

Cotton Growth Regulators and Defoliants

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Growth regulators

Excessive vegetative growth is a problem because it reduces the retention of fruit and delays maturity and results in reduced efficacy of insecticides due to poor penetration of the canopy. To determine if growth regulators are required see Cotton Seed Distributors' website (www.csd.net.au) to calculate vegetative growth rates.

Defoliation

The safe timing of defoliation is when the youngest boll expected to reach harvest is physiologically mature. This usually occurs when 60–65% of bolls are open. The other method of assessing physiological maturity is when there are 3–4 nodes of first position bolls above the highest cracked first position boll (last harvestable boll), known as nodes above cracked boll (NACB). For more information on defoliation see FibrePak.

Registration of a chemical is not a recommendation for the use of a specific chemical in a particular situation. Growers must satisfy themselves that the chemical they choose is the best one for the crop and situation.

Growers and users must also carefully study the container label before using any chemical, so that specific instructions relating to the rate, timing, application and safety are noted. This publication is presented as a guide to assist growers in planning their agronomy programs.

If there is any omission from the list of chemicals, please notify the authors.

ABBREVIATIONS USED IN TABLES 35–38

AC = Aqueous concentrate	SC = Suspension concentrate
L = Liquid	WDG = Water dispersible granule
LC = Liquid concentrate	

TABLE 35: Plant growth regulators

Active ingredient	Concentration and formulation	Application rate of product	Comments
Mepiquat	38 g/L AC	0.25–0.6 L/ha	Pre flowering rate. Post flowering rate. Apply no more than 1.5 L/ha in total. See label for application times.
		0.25–1.0 L/ha	
		0.75–2.0 L/ha	

TABLE 36: Plant growth regulators trade names and marketers

Active ingredient	Concentration and formulation	Trade name	Marketed by
Mepiquat	38 g/L AC	Adjust 38	Rotam
	38 g/L AC	Chemquat 38	ChemAg
	38 g/L AC	Concorde	Nufarm
	38 g/L AC	Fortune	Syngenta
	38 g/L AC	Mepi-C,	Miller Chemical and Fertiliser
	38 g/L AC	Mepidet	Farmalinx
	38 g/L AC	Mepiquat	Ospray
	38 g/L AC	Mepiquat 38	Accensi
	38 g/L AC	Mepiquat 38	eChem
	38 g/L AC	Mepiquat 38	Conquest
	38 g/L AC	Mepiquat 38	Genfarm
	38 g/L AC	Mepiquat 38	Kenso Agcare
	38 g/L AC	PiQme 38	United Phosphorus
	38 g/L AC	Pix	BASF
	38 g/L AC	Pix	Nufarm
	38 g/L AC	Reign	Bayer CropScience
	38 g/L AC	Reward	Farmoz
	38 g/L AC	Roquat 38	Rotam

IMPORTANT— avoid spray drift

Take every precaution to minimise the risk of causing or suffering spray drift damage by:

- Planning your crop layout to avoid sensitive areas, including homes, school bus stops, waterways, grazing land and non-target crops.
- Ensuring that all spray contractors have details of any sensitive areas near spray targets.
- Consulting with neighbours to minimise risks from spraying near property boundaries. Keep neighbours informed of your spraying intentions near property boundaries. Make it clear that you expect the same courtesy from them.
- Carefully following all label directions.
- Paying particular attention to wind speed and direction, air temperature and time of day before applying pesticides using buffer zones as a mechanism to reduce the impact of spray drift or overspray.
- Keeping records of chemical use and weather conditions at the time of spraying.

TABLE 37: Cotton defoliation products

Active ingredient	Concentration and formulation	Application rate of product	Comments
Cotton seed oil	860 g/L LQ	2 L/ha	Apply in combination with thidiazuron as specified on the label.
Diquat	200 g/L AC	2.0–3.0 L/ha	See critical comments on label. May damage green bolls.
Ethephon	720 g/L AC	1.3 L/ha 2.0–3.0 L/ha	Pre-conditioning. Defoliation.
Ethephon + AMADS	275 g/L + 873 g/L AC	0.5–1.0 L/ha 3–4 L/ha 4 L/ha	Defoliation and accelerated boll opening. Boll opening and supplementary defoliation. Boll opening.
Ethephon + cyclanilide	720 g/L + 90 g/L SL	0.33–0.67 L/ha 1.3–2.5 L/ha	Enhancement of defoliation. Must have minimum 30 L water/ha. Acceleration of boll opening and enhancement of defoliation.
Flumiclorac-pentyl	100 g/L	0.6–0.9 L/ha + 360 g ai/ha ethephon 0.45 L/ha + 1440 gai/ha ethephon	Defoliation, first application once natural senescence has commenced and 60% open bolls. Apply with 2.0 L/ha DC Tron Cotton Spray Oil. Apply 4–10 days later. Apply when canopy is suitably open to allow good penetration of ethephon.
Paraffinic oil	582 g/L LQ 598 g/L EC 653 g/L EC 792 g/L EC 815 g/L EC 830 g/L EC	0.5–1.0 L/100 L water 0.5 L/ha 0.5 L/ha 0.5 L/ha 2 L/100 L 2 L/100 L	Compatible with thidiazuron and ethephon. Apply in combination with defoliant such as Dropp and Prep. Apply with Dropp Ultra or DroppWP in accordance with their labels. Apply in combination with thidiazuron defoliant. Apply in combination with thidiazuron defoliant.
Paraquat + diquat	135 g/L + 115 g/L AC	1.2–1.6 L/ha	Apply to cotton in dryland situation only. OPM 0005 (NRA) Can damage immature green bolls.
Petroleum oil	827 g/L LQ 844 g/L 846 g/L EC 859 g/L LQ 861 g/L	2 L/ha 2 L/ha 2 L/ha 2 L/100 L water 2 L/ha	Apply in combination with thidiazuron as specified on the label. Apply with Dropp defoliant Apply with Dropp Ultra. Apply in combination with Dropp defoliant as specified on the label. Apply with Dropp Ultra in accordance with the Drop Ultra label.
Pyraflufen-ethyl + n-methyl-2-pyrrolidone	25 g/L + 102 g/L EC	0.08 L/ha	Always apply as a tank mixture with ethephon (1–2 L/ha) and D-C-Tron (2 L/ha). Apply when the last harvestable boll is physiologically mature.
Sodium chlorate	300 g/L AC	11.0–22.0 L/ha	Apply when 60–65% bolls are open. Apply 2–3 weeks before anticipated picking dates. Apply when temperatures are high and soil moisture moderate.
Thidiazuron	490 g/kgWG or 500 g/L SL	0.05–0.1 kg/ha 0.1–0.15 L/ha 0.15–0.2 L/ha	Ideal conditions. Good conditions. Average conditions. Do not apply under cold conditions. Plus 2.0 L/ha cotton spray oil
Thidiazuron + Diuron	120 g/L + 60 g/L SL	0.15–0.2 L/ha 0.2–0.25 L/ha 0.25–0.3 L/ha 0.3–0.4 L/ha	Ideal conditions. Good conditions. Average conditions. Cold conditions. Plus 2.0 L/ha cotton spray oil
	240g/L + 120g/L SL	0.075–0.1 L/ha 0.1–0.125 L/ha 1.25–1.5 L/ha 1.5–2 L/ha	Ideal Good Average Cold Conditions. Plus the label rate of spray oil.

TABLE 38: Defoliation products trade names and marketers

Defoliant	Concentration and formulation	Trade name	Marketed by
Cotton seed oil	860 g/L LQ	Intac Cotton Spray Oil	Nipro
Diquat	200 g/L AC	Diquat 200	Chem Ag
	200 g/L AC	Diquat 200	Kenso
	200 g/L AC	Reglone	Farmalinx
	200 g/L SC	Sanction 200	Country
Ethephon	720 g/L AC	Ethephon	eChem
	720 g/L AC	Ethephon 720	ChemAg
	720 g/L AC	Ethephon 720	Conquest
	720 g/L	Ethephon 720	Country
	720 g/L AC	Ethephon 720	Genfarm
	720 g/L	Ethephon 720	Kenso
	720 g/L AC	Ethephon 720	Ospray
	720 g/L AC	Ethephon 720	Runge
	720 g/L	Ethephon 720	Titan
	720 g/L AC	Galleon	Nufarm
	720 g/L AC	Prep 720	Bayer CropScience
720 g/L AC	Promote 720	Farmoz	
Ethephon + AMADS	275 g/L + 873 g/L AC	CottonQuik	Nufarm
Ethephon + cyclanilide	720 g/L + 90 g/L SC	Finish 720	Bayer CropScience
Flumiclorac-pentyl	100 g/L	Resource	Sumitomo
Paraffinic oil	582 g/L LQ	Hustle Spray Adjuvant,	Allfire
	582 g/L LQ	Penatrol	Alphachem
	582 g/L LQ	Uptake Spraying Oil	Dow AgroSciences
	598 g/L EC	Enhance Spray Adjuvant	Sacoa
	598 g/L EC	Power Surge Spray Adjuvant	Conquest
	653 g/L EC	Inbound Spray Adjuvant	Victorian Chemicals
	792 g/L SC	Canopy Insecticide	Caltex Australia
	815 g/L EC	Biopest Paraffin Oil	Sacoa
	815 g/L EC	Bioclear	Caltex
830 g/L EC	Trump	Victorian Chemicals	
Paraquat + diquat	135 g/L + 115 g/L AC	Glamoxone Gold	Syngenta
	135 g/L + 115 g/L AC	Revolver	Nufarm
	135 g/L + 115 g/L AC	Spray.Seed 250	Syngenta
	135 g/L + 115 g/L AC	Spraykill 250	Chem Ag
	135 g/L + 115 g/L AC	Sprayout 250	Ospray
	135 g/L + 115 g/L SC	Alarm	Sipcam Pacific
	135 g/L + 115 g/L SC	Brown Out 250	4Farmers
	135 g/L + 115 g/L SC	Combik 250	Sinon Australia
	135 g/L + 115 g/L SC	EOS	Titan Ag
	135 g/L + 115 g/L SC	Paradym 250	Ronic Internationals
	135 g/L + 115 g/L SC	Premier 250	Halley
	135 g/L + 115 g/L SC	Rygel Pre-Seed	Rygel
	135 g/L + 115 g/L SC	Scorcher 250	Conquest
	135 g/L + 115 g/L SC	Speedy 250	Kenso
	135 g/L + 115 g/L SC	Spray & Sow	Farmoz
135 g/L + 115 g/L SC	Uni-Spray	United Phosphorus Limited	
135 g/L + 115 g/L SC	Wildfire	United Farmers	
Petroleum oil	839 g/L L	D-C-Tron	Caltex
	844 g/L	Sacoa Summer	Sacoa
	846 g/L EC	Broadcoat	Caltex
	859 g/L L	Cottoil	Sacoa
	861 g/L	Empower	Innovative Chemical Services
Pyraflufen-ethyl + n-methyl-2-pyrrolidone	25 g/L + 102 g/L EC	ETee	Sipcam Pacific
Sodium chlorate	300 g/L AC	Total Ag Leafex	Total Ag
Thidiazuron	500 g/L SC	Dropp Liquid	Bayer CropScience
	500 g/L SC	Escalate 500	Farmoz
	500 g/L SC	Mace	Conquest
	500 g/L SC	Reveal Liquid	Nufarm
	500 g/L SC	Tradewyns Thidiazuron 500	Ospray
	500 g/L SC	Thidiazuron 500	Genfarm
	500 g/L SC	Thidiazuron 500 SC Thidiazuron	eChem
	500 g/L SC	500 SC	Kenso Agcare