Future weed threats to Western Australian agriculture

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Summary Weeds cost Australian agriculture $4 billion annually and WA farmers still rate weeds and weed control as two of the most important aspects governing profitability and sustainability.

Today, growers and advisers are seeing weeds that were previously considered insignificant, emerge in the cropping and pasture landscape. Weeds such as small flowered mallow (*Malva parviflora* L.), windmill grass (*Chloris* spp.), common heliotrope (*Heliotropium europaeum* L.), shepherd's purse (*Capsella bursa-pastoris* L.), brome grass (*Bromus rigidus* Roth), along with our 'big weeds' annual ryegrass (*Lolium rigidum* Gaudin) and wild radish (*Raphanus raphanistrum* L.), further complicate our integrated weed strategies. Investment by growers and industry organisations has funded research into the characteristics of these weeds, and has enabled more robust weed management strategies to be developed. However, continued research will be essential to manage all the above mentioned species.

Perhaps the biggest revolution to affect weed control in agriculture has been the rapid adoption of reduced tillage 'no-till' practices (narrow seeding points). On one hand this has revolutionised the control of traditional weeds with the use of some older herbicides, but at the same time reduced tillage - along with other management factors – has allowed other less significant weeds to proliferate. This has created a whole new challenge in addition to current weed control issues.

As many of these new weed challenges are only now being recognised as a problem, limited herbicide control options are available or known. The importance of applied research and integrated approaches to weed management cannot be understated.

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Weeds in horticulture

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Summary With a wide range of crops grown in horticulture, growers are constantly faced with controlling weeds and reducing the weed seed bank. Virgin horticulture land can contain small amounts of weed seeds, but with the introduction of irrigated cropping, a substantial weed seed bank can be generated very quickly if constant attention is not given to weed control. Growers use a combination of herbicides and cultivation to suppress weed growth.

Intensive vegetable production requires growers to carefully plan their crops so a rotation between plant families is achieved. Quite often two and a half vegetable crops are grown per annum on a piece of land. Weed management often becomes difficult when crops that use similar herbicides are used at short rotation, For example, a crop of carrots followed by a crop of potatoes can use similar chemicals such as linuron for weed suppression. In this situation weed species not well controlled by the herbicide (e.g. wireweed) can become difficult to manage.

Herbicide resistance has not obviously become a major problem in horticulture in Western Australia. An effective rotation of chemical controls measures should help stop resistance becoming a problem.

Cultivation of horticultural crops can be very effective form of weed control. Fast growing crops or transplanted crops, such as cauliflower, cabbage and broccoli, can have little or no chemical application and can be grown using cultivation methods including scarifying and hilling or banking for weed suppression. Hand weeding may be necessary if the timing of either chemical or cultivation is not correct, but this is always a last resort particularly with the increasing costs of labour.

With the constant push for horticultural producers to become accredited in Quality Assurance schemes, the lack of chemical registrations for some minor crops has been brought to light. In 1998 the Australian vegetable industry investigated the minor use permit system to help horticulture, particularly vegetable growers, become compliant. A grower-owned company Crop Protection Approvals Limited, was started to handle the large number of minor use permits going to the National Registration Authority.