CONTROL OF WEEDS IN PERENNIAL RYEGRASS SEED CROPS WITH ASULAM

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Perennial ryegrass is one of the most important pasture species introduced into southern Australia and its use as a component in sown swards is increasing. However, seed production in Australia does not satisfy demand, one of the reasons being the presence of weeds, particularly grass weeds, which seriously reduce yields. Such species as *Bromus mollis*, *Bromus sterilis*, *Holcus lanatus*, *Vulpia bromoides*, *Hordeum leporinum*, *Poa annua*, and *Aira caryophyllea* are common in ryegrass seed crops to a greater or lesser degree. There exists a need, therefore, for a selective weedkiller to eliminate the competitive species and those that lead to losses of seed at cleaning because of a similarity in seed size.

In 1961 three new herbicides were discovered by May & Baker Ltd. and reported on by Carpenter *et al* and Cottrell and Heywood (1965). These compounds belong to a chemical group hitherto unknown in the herbicide field. They and the chemical used in these trials - asulam - are derivatives of methyl benzene sulphonylcarbamate. Asulum is of low toxicity to mammals, birds, and fish; for example the acute oral LD_{50} in mice has been shown to be greated than 5,000 mg per kilogramme body weight.

Arthur and Shildrick (1966) first demonstrated that perennial ryegrass seed crops were tolerant to asulam, and further work by Barrett (1969) confirmed the former's results under Australian conditions. The trials discussed were designed to confirm the previous work on crop tolerance and to evaluate the effectiveness of asulam against the weeds encountered.

Three replicated sites were sprayed with asulam at 16, 32, and 64 oz a.i. per acre (1.12, 2.24, and 4.48 kg per hectare) at two times of application (autumn and spring). A further two large-scale, replicated sites were sprayed to determine the effect of autumn applications at 32 and 64 oz a.i. per acre (2.24 and 4.48 kg per hectare) on yield under commercial field conditions.

Rates of 32 and 64 oz a.i. per acre (2.24 and 4.48 kg per ha) applied in the autumn effectively controlled *Vulpia* spp., *Aira* spp. and *Bromus* spp., and the density of *Holcus lanatus* was reduced by 80-90%. *Rumex* spp. and *Trifolium* spp. proved susceptible, particularly *Trifolium subterraneum*, which proved very susceptible. However, *Hordeum* spp. proved relatively resistant, being reduced by only 60-70%.

Seed yields were significantly increased following autumn application of asulam and the harvested sample was cleaner than where there had been no spraying. However, while spring applications were found to be more active ounce for ounce than autumn ones (being in general terms about twice as active, particularly against *Holcus lanatus* and *Rumex* spp.), spring applications proved too phytotoxic at all dose rates evaluated, as they significantly reduced yields.

Germination was not affected by any asulam treatment.

In all, the results were sufficiently encouraging for further trials to be carried out in ryegrass seed crops next season.

NEW HERBICIDES FOR CONTROL OF WIMMERA RYEGRASS IN WHEAT

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Wimmera ryegrass (*Lolium rigidum*) is a serious weed of wheat crops in Victoria. Although reasonable pre-emergence control of this weed can usually be obtained with the use of di-allate, this chemical suffers from a number of disadvantages, including the need for immediate incorporation into a fine, level seedbed and a lack of activity on broadleaf weeds and on other grasses which sometimes occur with Wimmera ryegrass. Furthermore, pre-emergence herbicides do not usually find ready farmer acceptance as they are applied to seemingly weed-free areas.

During the period 1965-1970, a range of herbicides has been evaluated at Rutherglen Research Station for either pre- or post-emergence ryegrass control in wheat, or possibly both.

Pre-emergence	Post-emergence
Alachlor	Chlorthiamid
VCS438	Dichlobenil
Linuron	Diuron
Dichlobenil	Isonoruron