भारत सरकार
Government of India
कृषि और किसान कल्याण मंत्रालय
Ministry of Agriculture & Farmers Welfare
कृषि एवं किसान कल्याण विभाग
Department of Agriculture & Farmers Welfare
वनस्पति संरक्षण, संगरोध एवं संग्रह निदेशालय
Directorate of Plant Protection, Quarantine & Storage
केंद्रीय कीटनाशी बोर्ड एवं पंजीकरण समिति
Central Insecticides Board & Registration Committee
एनएच IV, फरीदाबाद–121 001 (हरियाणा)
N.H. IV, Faridabad-121 001 (Haryana)

Major Uses of Pesticides

(Registered under the Insecticides Act, 1968)

(UPTO - 31/03/2022)

(Based on certificate issued)

Disclaimer: The document has been compiled on the basis of available information for guidance and not for legal purposes.

PLANT GROWTH REGULATORS (PGR)

APPROVED USES OF REGISTERED PGR

PLANT GROWTH REGULATORS (PGR)

Name of PGR & approved Crops	Time of application / purpose	Dosage /ha		Dilution In Water (Litres) / Preparation of solution	Waiting period / PHI between last application & harvest (days)
		a.i. (ppm/gm/ %)	Formu-lation (ml/gm/Ltr/kg/%)		
Alpha Naphthyl Acetic Acid 4.5% SL (Na salt)					
Tomato	At the time of flowering two spray.	45ppm	-	-	-
Chillies	Ist spray during flowering & 2nd spray 20 -30 days later.	10ppm	-	-	-
Mango	Ist spray when tender fruits one of pea size. 2nd spray when fruits one of marble size(about 2 cm diameter)	20ppm	-	2 ml in 4.5litre.	-
	<u>To control Mango malformulation</u>- Before fruit bud differentiations approx.3 months before flowering	200ppm	-	20 ml in 4.5 ltrs.	-
Grapes	(a)To increase size & weight of berries. – Ist sprays at pruning time. – 2nd spray when flowering shoot appear	10ppm	-	2 ml in 49 ltrs.	-
	(b)To control berry drop (spray on matured grape bunches) 10-15 days before harvesting.	100ppm	-	20 ml. in 49 ltrs.	-

Pineapple	**(a)**<u>To induce flowering and uniform growth</u> (b)To increase fruit size. I To delay maturity - Two weeks before harvest.	10ppm (In dry weather half strength solution i.e. 5 ppm may be used) 199ppm 100ppm	- - -	1 ml in 4.5 ltrs (pour 30-50 ml of solution in to the head of each plant) 10 ml in 4.5 ltrs. (spray to wet the whole plant) 10 ml in 4.5 ltrs.(Wet the whole fruit 2 weeks before harvest.)	- - -
Cotton	To prevent shedding of flower squares & bolls (3 sprays at 15 days interval from square formation stage	10-20 ppm.	222-444 ml	1000 ltr.	
Chlormequat Chloride 50% SL					
Cotton (American)	Square formation of early flowering (one spray)	20-40 gm a.i/ha	40-80 ml/ha	High Volume 375-600 Low volume 125-187	-
Cotton (Deshi)	Square formation of early flowering (one spray)	75 a.i. gm/ha	150 ml/ha	High volume 375-600	-
Brinjal	Seed soaking for 24 hours (before sowing)	50ppm	100ppm	1ml/ 10L water	-
Potato	Dipping of cut pieces for 10 minutes	100ppm	200ppm	2.0ml/ 10 L water	
Grapes 1st spray: 2nd Spray:	3-5 leaf stage after April pruning 5-7 leaf stage after April Pruning 3-5 leaf stage after October	500 g a.i./ha 1000 g	1000ml 2000 ml	1000L	91

3rd Spray:	Pruning	a.i./ha 250 g a.i./ha	500ml		
Chlorpropham 50% HN					
Potato	Antisprouting agent for stocked potatoes under cold storage condition Temp= 10±2°C R.H.= 90±5%	18-20 gm/MT	36-40 ml/MT	Formulation is to be applied as such with fogging applicator	20
Ethephon 10% Paste					
Rubber	For renewed bark 4 times bark swabbing. During March, August, September & November below the tapping panel after 4cm scrap of the bark /above the tapping panel/on the tapping cut after removing the lace.	10%	50 ml. formulation per tree directly used without dilution.	-	-
Ethephon 39 % SL					
Mango	a)For breaking alternate bearing tendencies	200 ppm	770-1025	1500-2000	26 ml in 10 lit of water
	b)For Flower induction in juvenile mango	1000 ppm	3846-5128	1500-2000	5ml in 10 lit of water
	c)Post-harvest treatment (For Uniform Ripening)	500 ppm	1923-2564	1500-2000	26 ml in 10 lit of water
Pine apple	For flower induction	100 ppm	385-513	1500-2000	13 ml in 10 lit of water
Coffee (Arabica)	For uniform ripening of berries, One spray at fly pricking stage, when 10-15% berries are ripened.	192 ppm	738-985	1500-2000	5 ml in 10 lit of water
Coffee (Robusta)	For uniform ripening of berries, one spray at fly pricking stage, when 10-15% berries are ripened.	96 ppm	215-287	1500-2000	2.5 ml in 10 lit of water

Tomato	Post-harvest treatment (for Uniform Ripening)	2500 ppm	-	-	65 ml in 10 lit of water
Rubber	Yielding rubber latex	1000 ppm	0	1500-2000	2.5 ml in 10 lit of water
Pomegranate	Defoliation for better flowering and fruit yield	390-48.5 gm	1000-1250 ml	500	135 days (2-2.5 ml/lit water)
Forchlorfenuron 0.1% L (w/v)					
Grapes	Two dipping applications. 1st When size of berry is 3-4 mm diameter and 2nd When size of berry is 6-7 mm diameter,	2ppm.	1 ltrs.	500	60 days
Forchlorfenuron 0.12% EC w/w					
Grapes	To enhance the fruit size in seedless grapes single directed spray on berries at 4-6 mm berry size	3 ppm	1.5 liter	500 liter/ha.	20
Pigeonpea (Tur)	Single directed spray at the time of 100% flowering	2.5ppm	1.125 Litres/ha	Spray Volume-450 l/ha. Mix 250 ml of Sitofex in 100 l water	30 days
Gibberellic Acid Technical (90% w/w)					
Grape fruit	a) At full bloom (for fruit set)-single spray b) Ist week of May (For June fruit drop) –single spray c) Ist week of October (For pre-harvest drop)-single spray	500-1000 ppm	-	-	-
Sweet cherry	When more than 60% buds opened fully.	40-80ppm	-	-	-
Grapes	Two directed spray Ist at full bloom & 2nd at fruit set stages.	100ppm.	-	-	-

Grape (Seedless)	Two blanket spray at Ist full bloom & 2nd at post bloom stage.	15-60ppm	-	-	-
Brinjal	a) seed treatment (dipping) b) When 4 weeks old -weekly spray	10ppm 50ppm	- -	- -	- -
Gibberellic Acid 0.001%L					
Paddy	To increase the yield and quality of the crop produce				
	Short duration varieties 20-25DAT Medium duration varieties 30-35 DAT Long duration varieties 40-45 DAT	0.018gm	180 ml	450-500	-
Sugarcane (Planted crops)	a)First spray 40-45 DAP b)Second spray 70-80 DAS	0.018gm	180 ml	450-500	-
Cotton	a) First spray 40-45 DAP b) Second spray: At the time of ball formation	0.018gm	180 ml	450-500	-
Groundnut	a) First spray at flowering (30-35 AS) b) Second spray at the time of flowering	0.018gm	180 ml	450-500	-
Banana	a) First spray 3rd month b) Second spray 5th month Third spray at the time of fruit formation	0.027gm	270 ml.	450-500	-
Tomato / Potato / Cabbage / Cauliflower	a) First spray 45 DAS b) Second spray 65 DAS	0.018gm	180 ml.	450-500	-

Grapes	**a)** First spray 30-35 days after pruning **b)** Second during the match head stage	0.018gm	180 ml.	450-500	-
Brinjal, Bhindi	a)First spray 34 DAP b)Second spray 70 DAP c)Third spray 105 DAP	0.045 gm	450 ml.	450-500	-
Tea	Five spray at monthly interval.	-	270ml	450-500	-
Mulberry	First spray: 15-20 days after harvest	0.045	450	450-500	
Gibberellic Acid 0.186% SP					
Cotton	to improve fiber quality one spray at square formation or early flowering stage	142ppm.	71 gm	450-500	-
Gibberellic Acid 40% WSG					
Grape	Pre Bloom- Elongation	40	50	500	-
	Fruit Setting Thinning				
	6-7mm berry size-enlargement				
Rice	20-25 Days After Transplanting	20-25	20-62.5	500	
	At Panicle emergence	20-25	50-62.5	500	
Wheat	20-25 Days After sowing	10-15	25-37.5	500	-
	10% ear emergence				
Maize	Knee high stage (25-30 DAS)	20	50	500	-
Hydrogen Cynamide 50% SL (Import)					
Grapes	For breaking bud dormancy Single application as spray Just after pruning ,	1-1.5%	2-3%	375-500	90-120 days
Hydrogen Cynamide 50% SL (Indigenous manufacture)					

Grapes	For breaking dormancy of fruiting buds Just after pruning, single application by swabbing.	1.5%	1.5 ltrs.	Mix with 200-300 ml. of product in 10 litres of water.	120 days
Hydrogen Cyanamide 49% AS (Import)					
Grapes	For breaking bud dormancy One directed spray, just after pruning.	1.0-1.5%	2-3%	50 ltrs.	110 days
Sugarcane	Dipping of setts	0.50	1.00%	Mix 1000 ml of the product per 100 litres of water	319 days
Mepiquat chloride 5% AS					
Potato	One spray 45 DAP To restrict the excessive vegetative growth of potato and increasing its yield	62.5-75 g	1.25-1.50 ltr	500-600	60-90 days
Cotton	Single spray at flowering stage to control of excessive vegetative growth and to increase crop yield in cotton	50-62.5 g	1.00-1.25 ltr	500-600	57
Groundnut	Single spray at flowering stage to control of excessive vegetative growth and to increase crop yield in groundnut	50-62.5 g	1.00-1.25 ltr	500	60
Chickpea	Single spray at flowering stage to control of excessive vegetative growth and to increase crop yield in chickpea	62.5 g	1.25 ltr	500	56
Soybean	Single spray at flowering stage	62.5 g	1.25 ltr	500	54

	to control of excessive vegetative growth and to increase crop yield in soybean				
Brinjal	Single spray at flowering stage to control of excessive vegetative growth and to increase crop yield in brinjal	62.5 g	1.25 ltr	500	7
Onion	Single spray at flowering stage to control of excessive vegetative growth and to increase crop yield in onion	62.5 g	1.25 ltr	500	48 (bulb) 7 (green leaves)
1-Methylcyclopropene 3.3% VP (Vapour Releasing Product)					
Apple fruit (Under ambient and cold condition)	Applied as soon as possible after harvest, within a maximum of 7 days after harvest on fruits kept at ambient and cold temperature away from source of external ethylene.	2.24 mg	68 mg (1000 PPB)	-	1
Paclobutrazol 23% w/w (25% w/v) SC **(Import Source:- ZENECA Agrochemicals, Fernhurst, Haslemere, Surrey, UK)**					
Mango	To reduce the inter node length of new shoots and earlier formation of terminal bud. Favourably, influence the fruit bud production, fruit colour and harvest yield 7-15yrs old 16-25 yrs.old >25 yrs old Application after the harvest of fruits (Any time from July to Oct)	- - -	15 ml. Per tree 20 ml. Per tree. 25-40 ml. Per tree (Note: If the soil is sandy the rate of application may be	Recommended quantity diluted in clean water of 5-10 lit. and applied in furrow 5 to 10 cm deep about 30 cm away from the trunk. Fill up with soil after application or apply as soil – collar	-

			reduced to 75 % of the recommended. For repeat use the rate of application can be 50 to 75 % of the rate used in the 1st year)	drench.	
Paclobutrazol 23% SC (W/W) / (25% W/V) **(Import Source:- PGR International Pty. Ltd., 4 Dairy road, Werribee Vic. 3030 Australia)**					
Mango	To reduce the inter node length of new shoots and earlier formation of terminal bud. increase fruit bud production, and improve fruit yield texture 16-25 yrs old Application after the harvest of fruits (Any time from July to Oct)	4.0 gm per tree - -	16 ml. Per tree (Note: If the soil is sandy the rate of application be reduced to 75 % of the recommended. For repeat use the rate of application can be 50 to 75 % of the rate used in 1st year)	Make a round furrow about 5 to 10 cms deep at least 30cm away from the trunk. Mix the recommended dose with about 5-10 litres of clean water and apply to the furrow. Fill up with soil after application and irrigate once or twice a month subsequently	Waiting Period-NIL as the chemical is applied 8 months before harvest of fruits

Paclobutrazol 23% SC (w/w) / (25% w/v) (Indigenous manufacture)					
Mango	To reduce the inter node length of new shoots and earlier formation of terminal bud. Favourably, influence the fruit bud production, fruit colour and harvest yield 7-15 yrs old 16-25 yrs old >25 yrs old Application after the harvest of fruits (Any time from July to Oct)	 3.45 4.6 5.75-9.2	 15 ml per tree 20 ml per tree 30 ml per tree (Note: If the soil is sandy the rate of application may be reduced to 75 % of the recommended. For repeat use the rate of application can be 50 to 75 % of the rate used in the 1st year)	Recommended quantity diluted in clean water of 5 litres and applied in furrow 5 to 10 cm deep about 30 cm away from the trunk. Fill up with soil after application or apply as soil – collar drench.	-
Pomegranate	To induce flowering and enhance yield	0.69 g.ai./ha	3.0 ml/tree	2L Recommended as soil drench (single application) ring form furrow to be made at a depth of 5-7 cm around plants and soil drenching to be done in active root zone and covered with soil.	83

Apple	To induce flowering and enhance yield	2.3 g.a.i./tree	10 ml/tree	5L Recommended as soil drench (single application) Treatment should be drenched in soil in circular area 25 cm away from tree stem. (Dormant stage)	155
	To induce flowering and enhance yield	0.46 g.a.i/ Litre water (460 ppm)	2 ml/Litre (2000 ppm)	3L Recommended as foliar spray (single application) with the help of high volume knap sack sprayer (at green tip stage)	134
Cotton	To restrict vegetative growth prevent shedding of squares/bolls & enhance yield	34.50 g a.i./ha	150ml/ha	500 L/ha	42
Groundnut	To enhance yield by restricting vegetative growth	28.75 g a.i./ha	125 ml/ha	500 L/ha	70

Paclobutrazole 40% SC

Pigeon Pea	At Flowering initiation stage	30	75	500	48

Prohexadione-Ca 10% WG

Apple	Two split applications: 1st application: at 3-5 leaves/ shoot 2nd application 4 weeks after 1st application	125 150	50 gm per 100 liter 60 gm per 100 liter	2500 2500	94

Sodium Para –Nitrophenolate 0.3% SL					
Cotton	Flower bud initiated stage and fruit set stage	0.5%	5ml	800	16
Tomato	Flowering and fruit stages	0.5%	4ml	200	7
Triacontanol 0.05% EC					
Cotton	To increase the yield Three sprays at 45, 65 and 85 days after planting	0.125 gm	0.25ltr	400-500	
Rice	Three sprays at 25, 45 and 65 days after transplanting	0.125 gm	0.25ltr	400-500	
Chilli	Three sprays at 25, 45 and 65 days after planting	0.125 gm	0.25ltr	400-500	
Tomato	Three sprays at 25, 45 and 65 days after planting	0.125gm	0.25 ltr	400-500	
Groundnut	Three sprays at 25, 45 and 65 days after planting	0.125 gm	0.25 ltr	400-500	-
Potato	Two sprays at 30 and 45 days after planting	0.250 gm	0.50 ltr	500-600	-
Triacontanol 0.05%w/w min. GR					
Cotton	To increase the yield Broadcast & mix the desired quantity of granules in soil 2-3 days before sowing.	12.5 gm	25 kg.	-	-
Rice	Broadcast & mix the desired quantity of granules in soil 2-3 days before transplanting.	12.5 gm	25 kg.	-	-

Chilli	Broadcast & mix the desired quantity of granules in soil 2-3 days before sowing.	12.5 gm	25 kg.	-	-
Tomato	Broadcast & mix the desired quantity of granules in soil 2-3 days before sowing.	12.5 gm	25 kg.	-	-
Groundnut	Broadcast & mix the desired quantity of granules in soil 2-3 days before sowing.	12.5 gm	25 kg.	-	-
Triacontanol 0.1% EW					
Cotton	To increase the yield Three sprays at 45, 65 and 85 days after sowing	0.25 g	0.25 ltr.	400-500	-
Rice	Three sprays at 25, 45 and 65 days after transplanting	0.25 g	0.25 ltr.	400-500	-
Chilli	Three sprays at 25, 45 and 65 days after transplanting	0.25 g	0.25 ltr.	400-500	-
Tomato	Three sprays at 25, 45 and 65 days after transplanting	0.25 g	0.25 ltr.	400-500	-
Groundnut	Three sprays at 25, 45 and 65 days after sowing	0.25 g	0.25 ltr.	400-500	-
Tea	Three sprays: 1st spray on mature plants, 2nd spray one month after 1st spray, 3rd spray one month after 2nd spray	0.25 g	0.25 ltr	400-500	-
Cyclanilide 2.10% w/w +Mepiquat Chloride 8.40% w/w SC					
Cotton	First spray should be applied at square formation stage or after 45-55 days of sowing. 2nd and 3rd spray should be applied at an interval of 15 days.	4.40 +17.60 to 4.95 +19.80 gm	200 - 225	500	21

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