

## Herbicide damage guide for cotton

Photographs & material by:

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**Herbicide:** **triclopyr + picloram**  
**Rate:** **75 g + 25 g a.i./ha**  
**% of typical field rate** **50%**  
**Date of exposure:** **13<sup>th</sup> Jan**  
**(12 weeks post-emergence)**  
**Growth stage at exposure:** **17 nodes**

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

### 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 250 ml/ha to 17 node cotton. Photo taken on 14<sup>th</sup> Jan, 1 day after exposure.

Symptoms of Grazon damage were apparent soon after exposure. Stems and leaf petioles were highly distorted, changing the leaf orientation and giving the crop a wilted appearance.



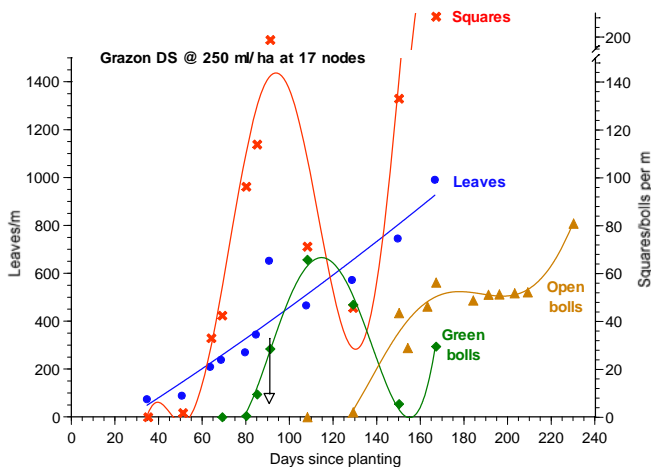
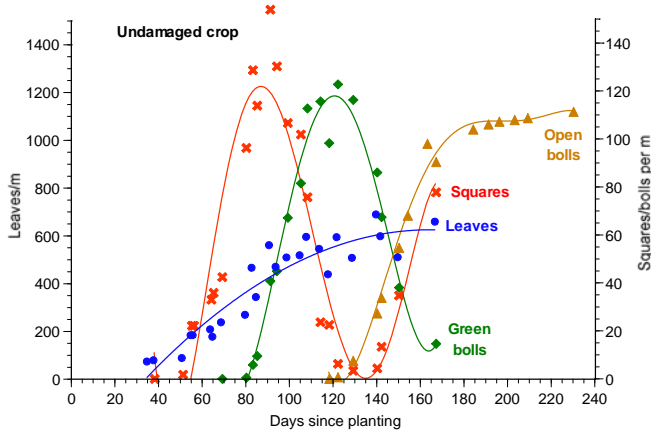
Grazon DS (triclopyr + picloram) applied broadcast at 250 ml/ha to 17 node cotton. Photo taken on 19<sup>th</sup> Jan, 6 days after exposure.

Most leaves had resumed normal orientation by 6 days after exposure, although some petioles were still bent. However, damage had now become apparent on many of the newly expanding leaves. These leaves were cupped and distorted, with curled and blistered edges, and yellow discolouration.



Grazon DS (triclopyr + picloram) applied broadcast at 250 ml/ha to 17 node cotton. Photo taken on 10<sup>th</sup> Feb, 33 days after exposure.

More typical signs of Group I damage were apparent on newly emerging leaves by 33 days. These leaves were cupped and distorted, with curled edges and narrow 'fingers'.



### Impact on plant growth

**Plants:** exposure to the 50% rate of triclopyr + picloram at 17 nodes caused petiole twisting, within a few hours of the exposure, giving the plants a wilted appearance. Plant growth and development were delayed by the exposure, resulting in late-season vegetative growth and compensation. Plants remained 8 cm and 2.8 nodes shorter on average at picking.

**Leaves:** plants had 50% more leaves and 19% more leaf area at the last observation.

**Squares:** plants produced a large number of late squares.

**Bolls:** many bolls were shed following the herbicide exposure, causing a large delay in boll production and crop maturity. Few bolls were retained above node 13, with a late set of bolls on nodes 26 – 29. Average weight of open bolls was reduced by 36%, with only 59% of bolls open at picking.

**Lint:** the herbicide damage affected seed and lint development, resulting in small seeds and a ginning turnout of 56%. Lint yield was reduced by 61%.

Final plant count data		
	undamaged crop	triclopyr + picloram
<b>Nodes/plant</b>	30.9	28.1
<b>Leaves/m*</b>	656	987
<b>Leaf area (cm<sup>2</sup>/m)*</b>	21196	25139
<b>Reduction in leaf area*</b>		-
<b>Bolls/m</b>	132	138
<b>Boll weight (g/open boll)</b>	5.3	3.4
<b>Retention in posit's 1-3^</b>	95%	95%
<b>Nodes carrying &gt;80% bolls#</b>	7 - 18	8 - 27
<b>Days to 50% open bolls</b>	157	210
<b>Maturity delay (days)</b>		53
<b>% Open bolls at picking</b>	85%	59%
<b>Lint yield/ha</b>	2380	939

Exposure to 50% of a typical field rate of triclopyr + picloram at 17 nodes caused almost immediate petiole twisting but only limited leaf damage.

The herbicide exposure had a large impact on square and boll production and retention, with most early bolls shed, and few bolls retained on the next 8 nodes. Crop maturity was delayed by 53 days and lint yield reduced by 61%.

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.