

Product Name: NAADCO Ethephon 900 Growth Regulator
APVMA Approval No: 91525/132522



Label Name:	NAADCO Ethephon 900 Growth Regulator
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Signal Headings:	POISON KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
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Constituent Statements:	ACTIVE CONSTITUENT: 900 g/L ETHEPHON (an anti-cholinesterase compound)
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Mode of Action:	
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Statement of Claims:	For crop thinning, loosening or ripening in various crops and for accelerating boll opening, defoliation and pre-conditioning before defoliation of cotton as specified in the Directions for Use.
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Net Contents:	1L - 1000L
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Restraints:	DO NOT apply to weak or stressed plants. DO NOT apply if rain is expected within 8 hours of application. DO NOT apply if day/night temperatures are expected to fall below 18°C. DO NOT apply to cotton if bolls have been burned by frost. DO NOT pretreat with a desiccant (chlorate) before using NAADCO Ethephon 900 Growth Regulator. DO NOT mix with hard (alkaline) water. DO NOT apply before sufficient mature unopened bolls have developed to produce the desired yield.
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Directions for Use:	This section contains file attachment.
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Other Limitations:	
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Withholding Periods:	Apples, Cherries, Macadamia nuts, Pineapples, Tomatoes, Wine grapes: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION. Table Grapes and Cotton: DO NOT HARVEST FOR 14 DAYS AFTER APPLICATION. Peaches and Sugar Cane: DO NOT HARVEST FOR 6 WEEKS AFTER APPLICATION. DO NOT FEED COTTON STUBBLE OR GIN TRASH TREATED WITH NAADCO ETHEPHON 900 TO LIVESTOCK. DO NOT GRAZE LIVESTOCK ON TREATED PLANTS.
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Trade Advice:	
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General Instructions:	This section contains file attachment.
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Resistance Warning:	
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Precautions:	
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Protections:	<p>PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS DO NOT apply under weather conditions, or from spraying equipment that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.</p> <p>PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT Dangerous to fish. DO NOT contaminate streams, rivers or waterways with the chemical or used containers.</p>
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Storage and Disposal:	<p>Store in the closed original container in a dry, cool, well-ventilated area away from children, animals, food, feedstuffs, seed and fertilisers. DO NOT store for prolonged periods in direct sunlight. Triple rinse containers before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. Do not burn empty containers or product.</p>
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Safety Directions:	<p>Product is harmful if swallowed. Attacks eyes. Repeated minor exposure may have a cumulative poisoning effect. Protect eyes while using. When preparing spray and using the prepared spray, wear elbow-length PVC gloves and face shield or goggles. Wash hands after use. After each day's use, wash gloves, face shield or goggles and contaminated clothing.</p>
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First Aid Instructions:	If swallowed, do NOT induce vomiting. If swallowed, splashed on skin or in eyes, or inhaled, contact a Poisons Information Centre. Phone Australia 131126, New Zealand 0800 764 766.or a doctor at once. Remove any contaminated clothing and wash skin thoroughly.
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	If swallowed, activated charcoal may be advised. Give atropine if instructed. If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.
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First Aid Warnings:	
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DIRECTIONS FOR USE

CROP	MODES OF ACTION	STATE	RATE (high volume)	WHP	CRITICAL COMMENTS	
APPLES Jonathan, Delicious	Advancement of maturity, improvement of red colour	Qld, NSW, Vic, SA, WA only	28 to 52 mL/100 L water PLUS a non-ionic wetter and add 'stop drop'	7 days	Ensure fruit has reached marketable size before treatment and keep trees under observation after spraying. Apply 2 to 3 weeks before normal harvest period and 7 to 14 days before desired harvest date. Ensure fruit is picked at the correct stage of maturity, as fruits not harvested will quickly become over-ripe. Note: For best results spray when temperatures are between 15° and 32°C. Continuing low temperatures will advance maturity but may reduce colouration, so use lower rate. Use higher rate for quicker response. Add a 'stop-drop' to prevent premature loosening of fruit. Thorough coverage is essential. Apply to fruit only for the fresh fruit market or short- term storage.	
Tydemans Early		Tas only	20 mL/100 L water and add 'stop drop'			
Gravenstein, Golden Delicious, Jonathan and Red Delicious	Thinning *	Vic, SA only	12 mL/100 L water PLUS a non-ionic wetter			Apply at full bloom OR up to 1 week following full bloom. A second thinning spray 10 to 14 days after the NAADCO Ethephon 900 spray may be necessary. On Gravenstein and Golden Delicious apply carbaryl or 5 to 7.5 ppm NAA (use higher rate for maximum thinning). On Jonathan and Red Delicious apply carbaryl or 4ppm NAA.
Golden Delicious, Stark Crimson and Legana		Tas only	28 mL/100 L water PLUS a non-ionic wetter per 100 L water			Apply at the balloon blossom stage using a high volume sprayer at 4000 L/ha. DO NOT apply if rain is imminent. DO NOT use in sequence or in mixtures with NAA. If maximum temperatures are below 13°C after spraying, inadequate thinning may result, or if above 18°C excessive thinning may result.
Golden Delicious, Red Delicious, Jonathan, Granny Smith		WA only	28 mL to 32 mL/100 L water PLUS a non-ionic wetter			Only use high concentration when heavy set expected. * Note: For all thinning applications: The complex nature of fruit set and the possible variable action of chemical thinners due to weather conditions, make it difficult to give set recommendations and growers should consult their local agronomist.
Lady William						
All varieties	Aid complete removal of fruit from trees and encourage a biennial bearing habit (Excessive vegetable growth will be suppressed and the following bloom stimulated.)	NSW, SA, WA only	52 to 108 mL/100 L water PLUS a non-ionic wetter	7 days	Apply just prior to full bloom OR 5 to 6 weeks later during early morning or late afternoon when slow drying conditions occur. Ensure thorough coverage of foliage and flowers or fruit. Note: Under normal weather conditions use lower rate for Delicious and higher rate for Jonathans as they are difficult to de-fruit. Consult the local Department of Agriculture for specific recommendations on other varieties. Warm weather following treatment will improve results, but if temperatures below 18°C prevail after spraying, fruit removal may be reduced, in the latter case use a higher dose rate. Fruit will loosen in 7 to 10 days and thinning should be complete within 2 to 3 weeks. Limbs can be lightly shaken to aid removal after this time.	

DIRECTIONS FOR USE

CROP	MODES OF ACTION	STATE	RATE (high volume)	WHP	CRITICAL COMMENTS
	Retard vegetative growth and stimulate flowering of young apple trees in the following season				Apply from full bloom to 6 weeks after full bloom. Ensure thorough coverage. Trees should be large enough to support an increased crop of apples before being treated. Increase rate towards 108 mL/100 L to maximise thinning and stimulation of blooms during the following season. DO NOT apply if harvesting fruit in same season as flowers or fruitlets will be partially or completely thinned.
CHERRIES Ron's Seedling, St. Margaret, Napoleon, Florence	Promotes evenness of maturity; early colour development	NSW only: Young district	16 mL/100 L water	7 days	Treatment with NAADCO Ethephon 900: Apply when approximately 20% of the fruit show pink to red colour development, normally 7 to 10 days before harvest. Ensure thorough coverage of leaves and fruit. Note: High temperature at spraying or following spraying may accelerate results. DO NOT spray when mean daily temperatures exceed 32°C. DO NOT spray when rain is expected within 24 hours OR when temperatures are low (17°C or less) as this will delay or reduce the effect of NAADCO Ethephon 900. Fruit will mature 3 to 5 days earlier than normal and will be loosened to allow easier harvesting. A high proportion of fruit will readily separate from the stalk when harvested.
		Orange/Bathurst district	32 mL/100 L water		
TABLE GRAPES Barlinka	To promote early uniform colouring	NSW, SA only	12 to 16 mL/100 L water PLUS a non-ionic wetter	14 days	Apply when 5 to 30 % of the berries are coloured (2-4 weeks prior to expected harvest). Use the higher rate to maximise the colouring effects required. Ensure thorough coverage of bunches although the foliage needs not to be completely covered. Note: NAADCO Ethephon 900 may slightly reduce firmness of grapes. DO NOT use on grapes intended for long storage.
Red Emperor, Red Prince, Red Malaga, Cardinal, Muscat of Hamburg		NSW, Vic, SA, WA only	20 to 32 mL/100 L water PLUS a non-ionic wetter		
Flame Seedless		WA only			
WINE GRAPE S Semillon	Aids to mechanical harvesting	NSW only	32 to 104 mL/100 L water PLUS a non-ionic wetter	7 days	Apply 7 days before expected harvest. Thorough coverage of upper and lower leaf surfaces is essential. Note: Some leaf yellowing and leaf fall, which is not detrimental to vines, may occur. The concentration to use will depend on a number of factors such as seasonal conditions, crop size, weather conditions (before and after application) and trellis

DIRECTIONS FOR USE

CROP	MODES OF ACTION	STATE	RATE (high volume)	WHP	CRITICAL COMMENTS
					type. Therefore, before applying consult the local Department of Agriculture for specific recommendations.
MANDARINS Imperial	Thinning to increase fruit size, to reduce size of heavy crop and to even out the production cycle	Qld, NSW, SA, WA only	28 to 32 mL/100 L water	Not required	Apply during the early stage of fruit development for thinning and correction of the habit of alternate heavy and light crops. Apply as foliar spray when fruitlets are about 10 to 15 mm in diameter and when natural fruit drop is occurring. This is usually in November in Qld, December in SA and intermediate in NSW, WA and Vic. Weather conditions influence the degree of thinning and care must be taken not to over-thin. Note: Fruitlets should fall off 7 to 14 days after application. Aim to apply 13 to 15 L of spray per 4 to 5 m high tree. Use the higher rate when a very heavy crop is evident. DO NOT apply in cold weather (less than 18°C) OR when rain is likely within 1 to 2 days of spraying. DO NOT add surfactants or wetting agents as leaf fall may be increased. See also General Instructions.
		Vic only	20 to 28 mL/100 L water		
NSW, WA only		28 to 32 mL/100 L water			
NSW, SA, WA only		28 to 32 mL/100 L water			
ORANGES Navel					
Valencia					
		Vic only	32 to 36 mL/100 L water		
MACADAMIA NUTS Own choice	Aid harvesting by promoting uniform nut fall	NSW, WA only	132 mL/100 L water PLUS a non-ionic wetter	7 days	Apply late March to early May when nuts are mature. Vary rate according to degree of loosening required. Note: Nuts will be stimulated to fall within 10 to 14 days after spraying. Mechanical shaking may be used 7 to 10 days after spraying. Ensure thorough coverage of foliage and nuts. Ensure tops and insides of trees are adequately sprayed. A small quantity of older leaves will fall after treatment, but production will not be adversely affected. DO NOT use on Teddington variety.
			H2 Variety		
PEACHES	Advancement and concentration of maturity	Vic only: Goulburn Valley	12 mL/100 L water PLUS a non-ionic wetter	6 weeks	Apply once as foliar spray after commencement of the final fast growth stage. Timing depends on variety. Determine by measuring twice weekly, fruit circumference, 20 tagged fruit/block. After rapid growth stage determined, wait 3 to 4 days for further confirmation, then spray. Thorough coverage is essential. Note: Instances have been recorded where this product, when applied in peaches at apparently the correct time, has resulted in premature fruit drop, fruit gumming and fruit splitting. See also General Instructions.

DIRECTIONS FOR USE

CROP	ACTION	STATE	RATE		WHP	CRITICAL COMMENTS
			General	Boom Sprayer		
PINEAPPLES (plus Urea)	Initiation of flowering	Qld, WA only	64 mL PLUS 5 kg Urea/100 L water. Apply 30 mL solution/plant	1.28 L PLUS 100 kg Urea in 2000 L water/ha (Boom spray)	7 days	Apply in March. Note: Rate should be doubled for plant crops, which are growing vigorously at the time of application.
			32 mL PLUS 5 kg Urea/100 L water. Apply 30 mL solution/plant	640 mL PLUS 100 kg Urea in 2000 L water/ha (Boom spray)		Apply in May-June OR September-October. Note: See above – February/March application with Urea.
PINEAPPLES (without Urea)	Initiation of flowering in ratoon		20 mL/10 L water. Apply 30 mL solution/plant	4.8 L in 2000 L water/ha (Boom spray)		Apply February-March. Note: Use on the final crop in the block before eradication of the crop. Pineapples treated at the above time will be ready for picking 7 to 10 months after application.
			6 mL/10 L water. Apply 30 mL solution/plant	1.2 L in 2000 L water/ha (Boom spray)		Apply in May-June OR September-October. Note: See above – February/March application without Urea.
PINEAPPLES	Fruit ripening		-	1.36 L in 1000 L water/ha		NAADCO Ethephon 900 for ripening should only be used on even crops successfully induced for flowering with NAADCO Ethephon 900. DO NOT use on fields intended for ratoon production. Treatment should be made when the forced fruit are beginning to show their first colour break. An initial harvest may be necessary to remove more advanced fruit before applying NAADCO Ethephon 900. The remaining treated fruit will be ready for harvest at least 7 days following the NAADCO Ethephon 900 ripening application. Note: DO NOT use on fruit intended for the fresh fruit market. NAADCO Ethephon 900 for ripening is NOT SUITABLE FOR USE ON SUMMER PLANT CROPS because of scattered fruiting and high risk of forcing young suckers. Where natural fruiting has occurred prior to chemical induction, these natural fruit must be picked before NAADCO Ethephon 900 ripening. Treatment too early can result in a loss of yield and a reduction in fruit sugar levels.

DIRECTIONS FOR USE

CROP	MODE OF ACTION	STATE	RATE (High Volume)	WHP	CRITICAL COMMENTS
SUGAR CANE	Cane ripening	Qld, NSW, WA only	800 mL/ha	6 weeks	Use in March-April to accelerate ripening in cane and increase c.c.s. Use on cane planted for early harvest, with harvest no later than August. Apply to actively growing and non- stressed cane with at least eight non-stressed green leaves. Cane varieties Q115, Q119, Q137, Q124, Q96, H56-752 and CP44-101 have all shown high to moderate response to ethephon. Shortening of some internodes and yellowing of leaves may occur without any effect on cane yield. Test any new varieties prior to application.
TOMATOES	Accelerate ripening, increasing yield of marketable fruit	All States	960 mL in 440 to 880 L water/ha	7 days	Apply once in the season. Ensure thorough coverage of fruit and foliage, when fruit is 5 to 30% pink or red. To determine this pull a few plants, shake off fruit, weigh and determine above percentage. Optimum harvest maturity is expected 14 to 21 days after spraying. DO NOT use on greenhouse crops. Note: Temperature below 18°C retard colour development and may extend the interval between treatment and harvest. Treatment may cause some yellowing of foliage or defoliation. Sun scald or exposed fruit may occur under high temperature conditions following treatment.

CROP	SITUATION	STATE	RATE	CRITICAL COMMENTS
COTTON	Defoliation, Acceleration of boll opening	Qld, NSW, WA, NT only	1.6–2.4 L/ha in a minimum of 20 L water/ha	FOR ENHANCED DEFOLIATION AND BOLL OPENING OF COTTON. Apply when the number of mature unopened bolls is sufficient to produce the desired crop. Use the lower rate in warm, optimum conditions. Use the higher rate for stressed plants, rank growth, or adverse cool conditions (e.g. if day/night temperature after treatment is expected to be below 22°C). Ensure thorough and uniform coverage of bolls.
	Pre-conditioning of the crop before a normal defoliation is to occur		1.04 L/ha in a minimum of 20L water/ha	FOR PRE-CONDITIONING BEFORE DEFOLIATION. Apply when there are sufficient mature unopened bolls to produce desired yield. Apply defoliant 4 to 7 days later. Ensure thorough and uniform coverage of bolls.
	Defoliation #		400-800 mL/ha in a minimum of 20 L of water/ha	Use in a tank with a registered rate of thidiazuron. Apply when there are sufficient unopened bolls to produce the desired yield. Total application volume should be no less than 20.0 L/ha. Ensure thorough and uniform coverage of bolls and leaves. # This mixture will also provide some acceleration of boll opening, however a subsequent application of a boll opener may be required to complete boll opening.

**NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER CONTRARY TO THIS LABEL
UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.**

GENERAL INSTRUCTIONS

When adding a non-ionic wetter, use a rate as recommended on the wetter label.

IMPORTANT

APPLES - Advancement of fruit maturity and improvement of red colour.

- Ensure fruit has reached marketable size before treatment and keep trees under observation after spraying.
- Ensure fruit is picked at the correct stage of maturity, as fruit not harvested will quickly become over-ripe.
- Continuing low temperatures will advance maturity and colouration; continuing warm to high temperatures, both day and night, will advance maturity but may reduce colouration.
- Apply to fruit only for the fresh fruit market or short term storage.

APPLES – Thinning

The complex nature of fruit and the possible variable action of chemical thinners due to weather conditions, make it difficult to give set recommendations and growers should consult their local agronomist.

APPLES – Fruit Removal

- Apply to trees to remove unwanted fruit and encourage a biennial bearing habit. Excessive vegetative growth will be suppressed and bloom the following season stimulated.
- Weather conditions are very important – warm weather following treatment will improve results, but if temperatures below 18°C prevail after spraying, fruit removal may be reduced. In the latter case, use the higher dose rate.
- Fruit will loosen in 7-10 days and thinning should be complete within 2-3 weeks. Limbs can be lightly shaken to aid removal after this time.

IMPERIAL MANDARINS and VALENCIA ORANGES

Apply during the early stage of fruit development for thinning and correction of the habit of alternate heavy and light crops. Weather conditions influence the degree of thinning and care must be taken not to over-thin.

EXCLUSION OF LIABILITY: As the degree of thinning may vary according to the conditions and over-thinning is possible, the decision to incur these risks is taken by the user, and the manufacturer and vendor exclude themselves from all conditions, representations, warranties, whether expressed or implied by the statute or otherwise and accept no responsibility for any losses which follow from the use of the product on mandarins or oranges as far as this is legally possible under the Trade Practices Act or any State legislation.

COTTON

A foliar spray with NAADCO Ethephon 900 will accelerate opening of mature unopened bolls and enhance defoliation, which can result in earlier harvest and increased recoverable yield and quality. Some premature drop of small immature bolls may occur. Harvest at optimum boll opening and optimum defoliation. Too late harvest may reduce quality and lint.

COTTON – APPLICATION

DO NOT apply before sufficient mature unopened bolls have developed to produce the desired yield of cotton. Bolls are mature when the seed coat turns light brown, the embryo fills the seed cavity with an abundance of creamy colour and cotyledons are well defined.

COTTON - TREATMENT SEQUENCE

- Light canopy: Apply NAADCO Ethephon 900 then apply defoliant 4 to 7 days later.
- Moderate to heavy canopy: First apply a pre-conditioner, then apply NAADCO Ethephon 900 as soon as sufficient leaves have dropped to expose the target bolls, usually 4 to 10 days later.

COTTON - APPLICATION METHOD

Apply by placement technique under the following range of conditions to achieve a target droplet density of 60 droplets per sq. cm.

Wind Direction: Cross Wind Wind speed range: 6-20kph

Air Temperature: Maximum 32°C Delta t: Maximum 10°C

SUGARCANE

NAADCO Ethephon 900 may be applied by air or ground spray equipment. Apply in 30 L water/ha by air, and 110- 150 L water/ha by ground spray equipment. Apply during March-April on cane due for harvest no later than August. Consult your local NAADCO agent or BSES officer.

TOMATOES

- Temperatures below 18°C retard colour development and may extend the interval between treatment and harvest.
- Treatment may cause some yellowing of foliage or defoliation.
- Sun Scald of exposed fruit may occur under high temperatures conditions following treatment.

MIXING & APPLICATION

Add NAADCO Ethephon 900 to half the required volume of good quality water in the spray tank, then add the remaining volume of water while agitating the mixture. Do not use alkaline water. Prepare only enough spray solution for immediate use, and do not allow to stand. If tank mixtures are prepared, maintain good agitation and use promptly. Apply as a thorough uniform spray to achieve good coverage. For aerial application apply in at least 20 L/ha water. NAADCO Ethephon 900 is corrosive to acrylic plastics, certain paints and metals. Flush and rinse all exposed equipment including aircraft surfaces with detergent and water after use.

COMPATIBILITY

DO NOT mix with desiccants containing sodium chlorate as this could result in emission of toxic chlorine fumes. NAADCO Ethephon 900 may be tank-mixed with defoliant products. Since the formulations of other products are beyond the control of NAADCO tank mixtures should be tested before commercial use.