

New ways to manage weeds in no-till

Key points

- Non chemical inter row weed control can work
- Auto steer offers great ability for accurate inter row control methods
- Combinations of treatments proved most successful

One advantage of no-till is less soil disturbance and ultimately less weed germination, especially at seeding, the traditional time for weed control to occur. However, some weeds still germinate in-crop resulting in the need for new approaches to weed control.

In 2005, SA No Till Farming Association (SANTFA) established a trial, with funding from a National Landcare Program – Natural Resources Innovation Grant, with the support of gps-Ag and Nufarm to look at the holistic use of in-crop chemical and non-chemical weed control methods.

Inter row treatments included various combinations and timings of glyphosate, cover crops, tillage and knife rolling to crimp weeds or cover crops. These were compared to the use of a blanket or inter row/banded application of TriflurX® or trifluralin 480 (1.6L/ha), and incorporated by sowing (IBS). Midas at 900 ml/ha was also applied to the Clearfield wheat post emergence in the Mallee.

Three sites were located across the state in association with the YP Alkaline Soils Group, Hart Field Site Group and the Mallee Sustainable Farming Project.

On the YP and at Hart, Krichauff wheat was sown at 90kg/ha on 28cm (11 inch) row spacing with all plots top dressed prior to sowing with 12kg/ha ryegrass to provide a consistent weed burden. In the Mallee, Clearfield Janz was sown at 50kg/ha on the same row spacing and 30kg/ha of brome grass was top dressed prior to sowing to provide the weed burden.

In some plots Saia oats (150kg/ha) or Indian mustard (10kg/ha) were sown as a cover crop either inter row or as a blanket green manure crop.

The use of 2cm guidance and auto steer allowed inter row seeding of cover crops as well as inter row spraying, cultivation and knife rolling.

SANTFA's Scientific Officer, Rohan Rainbow reports that it still early days in the development of new weed control methods for no-till but this trial has confirmed three key facts.

The use of knife rolling to crimp the stems of weeds or cover crops, causing them to die without re shooting is feasible on the inter row. This treatment was most successful when combined with a late application of glyphosate (Roundup PowerMax®540g/L,1/L/ha) applied inter row with a shielded sprayer. At Hart this treatment achieved 96 per cent kill compared to only 59 per cent in the Mallee.

Inter row cultivation was generally more successful when repeated; the first cultivation was in the third week September and the second in the third week October with between 74-89% of weeds killed depending on location. The crop did suffer some temporary setback from the tillage due to root pruning.

Saia oats are a much more competitive cover crop than Indian mustard. The combination of inter row Saia oats with early knife rolling provided the best weed control option of all, including the IBS herbicide, at Hart (98% kill) and on the YP (97%). It was in the top five treatments in the Mallee (83%). However, at Hart and in the Mallee this treatment resulted in nearly 50% yield loss, while on the YP the yield reduction was only 11 per cent.

SANTFA together with other members of the Conservation Agriculture Alliance of Australia and New Zealand (CAAANZ) are taking a national approach to research in new methods of weed control in no-till and will build on the results from this work over the coming years.

