

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: 25th Nov
(5 weeks post-emergence)
Growth stage at exposure: 5 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 1.1 kg/ha to 5 node cotton. Photo taken on 4th Dec, 9 days after exposure.

There was no apparent damage on emerging leaves 9 days after exposure, but some of the older leaves had patches of inter-veinal yellowing.



Gesaprim® granules 900 WG (atrazine) applied broadcast at 1.1 kg/ha to 5 node cotton. Photo taken on 15th Dec, 20 days after exposure.

Symptoms of atrazine damage were still apparent on some of the older leaves 20 days after exposure, with patches of inter-veinal yellowing.



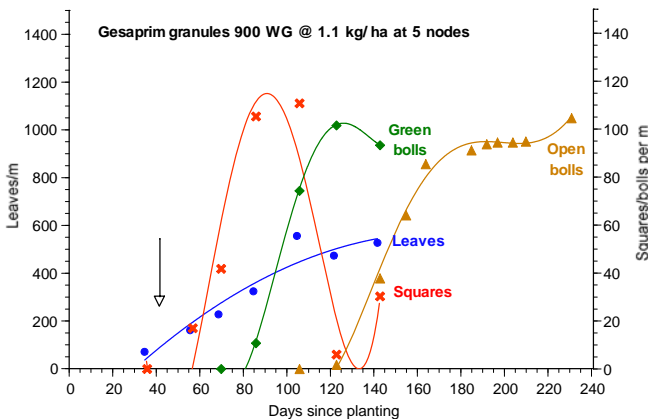
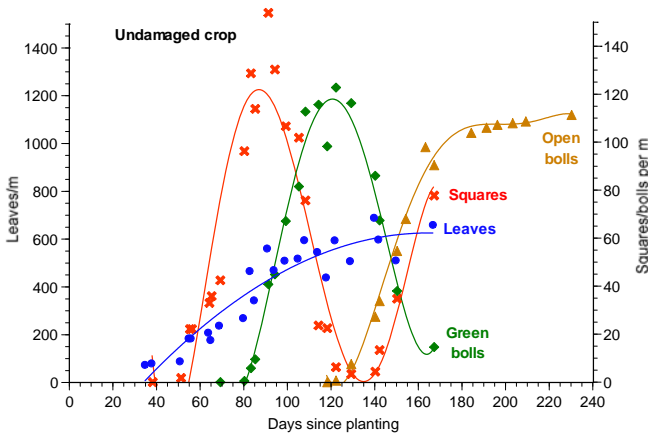
Gesaprim® granules 900 WG (atrazine) applied broadcast at 1.1 kg/ha to 5 node cotton. Photo taken on 23rd Dec, 28 days after exposure.

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



Gesaprim® granules 900 WG (atrazine) applied broadcast at 1.1 kg/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 50% rate of atrazine at 5 nodes caused a 20% increase in tipping-out. There was a reduction in plant size of 2.4 nodes and 24 cm height and a 10% reduction in average plant weight.

Leaves: inter-veinal yellowing was apparent on some of the exposed leaves, but there was no other visible damage. However, leaf number was reduced by 12% and leaf area by 16% at the final observation.

Squares: there were no obvious effects on square production.

Bolls: the herbicide damage didn't affect the pattern of boll retention, but caused a 19% reduction in peak boll production and a 5% reduction in open bolls at picking. There was no reduction in the average weight of open bolls or delay in crop maturity.

Lint: ginning turnout and fibre quality were unaffected by the herbicide damage but lint yield was reduced by 15%.

Final plant count data		
	undamaged	atrazine
Nodes/plant	30.9	28.5
Leaves/m*	595	524
Leaf area (cm²/m)*	24900	20897
Reduction in leaf area*		16%
Bolls/m	132	130
Boll weight (g/open boll)	5.3	5.2
Retention in posit's 1-3[^]	95%	96%
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	2033

Exposure to 50% of a typical field fate of atrazine at 5 nodes caused inter-veinal yellowing of some early leaves and a reduction in plant size, leaf number and leaf area.

Boll production, boll number, boll size, crop maturity and fibre quality were largely unaffected, but a number of small reductions combined to give a 15% reduction in 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.