



محکمہ باغبانی کشمیر

ہدایات برائے تحفظ میوہ باغات



**PLANT PROTECTION
ADVISORY 2022**



سفارش کردہ: زرعی یونیورسٹی کشمیر مرتب کردہ: محکمہ باغبانی کشمیر

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I am proud to be a
"FARMER"



JAAN HAI TOU JAHAN HAI

جان ہے تو جہان ہے

Always Use Protective Gear While Spraying

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ATTENTION

Use and sale of the products recommended in the schedule are subject to production of registration and label claim for apple from CIB & RC, GoI.

Caution:

- This schedule is devised for Kashmir Valley for normal weather conditions.
- For location specific decisions and under abnormal weather conditions contact concerned Horticulture Development Officer/KVK Scientists/Directorate of Extension, SKAUST-K 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.

Safe use of Pesticides

Pesticides are toxic to both pests and humans. However, they need not be hazardous to humans and non-target animal species if suitable precautions are taken. Most pesticides will cause adverse effects if intentionally or accidentally ingested or if they are in contact with the skin for a long time. Pesticide particles may be inhaled with the air while they are being sprayed. An additional risk is the contamination of drinking-water, food or soil. Special precautions must be taken during transport, storage and handling. Spray equipment should be regularly cleaned and maintained to prevent leaks. People who work with pesticides should receive proper training in their safe use.

Storage and Transport

Store pesticides in a place that can be locked and is not accessible to unauthorized people or children. They should never be kept in a place where they might be mistaken for food or drink. Keep them dry but away from fires and out of direct sunlight. Do not carry them in a vehicle that is also used to transport food.

Disposal

Left-over insecticide suspension can be disposed of safely by pouring it into a specially dug hole in the ground or a pit latrine. It should not be disposed of where it may enter water used for drinking or washing, fish ponds or rivers. Some insecticides, such as the pyrethroids, are very toxic to fish. Dig a hole at least 100 metres away from streams, wells and houses. In a hilly area the hole should be on the lower side of such areas. Pour run-off water from hand washings and spray washings into the hole, and bury containers, boxes and bottles used for pesticides in it. Close the hole as soon as possible. Cardboard, paper and cleaned plastic containers can be burned, where this is permitted, far away from houses and sources of drinking-water. For reuse of cleaned containers.

Plant Protection Advisory (Apple) 2022

Spray	Phenological stage	Insecticide/Acaricides/Oils/per 100 lit of water	Fungicide /100 lit of water
I	Delayed Dormancy	Horticulture Mineral Oil (2 Lit) Do not spray HMO beyond green tip stage	X
II	Green Tip	X	Mancozeb 75WP (300g) or Zineb 75WP (300g) or Captan 50 WP (300g) or Propineb 70 WP (300g) Spray Captan at least 10 days after. HMO Spray Give preference to Captan 50WP (300g) in case rainy weather hampers green tip spray of fungicide
III	Pink bud	<u>Need based:</u> (a) <u>(a). If HMO spray is missed apply Dimethoate 30 EC (100 ml)</u> <u>(b). For Blossom Thrips. Apply when 2 or more thrips per flower are observed</u> Spray Thiocloprid 21.7 SC (40 ml)	<u>10-14 days after II spray</u> Zineb 68% + Hexaconazole (4%) 72 WP (100 g) or Metiram (55%) + Pyraclostrobin (5%) 60 WG (100g) or Dodine 65 WP (60 g) or Dodine 40 SC (90 ml)

IV	Petal fall	<p><u>(Need based for Insects)</u> Dimethoate 30 EC (100 ml) or Quinalphos 25 EC (100 ml) <u>(Need based for ERM)</u> Apply acaricide when 4-5 mites per leaf are observed. Hexythiazox 5.45 EC (40ml) or Spiromesifen 22.9 SC (40 ml) or Fenazaquin 10 EC (40 ml) or Cyenopyrafen 30 SC (30 ml)</p>	<p><u>When 60-70 % petal fall occurs</u></p> <p>Difenaconazole 25 EC (30 ml) or Flusilazole 40 EC (20ml) or Trifloxystrobin 25% + Tebuconazole 50% 75 WG (40 g)</p>
V	Fruit let (Pea size)	<p><u>For Insects</u> Chlorpyrifos 20 EC (100 ml) or Dimethoate 30 EC (100 ml) <u>Need based for ERM:</u> Apply acaricide when more than 5 mites per leaf are observed Hexythiazox 5.45 EC (40 ml) or Spiromesifen 22.9 SC (40 ml)</p>	<p><u>10-14 days after IV spray</u></p> <p>Zineb 68% + Hexaconazole 4% 72 WP (100g) or Dodine 65 WP (60 g) or Dodine 40 SC (90 ml) or Fluxapyroxad 250g/l + Pyracostrobin 250g/l 500 SC @ 20 ml</p>

VI	Fruit develop ment-I	<p>(Need based for <u>Insects</u>) Chlorpyriphos 20 EC (100 ml) or Quinalphos 25 EC (100 ml) or (Need based for <u>ERM</u>) When ERM population is more than 10 mites/leaf Hexythiazox 5.45 EC (40 ml) or Spiromesifen 22.9 SC (40 ml)</p>	<p><u>12-15 days after V spray</u> Mancozeb 75 WP (300 g) or Zineb 75 WP (300 g) or Captan 50 WP (300 g) or Propineb 70 WP (300 g) or Ziram 80 WP (200 g)</p>
VII	Fruit develop ment-II	<p>Dimethoate 30 EC (100 ml) or Cholorpyriphos 20 EC (100 ml) or Quinalphos 25 EC (100 ml) (For <u>ERM</u>) 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)</p>	<p><u>12-15 days after VI spray</u> Difenaconazole 25 EC (30 ml) or Flusilazole 40 EC (20 ml) or Trifloxystrobin 25% + Tebuconazole 50% 75 WG (40 g) or Fluxapyroxad 250g/l + Pyracostrobin 250g/l 500 SC @ 20 ml</p>

VIII	Fruit develop ment-III	<p><u>(Need Based)</u> Chlorpyrophos 20 EC (100ml) Dimethoate 30 EC (100 ml) or Quinalphos 25 EC (100 ml) <u>(Need based for ERM)</u> If population is more than 10 mites/leaf Fenazaquin 10 EC (40 ml) or Spiromesifen 22.9 SC (40 ml) or Cyenopyrafen 30 SC (30 ml)</p>	<p><u>12-15 days after VII spray</u> Mancozeb 75 WP (300 g) or Zineb 75 WP (300 g) or Ziram 27 SC (600 ml) or Ziram 80 WP (200 g) or Chlorothalonil 75 WP (150 g)</p>
IX	Fruit develop ment-IV	X	<p><u>12-18 days after VIII spray</u> <u>(Need based)</u> (a). For ALB, Scab incidence Hexaconazole 5 EC (50ml) or Zineb(68%)+ Hexaconazole(4%) 72 WP (100 g) or Myclobutanil 10 WP (70g) or Metiram 55% + Pyraclostrobin 5% 60 WG (100 g)</p> <p><u>(Need based) : (b)For Marssonina / Sooty blotch / Flyspeck</u> Mancozeb 75WP (300 g) or Ziram 27 SC (600 ml) or Propineb 70 WP (300 g) or Ziram 80WP (200 g)</p>

X	Post-harvest	<p><u>Need based for Insects</u> Chlorpyrophos 20 EC (100ml)</p> <p><u>Need based for Mites</u> If population is more than 20 mites per leaf Fenazaquin 10 EC (40 ml) <u>Essential spray in areas</u> <u>where Bloch leaf minor is</u> <u>a problem</u> Quinalphos25 EC (100 ml)</p>	
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Precaution

SJS- San Jose Scale, ERM- European Red Mite, WAA-Woolly Apple Aphid

1. Delayed Dormancy spray should not go beyond green tip stage.
2. Spray Captan at least 10 days after Oil Spray
3. Use against insect pests.
4. Use against insect pests and ERM
5. Give preference in case rainy weather hampers green tip spray.

* The fungicidal sprays in the schedule shall take care of the major diseases (leaf spot, twig blight, blossom blight) of Almond

** Insecticides/ Acaricides should be sprayed only when the pest population warrants control measures.

- 1 For the management of San Jose scale
- 2 For the management of aphids/mites/ San Jose scale
- 3 For the management white grub and mealy bug
- 4 If infestation/ migration of mealy bugs from soil to trunk is observed
- 5 When attack of hairy caterpillar and chafer beetle is noticed
- 6 When twig blight is serious

*Insecticides/Acaricides should be sprayed only when the pest population warrant control measures.

1For the management of San Jose Scale

2 only in case spray 1st is missed; for the management of aphids/mites/San Jose scale/ Chaetoprocta.

3For the management of stem borer and pin hole borer

4For the management of hairy caterpillar/chafer beetle/walnut weevil/walnut husk fly

5 For the management of blister mite, when 5 mites per leaf are observed.

Important Instructions

- i. Maintain a gap of 3-4 days between insecticide and fungicide spray.
- ii. Chemicals in the recommendations at a given stage are shown in order of their increasing cost.
- iii. Adjuvants/Stickers may be added for better efficacy of fungicides especially during rainy days. Sticker like Sandovit @ 50-75 ml/100 lit. of suspension should be used.
- iv. Stickers should not be used with Dodine.
- v. Keep 60 cm of soil around trunks undisturbed.
- vi. All insecticides/fungicides sprays should be stopped 3-4 weeks before harvesting of fruit.
- vii. Same pesticide should not be repeated continuously in two sprays.
- viii. Use balanced nutrition (N:P:K+FYM as per Package of Practices recommended by SKUAST-K).
- ix. 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 after the first fungicide spray (Mid April to end April).

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- x. After fruit-let stage, ensure periodical destruction of weeds beyond 60 cm around tree trunks.
 - xi. Ensure removal of borer infested twigs/branches and their proper destruction.
 - xii. Close monitoring of pests and diseases is important for effective management.
 - xiii. In case of heavy rains (within 12 hours of spray) the spray is to be repeated immediately. (when adjuvants/stickers are not used).
 - xiv. Before conducting the spray inform the beekeepers in the vicinity of the orchard about spraying time.
 - xv. Bee colonies should be kept preferably away from spraying area.

Dos and Don'ts of Pesticide Application

A) Dos:

- Purchase pesticides only from registered dealer 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 clean water for making pesticide solution as per requirement.
- Use protective clothing viz., hand gloves, face masks, apron, etc. to cover whole body.
- Always protect your nose, eyes, ears, hands etc. from spill of spray solution.
- Use recommended dose of pesticides.
- Select right kind of equipment for spraying
- Spray pesticide during morning or evening hours.
- Agitate spray solution 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 solution.
- Don't transfer pesticide from original to other container.
- Don't use leaky or defective equipments.
- Don't blow / clean clogged nozzles with mouth.

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

Pesticide Formulations Evaluated and Recommended for Plant Protection Advisory 2022

(A) Fungicide

S. No	Fungicides	Trade name	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.
		Casper (25 EC)	M/S Godrej Agrovet Ltd.
		Karara (25 EC)	M/S Agro Life Science Corporation
4	Dodine	Noor (65 WP)	M/S Indofil Industries Ltd.
		Dodino FIL (40 SC)	M/S FIL Industries Ltd.
		Super Star (65 WP)	M/S FIL Industries Ltd.
5	Flusilazole	Cursor (40 EC)	M/S DhanukaAgritech Ltd.
		Governor (40 EC)	M/S FIL Industries Ltd.
6	Hexaconazole	Contaf (5 EC)	M/S Rallis India Ltd.
		Mainex (5EC)	M/S Adama India Pvt. Ltd.
		Krizole (5EC)	M/S KrishiRasayan Exports Pvt. Ltd.
		Sitara (5EC)	M/S Indofil Industries Ltd.
		Hexahit 5Ec	M/S Hindustan Pulvarizing Mills
		Titan (5 EC)	M/S Sudarshan Chemical Ltd.
		Envil (5 EC)	M/S FIL Industries Ltd.

7	Mancozeb	Indofil M-45 (75 WP)	M/S Indofil 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.
		Luzem-45(75 WP)	M/S Cheminova India Ltd.
		Kohinoor M -45 (75 WP)	M/S FIL Industries Ltd.
		Mount (75 WP)	M/S Bharat Insecticides Ltd.
		Tata-M45	M/S Rallis India Limited
8	Metiram 55% + Pyraclostrobin 5%	Cabrio Top (60 WG)	M/S BASF India Ltd.
		Clutch (60 WG)	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 NACL Ind.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.
10	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)	M/S P.I Industries

11	Trifloxystrobin 25% + Tebuconcazole 50%	Nativo (75 WG)	M/S Bayer Crop Science Ltd.
12	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 (27 SC)	M/S India Pesticide Ltd
13	Zineb	Indofil Z-78 (75 WP)	M/S Indofil Industries Ltd.
		Neutec (75WP)	M/S UPL & Marketed by M/S Swal Corporation Ltd.
14	Zineb 68% + Hexaconazole 4%	Avtar (72 WP)	M/S Indofil Industries Ltd
15	Fluxapyroxad 250g/l+ Pyraclostrobin 250g/l 500 SC	Merivon 500 SC	M/S BASF India Limited.

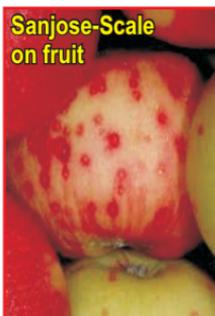
Note: Use and sale of the products recommended in the schedule are subject to production of registration and label claim and trade name from CIB & RC, Gol to be ascertained by Directorate of law enforcement Govt, J&K.

B) Insecticide

A	Oils	Trade name	Name of the Company
i1.	Horticulture Mineral Oils for Delayed Dormant Spray	Usage of HMO formulations as per the Government of J&K Regulations	
i2.	Horticulture Mineral Oils for Summer Spray		
B	Insecticides	Trade name	
1	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.
		Tafaban (20 EC)	M/S Rallis India Ltd.
2	Dimethoate	Rogor (30 EC)	Manufactured Lupin & Marketed by M/S Cheminova India Ltd
		Tafagor (30 EC)	M/S Rallis India Ltd.
3	Quinalphos	Ekalux (25 EC)	M/S Syngenta India Ltd.
4	Thiocloprid	Alanto 240 SC (21.7%)	M/S Bayer Crop Science Ltd.
C	Acaricides	Formulations	
1	Fenazaquin	Majestic (10 EC)	M/S FIL Industries Ltd.
2	Hexythiazox	Maiden (5.45 EC)	M/S Biostad India Ltd.
3	Spiromesifen	Oberon 240 SC (22.9%)	M/S Bayer Crop Science India Ltd.
4	Cyenoxyrafen	NC-512 30SC (Kunoichi)	M/S Insecticide India Ltd.

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

DIFFERENT DISEASES OF APPLE





Published by: Horticulture Information & Publication Office
Rajbagh, Srinagar, Kashmir
e-mail ID: horticultureinformation19@gmail.com
Phone (O): 0194-3510169