

Herbicide damage guide for cotton

Photographs & material by:

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Herbicide: **triclopyr + picloram**
Rate: **15 g + 5 g a.i./ha**
% of typical field rate **10%**
Date of exposure: **13th Jan**
(12 weeks post-emergence)
Growth stage at exposure: **17 nodes**

| <u>Damage key:</u> | |
|---------------------------|----------|
| Leaf loss | |
| Leaf distortion | x |
| Petiole distortion | |
| Plant stunting | |
| Square shedding | |
| Boll shedding | x |

Herbicidal action

Herbicide group: **I**

triclopyr

Translocation: readily moves to the plant growth points
Mode of action: an auxin-type (phenoxy) herbicide that affects cell wall plasticity & nucleic acid metabolism. Low concentrations cause uncontrolled cell division & growth, leading to plant death.
Residual activity: some activity. Translocated to the growing points following root absorption
Soil half-life: around 30 days

picloram

Translocation: readily absorbed by roots and foliage and moves to the growing points
Mode of action: an auxin-type herbicide
Residual activity: strong residual activity and readily absorbed by plant roots
Soil half-life: 90 days, but can be up to 200 days. Breakdown is slower in dry, cool conditions.



Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 17 node cotton. Photo taken on 16th Jan, 3 days after exposure.

No symptoms of Grazon damage were apparent in the days immediately following exposure.



Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 17 node cotton. Photo taken on 20th Jan, 7 days after exposure.

Grazon damage become apparent on many of the newly expanding leaves a week after exposure. These leaves are cupped and distorted, with curled and blistered edges, and yellow discoloration.



Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 17 node cotton. Photo taken on 10th Feb, 33 days after exposure.

The only signs of herbicide damage remained the discolouration of newly expanding leaves 33 days after exposure. These leaves are mildly cupped and distorted, with curled and blistered edges, and yellow discolouration. No symptoms typical of Group I damage were apparent on these plants.

Impact on plant growth

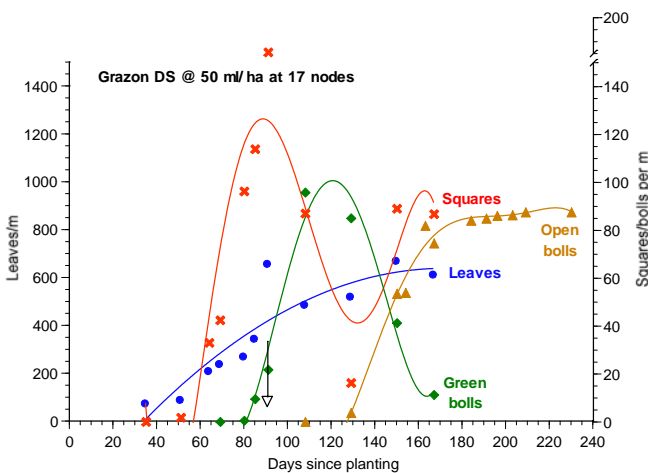
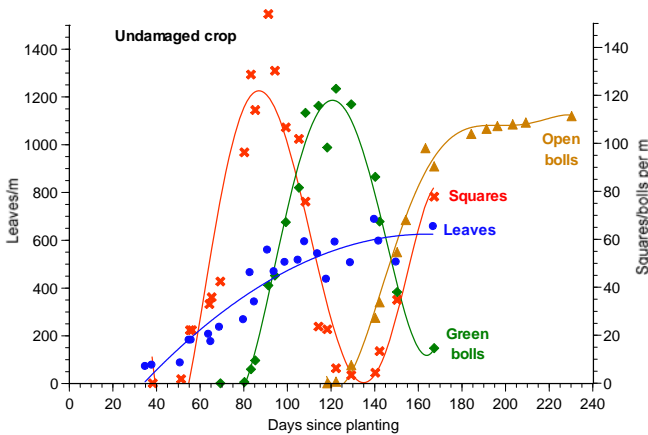
Plants: exposure to the 10% rate of triclopyr + picloram at 17 nodes caused almost no visible symptoms of damage, other than mild distortion and discolouration of newly expanding leaves. However, plants were stunted by the exposure and remained 2.3 nodes and 9 cm shorter at picking.

Leaves: plants had 7% fewer leaves and 31% less leaf area at the last observations.

Squares: there was no apparent impact on square production.

Bolls: some bolls were shed following the herbicide exposure, with peak boll production reduced by 46%. Few bolls were retained above node 16, resulting in a 30% reduction in final boll retention. Plants did not compensate for this loss with late bolls. There was no impact on the average weight of open bolls or crop maturity.

Lint: ginning turnout and fibre quality were unaffected by the herbicide damage but lint yield was reduced by 21%.



| Final plant count data | | |
|--------------------------------------|----------------|----------------------|
| | undamaged crop | triclopyr + picloram |
| Nodes/plant | 30.9 | 28.6 |
| Leaves/m* | 656 | 609 |
| Leaf area (cm²/m)* | 21196 | 14724 |
| Reduction in leaf area* | | 31% |
| Bolls/m | 132 | 92 |
| Boll weight (g/open boll) | 5.3 | 5.1 |
| Retention in posit's 1-3^ | 95% | 99% |
| Nodes carrying >80% bolls# | 7 - 18 | 7 - 16 |
| Days to 50% open bolls | 157 | 149 |
| Maturity delay (days) | | - |
| % Open bolls at picking | 85% | 88% |
| Lint yield/ha | 2380 | 1876 |

Exposure to 10% of a typical field rate of triclopyr + picloram at 17 nodes caused little obvious damage. Nevertheless, plant growth and development were affected, with reductions in plant height, node number, leaf number and leaf area.

Many bolls were shed following the exposure, resulting in a reduction in final boll retention. Boll size, crop maturity and fibre quality were unaffected, but lint yield was reduced by 21%.

Note* These parameters were last recorded 167 days after planting.

Note^ Percentage of retained bolls in positions 1-3.

Note# The spread of nodes carrying more than 80% of open bolls.