

Trialling and demonstrating alternative weed control options with Fleurieu farmers

Background

Increasing numbers of people in the community are expressing a desire to reduce synthetic chemical use on common agricultural and environmental weeds. This has led to the development of innovative methods to achieve non-chemical weed control, and a growing movement towards 'green' products by producers, retailers and consumers.

This project aimed to demonstrate some of the innovative practices, and assess the suitability of some of the 'green' or non-synthetic herbicides on local weed species across the Fleurieu region.

The method

Seven sites across three properties were identified with an established area for application of alternative weed control products.

Products trialled included BIOSAFE™ (a canola derivative and carrier for herbicides), BioWeed™ (Pine Oil active ingredient), and Urea.

Landholders, implementation officers and contractors, applied the products and weeds were hand-sprayed using a 15L knapsack.

The level of weed control across a range of annual, bi-annual and perennial woody weeds was monitored, and general observations made with regards to the effectiveness of each of the different products in controlling weed species. Over the whole project area, assessments were made on ten different weed species.

Several field days were held where participants were able to view the sites, and also visit two other properties where alternative weed control strategies have been implemented on a broad scale.

The results

BIOSAFE™ was initially trialed across a large number of common garden and field weeds including common *Malva parviflora* (marshmallow) *Galium aparine* (Cleavers) and *Sonchus oleraceus* (Common sow-thistle).

This showed promising results and so the product was then trialed on a larger scale at various application rates on other weeds including *Scabiosa atropurpurea* (Pincushions), *Cynara cardunculus* ssp. *flavescens* (Artichoke Thistle), *Allium triquetrum*



Picture of one of the trial sites and associated weed control.

(Three-cornered Garlic) *Onopordum acanthium* (Scotch thistle) *Solanum nigricans* (Blackberry nightshade) *Dactylis glomerata* (Cocks-foot), *Ulex europaeus* (Gorse) re-growth, *Rubus laciniatus* (Blackberry) re-growth, *Mysotis* sp. (forget-me-not), *Senecio angulatus* (Cape Ivy), *Rosa canina* (Dog rose), *Disa bracteata* (African Weed orchid), *Plantago bellardii* (Hairy Plantain), *Euphorbia terracina* (False Caper) and *Hypochaeris* sp. (Cat's ear).

Effective knockdown of broad-leaved weeds such as *Echium plantigeum* (Salvation Jane), Cleaver and Common sow-thistle was achieved with full plant coverage of BIOSAFE™, providing the plants were healthy.

BIOSAFE™ was not as effective on woody weeds; it was limited at only burning new fresh growth. Its potential use could be for chemically grooming fresh blackberry if other volatile chemicals or grooming could not be used, however, BioWeed™ appeared more effective at 'grooming' back vegetation through desiccation of the plants. BioWeed™ was also more effective at killing small seedlings of gorse and broom provided full leaf coverage was achieved.

BioWeed™ was also trialed on Pincushions, Artichoke Thistle, Three-cornered Garlic Scotch thistle, Blackberry nightshade, Cocks-foot, Gorse re-growth, Blackberry re-growth, Forget-me-not, Dog rose, African Weed orchid, Hairy Plantain and Cat's ear.

Effective knock-down of all target broad-leaved weeds was achieved using strong rates of pine oil (rates of 50% with water).



Perennial weeds such as Artichoke Thistle and Three-cornered Garlic were knocked back but re-shot due to the non-systemic nature of the product. Annual grasses were generally killed. Weeds such as Pincushions were killed provided that full leaf coverage was achieved.

Urea treatments were trialed on Pincushions, Artichoke Thistle and Three-cornered garlic. It was thought that by applying high rates of Urea, an overdose of nitrogen would effectively kill the plants. At a rate of 1kg/1L, there was minimal effect on the weeds. The Artichoke thistle did have a visual reduction in vigour and re-growth, however it was expected that the plants would eventually return to full health.

Recommendations

The GWLAP identified a resource gap, in the lack of information around alternative (non-synthetic chemical) control options for agricultural and common declared environmental weeds. It is recommended a resource be developed that provides information on weeds and alternative control methods, particularly for land management advisors.

The opportunity also exists to continue to trial BioWeed™ and BIOSAFE™ for their effectiveness in cut and swab approaches to woody weed control as an alternative to other traditional herbicides, and to further investigate the efficacy of BioWeed™ on additional broadleaf species that weren't investigated as part of the project, as a pre-emergent in vineyards (in the mid-row), and also BioWeed™ at lower rates for selective control of broad-leafed weeds in areas of native grass (it does not appear to permanently effect perennial grasses).

Conclusion

Innovation in weed control is occurring on a farm scale across the region. The use of BIOSAFE™ gave control on some weeds but is currently cost prohibitive for most large-scale landholders and there is little research and no label recommendations. BioWeed™ has given good control of some target weeds and is a registered product.

The cost compared to traditional knockdown herbicides will probably see the use of these products largely limited to spot spray situations.

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