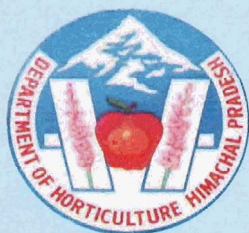


SPRAY SCHEDULE YEAR 2021 (APPLE)



**Department of Horticulture, Himachal Pradesh,
Shimla-2**

and

**Dr. Y. S. Parmar
University of Horticulture and Forestry,
Nauni, Solan (H.P.)**

SPRAY SCHEDULE FOR THE CONTROL OF DISEASES OF APPLE YEAR 2021

Sl. No.	Tree Stage	Name of Chemical	Quantity of Chemical for 200 L of Water	Control of Diseases	Remarks
1.	Green tip	Captan* or Dodine or Ziram* Fluxapyroxad 75g/l +Difenoconazole 50 g/l SC	600 gm 200 gm 600 (ml/g) 60 ml	Scab Scab/powdery mildew	
2.	Pink bud	Mancozeb* or Propineb or Difenoconazole	600 gm 600 gm 30 ml	Scab	
3.	Petal fall/ Pea Stage	Carbendazim* or Thiophanate Methyl* or Hexaconazole or Myclobutanil or Flusilazole 40% EC Tebuconazole 50% +Trifloxystrobin 25%WG or Tebuconazole 8% +Captan 32% SC or Boscalid 25.2% +Pyraclostrobin 12.8% w/w WG or Metrafenone 500g/l SC Carbendazim 12% +Mancozeb 63% WP Carbendazim 25% +Flusilazole 12.5% SC	100 gm 100 gm 100 ml 80 gm 500ml 80 gm 500 ml 50 gm 20 ml 500 gm 160ml	Scab Powdery mildew Scab/powdery mildew Alternaria leaf spot	
4.	Fruit Development (Walnut size)	Mancozeb* or Propineb or Dodine Metiram 55% + Pyraclostrobin 5%WG Tebuconazole 8% +Captan 32% SC or Fluxapyroxad 250 g/l + Pyraclostrobin 250 g/l 500 SC	600 gm 600 gm 150 gm 200 gm 500 ml 20 ml	Scab Alternaria leaf spot/ Blight/Pre mature leaf fall Alternaria leaf spot/ Premature leaf fall	Do not spray Dodine if temperature is above 30°C and slow drying condition prevails

5.	Fruit development (20 days after 4th spray)	Tebuconazole 50% + Trifloxystrobin 25%WG	80 gm	Pre-mature leaf fall
		Propineb or Zineb*	600 gm	Scab
		Carbendazim 25% + Flusilazole 12.5% SC	600 gm 160ml	Scab, Black rot Alternaria leaf spot/ Premature leaf fall
6.	Pre harvest (20-25 days before harvest)	Captan*	600 gm	Scab/Fly speck/ Bitter rot
		Ziram* or Metiram 55%	600 ml/g	Scab
		+ Pyraclostrobin 5%WG	200gm	Alternaria leaf spot/ blight
7.	After harvest	Copper Oxychloride	600 gm	Canker

Note :-

1. This spray schedule is for normal weather conditions.
2. In case of heavy rains within 12 hours of spray, the spray is to be repeated within seven days.
3. Do not use the same chemical, spray after spray.
4. Pesticides should be sprayed when there are chances of diseases.
5. Do not mix Dodine with other pesticides/chemicals.
6. Do not mix any other pesticide/chemical/micro-nutrient/growth regulator/hormone with the above recommended pesticides to avoid russetting and other disorders. In case there is necessity, these may be sprayed separately.
7. The fallen leaves of apple should be collected and decomposed in a compost pit or spray of 5% urea may be done on orchard floor on fallen leaves to ensure fast decomposition of infected leaves .
8. Copper oxychloride although tested by the Dr. Y. S. Parmar UHF Nauni and essentially required at the above stage of the tree but product is not registered with CIB & RC till date.
9. Drench the basin area 3-4 times, with Carbendazim (0.1%) or Aureofungin (0.02%) + Copper Sulphate (0.02%) with the onset of rainy season in 15-20 cm deep holes around the tree basin. During winters, expose the root system of infected trees and cut the infected portion and apply Bordeaux paint for the control of White root rot.
10. Scarify wounds near collar region and apply Bordeaux paint or any other Copper fungicide based paint during winter season. Drench the whole tree basin at a distance of 30 cm from tree trunk with Mancozeb (0.3%) during rainy season, for the control of Collar rot.
11. In the high scab areas, 12-14 days interval should be maintained between the sprays upto primary scab stage i.e. fruit set.

Recommendations against Hail damage:-

1. Spray 100 gm Carbendazim or 600 gm Mancozeb in 200 L of water immediately after hail.
2. Spray 200 gm Boric acid + 500 gm Zinc Sulphate + 250 gm Quick lime in 200 L of water within 3-4 days of hail storm.
3. After 10 to 12 days, a spray of micro-nutrients like Agromin, Multiplex or Microvit @ 400 to 600 g per 200 L of water is also recommended. Spray the hail affected apple orchard with 1 kg Urea in 200L of water.

Note:-

- ★ The pesticides are proposed to be banned viz. Captan, Ziram, Mancozeb, Carbendazim, Thiophanate methyl, Zineb, Malathion & Chlorpyrifos by the Government vide Gazette Notification No. CG-DL-E-18052020-219423, Extraordinary Part-II-Section-3-Subsection (ii), dated 18th May 2020 regarding- Banning of Insecticides Order, 2020.

SPRAY SCHEDULE FOR THE CONTROL OF INSECT & MITE PESTS OF APPLE, YEAR 2021

Sl. No.	Tree Stage	Name of Chemical	Quantity of Chemical for 200 L of Water	Control of Pests
1.	Half-inch Green Tip	Horticultural Mineral Oil	4 lt	Sanjose scale & mite
2.	Pink Bud	Thiacloprid	100 ml	Thrips
3.	Petal fall	Spiromesifen or Hexythiazox Oxy-demeton methyl Malathion*	60 ml 200ml 200 ml 200 ml	Mites Sanjose scale Aphid
4.	Fruit development (Walnut size)	Fenazaquin or Propargite or Horticultural Mineral Oil	50 ml 200 ml 2 lt.	Mites
5.	Fruit development (20 days after 3 rd spray)	Hexythiazox or Spiromesifen	200 ml 60 ml	Mites
6.	Fruit development (20 days after 4 th spray)	Fenazaquin or Propargite	50 ml 200 ml	Mites
7.	Pre harvest (20-25 days before harvest)	Malathion* Oxy-demeton methyl	200 ml 200 ml	Aphid Sanjose scale
8.	After harvest	Chlorpyrifos*	400 ml	Woolly Apple Aphid

Note:-

1. Avoid repetition of same insecticides/Acaricides .
2. While spraying for the control of mites on the tree, also spray the basin area to ensure optimum control.
3. Drench the basin area with Chlorpyrifos after harvesting @ 4ml/ltr of water for the control of woolly apple aphid and root borer.
4. Horticultural Mineral Oils are although tested by Dr. Y. S. Parmar UHF Nauri and essentially required for scale and mite pests but not registered till date by the CIB & RC. However, matter is under process.
5. Minimum insecticidal spray should be given from April-June for the safety of Lady bird beetles, syrphid flies and other beneficial insects as most of useful insects are usually active during these months.
6. Do not spray any other pesticides on open flowers to save pollinating insects.

RECOMMENDED BRAND NAMES OF PESTICIDES

Sl. No.	Common Name	Brand Names
A. Fungicides:		
1.	Carbendazim 50 WP *	Dhanustin/Bavistin/Mavistin/Derosal/ Benfil/ Gilzim /Carbestin/ Goldstin
2.	Captan 50 WP *	Captaf/ Dhanutan/Kohicap/Masstan/ Captax/ Capgold
3.	Copper Oxychloride 50 WP	Blitox/Fytolan/Masstox/Copter/Trucop/Riva
4.	Dodine 65 WP	Superstar/ Syllit/Himdin/ Tohfa /Noor
5.	Difenoconazole 25 EC	Score/Scale/Dizole/Rubigan D/Karara
6.	Metiram 55% +Pyraclostrobin 5%WG	Cabrio Top 60WG
7.	Hexaconazole 5 EC	Contaf/ Hexzol /Sitara/ Titan /Glow /Envil/ Hexcon/Krizole
8.	Mancozeb 75WP *	Indofil M-45/ Dithane M-45/ Mass M-45/ Kohinoor M-45 / Dhanuka M-45/ Abic M-45 / Emthane M-45/ Uthane M- 45/ Hindustan M-45/Gold M-45/ Marlett M-45
9.	Myclobutanil 10WP	Systhane /Boon / Index/ Grapple
10.	Propineb 70 WP	Antracol/Aaroosh/Scale 70%WP
11.	Thiophanate methyl 70WP *	Roko/ Topsin-M /Alert/ Stop/Trust/Key
12.	Zineb 75WP *	Indofil Z-78/Kanji
13.	Ziram 27% SC *	Cuman L
14.	Ziram 80% WP *	IPL Ziram-80
15.	Tebuconazole 50% +Trifloxystrobin 25%WG	Nativo 75 WG
16.	Tebuconazole 8% + Captan 32% SC	Shamir
17.	Fluxapyroxad 75 g/l + Difenconazole 50 g/l SC	Sercadis Plus 12.5 SC
18.	Carbendazim 12% +Mancozeb 63%WP	SAAF
19.	Boscalid 25.2% +Pyraclostrobin 12.8% w/w WG	Signum 38% WG
20.	Metrafenone 500g/l SC	Acrisio 50 SC
21.	Fluxapyroxad 250 g/l +Pyraclostrobin 250 g/l 500 SC	Merivon 50 SC
22.	Flusilazole 40% EC	Cursor 40% EC
23.	Carbendazim 25% + Flusilazole 12.5% SE	Lustre 37.5% SE

RECOMMENDED BRAND NAMES OF PESTICIDES

Sl. No.	Common Name	Brand Names
B. Insecticides, Acaricides and Spray oils:		
1.	Chlorpyrifos 20 EC*	Dursban/Durmet/Danusban/ Massban / Force/Tricel/Navigator/Goldban
2.	Fenazaquin 10 EC	Magister/Majestic
3.	Hexythiazox 5.45% EC	Maiden/Endurer
4.	Malathion 50 EC*	Cythion/Massthion
5.	Oxy-demeton Methyl 25% EC	Metasystox
6.	Propargite 57 EC	Omite/ Simba
7.	Spiromesifen 22.9 % SC	Oberon
8.	Horticultural Mineral Oil	Orchex 796/D-C-Tron Plus/ Arbofine /Orchol-13/ Servo/MAK All Season/Hindustan Petroleum HMO/ Rilso-999/Atso Supreme Oil/Petro Star HMO/ Balmerol Balspray HMO
9.	Thiacloprid 21.7% SC	Alanto

GROWTH STAGES IN APPLE TREES – SILVER TIP TO FRUIT SET



1. Silver Tip



2. Green Tip



3. Half-Inch Green Tip



4. Tight Cluster



5. Pink Bud



6. Bloom



7. Petal Fall



8. Fruit Set

Horticulture Information Service, Department of Horticulture,
Himachal Pradesh, Shimla-2