Herbicide damage guide for cotton

Photographs & material by: Graham Charles
NSW Dept. Primary Industries

Herbicide:	**atrazine**
Rate:	**200 g a.i./ha**
% of typical field rate	**10%**
Date of exposure:	**25th Nov**
	(5 weeks post-emergence)
Growth stage at exposure:	**5 nodes**

Damage key:

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 5 node cotton. Photo taken on 1st Dec, 6 days after exposure.

Mild inter-veinal yellowing was apparent on many of the older leaves 6 days after exposure. No damage could be seen on newly-emerged leaves.

Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 5 node cotton. Photo taken on 15th Dec, 20 days after exposure.

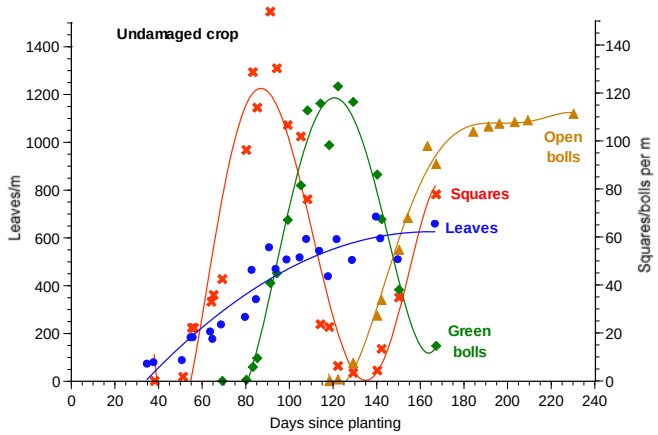
Most symptoms of atrazine damage had faded 20 days after exposure.

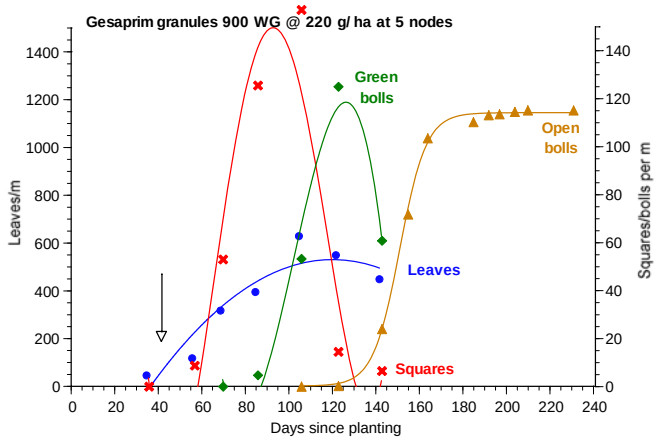
Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 5 node cotton. Photo taken on 23rd Dec, 28 days after exposure.

No herbicide damage symptoms could be seen 4-weeks after the herbicide exposure.

Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 5 node cotton. Photo taken on 14 Jan, 50 days after exposure.

No symptoms of atrazine damage were apparent on these plants at this or later growth stages.





Impact on plant growth

Plants: exposure to the 10% rate of atrazine at 5 nodes had no effect on plant height, but plants were 15% smaller by weight at the final observation.

Leaves: the herbicide caused mild inter-veinal yellowing on some of the exposed leaves, but no other visible damage. Leaf production appeared to be unaffected during the early part of the season, but there was a reduction in leaf number and leaf area in the middle of the season, with plants having 25% fewer leaves and 30% less leaf area at the final observation.

Squares: there was no apparent effect on square production.

Bolls: there was no obvious effect on boll production or the pattern of boll retention, boll size, the proportion of open bolls or crop maturity.

Lint: there was no effect on ginning turnout, fibre quality or lint yield.

Final plant count data

	undamaged	atrazine
Nodes/plant	30.9	31.7
Leaves/m*	595	446
Leaf area (cm²/m)*	24900	17511
Reduction in leaf area*		30%
Bolls/m	132	124
Boll weight (g/open boll)	5.3	5.0
Retention in posit's 1-3^	95%	99%
Nodes carrying >80% bolls#	7 - 18	8 - 17
Days to 50% open bolls	157	152
Maturity delay (days)		-
% Open bolls at picking	85%	85%
Lint yield/ha	2380	2352

Exposure to 10% of a typical field rate of atrazine at 5 nodes caused mild inter-veinal yellowing of some early leaves and a reduction in plant size, leaf number and leaf area.

Boll production, the pattern of boll retention, boll size, the proportion of open bolls and crop maturity were unaffected and there was no reduction in fibre quality or lint yield.

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

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

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