भाकृअनुप-राष्ट्रीय अंगूर अनुसंधान केंद्र

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Annexure-5

Revised date: 29th October, 2024

List of chemicals with CIB & RC label claim for use in grapes

Sr. No.	Chemical recommended for major disease & pest	Nature of chemical	Dose on formulation basis	EU MRL (mg/kg)	Pre-harvest Interval (PHI in days)
I	**Downy Mildew**				
1.*	Amisulbrom 17.7% SC w/w (20% SC w/v)	NS	375 mL/ha	0.5	59
2.*	Azoxystrobin 23 SC	S	494 mL/ha	3.0	7
3.	Captan 50 % WP	NS	2500 g/ha	0.03	70
4.	COC 50 WP	NS	2.5 g/L, 2.4 g/L	50.0	42 (avoid using after fruit set)
5.	Copper hydroxide 53.8 DF	NS	1.5 g/L	50.0	12
6.	Cyazofamid 34.5% SC	NS	200 mL/ha	2.0	30
7.*	Dimethomorph 50 WP	S	0.50 to 0.75 g/L	3.0	34
8.	Fosetyl Al 80 WP	S	1.4-2.0 g/L	100.0	30
9.*	Kresoxim methyl 44.3 SC	S	600-700 mL/ha	1.5	30
10.	Mancozeb 75 WP	NS	1.5-2.0 g/L	5.0	66
11.*	Mandipropamid 23.4% SC	NS	0.8 mL/L	2.0	5
12.*	Metiram 70% WG	NS	2000 g/ha	5.0	66
13.	Propineb 70 WP	NS	3.0 g/L	0.05	75 (avoid using after fruit set)
14.	Ametoctradin 27 + Dimethomorph 20.27 SC	NS + S	800-1000 mL/ha	6.0 + 3.0	34
15.*	Azoxystrobin 8.3% + Mancozeb 66.7% WG	S + NS	1500 g/ha	3.0 + 5.0	66
16.*	Azoxystrobin 11 % + Tebuconazole 18.3% w/w	S + S	750 mL/ha	3.0 + 0.5	60
17.	Benalaxyl-M 4% + Mancozeb 65% WP	S + NS	2750 g/ha	0.7 + 5.0	66
18.	Copper Sulphate 47.15% + Mancozeb 30% WDG	NS	5000 g/ha	50.0 + 5.0	66
19.	Copper Sulphate Pentahydrate 23.99% SC	NS	2.5 mL/L	50.0	30
20.	Cymoxanil + Mancozeb 8 + 64 WP	S + NS	2.0 g/L	0.05 + 5.0	66
21.*	Dimethomorph 12% + Pyraclostrobin 6.7% WG	S + S	1500 g/ha	3.0 + 0.3	55

Sr. No.	Chemical recommended for major disease & pest	Nature of chemical	Dose on formulation basis	EU MRL (mg/kg)	Pre-harvest Interval (PHI in days)
22.*	Famoxadone 16.6 % + Cymoxanil 22.1 % SC	S + NS	500 mL/ha	0.01+ 0.05	80
23.*	Fenamidone + Mancozeb 10 + 50 WG	S + NS	2.5 to 3 g/L	0.01 + 5.0	85
24.*	Fenamidone 4.44% + fosetyl-Al 66.66% WDG	S	2000-2500 g/ha	0.01 + 100	90
25.	Fluopicolide 4.44**%** + Fosetyl-Al 66.67% WG	S	2.25 to 2.5 kg/ha	2.0 + 100	40
26.*	Iprovalicarb + Propineb 5.5 + 61.25 WP	S + NS	2.25 g/L	2.0 + 0.05	75
27.*	Kresoxim methyl 18% + Mancozeb 54% WP (72 % WP)	S + NS	1500 g /ha	1.5 + 5.0	66
28.	Metalaxyl + Mancozeb 8 + 64 WP	S + NS	2.5 g/L	2.0 + 5.0	75
29.	Metalaxyl-M + Mancozeb 4 + 64 WP	S + NS	2.5 g/L	2.0 + 5.0	75
30.	Metiram 44% + Dimethomorph 9% WG	NS + S	2500 g/ha	5.0 + 3.0	66
31.	Oxathiapiprolin 3% + Mandipropamid 25% w/v (280 SC)	S + NS	700 ml/ha	0.7 + 2.0	30
32.*	Pyraclostrobin 5% + Metiram 55% 60 WG	S + NS	1.50-1.75 kg/ha	0.3 + 5.0	66
33.	Valifenalate 6 % + Mancozeb 60% WG	S + NS	2000 g/ha	1.0 + 5.0	66
II	**Powdery Mildew**				
2a.*	Azoxystrobin 23 SC	S	494 mL / ha	3.0	7
34.	Bupirimate 25% w/v (26.7% w/w) SC	S	3.0 mL/L	1.5	45
35.	Cyflufenamid 5% EW	S	500 mL/ha	0.2	50
36.*	Difenoconazole 25 EC	S	0.50 mL / L	3.0	45
37.*	Flusilazole 40 EC	S	25 mL/200L	0.01	60
38.*	Hexaconazole 5 EC	S	1.0 mL/L	0.01	60
9a.*	Kresoxim methyl 44.3 SC	S	600-700 mL/ha	1.5	30
39.	Meptyldinocap 35.7% EC	NS	308.6-342.8 mL/ha	0.2	50
40.	Metrafenone 50% SC	S	250 mL/ha	7.0	22
41.*	Myclobutanil 10 WP	S	0.40 g/L	1.5	30
42.*	Penconazole 10 EC	S	0.50 mL/L	0.4	50
43.	Polyoxin D zinc salt 5% SC	S	600 ml/ha	0.01	15
44.	Sulfur 40 SC, 55.16 SC, 80 WP, 80 WDG,85 WP	NS	3.0 mL, 3.0 mL, 2.50 g, 1.87-2.50 g, 1.50-2.0 g/L, respectively	No MRL required	PHI not applicable
45.	Sulphur 58.5% w/w + Azoxystrobin 4.2% w/w SC	S	2.0 mL/L	3.0	07

Sr. No.	Chemical recommended for major disease & pest	Nature of chemical	Dose on formulation basis	EU MRL (mg/kg)	Pre-harvest Interval (PHI in days)
46.*	Tetraconazole 3.8 EW	S	0.75 mL/L	0.07	60
16a.*	Azoxystrobin 11 % + Tebuconazole 18.3% w/w	S + S	750 mL/ha	3.0 + 0.50	60
47.*	Azoxystrobin 25 % + Boscalid 35 % WG	S + S	500 g/ha	3.0+5.0	07
48.*	Boscalid 25.2% + Pyraclostrobin 12.8% w/w WG	S + S	500-600 g/ha	5.0 + 0.3	55
49.*	Fluopyram 200 + Tebuconazole 200 SC	S + S	0.563 mL/L	2.0 + 0.5	60
50.	Fluxapyroxad 25% + Pyraclostrobin 25% SC	S + S	200 mL/ha	3.0 + 0.3	60
51.*	Fluxapyroxad 75 g/L + Difenoconazole 50g/L SC	S + S	800 mL/ha	3.0 + 3.0	45
52.*	Tebuconazole 50% + Trifloxystrobin 25% WG	S + S	0.175 g/L	0.5 + 3.0	34
III	**Anthracnose**				
53.	Carbendazim 50 WP, 46.27 SC	S	1.0 g/L, 1.0 mL/L	0.30	50
4a.	COC 50 WP	NS	2.5 g/L, 2.40 g/L	50.0	42 (avoid using after fruit set)
13a.	Propineb 70 WP	NS	3.0 g/L	0.05	75
54.	Thiophanate methyl 70 WP	S	0.71- 0.95 g/L	0.10	73
15a.	Azoxystrobin 8.3% + Mancozeb 66.7% WG	S + NS	1500 g/ha	3.0 + 5.0	66
55.	Carbendazim 12% + Mancozeb 63% WP	S + NS	1500 g/ ha	0.30 + 5.0	66
18a.	Copper Sulphate 47.15% + Mancozeb 30% WDG	NS + NS	5000 g/ha	50.0 + 5.0	66
49a.	Fluopyram 200 + Tebuconazole 200 SC	S + S	0.563 mL/L	2.0 + 0.5	60
56.	Kasugamycin 5% + Copper Oxychloride 45% WP	S + NS	750 g/ha	0.01 + 50.0	70 (Use should be avoided after flowering stage)
27a.	Kresoxim methyl 18% + Mancozeb 54% WP (72 % WP)	S + NS	1500 g /ha	1.5 + 5.0	66
45a.	Sulphur 58.5% w/w + Azoxystrobin 4.2% w/w SC	S	2.0 mL/L	3.0	07
IV	**Bacterial Leaf Spot**				
56a.	Kasugamycin 5% + Copper Oxychloride 45% WP	S + NS	750 g/ha	0.01* + 50.0	70 (Use should be avoided after flowering stage)

Sr. No.	Chemical recommended for major disease & pest	Nature of chemical	Dose on formulation basis	EU MRL (mg/kg)	Pre-harvest Interval (PHI in days)
V	**Flea beetle**				
57.	Imidacloprid 17.8 SL	S	0.30-0.40 mL/L	0.7	70 (Use of Imidacloprid should be avoided during pre-flowering and flowering stage)
58.	Lambda-cyhalothrin 4.9 CS	NS	0.25-0.50 mL/L	0.08	45
VI	**Thrips**				
59.	Cyantraniliprole 10 OD	S	0.70 mL/L	1.5	60
60.	Emamectin benzoate 05 SG	NS	0.22 g/L	0.04	30
61.	Fipronil 80 WG	NS	0.05-0.0625 g/L	0.005	75 (only one application before flowering stage)
62.	Spinetoram 11.7% SC	S	300 mL/ha	0.4	30
63.	Spinosad 45% SC	NS	250 mL/ha	0.5	15
VII	**Mealy bugs**				
64.	Buprofezin 25 SC	NS	1.00-1.50 mL/L	0.01	65 (Contact of bunches with Buprofezin should be avoided after veraison stage)
65.	Clothianidin 50% WDG	S	500 g/ha	0.70	60 (for use as soil drenching)
66.	Spirotetramat 15.31% w/w OD	S	700 mL/ha	2.0	60
VIII	**Jassids**				
65a.	Clothianidin 50% WDG	S	500 g/ha	0.700	60 (for use as soil drenching)
IX	**Mite**				
67.	Abamectin 1.9% (w/w) EC	Limited systemic; Translaminar action	0.75 mL/L	0.01	30
68.	Bifenazate 22.6% SC	NS	500 mL/ha	0.01	45
66a.	Spirotetramat 15.31% w/w OD	S	700 mL/ha	2.0	60
X	**Plant Growth Regulators**				
69.	1-Naphthyl acetic acid 4.5% L	S	100 ppm	0.06	15
70.	Chlormequat chloride 50 SL	S	600-1000 ppm	0.05	-

Sr. No.	Chemical recommended for major disease & pest	Nature of chemical	Dose on formulation basis	EU MRL (mg/kg)	Pre-harvest Interval (PHI in days)
71.	Ethephon 39% w/w SL	S	1250-1750 mL/ ha	1.00	110
72.$	Forchlorfenuron (CPPU) 0.1% L	S	1-2 ppm	0.01	60
73.	Gibberellic acid (GA_3) Technical	S	100 ppm (Cumulative Usage)	No MRL Required	PHI not applicable
74.	Hydrogen cyanamide 50 SL	S	30-40 mL/L	0.01	90-120
XI	**Herbicides**				
75.	Indaziflam 20 + Glyphosate IPA 540 SC (1.65% w/w + 44.63% w/w)	S + S	1875-2125 mL/ha	0.01 + 0.5	108
76.	Paraquat dichloride 24 SL	NS	5 mL/L	0.02	-

NS = Non-systemic, S = Systemic

*. Resistance in downy mildew based on Cys b gene (G143A) against QoI fungicides (Fenamidone, Azoxystrobin, Famoxadone, Kresoxim methyl, Pyraclostrobin and Trifloxystrobin), cellulose synthase gene (*PvCesA3*) against CAA fungicides (Dimethomorph, Iprovalicarb and Mandipropamid) and resistance in powdery mildew based on *CYP51* gene (14α-demethylase) against triazole fungicides (Penconazole, Hexaconazole, Myclobutanil, Flusilazole, Difenoconazole, Tetraconazole) have been detected in India from major grape growing areas. Use of formulations containing these fungicides should be minimized and avoided during high risk periods.

$. Application of Forchlorfenuron (CPPU) should be avoided after 65 days of pruning or after 6-8 mm berry size is attained to reduce the chances of detections.

Note

- 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 based on its active ingredient recommended for 1 ha area on the basis of 1000 L spray solution should be strictly maintained to ensure bio-efficacy and to minimize pesticide residues.
- Recommended PHI will be valid only if two applications of an agrochemical are given per fruiting season at the interval of 7-15 days at recommended dose except in case of special mention in table.
- If any of the pesticide found ineffective in controlling the targeted diseases or pests, it is advised not to give repeated applications of the formulation since it may lead to residue issues and increase the resistance population of targeted pathogen or insects.
- The information provided in this document is of advisory nature. The responsibility of usage of chemicals for the management of any of the above pests and diseases and compliance of the produce to the EU-MRL requirement will rest with the growers.
- Since risk of more than one pest may overlap, if appropriate insecticide is used, control of non-targeted pest can be achieved. Compliance for dose, number of applications and PHI as recommended for target pest is essential and should be strictly adhered.

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