## Chemical fallowing in the Victorian Wimmera

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In the Wimmera, replacement of fallow cultivation by herbicide can result in a reduction of cultivation draft energy of 20% - 55% (1). An increase in the adoption of chemical fallowing is anticipated because such fallows are at least as effective as cultivation (2,3).

Most weeds are annuals that grow mainly in winter-spring (eg Lolium rigidum, Medicago truncatula) or spring (eg thistles, melons, Heliotropium europaeum) and perennials such as Cardaria draba, Chondrilla juncea and Convolvulus arvensis. Although annuals present the most widespread weed problems, perennials frequently seriously limit the potential of chemical fallowing.

The requirements of a chemical fallow are for an initial "Knockdown" or kill of the vegetation, usually in late winter - early spring, and maintenance of the weed-free situation until the wheat crop is sown. Residual herbicides are required because of their lasting efficacy and relatively low cost, but it is essential that they dissipate at such a rate that they do not affect the growth of the crop.

Alternatives being evaluated include:

- "Knockdown" herbicides (paraquat diquat and glyphosate) in spring.
- residual herbicides (chlorsulfuron and atrazine) in spring.
- control of weeds in summer with a range of inexpensive herbicides.
- presowing applications of "Knockdown" herbicides or those which persist in the soil for a short period.

Herbicide costs of \$10 - \$15/ha is considered to be acceptable for controlling weeds which occur on fallows in mid-summer. Treatments showing promise include 2,4-D, glyphosate/2,4-D, glyphosate/metsulfuron methyl, 2,4-D/diuron, 2,4-D/dicamba, 2,4-D/chlopyralid, and trichlopyr. The effectiveness of the herbicides depends on the weeds present.

Spraying in summer is frequently undertaken under hot conditions when the weeds are under moisture stress and not actively growing. This generally reduces the effectiveness of the herbicides. Another problem is that older weeds are usually harder to kill than seedlings and under typical farm conditions early spraying is often not practiced. Therefore, the effect of adding wetting agent or crop oil to herbicides on control of moisture-stressed plants, older plants or hard-to-kill weeds on chemical fallows is being investigated.

It is likely that modified fallow systems acceptable to growers will include the use of residual and shortterm herbicides, grazing and, in some cases, cultivation prior to sowing to control Rhizoctonia spp. In some situations sowing the crop, thus overcoming the need for expensive "knockdown" herbicides or tillage, is likely to be adopted (3).

1. Huzzey, J. E. (1986) Vict. Dept. Agric. Rural Affairs. Res. Proj. Ser. No. 10.

2. Amor, R. L., Kent, A., Ridge, P. E. and Binns, R. M. (1986). Plant Prot. Quart. 2(1):38-40.

3. Amor, R. L. and Ridge, P. E. (1987). Plant Prot. Quart. (In press).