

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: **8th Dec**
(8 weeks post-emergence)
Growth stage at exposure: **9 nodes**

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

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 9 node cotton. Photo taken on 15th Dec, 7 days after exposure.

Some symptoms of Grazon damage were apparent 7 days after exposure as rolling and yellow discoloration on the margins of newer leaves.



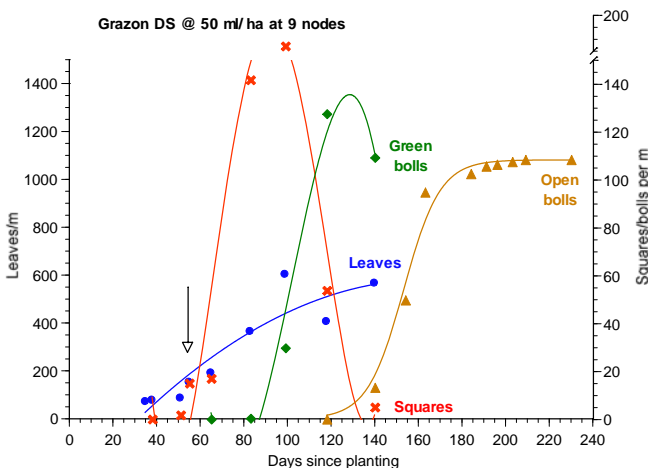
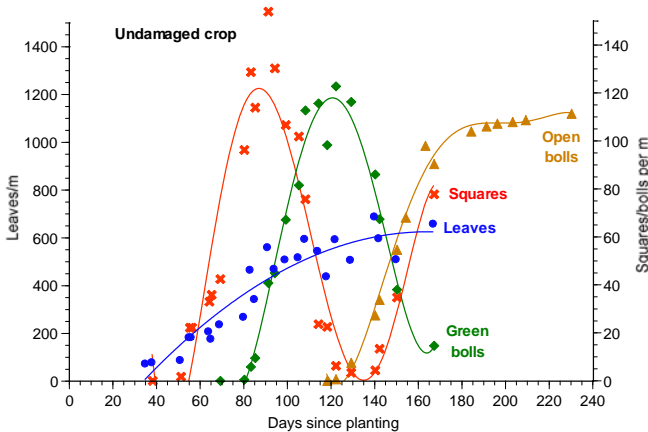
Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 9 node cotton. Photo taken on 5th Jan, 28 days after exposure.

Newly emerging leaves are showing mild signs of Group I damage 28 days after exposure to Grazon. New leaves were mildly distorted, with curled edges, narrow 'fingers' and more prominent veins.



Grazon DS (triclopyr + picloram) applied broadcast at 50 ml/ha to 9 node cotton. Photo taken on 14th Jan, 37 days after exposure.

Plants were showing few signs of damage 37 days after exposure.



Impact on plant growth

Plants: exposure to the 10% rate of triclopyr + picloram at 9 nodes appeared to have a minimal impact on plant growth and development. Nevertheless, there was a 40% increase in the proportion of tipped-out plants, and plants were 6.5 cm and 1.6 nodes shorter at picking.

Leaves: the herbicide caused some initial leaf distortion. There was no obvious effect later in the season, but plants had 21% fewer leaves and 17% less leaf area at the last observation.

Squares: plants produced a mass of small, distorted squares following the exposure.

Bolls: there was a 10 day delay in the start of boll production, but no impact on peak boll production, the pattern of boll retention or boll size. There was no delay in average crop maturity but there was a 6% reduction in the proportion of bolls open at picking.

Lint: ginning turnout and lint quality were unaffected by the herbicide damage, but lint yield was reduced by 10%.

Final plant count data		
	undamaged crop	triclopyr + picloram
Nodes/plant	30.9	29.3
Leaves/m*	687	545
Leaf area (cm²/m)*	23830	19662
Reduction in leaf area*		17%
Bolls/m	132	129
Boll weight (g/open boll)	5.3	5.1
Retention in posit's 1-3^	95%	94%
Nodes carrying >80% bolls#	7 - 18	7 - 18
Days to 50% open bolls	157	153
Maturity delay (days)		-
% Open bolls at picking	85%	80%
Lint yield/ha	2380	2133

Exposure to 10% of a typical field rate of triclopyr + picloram at 9 nodes caused some leaf discolouration and distortion, and a reduction in leaf number, leaf area and plant size.

Square and boll production were also affected but there was no delay in crop maturity. Fibre quality was unaffected but lint yield was reduced by 10%.

Note* These parameters were last recorded 140 days after planting.

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

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