

## Herbicide damage guide for cotton

Photographs & material by:

Graham Charles  
NSW Dept. Primary Industries

**Herbicide:** **triclopyr + picloram**  
**Rate:** **15 g + 5 g a.i./ha**  
**% of typical field rate** **10%**  
**Date of exposure:** **25<sup>th</sup> Nov**  
**(5 weeks post-emergence)**  
**Growth stage at exposure:** **5 nodes**

<u>Damage key:</u>	
<b>Leaf loss</b>	
<b>Leaf distortion</b>	<b>x</b>
<b>Petiole distortion</b>	
<b>Plant stunting</b>	<b>x</b>
<b>Square shedding</b>	
<b>Boll shedding</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 50 ml/ha to 5 node cotton. Photo taken on 1<sup>st</sup> Dec, 6 days after exposure.

Some symptoms of Grazon damage were apparent 6 days after exposure as rolling and yellow/orange discolouration on the margins of newer leaves.



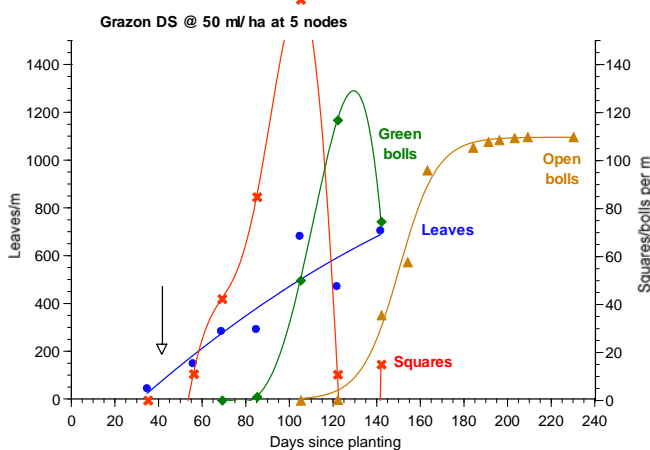
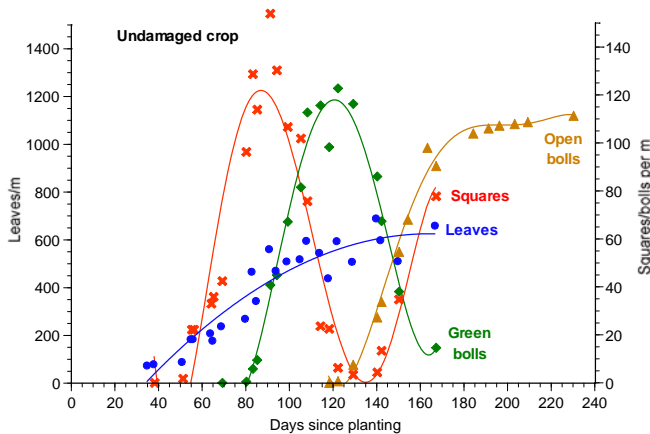
Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 5 node cotton. Photo taken on 15<sup>th</sup> Dec, 20 days after exposure.

Newly emerging leaves showed typical signs of phenoxy damage 20 days after exposure to Grazon. New leaves were very distorted, with long, narrow 'fingers'.



Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 5 node cotton. Photo taken on 14<sup>th</sup> Jan, 50 days after exposure.

Plants were showing few signs of damage by 50 days after exposure, although damage was apparent on some of the newer, fully expanded leaves. These leaves had a leathery appearance, with prominent white veins.



### Impact on plant growth

**Plants:** exposure to the 10% rate of triclopyr + picloram at 5 nodes had a minimal effect on plant growth and development. Plants were 12.5 cm shorter at picking.

**Leaves:** the herbicide caused some leaf discoloration and distortion. There was no effect on leaf number but leaf area was down by 16% at the final observation.

**Squares:** there was no apparent effect on square production.

**Bolls:** there was a 10 day delay in the start of boll production but no reduction in peak boll production or change in the pattern of boll retention. The average weight of open bolls was not reduced and there was no delay in crop maturity, but proportionally fewer bolls were open at picking, down by 7%.

**Lint:** ginning turnout, fibre quality and lint yield were unaffected by the herbicide damage.

Final plant count data		
	undamaged crop	triclopyr + picloram
<b>Nodes/plant</b>	30.9	30.5
<b>Leaves/m*</b>	595	703
<b>Leaf area (cm<sup>2</sup>/m)*</b>	24900	21016
<b>Reduction in leaf area*</b>		16%
<b>Bolls/m</b>	132	127
<b>Boll weight (g/open boll)</b>	5.3	5.1
<b>Retention in posit's 1-3<sup>^</sup></b>	95%	100%
<b>Nodes carrying &gt;80% bolls<sup>#</sup></b>	7 - 18	8 - 17
<b>Days to 50% open bolls</b>	157	152
<b>Maturity delay (days)</b>		-
<b>% Open bolls at picking</b>	85%	78%
<b>Lint yield/ha</b>	2380	2264

Exposure to 10% of a typical field rate of triclopyr + picloram at 5 nodes caused some leaf discoloration and distortion, and a reduction in leaf area.

There were a few minor effects on boll production and retention, with proportionally fewer bolls open at picking. Boll weight, crop maturity, fibre quality and lint yield were unaffected by the herbicide exposure.

Note\* These parameters were last recorded 142 days after planting.

Note<sup>^</sup> Percentage of retained bolls in positions 1-3.

Note<sup>#</sup> The spread of nodes carrying more than 80% of open bolls.