

## Herbicide damage guide for cotton

Photographs & material by:

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**Herbicide:** 2,4-D amine + picloram  
**Rate:** 150 g + 37.5 g a.i./ha  
**% of typical field rate:** 50%  
**Date of exposure:** 14<sup>th</sup> Oct  
(pre-planting)  
**Growth stage at exposure:**

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

### Herbicidal action

**Herbicide group:** I

#### **2,4-D**

**Translocation:** readily moves to the plant growth points  
**Mode of action:** an auxin-type (phenoxy) herbicide that affects cell wall plasticity & nucleic acid metabolism. Low concentrations cause uncontrolled cell division & growth, leading to plant death.

**Residual activity:** limited

**Soil half-life:** 10 days in moist soil

#### **picloram**

**Translocation:** readily absorbed by roots and foliage and moves to the growing points

**Mode of action:** an auxin-type herbicide

**Residual activity:** strong residual activity and readily absorbed by plant roots

**Soil half-life:** 90 days, but can be up to 200 days. Breakdown is slower in dry, cool conditions.



Tordon 75D (2,4-D amine + picloram) applied broadcast at 500 ml/ha and incorporated prior to planting cotton. Photo taken on 24<sup>th</sup> Nov, 31 days after emergence.

Most plants were growing normally. However, symptoms of herbicide damage were apparent on some plants. New leaves on this plant were cupped, with yellow to reddish margins.



Tordon 75D (2,4-D amine + picloram) applied broadcast at 500 ml/ha and incorporated prior to planting cotton. Photo taken on 4<sup>th</sup> Dec, 42 days after emergence.

Most plants were apparently undamaged, but typical symptoms of phenoxy damage were apparent on some plants. Symptoms included leaf distortion and cupping. Some leaves had a leathery appearance with prominent veins.



Tordon 75D (2,4-D amine + picloram) applied broadcast at 500 ml/ha and incorporated prior to planting cotton. Photo taken on 31<sup>st</sup> Dec, 69 days after emergence.

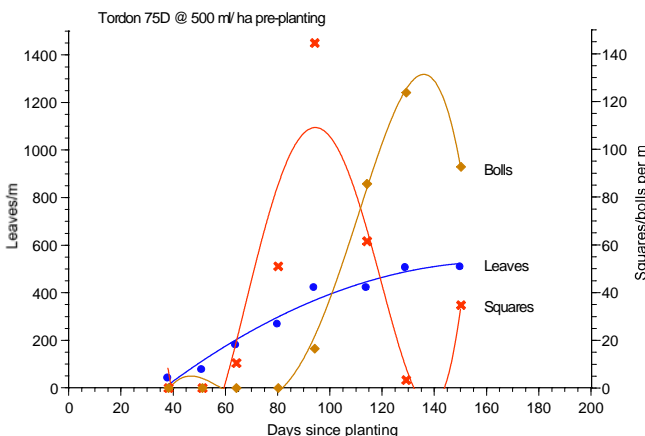
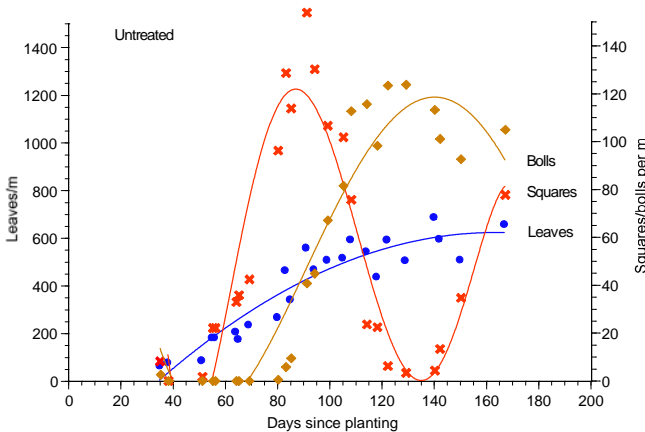
Some plants had distorted leaves, typical of phenoxy damage. Damaged leaves had crinkled edges, a leathery surface, and were distorted in shape, often ending in pointed 'fingers'.

### Impact on plant growth

**Leaves:** exposure to 2,4-D + picloram residue caused no visual damage to most plants. However, damage was apparent on some plants, initially causing cupping and yellowing of the expanding leaves. Later, some plants had distorted leaves, with damage typical of phenoxy herbicides.

**Squares:** there was no affect on square production.

**Bolls:** there was no apparent affect on boll production or retention during the season, but the final boll load was down by 19%, indicating reduced retention. There was no change in boll distribution on the plant, but average boll weight was down by 30% and lint yield by 22%.



<b>Final plant count data</b>		
	<b>Untreated</b>	<b>Tordon 75D</b>
<b>Nodes/plant</b>	30.9	32.2
<b>Leaves/m*</b>	543	421
<b>Leaf area (cm<sup>2</sup>/m)*</b>	10176	14165
<b>Reduction in leaf area*</b>		-
<b>Bolls/m</b>	132	107
<b>Boll weight (g/boll)*</b>	3.1	2.1
<b>Retention posit's 1-3<sup>^</sup></b>	95%	96%
<b>Bolls/node (nodes 10 – 20)<sup>#</sup></b>	0.63	0.64
<b>Days to 50% open</b>		156
<b>Maturity delay (days)</b>		-
<b>% Open bolls at picking</b>	84%	74%
<b>Lint yield/ha</b>	2067	1607

Exposure to Tordon 75D residue had no apparent effect on most plants, but did cause stunting and leaf damage to some plants.

Boll production was not affected, but there was a reduction in boll retention and boll size, combining to give a 22% reduction in lint yield.

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

Note<sup>^</sup> Percentage of retained bolls in positions 1-3

Note<sup>#</sup> Average number of retained mature bolls on nodes 10 to 20.