Upper North Farming Systems

Stubble Management Guidelines

Statice

Statice (*Limonium lobatum*). Photo: Hannah Mikajlo (UNFS).

Key facts

- Statice (*Limonium* spp.) populations can quickly build up along roadsides, fence-lines and in depressions.
- Dense stands of statice have reduced crop yields by up to 30 per cent, while statice leaves can discolour and contaminate grain.
- Currently there are no herbicides registered for control of statice.
- Cultivation and crop competition are more effective control measures than grazing. Weed seed capture and destruction also can be effective options.

Statice (*Limonium* spp.) weeds are starting to emerge as a serious problem across low-rainfall cropping regions of southern Australia. Although statice has been present in the Upper North region for a number of years, it has recently become a more significant issue, likely due to increasing adoption of no-till practices and diminishing use of sulfonylurea and Diuron herbicides.

The most common statice species in the Upper North region is *L. lobatum*, commonly called winged sea lavender.

L. lobatum grows as either an annual or short-lived perennial. The seeds germinate during autumn and winter, with most growth occurring during winter and spring. At maturity, the plant is roughly 10–50cm tall, with a basal rosette of wavy leaves as well as erect, winged stems. In South Australia, flowering and seed set occur during spring and summer.

The small white or yellow flowers are enclosed in large, papery purple-blue calyx and bracts. *L. lobatum* has deep taproots, which enable it to compete against crops for nutrients and soil moisture. *L. sinuatum*, or perennial sea lavender, is also prevalent in the Upper North. The wings on its stems are narrower than those found on *L. lobatum*.

Statice often flourishes in paddocks where crops are rotated with pastures and is well adapted to a range of alkaline, sodic and moderately saline soils. Numbers can quickly build up along roadsides, paddock fence-lines and around creeks or in depressions, easily spreading into nearby paddocks.

Project information

This *Statice 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 UNF00002).

The Stubble 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.

L. lobatum (winged sea lavender) growing near Booleroo Centre. Photo: Hannah Mikajlo (UNFS).

L. sinuatum (perennial sea lavender) growing along a roadside near Port Pirie. Photo: Hannah Mikajlo (UNFS).

Anecdotal evidence suggests statice populations increase rapidly in the wake of pulse crops, and can be extremely difficult to control during summer, before sowing, and particularly in-crop.

There is evidence of dense stands of statice reducing crop yields by up to 30 per cent while the leaves can discolour and contaminate harvested grain.

Statice weeds quickly multiply along paddock fencelines and undisturbed areas. Photo: Hannah Mikajlo (UNFS).

Statice is best controlled during the seedling stage. Photos: Fleet and Kleemann

Managing statice

Statice can be difficult to control, but researchers from the University of Adelaide recommend concentrating on reducing seed set and controlling the weed seedbank by killing seedlings.

Non-chemical control options

There is limited research into how to manage statice without herbicides.

Grazing

» Unfortunately, grazing has been shown to be a fairly ineffective control method because, although not toxic to livestock, statice is unpalatable. Livestock can also end up dispersing the weed over a larger area.

Increasing the competitiveness of the crop

» This technique, along with cultivation, has been shown to be more useful than grazing, potentially controlling up to 50 per cent of a statice population. This may involve increasing the sowing rate or growing a more competitive crop, such as barley. Delaying sowing so as to remove more weeds with herbicides can also help.

Cultivation

» Recent research by the University of Adelaide found exposure to sunlight was a key factor in stimulating statice germination, explaining why no-till systems, where weed seeds are left on the soil surface, support flourishing statice populations. Statice seeds left on the soil surface were found to decay at a significantly slower rate than seeds incorporated into the soil. After being buried 2cm deep for just two months, more than 95 per cent of the seeds in the study lost their viability. This also means 'green manuring' (i.e. where the crop and weeds are cultivated into the soil while still green) can be used as a control method.

Brown manuring

» Another potential control option involves spraying out a pulse crop, using knockdown herbicides, before seed set by weeds. This method provides nitrogen benefits, through fixation by the pulse crop, while controlling difficult weeds. The timing of spraying is determined by the growth stage of the statice, rather than the crop itself. Brown manuring may require more than one herbicide application.

Weed seed capture or destruction

» While statice seeds decay quite rapidly, each plant can produce more than 2000 seeds. Weed seed capture or destruction at harvest could prove effective in controlling the seedbank. Narrow windrow burning may be an option, however there has not yet been sufficient research to determine what temperature or duration of heat is required to render the statice seeds unviable.

Paddock use

» Herbiguide notes that statice numbers tend to decline under continuous cropping or continuous pasture.

Controlling statice in non-cropped areas

» Statice numbers can quickly build up along fencelines and other un-cropped areas, so keeping these areas clean is vital. Spray small plants, aiming for 100 per cent control of seed set. Avoid using herbicides during times of water stress.

BELOW: Statice seeds quickly lose viability in soil, so actions that incorporate the seeds into the soil can be effective control methods. Photo: Jim Kuerschner.

Early control offers greatest success

Leighton Johns, Port Pirie

Statice is a problem weed on Leighton Johns' family's mixed farming enterprise, south of Port Pirie.

According to Leighton statice has been an issue in the area for a number of years, but within the past decade it has become particularly challenging. The Johns have experimented with different ways to control the weed and have found some approaches that seem to work.

Leighton finds statice more difficult to kill after it flowers, so targets the weeds when they are young and small.

The Johns greatest success has been using a high rate of glyphosate (1.2–1.8l/ha) and Hammer® (18–20ml/ha) at seeding. When cropping cereals, the Johns use Diuron (250g/ha) + MCPA 750 (250ml/ha) and Ally® (5g/ha) post emergence. For peas, they use Terbyne post seeding and pre emergence, or Diuron (500g/ha) post seeding and pre emergence in vetch.

During pasture phases, Leighton waits until the clover has podded, then sprays the statice out with a mix of glyphosate and Hammer® and keeps spraying each time it germinates, until seeding.

Statice growing in one of Leighton Johns' paddocks.
Photo: Hannah Mikajlo (UNFS).

References and further information

» Benjamin Fleet (2014) Post emergent herbicide control of Statice (*Limonium lobatum*), unpublished research (University of Adelaide)

» Samuel Kleemann, Benjamin Fleet, Fleur Dolman and Gurjeet Gill (University of Adelaide) (2017) Statice (winged sea-lavender); biology, ecology & IWM Tactics factsheet Click

» Sam Kleemann, Benjamin Fleet and Gurjeet Gill (University of Adelaide) (2017), Latest research on emerging weeds – brome grass, statice and common sowthistle, GRDC Update Paper Click

» Cameron Taylor and Jarrod Brown (2014), Statice Control, Birchip Cropping Group Research Results Click

» GRDC Winged Sea Lavender Weed Ute Guide (2014) Click

» Guidelines to managing key weed species across low-rainfall regions of south-eastern Australia (2016), partnership between NRM Organisations and the Grains Industry, funded by GRDC and the Ag Excellence Alliance Click

Acknowledgements

This guideline was developed using research by Sam Kleemann, Benjamin Fleet, Fleur Dolman and Gurjeet Gill (University of Adelaide).

Disclaimer

Any recommendations, suggestions or opinions contained in this publication do not necessarily represent the policy or views of the Upper North Farming Systems Group (UNFS) or the Grains Research and Development Corporation (GRDC).

No person should act on the basis of the contents of this publication without first obtaining specific, independent professional advice. The UNFS, GRDC and contributors to these guidelines may identify products by proprietary or trade names to help readers identify particular types of products. We do not endorse or recommend the products of any manufacturer referred to.

Other products may perform as well as or better than those specifically referred to. The UNFS and GRDC will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information in this publication.