Stubble Stubble Nanagement Guidelines Onio



Managing onion weed in retained stubble farming systems is increasingly challenging. Photo: Peter Baker

Onion weed management options in crop and pasture systems, low-input rangeland grazing systems and other non-cultivated areas are often limited to hygiene practices, reduced total grazing pressure and chipping or spot spraying to prevent or delay new infestations.

As part of the *Maintaining Profitable Farming Systems with Retained Stubble initiative*, funded by the Grains Research and Development Corporation (GRDC), the Upper North Farming Systems Group has investigated a range of onion weed control options to reduce the need for cultivation.

Control of onion weed in cropping systems

The introduction of sulfonylurea (SU) herbicides, in combination with cultivation and competitive crops and pastures, during the 1980s provided effective control of onion weed in cropping systems. Since the move towards no-till farming systems and the reduced use of these herbicides, onion weed populations have increased, particularly during seasons with high summer rainfall.

Onion weed (*Asphodelus fistulosus* L), is an annual, biennial or perennial, unpalatable, drought-tolerant, grass-like herb that reproduces by seed only. The weed produces abundant, white-pink flowers during spring and summer, yielding as many as 13,200 seeds per plant.

Onion weed can germinate throughout the year, but usually after summer rainfall. It prefers light, disturbed, neutral to alkaline soils, particularly in areas where other vegetation is sparse or absent.

Onion weed management

Key facts

- » The incidence of onion weed is increasing in low-rainfall conservation farming systems across South Australia.
- » Onion weed populations tend to build up during the pasture phase of a cropping rotation, particularly where two or more years of pasture are used to break the cropping phase.
- » Where cultivation is not an option to control onion weed, trial results support the use of a range of pre-planting herbicide combinations.
- » Control of onion weed in pasture systems is more complex due to the impact of effective herbicide options on pasture species.

Project information

This onion weed management guideline has been developed for the Upper North Farming Systems Group (UNFS) as part of the Maintaining Profitable Farming Systems with Retained Stubble initiative, funded by the Grains Research and Development Corporation (GRDC).

The initiative involves farming systems groups in Victoria, South Australia and southern and central New South Wales, collaborating with research organisations and agribusiness, to address challenges associated with stubble retention.

The GRDC, on behalf of growers and the Australian Government, is investing \$17.5 million in the initiative that has been instigated by the GRDC Southern Regional Panel and the four Regional Cropping Solutions Networks that support the panel.

The 2014 Onion Weed Herbicide Efficacy trial conducted by UNFS presented in this guideline was funded through the Northern and Yorke Natural Resources Management Board Community Grants Program.







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Onion weed populations typically build up during the pasture phase of a rotation.

In low-rainfall areas it can be prominent in run-off areas such as roadsides, depressions, and creek lines. It is unpalatable and of low toxicity to livestock.

Native to the Mediterranean regions of southern Europe, northern Africa and the Middle East, extending through western Asia to India, onion weed was introduced to Australia in the 1850s as a garden ornamental.

Impact on farming systems

With a move towards conservation farming practices and the reliance on summer weed control to retain out-of-season rainfall as stored soil moisture for improved water use

efficiency, onion weed is becoming an increasing problem in cropping areas in the Upper North as it is difficult to control using traditional glyphosate-based summer weed herbicide mixtures.

Onion weed populations tend to build up during the pasture phase of a rotation, particularly where two or more years of pasture are used to break the cropping phase, and cultivation is often used as an effective control option. It does not appear to be a problem in intensive cropping systems.

Onion weed has become established in non-arable areas on properties, reducing pasture quality and providing a seed source to reinfest cropping areas.

Herbicide products vary in their efficacy due to plant size, growth stage and plant stress, making effective control difficult.

Herbicide trials

A replicated trial conducted by the Upper North Farming System Group near Booleroo Centre in the Upper North during 2014 compared a range of herbicide control options to manage onion weed.

The trial investigated a combination of: currently recommended mixtures, potential mixtures and some newer products.

All T1 treatments were applied during May 2014 T2 treatments of paraquat were applied as a double knock three weeks later across four treatment plots.

All the treatments were pre-planting applications, which significantly reduced medic and grass growth and survival of most plant species. Therefore most of these treatments would not be suitable for use in a pasture situation.

FIGURE 1. Onion weed control using a range of herbicide mixtures (only results for selected treatments shown)



Onion weed management

Trial results

Most products trialled provided effective control of small, seedling onion weed plants, but control was more variable for larger plants.

Herbicide mixtures containing paraquat gave fast control of both small and larger plants with most achieving >90% control 19 days after application. This level of control increased to 100% by 103 days after application.

Mixtures containing glyphosate tended to take longer to achieve effective control. Lower rates and glyphosate alone provided unreliable control for medium to larger plants.

Glyphosate mixtures containing Pyresta[®], Sharpen[®], Valor[®] and Starane Advanced[®] only provided moderate to poor control (data not included).

The double-knock treatments provided 100% control, ensuring any escapes from the first treatment were controlled.

The use of automatic spot-spraying technology, such as the WEEDit[™] or Weedseeker[™] will significantly reduce herbicide costs in double-knock situations.

Control options for pasture sysytems

The only treatment that allowed established pastures (medic at eight-plus trifoliate) to recover to some degree was paraquat at 1L/ha applied at T2, however this was only observed in a demonstration area outside the replicated trial.

In a pasture situation all other treatments in the trial would be too severe.

Other products used successfully by farmers in pastures include: 0.5L/ha paraquat followed by a double knock of 0.5L/ha paraquat 2 - 3 weeks later, or 1lt/ha LVE 2,4-D 680 plus 5g/ha Ally.



Herbicides mixtures containing paraquat gave fast control of both small and larger onion weed plants (control plot at left and 1L/ha paraquat at T2 on right).

References

Parsons WT and Cuthbertson EG (2001) 'Noxious Weeds of Australia' (2nd edn) (CSIRO Publishing: Melbourne)
Roark B (1955) 'The autecology of Asphodelus fistulosus L', PhD thesis, University of Adelaide, Adelaide

Further information

» www.herbiguide.com.au/Descriptions/hg_Onion_Weed.htm

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