exception is when flowering starts to decline. Secondly, a bee entering a field will visit a number of flowers in a close area. This could lead to hotspots of gene flow within canola crops.