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Pomegranate Advisory for Feb- Mar 2021

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I. Bahar: Mrig (May-Jun Crop regulation)

CURRENT STAGE OF THE ORCHARD: REST PERIOD FOLLOWED BY STRESS PERIOD

A. Nutrient Management: Orchard is under rest period. Apply the recommended dose o fertilizers during rest period as mentioned in the previous advisory (https://nrcpomegranate.icar.gov.in/files/Advisory/71.pdf). Please ignore if already applied.

B. **Insect Pest Management:** Regular monitoring/observation should be done for stem borer, shot hole borer, termites, mites, leaf eating caterpillars and Sucking pests (Mealy bugs, scale insects) etc. Depending on insect pest observed, take 2-3 sprays at 15 to 20 days interval with any of the insecticides mentioned below:

a. If low foliar insect pest infestation observed, spray only Azadirachtin/Neem oil @ 3 ml/L water.

b. If foliar pest infestation observed is high, take spray with any of these insecticides Lambda cyhalothrin 5% EC @ 0.5-0.75 ml/L **or** Indoxacarb 14.5% SC @ 0.75 ml/L **or** Cyantraniliprole @ 0.75 ml/L **or** Thiamethoxam 25%WG @ 0.5 g/L water.

c. If shot hole /stem borer infestation is observed in the orchard:

i. **Stem pasting:** Make the paste by mixing the Red soil 4 kg + Chlorpyriphos 20% EC 20 ml + Copper oxychloride 25 g in 10 litres of water and paste on a stem up 2-2.5 ft. from the bottom.

ii. **Drenching:** Thiamethoxam 25 % WG @ 10-15 g + Propiconazole 25% EC @ 15-20 ml/10 litre of water.

II. Bahar: Hasta (Sep-Oct Crop regulation)

CURRENT STAGE OF THE ORCHARD: FRUIT MATURITY AND RIPENING

A. Nutrient Management: Harvesting of fruits and allowing trees to rest for next 2-3 months.

1. After harvesting of crop, undertake pruning operation to remove the bearing branches.
2. Apply 20-25 kg of farm yard manure (FYM) per plant **or** 13-15 kg FYM + 2 kg Vermicompost + 2 kg Neem cake per plant **or** 7.5 kg well decomposed poultry manure + 2 kg Neem cake per plant.
3. Apply 205 g Nitrogen (446 g Neem-coated urea) + 50 g P_2O_5 (315 g Single Super Phosphate) and 152 g K_2O (254 g Murate of Potash **or** 304 g Sulphate of Potash)/ plant, followed by light Irrigation.
4. Apply bio-formulation of *Azospirillum* sp., *Aspergillus niger*, *Trichoderma viridae* and *Penicillium pinophilum* @ 10-20 g/plant after incubating separately with well

decomposed farmyard manure for 15 days; maintaining 60 % moisture content in the mixture and periodical stirring (every alternate day) under shed.

5. Also apply Arbuscular Mycorrhizal Fungi, AMF (*Glomas* sp.) @ 10-15 g per plant along with farm yard manure. Mix the micorrhizal formulation in the FYM just before the application.

B. Insect Pest Management:

(i) **Fruit fly damage**: If fruit fly damage is observed, Install 12 McPhail/water bottle traps/ha with Torula yeast/*Bactrocera dorsalis* lure and replace the lure at 15-20 days' interval.

(ii) **Fruit borer (egg stage):** if low infestation is observed, single spray may be taken and if higher infestation is observed take two sprays (1st single and 2nd combination) with Azadirachtin/Neem oil 1% (10000 ppm) @ 3 ml **or** Pongamia oil @ 3 ml **or** combination of both the above @ 3 + 3 ml/L water at 7-10 days' interval.

(iii) **Damaged fruits/bored holes:** Remove all the bored fruit and dispose them by burying in pit and take a spray with any one of the insecticide Cyantraniliprole @ 0.75 ml/L **or** Chlorantraniliprole 18.5 SC @ 0.75 ml/L **or** Tolfenpyrad 15 % EC @ 0.75ml/L **or** Flonicamid 50% WG @ 0.75-1.0 ml/L water.

(iv) **Southern stink bug (Egg stage)**: Spray Azadirachtin/Neem oil 1% (10000 ppm) @ 3 ml/L + Pongamia oil @ 3 ml/L water.

(v) **Nymph and adult stage:** Spray Cyantraniliprole @ 0.75 ml/L **or** Chlorantraniliprole 18.5 SC @ 0.75 ml/L **or** Spinetoram 12% SC @ 1.0 ml/L **or** Lambda cyhalothrin 5% EC @ 0.5-0.75 ml/L water.

(vi) **Mealy bugs/scale insect:** Early infestation: Spray Azadirachtin/Neem oil 1% (10000 ppm) @ 3 ml/L + Pongamia oil @ 3 ml/L water. If the infestation is at the late stage, spray Thiamethoxam 12.6 % + Lambda-cyhalothrin 9.5% ZC @ 0.75 ml/L water.

(v) **Mite infestation:** if mite infestation is observed at early stage, take the spray with Azadirachtin/Neem oil 1% (10000 ppm) @ 3 ml/L water. If the infestation is at late stage, take the spray with Fenazaquin 10 % EC @ 1.5 ml/L **or** Fenpyroximate 5 % EC @ 0.4 ml/L **or** Phosalone 35 % EC @ 2 ml/L water.

III. Bahar: Ambia (Jan-Feb Crop regulation)

A. CURRENT STAGE OF THE ORCHARD: NEW LEAF INITIATION TO EARLY FRUIT SET

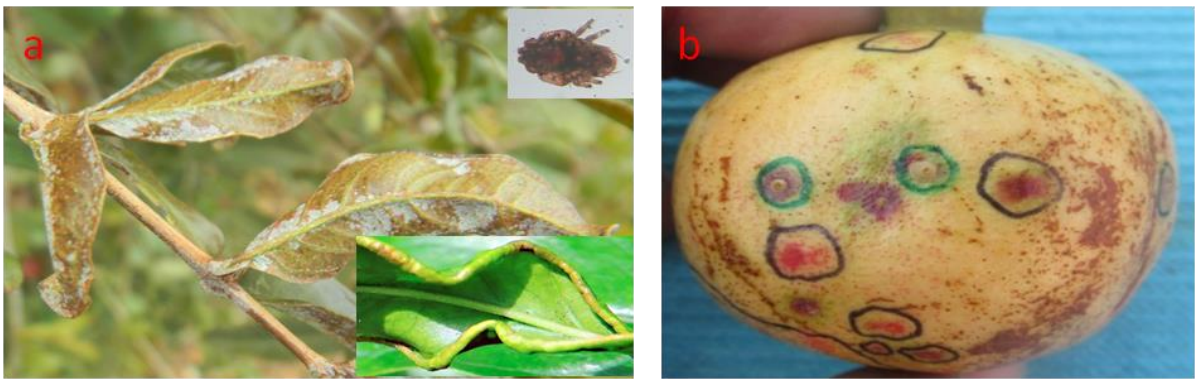
A. Nutrient Management: Orchard in flowering and fruit setting stage

1. Foliar application of planofix @ 22.5 ml/100 litre water
2. Foliar application of micronutrient mixture @ 1.0-1.5 kg/ha
3. Fertigation with N:P:K::00:52:34 (Mono-Potassium Phosphate) @ 8.5 kg/ha per application. Give 3 applications at 7 days interval through irrigation.
4. Apply Gypsum @ 1.70-1.80 kg/plant and $MgSO_4$ @ 700 g/plant followed by thorough mixing with the soil and watering. Magnesium sulphate can also be applied through drip system.

B. Insect Pest Management:

1. **Vegetative stage:** First spray with Azadirachtin/Neem oil 1% (10000 ppm) @ 3.0 ml/L **or** Pongamia oil @ 3 ml/L **or** combination of both the above @ 3 + 3 ml/L. 7-10 days after first spray, take the second spray with Cyantraniliprole @ 0.75 ml/L **or** Thiamethoxam 25 % WG @ 0.5 g/L **or** Tolfenpyrad 15 % EC @ 0.75 ml/L **or** Flonicamid 50 % WG @ 0.75-1.0 ml/L **or** Thiamethoxam 12.6 % + Lambda-cyhalothrin 9.5 % ZC @ 0.75 ml/L water.
2. **Flower bud initiation/Flowering/early fruit setting stage**: Spray Spinetoram 12 % SC @ 1.0 ml/L **or** Spinosad 45 % SC @ 0.5 ml/L **or** Cyantraniliprole @ 0.75 ml/L water.
3. **Mite:** if mite infestation is observed at early stage, take the spray with Azadirachtin/Neem oil 1% (10000 ppm) @ 3 ml/L water. If the infestation is at late stage, take the spray with Fenazaquin 10 % EC @ 1.5 ml/L **or** Fenpyroximate 5 % EC @ 0.4 ml/L **or** Phosalone 35 % EC @ 2 ml/L water.

a) Shot hole borer damage on young plants b) Fruit fly c) fruit fly damage symptoms



a) Mite damage symptoms **b) Scale insect damage**

MANAGEMENT OF MAJOR DISEASES FOR ALL SEASONS

Bacterial Blight
Spray During crop season for Bacterial blight: (Spray intervals: 7-10 day) Bordeaux mixture (0.5 % except 1% during rest period and just after pruning) *altered with* Streptomycin sulphate 90 % + Tetracycline hydrochloride 10% (Streptocycline) @ 5 g/10 L **or** 2-bromo, 2-nitro propane-1, 3-diol 95% (Bronopol) @ 5 g/10 L water. Mix copper oxychloride **or** copper hydroxide @ 20-25 g/ 10 L. Depending on fungal problems present in the orchard Copper based formulations may be

replaced with appropriate fungicides. In addition to these, **4 sprays of Salicylic acid @ 0.3 g/L and 4 sprays of Micronutrient mixture @ 2 g/L** should be taken at 1 month interval from pre-flowering.

Emergency Sprays for bacterial blight

Take 1-2 sprays at 4 day interval soon after blight infection seen on fruits in green lemon stage or after

1. Streptocycline (5 g/10 L) + Bronopol (5 g/ 10 L) + Kocide (20 g/10 L) + spreader sticker (5 ml/10L).
2. Streptocycline (5 g/10 L) + Bronopol (5 g/10 L) + Carbendazim (10 g/10 L) + spreader sticker (5 ml/10 L).

Precautions

- Take only need based sprays at recommended doses.
- Reduce number of sprays.
- Take additional spray after the rains.
- Use non-ionic spreader sticker except with Bordeaux mixture.
- Before every spray remove all bacterial blight/rot affected fruits and put them in a pit covered with soil for decomposition.
- Prepare Bordeaux mixture fresh and use on the same day.
- Take sprays in the evening.

During rest period: Take sprays of Bordeaux mixture (1%) **or** copper oxychloride or copper hydroxide or suitable fungicide (20-25 g/10 L) + Spreader sticker (2.5 to 5 ml /10L) water at 10-15 days interval.

Fungal Diseases

Some promising fungicides for Pomegranate fungal Scab, Spots and Rots

1: Mandipropamid 23.4 % SC @ 1 ml/L
2: Metiram 55 % + Pyraclostrobin 5 % EC @ 3 g/L
3: Propiconazole 25 % EC @ 1 ml/L + Azoxystrobin @ 1 ml/L
4:Azoxystrobin 20 % + Difenconazole 12.5 % SC @ 2 ml/L
5: Chlorothalonil 50 % + Metalazxyl M 3.75 % @ 2 ml/L
6: Bordeaux mixture @ 0.5 %
7: Copper Oxychloride 45 % + Kasuamycin 5 % @ 2.5 g/ L
8: Zineb 68 % + Hexaconazole 4 % WP @ 2.5 g/ L
9: Tricyclazole 18 % + Mancozeb 62 % WP @ 2.5 g/ L
10: Chlorothalonil 75 % WP @ 2 g/L
11: Propiconazole @ 1 ml/L

Note:

i. Best results are obtained with 2-3 sprays starting during flowering and fruit setting stage at 10-14 days interval with any of the above. This will avoid several sprays at later stages.
ii. Always use spreader sticker with sprays except in Bordeaux mixture.
iii. Need based sprays should be used later at 7-14 days interval depending on crop season.
iv. No fungicide should be used more than 2 times in a season except copper fungicides

Fungal Wilt Management:

Prefer drenching soon after harvest in rest period or initial stage of crop regulation

Use only one of the following methods

Method I:

- 1st drenching Propiconazole 25 % @ 2 ml/L + Chlorpyriphos @ 2 ml/L **or** Thiamethoxam 25 % WG @ 1 -1.5 g/L (use 10 L solution/plant).
- After 30 days of first application 2nd drenching with *Aspergillus niger* AN 27 (New Packs have AN 27 with IRAG07) fungus @ 5 g/plant with 2 Kg FYM/plant
- 3rd application after 30 days of 2nd application - VAM fungus (Vesicular arbuscular mycorrhizae - *Rhizophagus irregularis* @ 25 g/plant with 2 Kg FYM/plant)

or

Method II: Propiconazole 25 % @ 2 ml/L + Chlorpyriphos @ 2 ml/L (3 drenching at 20 days interval)

or

Method III: 1st and 3rd drenching Fosetyl Al 80% WP @ 6 g/plant (10 L solution)]; [2nd and 4thdrenching with Tebuconazole 25.9% w/w EC @ 3 ml/plant (10 L solution)]. Drenching interval 20 days.

NOTE: For complete details, method of drenching please see Wilt advisory on NRCP website

Advantages of applying bioformulation *Aspergillus niger* AN 27 (Fungus)

1. Only biopesticide and biofertilizer patented in the world using *Aspergillus niger*.
2. Controls all types of wilt pathogens including nematodes.
3. Works in all types of climatic, soil and water conditions.
4. Releases beneficial hormones promoting plant growth, flowering and fruit yield.
5. Increases resistance in plants to diseases and other stress conditions.
6. *Aspergillus niger* AN 27 and VAM fungus (Vesicular arbuscular mycorrhizae *Rhizophagus irregularis* (previously known as *Glomus intraradices)* have synergistic effect.
7. VAM fungus establishes in pomegranate roots and helps under water stress conditions
8. Both are phosphate solubilizers.

Nematode Infestation:

During rest period: Method I, in fungal wilt management takes care of root knot nematodes also. Alternatively promising bioformulations like *Paecilomyces, Pseudomonas* or *Trichoderma* for nematode management may be added.

During crop season: any one of the following methods should be used if infestation is high

1. Azadirachtin 1% (10000 ppm) @ 2.0 ml/L water to be applied through drip irrigation.

2. Soil application of Fluensulfone 2% GR @ 10 g/per dripper in a pit of 5-10 cm deep below each dripper equally and give light irrigation. Maximum dose of fluensulfone should not exceed 40 g/plant **or** drenching with Fluopyram 34.48 % SC @ 2 ml/plant. Plants should be watered sufficiently before drenching. Fluopyrum drenching should be done @ 2 ml/plant in 1 liter of water.

Important Notes:

- All the insecticidal/fungicidal/miticidal spray need to be taken preferably at evening hours with proper spray coverage and use the reputed company product. Do not forget to add spreader sticker @ 0.25 - 0.3 ml/L water.
- Please refer ‘Adhoc list of agrochemicals for pomegranate production Dec. 2020’, for chemicals that are banned, or are for restricted use or in watch list of European Union and hence may be avoided for export plots. You will also find list of pesticides which

may be banned in India after orders from GOI, hence be vigilant for purchase and use of such chemicals.

IMPORTANT LINKS ON ICAR-NRCP WEBSITE

- **Nutrient Management Schedule 2019** in English **(http://nrcpomegranate.icar.gov.in/files/Advisory/41.pdf)**
- **Nutrient Management Schedule 2019** in Marathi **(http://nrcpomegranate.icar.gov.in/files/Advisory/36.pdf)**
- **IDIPM Schedule :- http://nrcpomegranate.icar.gov.in/files/Advisory/12.pdf**
- **Adhoc List of Chemicals For Pomegranate 2020 (http://nrcpomegranate.icar.gov.in/files/Advisory/75.pdf)**
- **List of Trade Names of Agrochemicals 2020 (https://nrcpomegranate.icar.gov.in/files/Advisory/68.pdf**
- **Wilt advisory in Marathi (http://nrcpomegranate.icar.gov.in/files/Advisory/34.pdf)**
- **Wilt advisory in English (http://nrcpomegranate.icar.gov.in/files/Advisory/28.pdf)**