

INTEGRATED DISEASE AND INSECT PEST MANAGEMENT (IDIPM) SCHEDULE FOR POMEGRANATE CULTIVATION

This schedule can be used in general for getting disease and insect free yield in any season, however, farmers should not use Streptocycline (streptomycin sulphate 90%+oxy tetracycline 10%) and Bronopol (2-bromo, 2-nitropropane-1, 3-diol) if their orchards are free from bacterial blight and are in bacterial blight free areas.

The spray interval of 7 days should be adopted in *mrig bahar* and 10-14 days in *hasta* and *ambe bahar* season.

Foliar Sprays

S. No.	Days after defoliation	Stage	Pesticides
Sprays During Crop Period			
1.	0-7	Defoliation	Spray 1% Bordeaux mixture before defoliation
2.	8-14	85-100 % leaf fall	Remove fallen leaves and debris from the orchard and burn Drench soil with bleaching powder (33% Cl) @25Kg/1000 liters/1 ha Spray copper oxychloride 50WP (2.5g/l) + Bronopol (0.5g/l)
3.	15-21	First flush of leaves	Morning spray salicylic acid formulation @a.i.0.3g/l Evening spray streptocycline (0.5g/l) + carbendazim 50WP (1g/l) + Thiamethoxam 25WG @ 0.3g/l
4.	22-28	Flower initiation	Bronopol (0.5g/l) + Ziram 80% WP 2g/l
5.	29-35	Flowering	Morning spray mixture of zinc sulphate (3g/l), solubor (2g/l), chelated iron (3g/l) Evening spray streptocycline (0.5g/l) + Carbendazim 50WP (1g/l) + Acetamiprid 20SP @ 0.3g/l/
6.	36-42	Flowering	Spray Captan 50WP(2.5g/l) + Bronopol (0.5g/l)
7.	43-49	Flowering 100%	Spray streptocycline (0.5g/l) + Mancozeb 75% WP (2g/l)+ Imidacloprid 17.8SL @ 0.3ml/l
8.	50-56	Fruit set starts	Morning spray salicylic acid formulation @ a.i. 0.3g/l Evening spray streptocycline 0.5g/l) + Propineb 70WP (3g/l) or Ziram 80% WP(2g/l)
9.	57-63	Fruit setting	Morning spraysolubor 2 g/lit + commercial micronutrient mixture 1g/l Evening spray Steptocycline (0.5g/l)+Thiophanate Methyl 70WP (1g/l) + Cypermethrin 25%EC (1 ml/l) + Neem Seed Kernel Extract @50g/l (75g if entire seed is used) in evening
10.	64-70	Fruit setting	Morning spray Magnesium sulphate (2g/l) Evening spray Bronopol (0.5g/l) +Fosetyl Al 80% WP (2g/l)
11.	71-77	Fruit enlargement	Morning spray salicylic acid formulation @ a.i.0.3g/l Evening spray Bordeaux mixture (0.5%)
12.	78-84	Fruit enlargement	Morning spray calcium nitrate (15 g/l) Evening spray Bronopol (0.5g/l) (0.5g/l) + Mancozeb 75% WP (2g/l)

13.	85-91	Fruit enlargement	Spray streptocycline (0.5g/l) + carbendazim 50WP (1g/l) + methomyl 40%SP@ 1g/l +Neem seed kernel extract @50g/l (75g if entire seed is used)
14.	92-98	Fruit enlargement	Morning spray salicylic acid formulation @ a.i.0.3g/l Evening spray Bronopol (0.5g/l) (0.5g/l) + ziram 80% Wp (2g/l) + Azadirachtin 10000 ppm (3ml/l)
15.	99-105	Fruit enlargement	Spray Bordeaux mixture (0.5%)
16.	106-112	Fruit enlargement	Spray Steptocycline (0.5g/l) (0.5g/l) + Mancozeb 75% WP (2g/l)
17.	113-119	Fruit enlargement	Spray Captan 50WP(2.5g/l) + Bronopol (0.5g/l)+ Methomyl 40%SP@ 1g/l Drench with bleaching powder (33% Cl) @25Kg/1000 liters/1 ha
18.	120-126	Fruit enlargement	Morning spray Calcium nitrate (8-10 g/l) Evening spray steptocycline (0.5g/l) (0.5g/l) + copper hydroxide 77WP (2g/l) 77% WP (2g/l) in evening same day
19.	127-133	Fruit enlargement +Aril colour development	Spray Bronopol (0.5g/l) + Thiophanate Methyl 70WP (1g/l) +Acetamiprid 20SP@ 0.3g/l+
20.	134-140	Fruit enlargement +Aril colour development	Spray Steptocycline (0.5g/l) (0.5g/l) + Propineb 70WP (3g/l)
21.	141-147	Fruit enlargement and development	Spray Bordeaux mixture (0.5%)
22.	148-154	Fruit enlargement and development	Spray Bronopol (0.5g/l) + Captan 50% WP (2.5g/l)
23.	155-161	Fruit enlargement and development	Spray Steptocycline (0.5g/l) (0.5g/l) + copper oxychloride 50WP (2.5g/l) +Lambda cyhalothrin 5EC/CS (0.5g/l)
24.	162-168	Fruit enlargement and development	Bordeaux mixture (0.5%)
25.	169-184	Fruit enlargement &development	Spray Potassium dihydrogen phosphate @10g/l + Spray Bronopol (0.5g/l) + Captan 50% WP (2.5g/l)
26.	185-199	Fruit Maturity	Spray Neem seed kernel extract @50g/l (75g if entire seed is used) or Azadirachtin 1500ppm @ 3ml/l
27.	200-214	Fruit Maturity (1 month before harvest)	Spray Potassium nitrate@10g/l or 0:0:50 @10g/l Bordeaux mixture @ 0.5% only under adverse weather conditions
28.	215-230	Fruit ripening	Harvest

Sprays During Rest Period

Apply Bordeaux paste (10%) on pruned ends. Immediately after pruning spray Bordeaux Mixture (1%)

Spray Bordeaux Mixture (1%) at 15 days interval or alternate with Bronopol @0.5g/l+ Copper oxychloride 50WP (2.5g/l) spray. Continue through defoliation.

Points to remember:

1. A pomegranate surfaces are glossy, hence, preferably add good quality non non-ionic spreader sticker with sprays for uniform coverage with pesticide. DO NOT USE

SPREADER STICKER WITH BORDEAUX MIXTURE

2. To prepare spray mixture, prepare dilute solutions of each chemical separately and mix to make total volume. If precipitate is formed, either mixture chemicals are not compatible or pH is not proper.
3. The spray solution should have a pH of 6.5 -7 for good results.
4. In case no rains are there for long duration or blight is not increasing, sprays can be taken at 10-15 days interval instead of 7 days

The active ingredients (a.i.) in Streptocycline are streptomycin sulphate 90%+oxy tetracycline 10% and in Bronopol '2-bromo, 2-nitropropane-1, 3-diol 95%.' Both streptocycline and bronopol are available with different trade names from different companies. check if a.i. is less then increase the dose accordingly.

EMERGENCY MEASURES FOR BACTERIAL BLIGHT MANAGEMENT

In case of sudden increase in BB on fruits take 2-3 combination sprays of Streptocycline (0.5g/l) + 2-bromo, 2-nitro propane-1, 3-diol @ 0.5g / l + copper fungicides (2.0 – 2.5g/ l)or carbendazim 1g/lor mancozeb or 2g/l in alteration at 5 days interval, however, the PHI of chemicals should be kept in mind while taking emergency sprays.

PRECAUTIONS

1. Take only need based sprays at recommended doses, too many sprays increase the disease.
2. Always remove and burn all affected fruits before starting any spray.
3. Combine insecticides, fungicides or micronutrient sprays with bactericidal sprays depending on compatibility to reduce number of sprays. Mixture should not form precipitate.
4. Take without fail, additional spray with a bactericide after the rains -when plant surfaces dry up
5. Always prepare Bordeaux mixture fresh and use on the same day

CULTURAL OPERATIONS

S. No.	Days after Defoliation	Stage	Operation
1.	0-7	Defoliation	<ul style="list-style-type: none">• Defoliate with Ethrel (1.5-2ml/l)+DAP5g/l• Remove weeds and suckers• Apply 2/3rd dose of FYM + Micronutrients depending on deficiency + poultry manure (1-1.5 kg/plant), vermicompost (1Kg/plant), Neem cake (1.5-3Kg/plant)Neem Cake 1-2 Kg /plant + Vermicompost 1 Kg/plant+ Phorate10G @25g/plant or Carbofuran 3G@40g/plant in wet soil in a ring around the plant• Apply 1/4th dose of nitrogen• Give light irrigation immediately after fertilizer application
2.	8-14	85-100 % leaf fall	<ul style="list-style-type: none">• Remove fallen leaves and debris from the orchard and burn• Drench soil with bleaching powder (33% Cl) @25Kg/1000 liters/1 ha
3.	15-21	First flush of leaves	Irrigate
4.	22-28	Flower initiation	Apply 1/4 th dose of nitrogen

5.	29-49	100% Flowering	Fertigate N:P:K::12:61:00 @ 8 kg/ha/application. Give 15 applications on alternate days for a month through irrigation. Irrigate
6.	50-63	Fruit set starts	Apply 1/4 th dose of nitrogen in soil Fertigate N:P:K::19:19:19 @ 8 kg/ha/application. Give 15 applications on alternate days for a month through irrigation
7.	64-70	Fruit setting	Remove weeds Irrigate regularly
8.	71-126	Fruit set 100% Fruit enlargement	Fertigate N:P:K::00:52:34 Mono-Potassium Phosphate @ 2.5 kg/ha/application -Give 15 applications on alternate days for a month through irrigation Apply 1/4 th dose of nitrogen in soil in August first week Irrigate Drench soil with bleaching powder (33% Cl) @25Kg/1000 liters/1 ha in last week of Aug. or first week of Sep.
9.	127-140	Fruit enlargement +Aril colour development	<ul style="list-style-type: none"> • Remove weeds and suckers • Irrigate
10.	141-184	Fruit enlargement & development	
11.	185-199	Fruit Maturity	
12.	200-214	Fruit Maturity 1 month before harvest	Fertigate Calcium Nitrate @12.5 kg/ha/application give 2 applications at 15 days interval Give moderate Irrigation
13.	215-230	Fruit ripening	Harvest mature fruits
Operations During Rest Period			
14.	-	Rest	Do heavy pruning to remove blight affected and old dry branches Drench soil with bleaching powder (33% Cl) @25Kg/1000 liters/1 ha Apply 1/3 rd dose of FYM + 1/4 th dose of nitrogen + Neem cake @ 1Kg /plant and full dose each of phosphorus and potash , poultry manure (1-1.5 kg/plant), vermicompost (1Kg/plant), Neem cake (1.5-3Kg/plant) Light Irrigation
15.	-	Rest	Light Irrigation
16.	-	Stress	Stop Irrigation
Note:			
1. Irrigate depending on soil type, plant age and stage and weather conditions			
2. Apply nitrogen, phosphorus and potash depending on plant age as given in table below			
Quantity of Different Fertilizers to be Applied Per Tree Depending on Age and Source			

Age of Plant (Yrs)	FYM (Kg)	Nitrogen (g/tree)			Phosphorus (g/tree)				Potassium (g/tree)		
		N Req.	Source		P ₂ O ₅ Req.	Source			K ₂ O Req.	Source	
			Urea	CAN		TSP	SSP	DAP			MOP
			46% N	25% N		43% P	16% P	46% P	#18% N		60% K
1	10	250	540	1000	125	290	780	271	50	125	210
2	20	250	540	1000	125	290	780	271	50	125	210
3	30	500	1090	2000	125	290	780	271	50	125	210
4	40	500	1090	2000	125	290	780	271	50	250	420
5 & above		625	1360	2500	250	580	1560	544	100	250	420

Note:
Depending on availability add poultry manure (1-1.5 kg/plant), vermicompost (1Kg/plant), Neem cake (1.5-3Kg/plant) once or twice a year.
Doses are total requirement/year, should be reduced depending on available nutrients in the specific orchard soil in different regions.
quantity to be subtracted from Urea/CAN dose if DAP is source of phosphorous.