A SURVEY OF ANNUAL RYEGRASS, *LOLIUM RIGIDUM*, POPULATIONS IN SOUTH AUSTRALIA AND THEIR RESISTANCE TO HERBICIDES

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Abstract.. A previous survey showed that there were populations of annual ryegrass resistant to Hoegrass (diclofop-methyl) present in all states of Australia wherever the weed occurred. These populations were cross-resistant to other herbicides such as fluazifop, haloxyfop, chlorsulfuron and metsulfuron. It was concluded there was a potential for resistance to develop wherever herbicides were used and was not a consequence of spread from a few initial sites. These populations were a selected sample. The present survey aimed to evaluate populations from a random group of farms and to identify farming practices leading to resistance. The only criterion used in choosing farms was that the farmer kept paddock histories.

We had histories from 115 farms but tested the annual ryegrass samples from 91 paddocks. Altogether there were 169 paddocks/populations .Of these populations, 63 had only been exposed to trifluralin and not to diclofop-methyl. None showed resistance to diclofop-methyl. Of the other 106 populations 15 were found to be resistant. Resistance is quantitative and eight had a very high level of resistance and seven were intermediate. Our laboratory test may detect resistance before it is obvious in the field. Among the populations that were still susceptible there were some that had been sprayed up to four times with diclofop-methyl, but none that had more than four applications were susceptible. Some resistant populations had been exposed to very few applications of Hoegrass but had been exposed to the other herbicides implicated in the cross-resistance phenomenon.