



ADHOC LIST OF AGROCHEMICALS WITH EUROPEAN UNION (EU) MAXIMUM RESIDUE LEVEL (MRL) AND PRE HARVEST INTERVAL (PHI) FOR POMEGRANATE PRODUCTION

Updated: Sept 22, 2023

S. No.	Agrochemicals Recommended	Nature of Pesticide	Dose on formulation basis	EU MRL (mg/kg)	PHI (Days)
DISEASES					
A. Bacterial Blight (<i>Xanthomonas axonopodis</i> pv. <i>punicae</i> Syn <i>Xanthomonas citri</i> pv. <i>punicae</i>)					
1a	Copper compounds	NS		20	60
	(i) Copper hydroxide 53.8% WP		1.5-2 g/l		
	(ii) Copper oxychloride 50% WP		2.5-3.0 g/l		
	(iii) Bordeaux Mixture (freshly prepared)		0.5-1 %		
2	2-Bromo-2-nitropropane-1,3-diol (a.i. 95%)	S	0.5 g/l	NF	60
3	Streptomycin sulphate 90% +Tetracycline hydrochloride 10% ^o	S	0.5 g/l	-	60
B. Fungal Wilt (<i>Ceratocystis fimbriata</i> ; <i>Macrophomina</i> sp.; <i>Rhizoctonia</i> ; <i>Fusarium oxysporum</i> etc)					
4a	Carbendazim 50% WP [#] @	S	2.0 g/l	0.1	@
5a	Fosetyl-Al 80% WP @ [@]	S	0.6 g/l	90	@
6a	Propiconazole 25% EC [@]	S	2.0 ml/l	0.01	@
7a	Tebuconazole 25.9% w/w EC [@]	S	0.3 ml/l	0.02	@
@ Note: Recommended for soil application/drenching only during rest period soon after harvest					
C. Fungal Leaf/Fruit Spots and Rots (<i>Alternaria</i> sp; <i>Cercospora</i> sp; <i>Colletotrichum</i> sp.; <i>Coniella</i> sp.; <i>Drechslera</i> sp.; <i>Sphaceloma</i> sp. etc.)					
8a	Azoxystrobin 23% SC	S	0.5-1.0 ml/l	0.01	75
9	Azoxystrobin 20% SC + Difenoconazole 12.5 % SC	S+ S	1 ml/l	0.01 + 0.1	75
4b	Carbendazim 50% WP [#]	S	1.0 g/l	0.1	100
10	Captan 50% WP ⁵	NS	2.5g/l	0.03	90
11	Chlorothalonil 75% WP [#]	NS	2.0 g/l	0.01	90
	Chlorothalonil 50% WP + Metalaxyl-M 3.75%	NS+ S	2.0-2.5 g/l	0.01 + 0.01	90
1b	Copper compounds	NS		20	60
	(i) Copper hydroxide 53.8% WP		1.5-2 g/l		
	(ii) Copper oxychloride 50% WP		2.5-3.0 g/l		
	(iii) Bordeaux Mixture (freshly prepared)		0.5-1 %		
12	Copper sulphate 47.15% + Mancozeb 30% WG	NS+NS	2.5 g/l	20 + 0.05	100
13	Kasugamycin 5% + Copper oxychloride 45% WP	S+NS	2-2.5 g/l	NF +20.0	60
14	Difenoconazole 25% EC	S	0.5-1 .0 ml/l	0.1	60

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15	Fluopyram 17.7% + Tebuconazole 17.7% w/w SC	S+S	1 ml/L	0.01+0.02	100
16	Hexaconazole 5%EC	S	1.0 ml/l	0.01	70
17a	Mancozeb 75% WP[#]	NS	2.0 g/l	0.05	100
7	Mandipropamid 23.4% SC	NS	0.8 – 1 ml/l	0.01	100
18a	Metalaxyl 8% + [#] Mancozeb 64% WP	S+NS	2.5 g/l	0.01 + 0.05	90
19	Myclobutanil 10% WP	S	0.4 g/l	0.01	90
6b	Propiconazole 25% EC	S	0.5-1 ml/l	0.01	60
20	Propineb 70% WP [#]	NS	3.0 g/l	0.05	100
21a	Pyraclostrobin 20% WG	S	1.0 g/l	0.02	60
22	Metiram 55% WG+ Pyraclostrobin 5% [#]	S+NS	1.5-1.75 g/l	0.05+0.02	120
6	Sulphur 80% WP	NS	2.5 g/l	-	20
7b	Tebuconazole 25.9 EC	S	0.625 ml/l	0.02	60
23	Tebuconazole 50% + Trifloxystrobin 25% WG	S+S	0.5 g/l	0.02 + 0.01	60
24	Thiophanate Methyl 70% WP[§]	S	1.0 g/l	0.1	60
25	Thiram 75%WP^{§#}	NS	2.0g/l	0.05	100
26	Tricyclazole 18%+ Mancozeb 62% WP[§]	S+NS	2.5-3g/l	0.01 + 0.05	90
27	Hexaconazole 4% + Zineb 68% WP	S+NS	2.5g/l	0.01+0.05	100
28	Ziram 27%SC^{§#}	NS	2.5ml/l	0.1	100
D. Fungal Blight (<i>Phytophthora</i> sp.)					
8b	Azoxystrobin 23% SC	S	0.5-1.0 ml/l	0.01	75
29	Boscalid 25.2% + Pyraclostrobin 12.8% w/w WG	S+S	0.5-0.6 g/l	2.0 + 0.02	60
1c	Copper compounds	NS		20	60
	(i) Copper hydroxide 53.8% WP		1.5-2 g/l		
	(ii) Copper oxychloride 50% WP		2.5-3.0 g/l		
	(iii) Bordeaux Mixture (freshly prepared)		0.5-1 %		
30	Cymoxanil 8%+ Mancozeb 64% WP	S+NS	2.0 g/l	0.01 + 0.05	90
31	Dimethomorph 50% WP	S	1.0 g/l	0.01	90
5b	Fosetyl- Al 80%WP	S	2.0 g/l	90	30
17b	Mancozeb 75% WP^{§#}	NS	2.0g/l	0.05	90
18b	Metalaxyl 8% + [#] Mancozeb 64%[§] WP	S	2.5 g/l	0.01 + 0.05	90
21b	Pyraclostrobin 20% WG	S	1.0 g/l	0.02	60
INSECT AND NON INSECT PESTS					
E. Fruit Borer (<i>Deudorix isocrates</i>)					
32a	Azadirachtin 1% EC (10000 ppm)	NS	3.0 ml/l	0.01	3
33a	Chlorantraniliprole (18.5% EC)	NS	0.75 ml/l	0.4	60
34a	Chlorantraniliprole 9.3% w/w + Lambda Cyhalothrin 4.6% w/w ZC*	NS	0.25 ml/l	0.4 + 0.01	55
35a	Cyantraniliprole 10.26% OD	S	0.7-0.9 ml/l	0.01	60
36a	Cypermethrin 25% EC*	NS	1.0 ml/l	0.05	73
37a	Flubendiamide 19.92% + Thiacloprid 19.92% w/w SC (480 SC)	NS+S	0.5 ml/l	0.01 + 0.01	90
38a	Indoxacarb 14.5% SC*	NS	0.75 ml/l	0.02	30
39a	Spinetoram 12% SC	NS	0.75-1.0 ml/l	0.02	30

S. No.	Agrochemicals Recommended	Nature of Pesticide	Dose on formulation basis	EU MRL (mg/kg)	PHI (Days)
40a	Spinosad 45% SC	NS	0.5 ml/l	0.02	40
41a	Tolfenpyrad 15 % EC	NS	0.75-1.0 ml/l	NF	30
F. Stem Borer (<i>Celosterna spinator</i>), Shot hole borer (<i>Xyleborus fernicatus</i>), Termites (<i>Odontotermes obesus</i>, <i>Microtermis obesi</i>)					
32b	Azadirachtin 1% EC(10000 ppm)	NS	3.0 ml/l	0.01	3
34b	Chlorantraniliprole 9.3% w/w + Lambda Cyhalothrin 4.6% w/w ZC*	NS	0.25 ml/l	0.4 + 0.01	55
42	Chlorpyrifos 20% EC*[§]#[@]	NS	2.0 ml/l	0.01	40
43	Emamectin benzoate 5% SG	NS	2.0 g/l	0.002	
44a	Imidacloprid 17.8% SL* [#]	S	0.5 ml/l	0.01	60
45a	Lambda-Cyhalothrin 5% EC *	NS	2.0 ml/l	0.01	55
46a	Thiamethoxam 25%WG* [#]	S	0.5 g/l	0.01	60
[@] Note: Recommended for soil application/drenching/ stem pasting/spray					
G. Mealybugs (<i>Ferrisia virgata</i>; <i>Nipaecoccus viridis</i>; <i>Pseudococcus jackbeardsleyi</i> etc.) Scale Insects (<i>Ceroplastes</i> spp.)					
32c	Azadirachtin 1% EC(10000 ppm)	NS	3.0 ml/l	0.01	3
47	Buprofezin 25% SC	NS	1-1.5 ml/l	0.01	38
35b	Cyantraniliprole 10.26% OD	S	0.7-0.9 ml/l	0.01	60
48	Emamectin benzoate 3% + Thiamethoxam 12% WG*	NS+S	0.75-1.0 g/l	0.002 0.01	60
44b	Imidacloprid 17.8% SL* [#]	S	0.5 ml/l	0.01	60
39b	Spinetoram 12% SC	NS	0.75-1.0 ml/l	0.02	30
49	Thiamethoxam 12.6* + Lambda cyhalothrin 9.5 % ZC*	S+NS	0.75-1.0 ml/l	0.01 + 0.01	60
46b	Thiamethoxam 25%WG* [#]	S	0.5 g/l	0.01	60
H. Thrips (<i>Scirtothrips dorsalis</i>), Aphids (<i>Aphis punicae</i>), Whitefly (<i>Siphoninus phillyreae</i>), Sucking bugs (<i>Nezara viridula</i>) leaf footed bug etc.					
50	Acetamiprid 20 SP* [#]	S	0.3 ml/l	0.01	70
32d	Azadirachtin 1% EC (10000 ppm)	NS	3.0 ml/l	0.01	3
30b	Chlorantraniliprole (18.5% SC)	NS	0.75 ml/l	0.4	60
51	Chlorantraniliprole 8.80 % + Thiamethoxam 17.5%*	NS+S	0.75 ml/l	0.4 + 0.01	60
34c	Chlorantraniliprole 9.3% w/w + Lambda Cyhalothrin 4.6% w/w ZC*	NS	0.25 ml/l	0.4 + 0.01	60
52	Chlorpyrifos 50%*[§] + Alpha cypermethrin 5% EC	NS+NS	0.75 ml/l	0.01 + 0.05	73
35c	Cyantraniliprole 10.26% OD	S	0.7-0.9 ml/l	0.01	60
53	Fipronil 80WG* [#]	NS	0.25 g/l	0.005	90
54	Flonicamid 50% WG	NS	0.75-1.0 g/l	0.03	30
37b	Flubendiamide 19.92% w/w+ Thiacloprid 19.92% w/w SC	NS+S	0.5 ml/l	0.01 + 0.01	90
44c	Imidacloprid 17.8% SL* [#]	S	0.5 ml/l	0.01	60
55	Pongamia oil	NS	3.0 ml/l	NF	3
56	Profenofos 50% EC	S	2.0 ml/l	0.01	100
57	Lambda Cyhalothrin 5% EC* [#]	NS	0.5 ml/l	0.01	45
39c	Spinetoram 12% SC	NS	0.75 to 1.0 ml/l	0.02	30
40b	Spinosad 45% SC	NS	0.5 ml/l	0.02	40
58	Thiacloprid 21.7%SC [#]	S	0.3-0.75 ml/l	0.01	90

S. No.	Agrochemicals Recommended	Nature of Pesticide	Dose on formulation basis	EU MRL (mg/kg)	PHI (Days)
42c	Thiamethoxam 25%WG* [#]	S	0.5 g/l	0.01	60
41b	Tolfenpyrad 15 % EC	NS	0.75-1.0 ml/l	NF	30
I. Mites (<i>Tenupalpus punicae</i>)					
29e	Azadirachtin 1% EC (10000 ppm)	NS	3.0 ml/l	0.01	3
59	Fenazaquin 10%EC	NS	1.5 ml/l	0.01	30
60	Fenpyroximate 5% EC	NS	0.4-0.5 ml/l	0.01	40
61	Phosalone 35% EC	NS	2.0 ml/l	0.01	40
62	Propargite 57% EC [#]	NS	1.0 ml/l	0.01	15
63	Spiromesifen 240 SC	NS	0.4-0.5 ml/l	0.02	30
J. Leaf eating caterpillars (<i>Spodoptera litura</i>, <i>Trabala vishnou</i> and <i>Ophiusa tirhaca</i>)					
33b	Chlorantraniliprole (18.5% EC)	NS	0.75 ml/l	0.4	60
34d	Chlorantraniliprole 9.3% w/w + Lambda Cyhalothrin 4.6% w/w ZC*	NS	0.25 ml/l	0.4 + 0.01	55
35d	Cyantraniliprole 10.26% OD	S	0.7-0.9 ml/l	0.01	60
36b	Cypermethrin 25% EC*	NS	1.0 ml/l	0.05	70
64	Deltamethrin 2.8 EC [#] [§]	NS	1.5 ml/l	0.01	40
38b	Indoxacarb 14.5% SC*	NS	0.75 ml/l	0.02	30
39d	Spinetoram 12% SC	NS	0.75 -1.0 ml/l	0.02	30
40c	Spinosad 45% SC	NS	0.5 ml/l	0.02	40
K. Nematodes (<i>Meloidogyne incognita</i>)					
65	Fluensulfone 2% GR [€]	NS	10 g/dripper	NF	30
66	Fluopyram 34.48% SC [*]	S	2 ml/plant	0.01	120
Note: Use Nematicides after harvest, during rest period or crop initiation [€] The dose needs to be distributed according to the no. of dippers per plants; quantity of chemical should be 10 gram per dripper and maximum dose should not exceed 40 gram per plant with 4 drippers. [*] Plants should be watered sufficiently before drenching. Drenching should be done @ 2ml/plant in 2 liter of water.					
PLANT GROWTH REGULATORS (For defoliation, flowering and checking flower/fruit drop)					
62	6-Benzylaminopurine (6BA) Technical grade	S	0.01 to 0.02 g/l	0.01	-
63	2,4-Dichloro phenoxy acetic acid Technical grade [§]	S	0.01 to 0.02 g/l	0.05	60
64	Ethephon 39% SL	S	1.0- 2.5 ml/l	0.05	135
65	Gibberellic Acid (GA) Technical grade	S	0.02 to 0.05 g/l	-	-
66	1-Naphthyl acetic acid 4.5% SL	S	0.23 ml/l	0.06	30
67	Paclobutrazol 23% SC (w/w) / (25% w/v)	S	2-3ml/tree soil drench	0.01	83
68	Salicylic Acid 98%	S	0.3g/l	NF	-
WEEDICIDES					
69	Glyphosate 41%SL	<i>Post emergent Non Selective</i>	5ml/l	0.1	60
70	Indaziflam 500 SC	<i>Pre emergent Selective</i>	0.125 ml/l	NF	55
71	Paraquat dichloride 24% SL	<i>Post emergent Non Selective</i>	4 ml/l	0.02	100

ABBREVIATIONS AND THEIR FULL FORM

EU-MRL	European Union–Maximum Residue Level	PHI	Pre-Harvest Interval;
NS	Non-systemic	S	Systemic

SYMBOLS USED

°	May be used only if necessary till December 31, 2023. NOTE: The use of Streptomycin + Tetracycline shall be completely banned in agriculture with effect from 01.01.2024. As per GoI Ministry of Agriculture and Farmers Welfare New Delhi, Gazette notification; S.O. 5295 (E) dated 17.12.2021. Link: https://egazette.nic.in/WriteReadData/2021/231955.pdf
*	Pesticides highly toxic to honey bees: Avoid sprays in the flowering period
#	Not banned but in EU Pesticides Watch list; Use with caution
®	Not enlisted in EU pesticide list but it was evaluated for toxicology jointly by FAO/WHO meeting on pesticide residues (JMPR) in 2013.
§	The names of the chemicals mentioned in the bold font and marked with § are mentioned in the gazette of India. Draft order: Banning of Insecticides Order, Department of Agriculture Cooperation and Farmer's Welfare, GOI, May 18: 2020 (Complete list given at the end.)

LIST OF PESTICIDES BANNED/WHICH MAY BE BANNED IN INDIA

Reference: Draft order: Banning of Insecticides Order, Department of Agriculture Cooperation and Farmer's Welfare, GOI, May 18: 2020 <http://agricoop.nic.in/sites/default/files/Notification.pdf>

Note: the order will come into force on the date of its final publication in the Official Gazette.

1. Acephate	8. Chlorpyrifos	15. Malathion	22. Sulfosulfuron
2. Atrazine	9. 2,4-D	16. Mancozeb	23. Thiodicarb
3. Benfuracarb	10. Deltamethrin	17. Methomyl ®	24. Thiophanat methyl
4. Butachlor	11. Dicofol ®	18. Monocrotophos	25. Thiram
5. Captan	12. Dimethoate	19. Oxyfluorfen	26. Zineb
6. Carbendazim	13. Dinocap ®	20. Pendimethalin	27. Ziram
7. Carbofuran	14. Diuron	21. Quinalphos	

NOTE:

(a) **Banned Pesticides:** Pesticide formulations (S. No 11, 13 and 17 in red font marked with ® have been banned for import, manufacture and use **w.e.f. Oct. 2022**. Ref: List Of Pesticides Which Are Banned And Restricted Use: (As on 01.10.2022). The order also stopped from use all formulations of Carbofuran except Carbofuran 3% Encapsulated granule.
<https://egazette.nic.in/WriteReadData/2023/243654.pdf>.

(a) S. No. 11, 13 and 18 banned in EU

(c) S. No. 6 and 16 in EU Watch List

CIB REGISTERED LIST OF PESTICIDES FOR POMEGRANATE

[Reference: MAJOR USES OF PESTICIDES, (Registered under the Insecticides Act, 1968), (UPTO - 01/02/2023); <https://ppqs.gov.in/divisions/cib-rc/major-uses-of-pesticides>]

Fungicides	Insecticides
Azoxystrobin 23% SC,	Cyantraniliprole 10.26% OD
Difenoconazole 25 % EC	Lambda-cyhalothrin 04.90% CS
Kitazin 48% EC	Quinalphos 25% EC
Propineb 70% WP	
Kasugamycin 5% + copper oxychloride 45% WP	Growth Hormones
Metalaxyl M4%+ Mancozeb 64% WP	Ethephon 39% SL
Metiram 55% + Pyraclostrobin 5% WG	Paclobutrazol 23% SC (w/w) / (25% w/v)
Copper Sulphate Pentahydrate 6% SC	

PLEASE NOTE

- *Recommended agrochemicals for the management of various insect pests and diseases along with their dose, PHI and MRL values are recommendations by Universities and Institutes & available research literature, hence are of advisory nature for the Good Pomegranate Production Practices and therefore, not covered under any legal scrutiny.*
- *As the data based on scientific field trials on PHI for pomegranate are not available for all chemicals hence, are based on available residue analysis reports of limited pomegranate samples of harvested produce during previous years or PHI for other fruit crops grown in similar climatic conditions and hence, may change at later stage on availability of scientific data. Therefore PHI given here are only indicative and ad-hoc in nature and are of advisory nature, therefore, not covered under any legal scrutiny.*
- *All the doses mentioned above are for high volume sprayers, where normal spray volume is 1000 l/ha. Spray volume can however, be changed as per the efficiency of sprayers used. However, the amount of each pesticide (active ingredient) recommended for 1 ha on the basis of 1000 litre spray solution should be strictly maintained to minimize pesticide residues.*
- *The responsibility of safe usage of chemicals for the management of any of the above pests and diseases will rest with the growers or exporters in compliance with the requirements of the Exporters/EU. ICAR-National Research Centre on Pomegranate shall not be covered under any legal scrutiny.*

DISCLAIMER

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

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