GOVERNMENT OF INDIA

Ministry of Agriculture & Farmers Welfare
Department of Agriculture, Cooperation & Farmers Welfare
Directorate of Plant Protection, Quarantine & Storage
Central Insecticides Board & Registration Committee
N.H.-IV, Faridabad-121 001

MAJOR USES OF PESTICIDES

Registered under the Insecticides Act, 1968

UPTO- 30.06.2016

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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) <u>To control Mango malformulation</u>- Before fruit bud differentiations approx.3 months before flowering	20ppm 200ppm	- -	2 ml in 4.5litre. 20 ml in 4.5 ltrs.	- -

Grapes	(a)To increase size & weight of arriers. – Ist sprays at pruning time. – 2nd spray when flowering shoot appear (b)To control berry drop (spray on matured grape bunches 10-15 days before harvesting.	10ppm 100ppm	- -	2 ml in 49 ltrs. 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 eather 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					
Brinjal	Before sowing, seed soaking for 24 hours. Square formation to early	50ppm	- -	-	- -

Cotton (American)	flowering – single spray	20-40 gm	-	375-600(high volume) 125-187 (low volume)	-
Cotton (Deshi)	Square formation to early flowering – single spray	75gm	-	375-600 ltrs .	-
Grapes	pre-bloom stage	600-1000ppm	-	600-1000 ltrs.	-
Potato	Dipping of cut pieces for 10 minutes	100 ppm.		-	
Chlorpropham 50% HN					
Potato	Antisprouting agent for stocked potatoes under cold storage condition Temp= $10\pm2^{o}C$ R.H.= $90\pm5\%$	18-20 gm/MT	36-40 ml/MT	Formulation is to be applied as such with fogging applicator	20
Ethephon 39% SL					
Mango	a)for breaking alternate bearing and to increase yiled Total 5 sprays, Ist spray in mid October or early November & Subsequent sprays at fortnightly interval b)for flower induction in juvenile mango	200ppm 1000 ppm			

	Total 5 sprays at weekly interval commencing from early November. (c)Post harvest treatment for uniform ripening Single dip treatment or spraying on physiologically matured fruits.	500ppm			
Pineapple	For flower induction One spray when there 30-37 leaves on the plant 10-12 months (approx.)	100ppm			
Coffee (Arabica)	For uniform ripening of berries, One spray at fly pricking stage ,when 10-15% berries are ripened.	192ppm			
Coffee (Robusta)	For uniform ripening of berries, One spray at fly pricking stage ,when 10-15% berries are ripened.	96ppm			
Rubber	For boosting latex yield Four times application by brushing to the tip of scrapped bark below the tapping cut during March, August , September & November .	1000ppm	-		
Tomato	For uniform ripening post harvest dip treatment on fruits	2500ppm	-	-	
Pomegranate	Defoliation for better flowering and fruit yield (One spray around 1 month before Mrig bahar (Jun-July)/ Hast bahar (Oct.-Nov) / Ambe bahar (Dec-Jan)	390-487.5 gm	1000-1250 ml	500 ltr	135 days (Waiting period) / 2 -2.5 ml in 1 ltr water (Method of

					preparation of Solution of required concentrations)

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.	-	-
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 012% 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

Gibberellic Acid Technical

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 40% WSG					
Grape	Pre Bloom – elongation – Fruit setting – Thinning 6-7 mm berry size - Enlargement	40	50	500	-
Rice	20-25 days after transplanting Panicle Emergence	20-25	50-62.5	500	-
Gibberellic Acid 0.001%L					
	To increase the yield and quality of the crop produce				

Paddy	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 spary 105 DAP	0.045 gm	450 ml.	450-500	-
Tea	Five spray at monthly interval.	-	270ml	450-500	-
Muberry	First spray: 15-20 days after harvest	0.045	450	450-500	
Gibberellic Acid 0.186% SP					
Cotton	to improve fibre quality	142ppm.	71 gm	450-500	-

	one spray at square formation or early flowering stage				
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	62.5-75gm	1.25-1.5Ltr	Mix 200 -300 ml of products in 10 ltrs of water.	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 gm	1.0-1.25 ltr	500-600	57

Paclobutrazol 23% SC (W/W) / (25% W/V) **(Import Source:- ZENECA Agrochemicals, Fernhurst, Haslemere, Surrey, UK)**					
Mango	To reduce the inter node length of new shoots and earliar 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 reduced	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 drench.	-

			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)		

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	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	Waiting Period- NIL as the chemical is applied 8 months before harvest of fruits

			application can be 50 to 75 % of the rate used in 1st year)	up with soil after application and irrigate once or twice a month subsequently	

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)	- - -	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	Recommended quantity diluted in clean water of 5 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 drench.	-

			be 50 to 75 % of the rate used in the 1st year)		

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	0.125g m	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 planting	0.25 gm	0.25 ltr.	400-500	-
Rice	Three sprays at 25, 45 and 65 days after transplanting	0.25 gm	0.25 ltr.	400-500	-
Chilli	Three sprays at 25, 45 and 65 days after planting	0.25 gm	0.25 Ltr.	400-500	-
Tomato	Three sprays at 25, 45 and 65 days after planting	0.25 gm	0.25 ltr.	400-500	-

Groundnut	Three sprays at 25, 45 and 65 days after planting	0.25gm	0.25 ltr.	400-500	-