

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: 8th Dec
(8 weeks post-emergence)
Growth stage at exposure: 9 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 9 node cotton. Photo taken on 15th Dec, 7 days after exposure.

There was no apparent damage on the plants 7 days after exposure.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 9 node cotton. Photo taken on 23rd Dec, 15 days after exposure.

Mild symptoms of atrazine damage were apparent on some of the expanded leaves 15 days after exposure. Damaged leaves had a mottled appearance, with patches of inter-veinal yellowing between green veins.



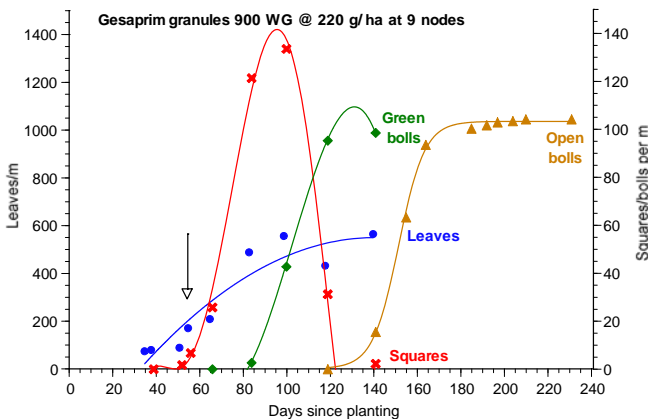
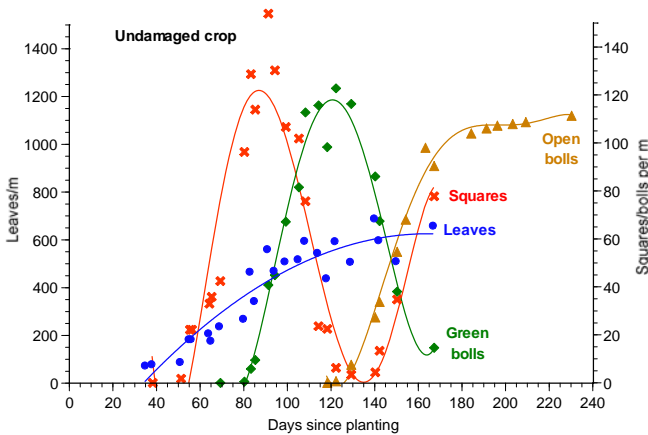
Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 9 node cotton. Photo taken on 5th Jan, 28 days after exposure.

Some symptoms of atrazine damage remain apparent on some of the older, lower leaves, with patches of inter-veinal yellowing 28 days after exposure. However, plants appear to be unaffected by this damage, with no damage symptoms apparent on most of the plant.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 220 g/ha to 9 node cotton. Photo taken on 14 Jan, 37 days after exposure.

Few symptoms of atrazine damage were still apparent on the lower leaves of these plants 37 days after exposure. Plants otherwise appeared to be unaffected by the atrazine.



Impact on plant growth

Plants: exposed to the 10% rate of atrazine at 9 nodes were on average 2.2 nodes and 16 cm shorter than the undamaged plants at picking. There was also a doubling of the percentage of tipped-out plants.

Leaves: inter-veinal yellowing was apparent on some exposed leaves, but there was no other visible damage. Plants had 18% fewer leaves and 12% 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, the pattern of boll retention or the average weight of open bolls but there were 8% fewer bolls at picking. Crop maturity was unaffected.

Lint: ginning turnout was unaffected by the herbicide damage, but the cotton fell below base grade with 11.1% short fibres and a staple length of 1.112". Lint yield was reduced by 7%.

Final plant count data		
	undamaged	atrazine
Nodes/plant	30.9	28.7
Leaves/m*	687	562
Leaf area (cm²/m)*	23830	21039
Reduction in leaf area*		12%
Bolls/m	132	121
Boll weight (g/open boll)	5.3	5.4
Retention in posit's 1-3^	95%	96%
Nodes carrying >80% bolls#	7 - 18	0.59
Days to 50% open bolls	157	151
Maturity delay (days)		-
% Open bolls at picking	85%	83%
Lint yield/ha	2380	2206

Exposure to 10% of a typical field rate of atrazine at 9 nodes caused inter-veinal yellowing of some of the lower leaves. Interestingly, plants did not compensate for this minor damage, whereas the higher rate caused more damage, but plants compensated for the damage.

There was a reduction in plant height, leaf number and area, boll retention and fibre quality. Crop maturity was not delayed, but lint yield was reduced by 7%.

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.