

SPRAY SCHEDULE YEAR 2023

(APPLE)



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SPRAY SCHEDULE FOR THE CONTROL OF DISEASES OF APPLE YEAR 2023

Sr. 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	600gm 200gm 600 (ml/gm) 60 ml	Scab Scab/powdery mildew	
2.	Pink bud	Mancozeb* or Propineb or Difenoconazole or Hexaconazole 4% + Zineb68% WP	600 gm 600 gm 30 ml 500 gm	Scab Scab/Powdery Mildew/ Core Rot	
3.	Petal fall/ Pea Stage	Carbendazim* or ThiophanateMethyl* 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 50ml 80 gm 500 ml 50 gm 20 ml 500 gm 160 ml	Scab Powdery mildew Scab/powdery mildew Alternaria leaf spot	
4.	Fruit Developm ent(Walnut size)	Mancozeb* or Propineb or Dodine Metiram 55% + Pyraclostrobin 5% WG	600gm 600gm 150 gm 200gm	Scab Alternaria leaf spot/ Blight/Pre mature leaf fall	Do not spray Dodine if temperature is above 30°C and slow drying condition prevails.

		Tebuconazole 8% + Captan 32% SC or Fluxapyroxad 250 g/l + Pyraclostrobin 250 g/l 500 SC or Fluopyram 17.7% w/w + Tebuconazole 17.7% w/w SC or Dodine 40% SC or Hexaconazole 4% + Zineb 68% WP	500 ml 20 ml 126 ml 150 ml 500 gm	Alternaria leaf spot/ Premature leaf fall Alternaria leaf spot/ Premature leaf fall Alternaria leaf spot/ Premature leaf fall/Scab	
5.	Fruit Development(2 0 days after 4 th spray) After 4th spray)	Tebuconazole 50% + Trifloxystrobin 25% WG Propineb* or Zineb* Carbendazim 25% + Flusilazole 12.5% SC	80 gm 600 gm 600 gm 160 ml	Pre mature leaf fall Scab Scab, Black rot Alternaria leaf spot/ Premature leaf fall	
6.	Pre harvest (20-25 days before harvest)	Captan* or Ziram* Metiram 55% + Pyraclostrobin 5% WG Fluopyram 17.7% w/w +Tebuconazole 17.7% w/w SC Hexaconazole 4% + Zineb68% WP	600 gm 600 (ml/gm) 200gm 126 ml 500 gm	Scab/Fly speck/Bitter rot Scab Alternaria leaf spot/ blight Alternaria leaf spot/Premature leaf fall/Fruit Rot Alternaria leaf spot/ Premature leaf fall/ Scab	

Note: - Points for consideration.

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 repeat the same chemical for 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. When necessary, these may be sprayed separately.
7. The fallen leaves of apple should be collected and decomposed in a compost pit or 5% urea sprayed on orchard floor to ensure fast decomposition of infected leaves.
8. For the control of White root rot, 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 to a depth of 15-20 cm. During winters, expose the root system of infected trees to sun. Remove the infected portion and apply Bordeaux paint.
9. For the control of Collar rot, 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.
10. In scab prone areas 12-14 days interval should be maintained between the sprays up to primary scab stage.
11. Use of Captan should be avoided before and after the oil spray for minimum 15 days.
12. Dodine should not be mixed with hard water.
13. Application of bio-control agents/bio-pesticides can be used against collar rot, root rot and root borers.
14. Preventive measures for Apple diseases:
 - a. **Crown gall or Hairy root**- Avoid injury to the collar region and rogue out infected plants and destroy them.
 - b. **Foliar Diseases**-As the pathogen overwinters on the fallen leaves and therefore orchard sanitation by removing weeds and bushes and by removing the fallen leaf litter from the orchard floor, is one of the most important measures to reduce the initial inoculum.
Adopt proper pruning of trees for adequate air circulation and rapid drying of foliage, thus prevents the development of secondary lesions in the orchard.

- c. **Powdery Mildew**-Prune off the silver terminals and destroy them.
- d. **Canker**- These include removal and destruction of infected plant parts, mummified fruits, dead twigs and pruned branches, avoiding mechanical injuries, application of balanced fertilizers on the basis of leaf and soil analysis, proper irrigation during hot dry periods to avoid tree stress, protecting plants from high and low temperature injuries and ensuring effective control of insect-pests and diseases.

Recommendations for 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 & PESTS OF APPLE, YEAR 2023

S. No.	Tree Stage	Name of Chemical	Quantity of Chemical for 200 L of water	Control of pests
1.	Half-inch Green Tip	Horticulture Mineral Oil	4 lt	Sanjose scale & mite
2.	Pink Bud	Thiacloprid	100 ml	Thrips
3.	Petal fall	Spiromesifen or Cyenopyrafen 30%SC or Hexythiazox Oxy-demeton methyl Malathion*	60 ml 50 ml 200 ml 200 ml 200 ml	Mites Sanjose scale Aphid
4.	Fruit Development (Walnut Size)	Fenzaquin or Propargite or Horticulture Mineral Oil	50 ml 200 ml 2 lt	Mites
5.	Fruit Development (20 days after 4 th spray)	Hexythiazox or Spiromesifen or Propargite 42% + Hexythiazox 2% EC or Cyenopyrafen 30%SC	200 ml 60 ml 200 ml 50 ml	Mites
6.	Fruit Development (20 days after 5 th spray)	Fenzaquin 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. Don't mix any Micro nutrients with Acaricides/Insecticides.
3. While spraying for the control of mites on the tree, also spray the basin area to ensure optimum control.
4. Drench the basin area with Chlorpyrifos after harvesting @ 4ml/ltr of water for the control of woolly apple aphid and root borer.
5. Minimum insecticidal sprays should be used during April-June for the safety of Lady bird beetles, syrphid flies and other beneficial insects as most of useful insects are active during these months.
6. Do not spray any other pesticides on open flowers to protect pollinating insects.
7. Methyl eugenol pheromone trap may be installed in the orchard to check fruit fly attack well in time.
8. For early surveillance of insect-pest suitable trap crops may be planted around the orchard.

RECOMMENDED BRAND NAMES OF PESTICIDES

S. No.	Common Name	Brand Names
1	2	3
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/GoldM-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	Nativo75 WG
16.	Tebuconazole 8% + Captan 32% SC	Shamir
17.	Fluxapyroxad 75g/l + Difenoconazole 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/Governor 40% EC

23. Carbenazim 25%
+ Flusilazole 12.5% SC

Lustre37.5% SC

24. Fluopyram 17.7% w/w
+ Tebuconazole 17.7% w/w SC

LUNAExperience

25. Dodine 40% SC
26. Hexaconazole 4%
+ Zineb 68% WP

DodinO FIL
Avtaar

2 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

HP Spray Oil E

9. Thiacloprid 21.7% SC

Alanto

10. Propargite 42% +
Hexythiazox 2% EC

Ceasemite

11. Cyenopyrafen 30%SC

Kunoichi

GROWTH STAGES IN APPLE PLANT 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

ENSURE SAFE USE OF PESTICIDES

Using pesticides safely depends on many things. Some of the most important factors include selecting the appropriate product, and using that product according to the label directions.

- Keep kids, pets and anyone non-familiar to the application out of the reach of pesticides while mixing and application.
- Be sure to wear protective clothing that will protect you while using pesticides. Protective clothing may include a long sleeve shirt, long pants, closed-toe shoes, gloves & goggles for eyes.
- Mix pesticides outdoors or in well-ventilated areas.
- Mix only what is advised.
- Be prepared for a pesticide spill. Have paper towels, sawdust or kitty litter, garbage bags, and non-absorbent gloves on hand to avoid direct contact during the spill. Avoid using excessive amounts of water, as this may only spread the pesticide and could be harmful to the environment.
- Read the first aid instructions on the label before using the product. Have the telephone number for the Poison Control Centre (1-800-222-1222) available in case you have additional questions.
- Remove personal items, such as toys, clothing, or tools from the spray area to avoid contamination.
- After using pesticides, wash your hands before eating.
- Dispose off the empty pesticide containers/bags properly.

Horticulture Information Service, Department of Horticulture, Himachal Pradesh, Shimla.