Herbicide damage guide for cotton

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

Herbicide: simazine
Rate: 300 g a.i./ha
% of typical field rate 10%
Date of exposure: 8th Dec
(8 weeks post-emergence)
Growth stage at exposure: 9 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
Mode of action: inhibits photosynthesis
Residual activity: prolonged residual activity. Plant-back period may be up to 1 year depending on rate, soil moisture, soil Ph and temperature
Soil half-life: 55 - 186 days. Breakdown is slower in dry, alkaline and cold soils

Simazine granules 900 WG were applied broadcast at 330 g/ha to 9 node cotton. Photo taken on 15th Dec, 7 days after exposure.

No symptoms of simazine damage were apparent at any stage.

Simazine granules 900 WG were applied broadcast at 330 g/ha to 9 node cotton. Photo taken on 23rd Dec, 15 days after exposure.

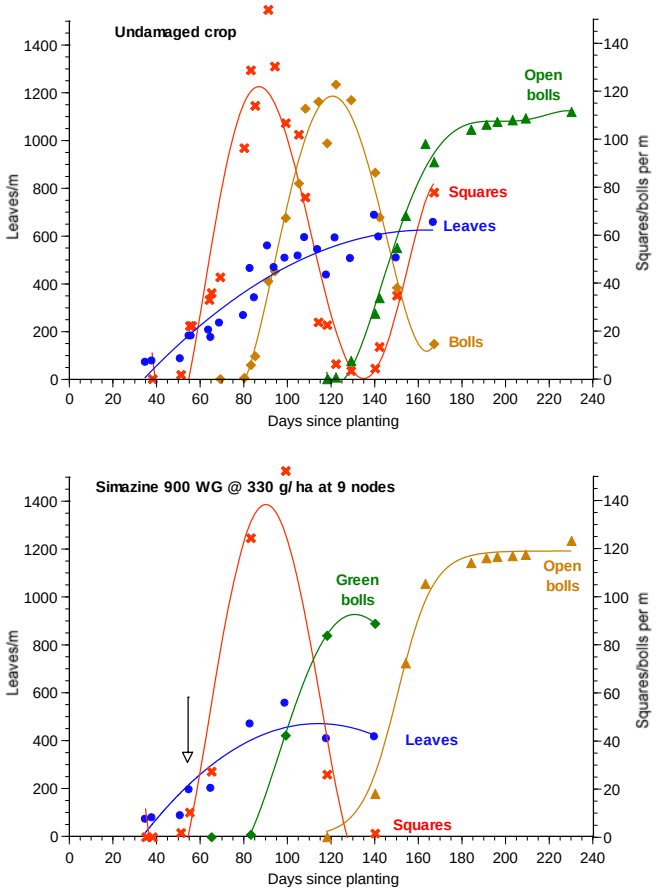
No symptoms of simazine damage were apparent at any stage.

Simazine granules 900 WG were applied broadcast at 330 g/ha to 9 node cotton. Photo taken on 5th Jan, 28 days after exposure.

No symptoms of simazine damage were apparent at any stage.

Simazine granules 900 WG were applied broadcast at 330 g/ha to 9 node cotton. Photo taken on 14th Jan, 37 days after exposure.

No symptoms of simazine damage were apparent at any stage.



Impact on plant growth

Plants: exposed to the 10% rate of simazine at 9 nodes were 10 cm and 1.3 nodes shorter at picking and 5% smaller by weight. A large proportion of plants (65%) were tipped out.

Leaves: caused no detectable leaf damage on the exposed leaves, but caused a disproportionately large amount of damage to the plant, reducing final leaf number by 40% and leaf area by 38%.

Squares: the herbicide exposure had no noticeable affect on square production.

Bolls: the herbicide damage caused the loss of some bolls mid-season, delaying peak boll production but didn't affect final boll retention, the pattern of boll retention or boll weight. There was no delay in crop maturity.

Lint: ginning turnout was unaffected by the herbicide damage, but the cotton fell below base grade with 12% short fibres and a staple length of 1.108". Lint yield was unaffected.

Final plant count data		
	undamaged	**simazine**
Nodes/plant	30.9	29.6
Leaves/m*	687	415
Leaf area (cm²/m)*	23830	14774
Reduction in leaf area*		38%
Bolls/m	132	143
Boll weight (g/open boll)	5.3	5.1
Retention in posit's 1-3^	95%	97%
Nodes carrying >80% bolls#	7 - 18	7 - 17
Days to 50% open bolls	157	151
Maturity delay (days)		-
% Open bolls at picking	85%	86%
Lint yield/ha	2380	2421

Exposure to 10% of a typical field rate of simazine at 9 nodes caused no observable leaf damage but delayed crop growth, and reducing plant size, leaf number and leaf area.

The herbicide exposure affected mid-season boll retention but caused no reduction in final boll retention, boll size or crop maturity. Fibre quality was affected but there was no reduction in lint yield.

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.