

## Herbicide damage guide for cotton

Photographs & material by:

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**Herbicide:** atrazine  
**Rate:** 200 g a.i./ha  
**% of typical field rate:** 10%  
**Date of exposure:** 13<sup>th</sup> Jan  
(12 weeks post-emergence)  
**Growth stage at exposure:** 17 nodes

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

### Herbicidal action

**Herbicide group:** C  
**Translocation:** readily absorbed by roots and translocated to shoots, absorbed by leaves  
**Mode of action:** inhibits photosynthesis  
**Residual activity:** prolonged residual activity. Plant-back period may exceed 1-2 years depending on rate, soil moisture and temperature  
**Soil half-life:** 60 days. Breakdown is slower in dry, alkaline soils and cold conditions.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 17 node cotton. Photo taken on 20<sup>th</sup> Jan, 7 days after exposure.

Mild symptoms of atrazine damage were apparent on many of the expanded leaves 7 days after exposure. Damaged leaves had a mottled appearance, with patches of inter-veinal yellowing between green veins.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 17 node cotton. Photo taken on 5<sup>th</sup> Feb, 23 days after exposure.

Mild symptoms of atrazine damage were still apparent on some of the outer leaves 23 days after exposure. Damaged leaves had a mottled appearance, with patches of inter-veinal yellowing between green veins.



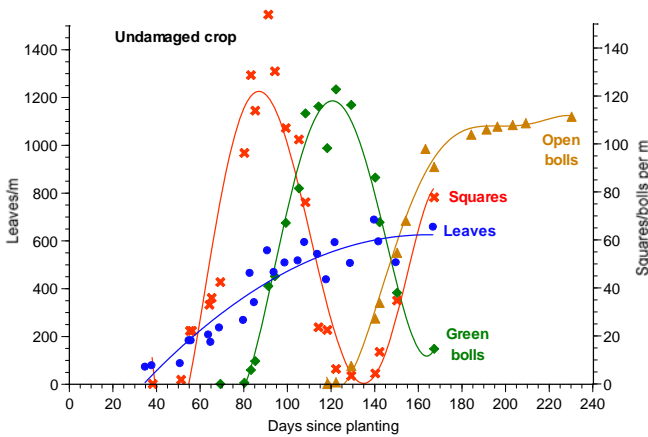
Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 17 node cotton. Photo taken on 10<sup>th</sup> Feb, 28 days after exposure.

Symptoms of atrazine damage remain apparent on some of the outer leaves, with patches of inter-veinal yellowing 28 days after exposure.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 17 node cotton. Photo taken on 11<sup>th</sup> Mar, 57 days after exposure.

A few symptoms of atrazine damage were still apparent on the lower leaves of these plants 57 days after exposure.



### Impact on plant growth

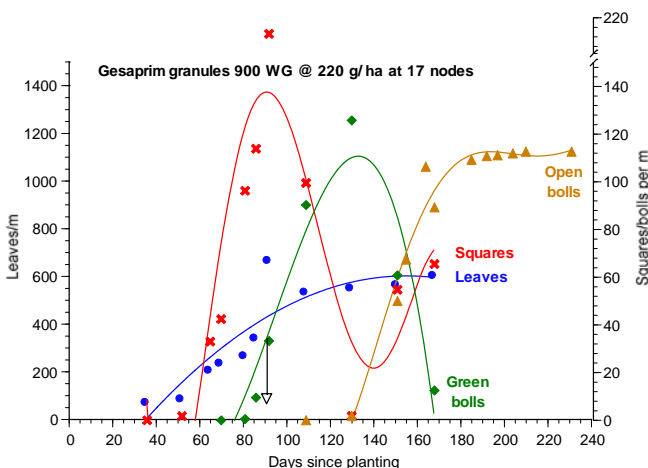
**Plants:** exposure to the 10% rate of atrazine at 17 nodes caused some stunting, with plants 10 cm and 1.4 nodes shorter and 8% lighter by weight.

**Leaves:** the herbicide exposure caused mild inter-veinal yellowing on some of the exposed leaves, with symptoms remaining throughout the life of the crop. The damage resulted in an 8% reduction in leaf number and a 30% reduction in leaf area at the final observation.

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

**Bolls:** there were no obvious adverse effects on boll production, the pattern of boll retention or average crop maturity. Nevertheless, there was a 6% reduction in the proportion of bolls open at picking and the open bolls were 7% lighter compared to the undamaged crop.

**Lint:** ginning turnout was unaffected by the herbicide damage, but the cotton fell below base grade with a staple length of 1.114" and lint yield was reduced by 10%.



Final plant count data		
	undamaged	atrazine
<b>Nodes/plant</b>	30.9	29.5
<b>Leaves/m*</b>	657	603
<b>Leaf area (cm<sup>2</sup>/m)*</b>	21196	14865
<b>Reduction in leaf area*</b>		30%
<b>Bolls/m</b>	132	126
<b>Boll weight (g/open boll)</b>	5.3	4.9
<b>Retention in posit's 1-3<sup>^</sup></b>	95%	95%
<b>Nodes carrying &gt;80% bolls<sup>#</sup></b>	7 - 18	7 - 18
<b>Days to 50% open bolls</b>	157	153
<b>Maturity delay (days)</b>		-
<b>% Open bolls at picking</b>	85%	80%
<b>Lint yield/ha</b>	2380	2142

Exposure to 10% of a typical field rate of atrazine at 17 nodes caused mild plant damage, with mild inter-veinal yellowing of many of the outer leaves. Plants were slightly stunted, with fewer leaves and less leaf area.

Square and boll production and retention were less impacted, with no delay in crop maturity. Boll size and fibre quality were reduced and lint yield was reduced by 10%.

Note\* These parameters were last recorded 167 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.