

Conservation tillage in Australia

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The term "conservation tillage" implies the total or partial replacement of pre-sowing cultivation with herbicides for weed control. The development of this technique for the winter rainfall areas of southern Australia has been largely concentrated on the winter cereal/legume-pasture ley system, a system which should become increasingly diversified with the trend towards cropping in higher rainfall areas (1) and the inclusion of grain legumes and oilseeds in crop rotations (2). The two major techniques that have evolved are direct drilling, where there is a graze/spray/sow sequence, or reduced cultivation, where cultivation is included in the sequence at some point before sowing.

Initially, a paraquat/diquat mixture (Sprayseed™) used in conjunction with direct drilling and pioneered by ICI, was the most common development. This was quickly followed by increasing use of the wider-spectrum glyphosate ("Roundup¹") in direct drilling systems (3), in reduced cultivation systems and as a replacement for cultivations in the control of weeds during the course of fallows (4).

Principal amongst the benefits of conservation tillage in southern Australia is the degree of flexibility it allows in crop production. For this reason, it may lead to an increase in cropping area (5). Yields appear to be comparable with those obtained using conventional methods (e.g. 6) and its acceptance by farmers is reflected in the estimate that in southern Australia in 1981 some 600,000 ha were sown by one or other of the conservation tillage techniques.

In the northern wheat belt, where summer rainfall predominates, weed control is generally required over a longer time span because of the fallow-based system and the winter/summer crop rotations. A similar range of herbicides is used (7, 8, 9): in order of importance, the main ones are glyphosate, 2,4-D, atrazine and dicamba (10).

Conservation tillage in the north is developing particularly in erosion-prone situations (11) and with summer crops (10). There is some evidence of increased yields, of both wheat and summer crops, compared with conventional techniques, and this is attributed to improved soil water status (10).

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