

Awareness of non glyphosate tolerant crops

Glyphosate drift onto non tolerant crops can cause significant yield reduction but visual symptoms may not be apparent, unlike drift from 2,4-D herbicides.

Herbicide drift damage on cotton caused by 2,4-D is easily diagnosed by the visual symptoms of cupped, twisted leaves with distorted edges and growing points. Glyphosate damage however may not be shown visually on leaves, but rather in delayed crop maturity and yield reduction. The impact of the damage depends on the timing and severity of the drift occurrence.

This season there will be an increase in planting area of Roundup Ready Flex® which allows over the top glyphosate application up until 16 nodes. Roundup Ready® cotton however only allows this over the top application to 5 nodes. Grower communication is important to ensure glyphosate drift from Roundup Ready Flex® cotton at advanced stages does not damage Roundup Ready® or conventional crops at vulnerable growth stages.

Research undertaken by the Cotton CRC, exposed cotton plants to glyphosate at 17% and 3% of the field dose rate commonly used in cotton. Roundup Ready® herbicide was applied at 250g/ha and 50g/ha, at various growth stages.

It was found that throughout all experiments, there were no visual symptoms of herbicide damage; however results varied for each growth stage.

- Exposure of a 6 node plant to Roundup Ready® herbicide at 250 g/ha caused no measurable negative impact. The plant was able to compensate for any effects caused by the herbicide at this early crop stage, resulting in no delay in crop maturity or reduction in yield.
- Exposure of an 8 node plant at 250 g/ha caused no measurable negative effect on leaf production, but did delay peak flowering and crop maturity. Final boll count was not reduced, but a percentage of bolls were malformed and average boll size was reduced by 32%, resulting in a 16% yield reduction.
- Exposure of a 12 node plant to 250 g/ha caused an increase in leaf production and production of a large number of late bolls,

delaying crop maturity. Final boll number was increased by 46%, but many were small and didn't reach maturity. Average boll size was reduced by 23%, and lint yield by 13%.

- Exposure of a 16 node plant to 250 g/ha had little impact on the plant, except for a decrease in leaf area and a delay in crop maturity. Average boll size and lint yield were not affected.

For the experiments using 50 g/ha of Roundup Ready® herbicide, exposure at 6 and 16 nodes had similar effects to the 250 g/ha rate.

- Exposure to an 8 node plant at 50 g/ha caused a small decrease in leaf number and boll size, but didn't delay crop maturity or reduce lint yield.
- Exposure of a 12 node plant at 50 g/ha had little impact on the plant. The herbicide exposure reduced average boll size and delaying crop maturity, but did not reduce lint yield.

This research shows that the effects of glyphosate drift will not be apparent until the end of the season, however yield losses may be significant. In the field, glyphosate drift is often combined with 2,4-D drift which can significantly increase the yield loss caused by herbicide damage.

Correct spray application techniques including spraying in suitable weather conditions and communication with neighbours will help to minimise herbicide drift.

Thanks to Graham Charles' research for this article. More information on herbicide drift identification and damage can be found on the Cotton CRC website in the Weeds section under Publications, www.cottoncrc.org.au

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This training course is designed to give participants an overview of the entire cotton pipeline from farm to predicting fabric performance. The course has limited vacancies due to the hands-on nature of proceedings. For more information please contact Lauryn Hanna on 6750 6308