

# 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](http://www.csd.net.au)) to calculate vegetative growth rates. For more information refer to *2014 Cotton Production Manual*. Cottassist provides support in calculating 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 and *2014 Cotton Production Manual*.

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.**

## 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.

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## ABBREVIATIONS USED IN TABLES 37–40

AC = Aqueous concentrate	LC = Liquid concentrate
DF = Dry flowable	SC = Suspension concentrate
EC = Emulsifiable concentrate	WG = Water dispersible granule
LQ = Liquid	

**TABLE 37: 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	Single application rate. Use high rate where crop growth is excessive, between 1st flower and cut out. Check label.

**TABLE 38: Plant growth regulators trade names and marketers**

Active ingredient	Concentration and formulation	Trade name	Marketed by
Mepiquat	38 G/L AC	Adjust 38	Rotam
		Chemquat	Imtrade
		Concorde	Nufarm
		Cot-Trol 38	Hextar
		Fix 38	Chemtura
		Fortune	Syngenta
		Mepi-C	Miller
		Mepidef	Farmalinx
		Mepiquat 38 Plant Growth Regulator	Accensi, Agri West, Cheminova, Conquest, Echem, Kenso, Landmark, Macro Protect, Ozcrop, Oztec Rural, Pacific Agriscience, Rainbow, Sabakem, Titan Ag
		Piqme 38	UPL
		Pix	BASF
		Reign	Bayer Cropscience
		Reward	ADAMA

**TABLE 39: Cotton defoliation products**

Active ingredient	Concentration and formulation	Application rate of product	Comments
Carfentrazone-ethyl	240 g/L EC	0.08 – 0.1L/ha	Desiccate regrowth following defoliation. Do not harvest for 1 day and do not graze or feed cotton trash to livestock.
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 (900 g/L SC)	0.5–1.0L/ha (0.4-0.8L/ha) 1.3L/ha (1.04 L/ha) 2.0-3.0L/ha(1.6-2.4L/ha)	Acceleration of boll opening Pre conditioning Defoliation – Accelerated boll opening in combination with a defoliant
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 LC	1.3 - 2.5 L/ha 1.3L 0.33 – 0.67 L/ha	Acceleration of boll opening and enhancement of defoliation. Pre conditioning. Enhancement of defoliation
Paraffinic oil/Non-ionic surfactant Adjuvants	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 in combination with defoliant such as Drop 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 dryland and moisture stressed cotton. Can damage immature green bolls.
Petroleum oil	827 g/L LQ 844 g/L EC 846 g/L EC 859 g/L LQ 861 g/L	2 L/ha 2 L/ha 2 L/ha 2 L/ha 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	0.04–0.08L/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	11.0–22.0 L/ha	Apply 2–3 weeks before anticipated picking dates. Apply when temperatures are high and soil moisture moderate.
Thidiazuron	490 g/kg WG or 500 g/L SC	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.
Thidiazuron + Diuron	120 g/L + 60 g/L SC	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.
	240g/L + 120g/L SC	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.

**TABLE 40: Defoliation products trade names and marketers**

Defoliant	Concentration and formulation	Trade name	Marketed by
Diquat	200 g/L AC	Desi-Tex 200	Macphersons
		Dia-Kill 200	Sinon
		Diquat 200	Accensi, Farmalinx, Imtrade, Kd Plant Care, Kenso, Landmark Operations,, Ozcrop, Rainbow, Titan Ag
		Hydrogel D	Better Safe
		Reglone	Syngenta Australia
		Sanction 200	Conquest Crop Protection

**TABLE 40: Defoliation products trade names and marketers (continued)**

Defoliant	Concentration and formulation	Trade name	Marketed by
Ethephon	720 g/L AC, SC, EC	Boll Cracker 720	ACP
		Ethephon 720	4Farmers, Accensi, Agri West, Agro-Alliance, Apparent, Cheminova, Conquest, Echem, Ezycrop, Imtrade, Kenso, Landmark, Novaguard, Ozcrop, Pacific, PGR, Proterra, Rainbow, Sabakem, Titan
		Ethic 720	Amgrow
		Ethon 720	Farmalinx
		Galleon	Nufarm Australia
		Prep 720	Bayer Cropscience
		Promote 720	ADAMA
		Sentral 720	Hextar Chemicals
		Promote Plus 900	ADAMA
		900 g/L	
Ethephon + AMADS	275 g/L + 873 g/L AC	CottonQuik	Nufarm
Ethephon + Cyclanilide	720 g/L + 90 g/L LC	Finish 720	Bayer CropScience
Parraffinic oil/Non-ionic surfactant Adjuvants	432 g/L LQ	Turbo Charge	4Farmers
Adjuvants	582 g/L LQ	Paraffinic Oil	Apparent
		AC Para Spray Oil	AxiChem
		Infuse	Rygel
		Penatrol	BD Chemicals
		Pro Stickup	APS
		Smartup	Crop Smart
		Uptake Spraying	Dow AgroSciences
	598 g/L EC	Enhance Spray Adjuvant	Sacoa
		PowerSurge Spray Adjuvant	Conquest
		Sticka Sprayoil	ACP
	725 g/L EC	Banjo	Nufarm
	792 g/L SC	Canopy Insecticide	Caltex
	815 g/L EC	Biopest Paraffin Oil	Sacoa
	815 g/L EC	Bioclear	Caltex
	826 g/L EC	Cotton Spray oil	SBC
	830 g/L EC	Trump	Victorian Chemicals
	Paraquat + diquat	135 g/L + 115 g/L AV	Refer to Table 33
Petroleum oil	827 g/L L	D-C-Tron	Caltex
	838g/L EC	Cropshield	Socoo
	844 g/L EC	Summer	Sacoa
	846 g/L EC	Broadcoat	Caltex
	859 g/L L	Cottoil	Sacoa
	861 g/L	Empower	Victorian Chemicals
Pyraflufen-ethyl + n-methyl-2-pyrrolidone	25 g/L + 102 g/L EC	ETee	Sipcam Pacific
Sodium chlorate	300 g/L L	Leafex	Total Ag
Thidiazuron	490g/kg WP 500 g/L SC	Lanceadrop	Lances Link
		Dropp Liquid	Bayer Cropscience
		Escalate 500 SC	ADAMA
		Mace 500 SC	Conquest Crop Protection
		Reveal Liquid	Nufarm Australia
		Tentacle SC	Agri West
		Thidiazuron 500DC	Accensi, Apparent, Cheminova, Echem, Kenso, Landmark, Oztec, Proterra, Sabakem, Titan Ag
		Thiron	Farmalinx
		Timezone 500	Australis Crop Protection
		Thidiazuron + diuron	120 g/L + 60 g/L SC
Escalate Ultra	Farmoz		
Thidiazuron + diuron	Titan AG		
Thi-Ultra	eChem		
240 g/L + 120 g/L SC	Dropp ultramax		

**This document is part of a larger publication -  
The Cotton Pest Management Guide for Cotton 2014 - 15**

**The complete document can be found on the CRDC or myBMP web sites during the 2014-15 Australian cotton season**

[www.crdc.com.au](http://www.crdc.com.au)

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