



محکمہ باغبانی کشمیر

# ہدایات

2020

برائے تفض میوہ باغات

## Plant Protection Advisory



سُفارش کردہ : زرعی یونیورسٹی کشمیر مرتب کردہ : محکمہ ہارٹیکلچر کشمیر

Union Territory of Jammu and Kashmir  
Directorate of Horticulture Kashmir



*Dedicated to the Fruit Growers*

**Plant Protection Schedule for the Management of Insects, Pests and Diseases of Apple (2020)**

Spray	Tree stage	Insecticide/Acaricide/ Oils per 100 lit of water	Fungicide /100 lit of water
I	<b>Delayed Dormancy</b>	Horticulture Mineral Oil (2 Lit)	<b>X</b>
II	<b>Green Tip</b>	<b>X</b>	Mancozeb 75 WP (300 g) or Propineb 70 WP (300 g) or Zineb 75 WP (300 g) or Captan 50 WP (300 g) <sup>2</sup>
III	<b>Pink bud</b>	Need based for Insects <u>If HMO Spray is missed</u> Dimethoate 30 EC (100 ml)  Need based for Blossom Thrips <b>Apply when 2 or more thrips/ flower are observed</b> Thiocloprid 21.7 SC (40 ml)	<u>10-14 days after II spray</u> Mancozeb 75 WP (300 g) or Propineb 70 WP (300 g) or Captan 50 WP (300 g) or Ziram 80 WP (200 g) or Dodine 65 WP (60 g) Or Dodine 40 SC (90 ml) or Zineb 68 % + Hexaconazole 4% 72 WP (100 g)
IV	<b>Petal fall</b>	<i>Need based for Insects</i> Dimethoate 30 EC (100 ml) or Quinalphos 25 EC (100 ml) <u>(Need based for Mites)</u> <b>Apply acaricide when 4-5 mites are observed/leaf</b> Hexythiazox 5.45 EC (40 ml) or Spiromesifen 22.9 SC (40 ml) or	<u>When 60-70% petal fall occurs</u> Difenoconazole 25EC (30 ml) or Flusilazole 40 EC (20 ml) or Trifloxystrobin 25% + Tebuconazole 50% 75WG (40 g)

		Fenazaquin 10 EC (40 ml)	
<b>V</b>	<b>Fruit let (Pea size)</b>	For Insects Chlorpyriphos 20 EC (100 ml) or Dimethoate 30 EC (100 ml) <i>Need based for Mites</i> <b>Apply acaricide when more than 5 mites/leaf are observed</b> Hexythiazox 5.45 EC (40 ml) or Spiromesifen 22.9 SC (40 ml)	<u>10-14 days after IV spray</u> Mancozeb 75 WP (300 g) or Propineb 70 WP (300 g) or Zineb 75 WP (300 g) or Captan 50 WP (300 g) or Ziram 80 WP (200 g)
<b>VI</b>	<b>Fruit development-I</b>	<i>Need based for insects</i>  Chlorpyriphos 20 EC (100 ml) or Quinalphos 25 EC (100 ml)  <i>Need based for Mites</i> <b>When population is more than 10 mites/leaf</b>  Hexythiazox 5.45 EC (40 ml) or Spiromesifen 22.9 SC (40 ml)	<u>12-15 days after V spray</u>  Dodine 65 WP (60 g) Or Dodine 40 SC (90 ml) or Difenaconazole 25EC (30 ml) or Zineb 68% +Hexaconazole 4% 72 WP (100 g)
<b>VII</b>	<b>Fruit development-II</b>	For Insects Dimethoate 30 EC (100 ml) or Chlorpyriphos 20 EC (100 ml)  <i>For Mites</i> Hexythiazox 5.45 EC (40 ml) or Fenazaquin 10 EC (40 ml) or Spiromesifen 22.9 SC (40 ml) or Summer Spray Oil (750 ml)	<u>12-15 days after VI spray</u>  Flusilazole 40 EC (20 ml) or Metriam 55% + Pyraclostrobin 5% 60 WG (100g) or Myclobutanil 10WP (70 g)
<b>VIII</b>	<b>Fruit development-III</b>	<i>Need Based for Insects</i> Chlorpyriphos 20EC (100 ml) or Dimethoate 30 EC (100 ml)	<u>12-15 days after VII spray</u> Mancozeb 75 WP (300 g) or Ziram 27 SC (600 ml) or

		<p>Zineb 75 WP (300 g) or Ziram 80 WP (200 g) or Chlorothalonil 75 WP (150 g)</p> <p><b><u>In case rainy weather hampers FD II spray</u></b> Difenoconazole 25 EC (30 ml) or Trifloxystrobin 25% + Tebuconazole 50% 75 WG (40 g)</p> <p>Need based for Mites <b>If population is more than 10 mites/leaf</b></p> <p>Fenazaquin 10 EC (40 ml) or Spiromesifen 22.9 SC (40 ml)</p>
IX	Fruit development-IV	<p>(Need based) : a) <b><u>when leaf spotting incidence is more than 20%</u></b> <b><u>12-18 days after VIII spray</u></b> Metiram 55% + Pyraclostrobin 5% 60 WG (100 g) or Zineb 68% + Hexaconazole 4% 72WP (100g) Hexaconazole 5 EC (50 ml) or Myclobutanil 10 WP (70 g)</p> <p>(Need based) : b) <b><u>For Marssonina / Sooty blotch / Flyspeck</u></b> Mancozeb 75WP (300 g) or Ziram 27 SC (600 ml) or Propineb 70 WP (300 g) or Ziram 80 WP (200 g)</p> <p style="text-align: center;"><b>X</b></p>
X	Pre-harvest	<p>(Need based): <b><u>For long term Storage 25 days before harvest</u></b> Mancozeb 75 WP (300 g) or Zineb 75 WP (300 g) or Ziram 80 WP (200 gm) or</p> <p style="text-align: center;"><b>X</b></p>

			Captan 50WP (300 g)
<b>XI</b>	<b>Post- harvest</b>	<i>Need based for insects</i> Chloropyriphos 20EC (100 ml) <i>Need based for Mites</i> <b>If population is more than 20 mites/leaf</b> Fenazaquin 10 EC (40 ml)	<b>X</b>

### Precaution

1. Delayed Dormancy spray should not go beyond green tip stage.
2. Spray Captan at least 10 days after Oil Spray

**Note: Use and sale of the products recommended in the schedule are subject to production of registration and label claim from CIB & RC, Gol.**

### Disclaimer:

- The molecules have been evaluated by SKUAST-K for bio-efficacy against apple diseases and pests, and the advisory/ information has been compiled for guidance and not for legal purposes.
- The advisory has been formulated in consultation and inputs received from Department of Horticulture Kashmir and Directorate of Enforcement Government of J&K.

### Caution:

- This schedule is devised for Kashmir Valley under normal weather conditions.
- For location specific decisions and under abnormal weather conditions, contact concerned Horticulture Development Officers/ KVK scientists for advice.
- For effective disease and pest management, ensure orchard sanitation through collection and destruction of fallen leaves, pruned/diseased/infected twigs and fallen/mummified fruits.

### **Important Instructions**

- i. Chemicals at a given stage in the recommendations are shown in order of their efficacy / increasing cost.
- ii. Avoid mixing of fungicides, insecticides and spray suspensions.
- iii. Maintain a gap of 3-4 days between insecticide and fungicide spray.
- iv. Adjuvants/Stickers may be added for better efficacy of fungicides especially during rainy days. Sticker like Sandovit @ 50-75 ml/100 litre of suspension.
- v. Stickers should not be used with Dodine.

- vi. In case of heavy rains within 12 hours of spray the spray is to be repeated immediately. (when adjuvants/stickers are not used).
- vii. Before conducting the spray inform the beekeepers in the vicinity of the orchard about spraying time ; bee colonies should be kept preferably away from spraying area.
- viii. Same pesticide should not be repeated continuously in two sprays.
- ix. Avoid spraying during high temperatures/rainy weather. All sprays should be conducted during early morning or evening hours to avoid phytotoxicity.
- x. No spray should be done during full bloom period.
- xi. Spraying of insecticides/fungicides should be stopped 3-4 weeks before harvesting of fruit.
- xii. Keep 60 cm of soil around trunks undisturbed.
- xiii. Apply balanced dose of nutrients (N:P:K + FYM) as per Package of Practices recommended by SKUAST-K to fruit trees.
- xiv. Under drought like conditions, 2-3 sprays of calcium chloride (dehydrated) @ 0.3-0.5% (3-5 g/lit) after pea size stage along with 0.15% boric acid (1.5 g/lit) at an interval of 10-15 days may be conducted).
- xv. After fruit-let stage, ensure periodical destruction of weeds beyond 60 cm around tree trunks.
- xvi. Ensure removal of borer infested twigs/branches and their subsequent destruction.
- xvii. Close monitoring of pests and diseases is important for effective management.

### **Do's and Don'ts of Pesticide Application**

#### **A. Do's**

- Purchase Pesticides only from registered dealer(s) having valid license.
- Check Batch No. Registration No. Manufacture / Expiry Date on the labels.
- Always purchase with proper bill or invoice.
- Storage place should be well protected from direct sunlight or rain.
- Read instructions on pesticide container label carefully before use.
- Always use clear water for making pesticide suspension as per requirement.
- Use protective clothing viz, hand gloves, face masks, aprons, etc to cover whole body.
- Always protect your nose, eyes, ears, hands etc, from spill of spray suspension.

- Use recommended dose of pesticides.
- Select right kind of equipment for spraying.
- Spray pesticide during morning or evening hours.
- Agitate spray suspension continuously while spraying.

#### **B) Don'ts**

- Don't Use muddy or stagnant water for preparing pesticide solution.
- Don't Prepare or spray pesticides without wearing protective clothing.
- Avoid spilling of pesticide solution while filling or spraying.
- Don't use over or sub lethal dose of pesticide.
- Don't spray pesticides during full bloom period.
- Don't spray during day time when temperature is high.
- Don't mix various pesticides other than those recommended by SKUAST-K.
- Don't eat, drink, chew or smoke during spraying or preparing pesticide suspension.
- Don't transfer pesticide from original to other container.
- Don't use leaky or defective equipment's.
- Don't blow / clean clogged nozzle with mouth.

**Pesticide Formulations Evaluated and Recommended for  
Spray Schedule of Apple (2020)**

**(A) Fungicide**

S.No	Fungicides	Formulations	Name of the Company
1	Captan	Captaf (50 WP)	M/S Rallis India Ltd.
		Deltan (50 WP)	M/S Coromandel Agrico Pvt. Ltd.
		Kohicap (50 WP)*	M/S FIL Industries Ltd.
		Captax (50 WP)	M/S India Pesticide Ltd.
		Merimain (50 WP)	M/S Adama India Pvt. Ltd
		Captra (50 WP)	M/S Indofil Industries Ltd.
		Kri-Captan (50WP)	M/S Krishi Rasayan Exports Pvt. Ltd.
		Panther (50WP)	M/S HPM Chemicals & Fertilizers Ltd.
2	Chlorothalonil	Tata Ishaan (75 WP)	M/S Rallis India Ltd.
3	Difenaconazole	Score (25 EC)	M/S Syngenta India Ltd.
		Rubigan-D(25 EC) *	M/S FIL Industries Ltd.
		Karara (25 EC)*	M/S Agro Life Science Corporation
		Casper (25 EC)	M/S Godrej Agrovet Ltd.
4	Dodine	Super Star (65 WP)*	M/S FIL Industries Ltd.
		Noor (65 WP)	M/S Indofil Industries Ltd.
		Dodine FIL (40 SC)	M/S FIL Industries Ltd.
5	Flusilazole	Governor (40 EC)*	M/S FIL Industries Ltd.
		Cursor (40 EC)	M/S DhanukaAgritech Ltd.
6	Hexaconazole	Contaf (5 EC)	M/S Tata Rallis India Ltd.
		Titan (5 EC)*	M/S Sudarshan Chemical Ltd.
		Envil (5 EC)*	M/S FIL Industries Ltd.
		Mainex (5EC)	M/S Adama India Pvt. Ltd.
		Krizole (5EC)	M/S KrishiRasayan Exports Pvt. Ltd.
		Sitara (5EC)	M/S Indofil Industries Ltd.
7	Mancozeb	Indofil M-45 (75 WP)	M/S Indofil Industries Ltd.
		Kohinoor M-45 (75 WP)*	M/S FIL Industries Ltd.
		Dithane M-45 (75 WP)	M/S Dow Agro Science Mumbai
		Hindustan M-45(75 WP)*	M/S Hindustan Pulverising Mills Ltd.
		Macoban (75 WP)	M/S Adama India Pvt. Ltd.
		Mount (75 WP)*	M/S Bharat Insecticides Ltd.
		Luzem-45(75 WP)	M/S Cheminova India Ltd.
8	Metiram 55% + Pyraclostrobin 5%	Cabrio Top (60 WG)	M/S BASF India Ltd.
		Clutch (60 WG)	Manufactured by BASF India and Marketed by M/S P. I Industries
9	Myclobutanil	Grapple (10 WP)	M/S FIL Industries Ltd.
		Boon (10 WP)	M/S Indofil Industries Ltd.
		Nagarjuna Index (10 WP)	M/S NagarjunaAgri- Chemicals Ltd.
		Systhane (10 WP)	M/S Dow Agro Science Mumbai Ltd.



		Myclomain (10 WP)	M/S Adama India Pvt. Ltd.
		Insyst (10 WP)	M/S Biostadt India Ltd.
		Revolve (10 WP)*	M/S Bharat Insecticides Ltd.
<b>10</b>	Propineb	Antracol (70 WP)	M/S Bayer Crop Science Ltd.
		Proximan (70WP)	m/s Adama India Pvt. Ltd
		Scale (70 WP)	M/S KrishiRasayan Exports Pvt. Ltd.
		Filprostar (70WP)	M/S FIL Industries Ltd.
		Sway (70 WP)	M/S Cheminova India Ltd.
		Jannat 70 WP	M/S Jain Shree RaisanUdoyog Ltd.
		Sanipeb (70WP)	Manufactured by Punjab Pesticides Industries Ltd & Marketed by P.I Industries
<b>11</b>	Trifloxystrobin 25% + Tebuconcazole 50%	Nativo (75 WG)	M/S Bayer Crop Science Ltd.
<b>12</b>	Ziram	Cuman-L (27 W/V)	M/S Syngenta India Ltd.
		Zed-78 (80 WP)*	M/S FIL Industries Ltd.
		IPL Ziram-80 (80 WP) *	M/S India Pesticide Ltd
		Zirex-L (27 SC)	M/S FIL Industries Ltd.
		IPL Ziram-27 (27SC) *	M/S India Pesticide Ltd
<b>13</b>	Zineb	Indofil Z-78 (75 WP)	M/S Indofil Industries Ltd.
		Neutec (75WP)	M/S UPL & Marketted by M/S Swal Corporation Ltd.
<b>14</b>	Zineb 68% + Hexaconazole 4%	Avtar (72 WP)	M/S Indofil Industries Ltd

## Insecticide

<b>A</b>	<b>Oils</b>	<b>Formulations</b>	<b>Name of the Company</b>
<b>1.</b>	Horticulture Mineral Oils for Delayed Dormant Spray	MAK All Season HMO	M/S Bharat Petroleum Corp. India Ltd.
		HP Tree Spray Oil	M/S Hindustan Petroleum Corp. Ltd
		Servo	M/S Indian Oil Corporation Ltd.
		ORCHOL-13	M/S R.G. Industries
		ORCHOL-TSO	M/S R.G. Industries
		Arbofine Extra	M/S Total oil India Ltd
		Petro star	M/S Petro Star Ltd.
		Duratek	M/S Raj Petro Specialists
		Veedol Tree Spray Oil	M/S Tide Water Oil Company Ltd
		Specol-OSO-HMO	M/s Sarbi Petroleum & Chemicals
		Balspray HMO	M/S Balmer Lawrie & Company Ltd.
		Rilso-999	M/S Airofine Chemicals Ltd
<b>2.</b>	Horticulture Mineral Oils for Summer Spray	MAK All Season HMO	M/S Bharat Petroleum Corp. India Ltd.
		HP HMO	M/S Hindustan Petroleum Corp. Ltd
		Servo	M/S Indian Oil Corporation Ltd.
		Orchol-13	M/S R.G. Industries
		Arbofine Extra	M/S Total oil India Ltd.
		Petro star	M/S Petro Star Ltd.
		Duratek	M/S Raj Petro Specialists
<b>B</b>	<b>Insecticides</b>	<b>Formulations</b>	
<b>1</b>	Chlorpyrifos	Coroban (20 EC)	M/S Coromandel Agrico Pvt. Ltd.
		Kohiban (20 EC)*	M/S FIL Industries Ltd.
		Dursban (20 EC)*	M/S Dow Agro Science Mumbai Ltd.
<b>2</b>	Dimethoate	Rogor (30 EC)	Manufactured Lupin & Marketed by M/S Cheminova India Ltd
<b>3</b>	Quinalphos	Ekalux (25 EC)	M/S Syngenta India Ltd.
<b>4</b>	Thiocloprid	Alanto 240 SC (21.7%)	M/S Bayer Crop Science Ltd.
<b>C</b>	<b>Acaricides</b>	<b>Formulations</b>	
<b>1</b>	Fenazaquin	Majestic (10 EC)	M/S FIL Industries Ltd.
<b>2</b>	Hexythiazox	Maiden (5 EC)	M/S Biostadt India Ltd.
<b>3</b>	Spiromesifen	Oberon 240 SC (22.9%)	M/S Bayer Crop Science India Ltd.

WP: Wettable Powder, EC: Emulsifiable Concentrate, SC: Suspension Concentrate, SL: Sprayable Liquid, WG; Water Dispersible Granules

- Trade name registration certificate under process.