

## Herbicide damage guide for cotton

Photographs & material by:

Graham Charles  
Industry & Investment NSW

**Herbicide:** **triclopyr + picloram**  
**Rate:** **75 g + 25 g a.i./ha**  
**% of typical field rate** **50%**  
**Date of exposure:** **14<sup>th</sup> Oct**  
**(pre-planting)**

**Growth stage at exposure:**

<u>Damage key:</u>	
<b>Leaf loss</b>	
<b>Leaf distortion</b>	<b>x</b>
<b>Petiole distortion</b>	
<b>Plant stunting</b>	
<b>Square shedding</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 and incorporated prior to planting cotton. Photo taken on 4<sup>th</sup> Dec, 42 days after emergence.

Most plants showed no symptoms of herbicide damage.



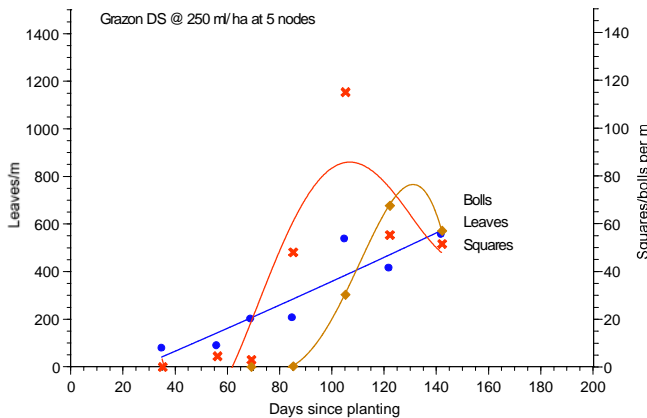
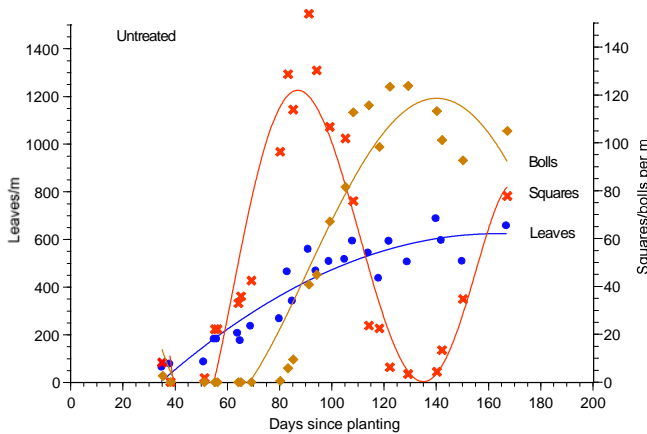
Grazon DS (triclopyr + picloram) applied broadcast at 250 ml/ha and incorporated prior to planting cotton. Photo taken on 4<sup>th</sup> Dec, 42 days after emergence.

Symptoms of Grazon damage were apparent on some plants. Damaged plants had “leathery” leaves, with distorted leaf margins and some yellow spotting.



Grazon DS (triclopyr + picloram) applied broadcast at 250 ml/ha and incorporated prior to planting cotton. Photo taken on 31<sup>st</sup> Dec, 69 days after emergence.

Plants showed no obvious symptoms of herbicide damage at this stage, although there was still some crinkling of the leaf margins.



### Impact on plant growth

**Leaves:** exposure to residual triclopyr + picloram had no visual effect on most cotton plants, but caused leaf distortion on some plants. Plants appeared to be slightly shorter, with fewer nodes during the season, but there was no effect on height, nodes or leaf number at the end of the season. Leaf area at the end of the season was much higher on these plants than on undamaged plants.

**Squares:** there was no affect on square production.

**Bolls:** residual Grazon caused a small reduction on boll production, but caused a much larger reduced boll retention, with 42% fewer bolls retained to picking. There was no effect on the distribution of these bolls on the plant, but the bolls were much smaller. These factors combined to give a 20% reduction in lint yield.

<b>Final plant count data</b>		
	<b>Untreated</b>	<b>Grazon DS</b>
<b>Nodes/plant</b>	30.9	28.6
<b>Leaves/m*</b>	543	564
<b>Leaf area (cm<sup>2</sup>/m)*</b>	10176	19529
<b>Reduction in leaf area*</b>		-
<b>Bolls/m</b>	132	76
<b>Boll weight (g/boll)*</b>	3.1	2.2
<b>Retention posit's 1-3^</b>	95%	98%
<b>Bolls/node (nodes 10 – 20)#</b>	0.63	0.62
<b>Days to 50% open</b>	157	154
<b>Maturity delay (days)</b>		-
<b>% Open bolls at picking</b>	84%	85%
<b>Lint yield/ha</b>	2067	1648

Exposure to Grazon DS residue caused minimal visual damage to the cotton, but reduced boll size, boll retention and yield. There was no effect on crop maturity.

Note\* These parameters were last recorded 114 days after planting.

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

Note# Average number of retained mature bolls on nodes 10 to 20.