

HERBICIDE RESISTANT ANNUAL RYEGRASS, *LOLIUM RIGIDUM* – A CASE

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Abstract. A paddock of 13 ha near Cargo, 25 km south west of Orange, was sown to its tenth consecutive winter crop on 19 April, 1989. The property is in a mixed farming area of winter crop and sheep grazing production. Altitude is 540 m and annual average rainfall 690 mm.

Over the ten seasons from 1980 a total of 2400 g/ha trifluralin (by six applications) together with 1687 g/ha diclofop-methyl (by four applications) were used on wheat, canola and lupin crops. In addition, other herbicides, each of one application, used were diquat 250 g, fluazifop-butyl 53 g, oryzalin 200 g, paraquat 250 g and simazine 1500 g per ha.

Following an application of haloxyfop and sethoxydim as a tank mix to a canola crop in 1989, well tillered, vigorous, healthy annual ryegrass, *Lolium rigidum*, plants continued to prosper in mid winter as scattered plants, concentrated in one corner.

Herbicides representing five herbicide groups were applied at a range of rates to a representative area in the paddock in late July, 1989. All herbicides were applied with 100 L per ha of water under favourable weather conditions. Annual ryegrass plants ranged from 2 leaves to 12 tillers per plant and were well established.

The herbicide representing the aryloxyphenoxypropionates (diclofop-methyl) was applied at up to 4500 g/ha and gave no control. Sethoxydim was used at up to 1500 g/ha as a representative of the cyclohexanediones. The high rate of sethoxydim resulted in some plant tiller death, but rates of 187 and 374 g produced no observable result on the annual ryegrass. Therefore, it was concluded that the annual ryegrass in this particular paddock is resistant to both the aryloxyphenoxypropionates and cyclohexanediones at least and could well be resistant to other herbicides in other groups. This is a clear case of herbicide cross-resistance.

Herbicides that controlled the ryegrass included representatives from the aromatic, bipryidyl and carbamate groups.

This is the first case of herbicide resistance recorded in the Orange district.

The immediate response of the owner was one of despondency, irritation, resentment and fear of the future. Ideas of destroying the canola crop were discounted after time.

Serious consideration was given to the problem spreading to adjoining paddocks down the water shed, into neighbours as well as the disposal of hay and grain. All these problems have been resolved to date.

The canola was harvested, providing a satisfactory yield. Subsequently the paddock has been shallowly cultivated with the aim of germinating annual ryegrass sown to a mixed sub-clover and lucerne pasture in autumn 1990.