

Herbicide damage guide for cotton

Photographs & material by:

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Herbicide: atrazine
Rate: 1 kg a.i./ha
% of typical field rate: 50%
Date of exposure: 14th Oct
(pre-planting)
Growth stage at exposure:

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

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 1.1 kg/ha and incorporated prior to planting cotton. Photo taken on 17th Nov, 24 days after emergence.

Symptoms of atrazine damage were not readily apparent at this growth stage 24 days after emergence, although there was some slight yellowing of the leaves.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 1.1 kg/ha and incorporated prior to planting cotton. Photo taken on 4th Dec, 42 days after emergence.

Symptoms of atrazine damage were not readily apparent 42 days after emergence, although there was some slight yellowing on some leaves.

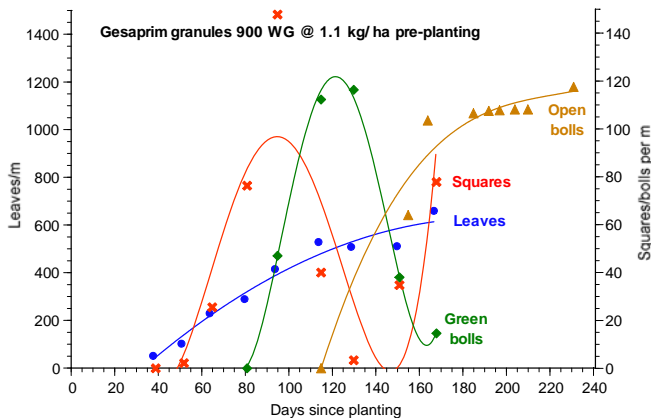
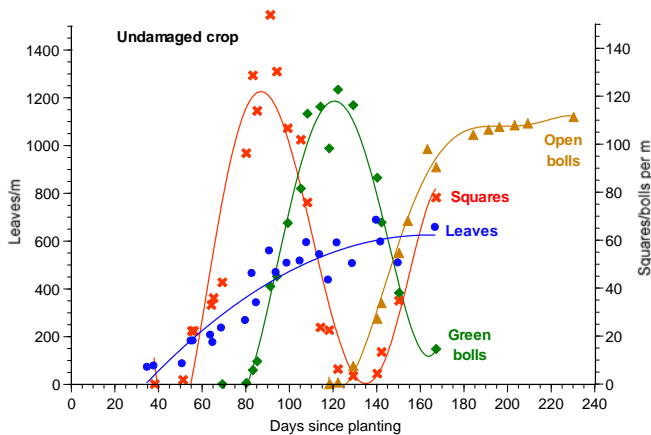


Untreated plants on 4th Dec. There were few visible differences between these and the plants exposed to the high rate of atrazine at planting.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 1.1 kg/ha and incorporated prior to planting cotton. Photo taken on 14th Jan, 82 days after emergence.

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



Impact on plant growth

Plants: were stunted and remained 12 cm shorter at picking following exposure to the 50% rate of residual atrazine.

Leaves: residual atrazine was absorbed by the plant roots and affected early shoot development. Inter-veinal yellowing was apparent on some leaves during early growth. There was a 30% reduction in final leaf area, although differences were not apparent during the season.

Squares: there was no apparent effect on square production.

Bolls: there was no obvious effect on boll production, but some early fruit were lost, with 82% of bolls were retained between nodes 9 - 18, 2 nodes higher than the undamaged crop. There was also a 7% reduction in the number of bolls open at picking, but no delay in crop maturity.

Lint: ginning turnout was unaffected by the herbicide damage, but the cotton fell below base grade with a staple length of 1.12" and lint yield was reduced by 15%.

Final plant count data		
	undamaged	atrazine
Nodes/plant	30.9	30.8
Leaves/m*	543	525
Leaf area (cm²/m)*	23764	16731
Reduction in leaf area*		30%
Bolls/m	132	150
Boll weight (g/open boll)	5.3	5.2
Retention in posit's 1-3^	95%	98%
Nodes carrying >80% bolls#	7 - 18	9 - 18
Days to 50% open bolls	157	154
Maturity delay (days)		-
% Open bolls at picking	85%	78%
Lint yield/ha	2380	2032

Exposure to 50% of a typical field rate of residual atrazine caused inter-veinal yellowing of some early leaves and a reduction in plant height and leaf area.

Boll production was not affected, but some early bolls were lost on nodes 7 and 8. Later bolls were retained, but there was a reduction in fibre quality and a 15% reduction in lint yield. There was no delay in crop maturity.

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

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

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