

# Pomegranate Advisory for Dec 2020-Jan 2021

Dr. Jyotsana Sharma , Dr Ashis Maithy, Dr Mallikarjun , Dr. Somnath S Pokhare, Mr Dinkar Chaudhari

ICAR-National Research Centre on Pomegranate, Solapur

## I. Bahar – Mrig (May-Jun Crop regulation)

### **CURRENT STAGE OF THE ORCHARD – FRUIT HARVESTING FOLLOWED BY REST PERIOD.**

#### **A. Nutrient Management –**

1. After harvesting of crop undertake pruning operation to remove the bearing branches.
2. Apply 20-25 kg FYM **OR** 13-15 kg FYM + 2kg vermin-compost + 2 kg neem-cake per plant. **OR** 7.5 kg well decomposed poultry manures + 2 kg neem-cake per plant.
3. Apply 205 g N (446 g neem-coated urea/plant ) 50 g P<sub>2</sub>O<sub>5</sub> (315 g Single Super Phosphate/plant) and 152 g K<sub>2</sub>O per plant (254 g Murate of Potash or 304 g Sulphate of Potash per plant) followed by light Irrigation.

#### **B. Insect and other Pest Management**

Regular monitoring/observation for stem borer, shot hole borer, termites, mites and leaf eating caterpillars etc. Depending on insect pest observed take 2-3 sprays at 15 to 20 day interval with any of the insecticides mentioned below:

- i. If no or low foliar insect pest infestation observed spray only Azadirachtin/Neem oil @ 3 ml/l with 0.25 ml spreader sticker
- ii. If foliar pest infestation observed is high take spray with any of these insecticides Lambda cyhalothrin 5% EC @ 0.5-0.75 ml/l, Indoxacarb 14.5% SC @ 0.75 ml/l, Cyantraniliprole @ 0.75 ml/l, Thiamethoxam 25% WG @ 0.5g with 0.25 ml spreader sticker /l water.
- iii. If shot hole borer pests observed drench with Thiamethoxam 25% WG @ 10-15g + Propiconazole 25% EC @ 10-20ml /10 l water. High dose may be taken only if infestation is high.

## II. Bahar – Hasta (Sep-Oct Crop regulation)

### **CURRENT STAGE OF THE ORCHARD: FRUIT BEARING STAGE - FRUIT ENLARGEMENT AND MATURITY.**

#### **A. Nutrient Management –**

1. Undertake three foliar application of 0-52-34 (Mono-Potassium Phosphate) @ 10 g/lit and
2. Undertake two foliar application of manganese sulphate @ 6 g/lit at 10 days interval
3. Fertigate N:P:K::00:52:34 (Mono-Potassium Phosphate), urea and 0-0-50 @ 12.80, 31.40 and 11.50 kg/ha/application respectively -Give 10 applications at 7 days interval through irrigation

#### **B. Insect Pest Management**

##### **(i) Fruit borer:**

- **If egg stage of fruit borer is observed on fruit surface:** Spray may be taken with Azadirachtin/Neem oil 1% (10000ppm) @ 3ml+0.25ml spreader sticker/l water or Pongamia oil @ 3ml+0.25ml spreader sticker / l water at 7-10 day interval.

- Combination of both Azadirachtin/Neem oil @ 3 ml/l + Pongamia oil @ 3 ml/l with 0.25 ml spreader sticker may be taken if heavy infestation is there.
- **If Damaged fruits/bored holes are observed:** Remove all the bored fruit and dispose by burying in pit. Take the 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 along with 0.25 ml of spreader sticker/ l water.

**(ii) Southern stink bug:**

- **Egg stage:** Spray Azadirachtin/Neem oil 1% (10000ppm + Pongamia oil @ 3+3ml/l +0.25ml spreader sticker/ l water.
- **Nymph and adult stage:** Spray Cyantraniliprole (Benevia) @ 0.75 ml/l OR Chlorantraniliprole (Coragen) 18.5 SC @ 0.75 ml/l + OR Spinetoram 12% SC @ 1.0 or Lambda cyhalothrin 5% EC @ 0.5-0.75 ml/l + 0.25 ml spreader sticker /l water.

### III. Bahar – Ambia (Jan-Feb Crop regulation)

#### CURRENT STAGE OF THE ORCHARD –PLANTS ON STRESS AND CROP REGULATION AFTER JANUARY 15.

##### A. Nutrient Management –

###### At the time of first irrigation at cop regulation

1. Apply 25-30 kg FYM **OR** 15-20 kg FYM + 2 kg vermicompost + 2kg neem-cake per plant. **OR** 7.5 kg well decomposed poultry manures + 2 kg neem-cake per plant.
2. Apply 2.5- 2.8 kg Gypsum and 800 g Magnesium sulphate per plant followed by mixing with rhizosphere soil.
3. Apply bio-formulation of *Azospirillum* sp., *Aspergillus niger*, *Trichoderma viride* and *Penicillium pinophilum* @ 10-20 g/plant after incubating separately with well decomposed farmyard manure under shaded area for 15 days maintaining 60% moisture content in the mixture and periodical stirring.
4. Also apply Arbuscular Mycorrhizal Fungi, AMF (*Rhizophagus irregularis* Syn *Glomus intraradices*) @ 10-15g per plant.
5. Give light irrigation immediately after manures application

##### B. Insect Pest Management Vegetative stage:

1. First spray may be taken with Azadirachtin/Neem oil 1% (10000ppm) @ 3ml+0.25ml spreader sticker /l water **OR** Pongamia oil @ 3ml+0.25ml spreader sticker/ l water at 7-10 day interval. Note, combination of both Azadirachtin/Neem oil @ 3 ml/l + Pongamia oil @ 3 ml/l with 0.25 ml spreader sticker may be taken if heavy insect infestation is there.
2. After 7-10 days of first spray take the second spray with Cyantraniliprole @ 0.75 ml/l or Thiamethoxam 25% WG @ 0.5g or Tolfenpyrad 15 % EC @ 0.75ml/l or Flonicamid 50% WG @ 0.75-1.0 ml/l + 0.25 ml of spreader sticker

##### Flower bud initiation/Flowering stage:

1. Spray Spinetoram 12% SC @ 1.0 +0.25 ml spreader sticker **OR** Spray Spinosad 45% SC @ 0.5 + 0.25 ml spreader sticker/ l water

2. ~~Root Knot Nematode infested plot: Apply Nimitz (Fluensulfone) 2% GR @ 40/plant in a pit of 5-10 cm depth below each dripper equally at the time of first irrigation or dissolve 40g in 4-5 litre water and drench circularly.~~



**Eggs on the fruit**



**Larval damage with bored holes**



**Southern stink bug**



**Stem borer adult damage on bark**



**Stem borer bored hole and excretory pellets**

## MANAGEMENT OF MAJOR DISEASES FOR ALL SEASONS

### Bacterial Blight

**Spray During crop season for Bacterial blight** (Take sprays at 7-10 days interval ) Bordeaux mixture (0.5% except 1% just after pruning) *altered with* Streptomycin sulphate 90%+Tetracycline hydrochloride 10% (Streptocycline) @ 5g/10 l **OR** 2-bromo, 2-nitro propane-1, 3-diol 95% (Bronopol) @ 5g/10 l. With this mix copper oxychloride or copper hydroxide (20-25g/ 10 l) along with Spreader sticker @2.5 to5 ml /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@ 0.3g/l and 4 sprays of Micronutrient mixture @2g/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 (5g/10l)+ Bronopol (5g/10l) + **Kocide (20g/10 l)** + spreader sticker (5ml/10l).
2. Streptocycline (5g/10l)+ Bronopol (5g/10l)+ **carbendazim(10g/10 l)** + spreader sticker (5ml/10l)

### 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+ (20-25g/ 10 l) + Spreader sticker (2.5 to 5 ml /10l) at (10-15 days interval).

### Fungal Diseases

**Some promising fungicides for Pomegranate fungal Scab, Spots and Rots**

- 1: Mandipropamid 23.4% SC @ 1ml/l
- 2: Metiram 55%+Pyraclostrobin 5% E@ 3g /l
- 3: Propiconazole 25% EC @1ml/l+Azoxystrobin@1ml/l
- 4:Azoxystrobin 20% +difenoconazol 12.5% SC @2ml/l
- 5: Chlorothalonil 50% +metalaxyl M 3.75% @2ml/l
- 6: Bordeaux mixture @ 0.5%
- 7: Copper Oxychloride 45%+ Kasuamycin 5% @ 2.5g/ l
- 8: Zineb 68%+ Hexaconazole 4% WP) @ 2.5g/ l
- 9: Tricyclazole 18%+Mancozeb 62% WP @ 2.5g/ l
- 10: Chlorothalonil 75%WP @2g/l
- 11: Propiconazole @1ml/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 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% @2ml/l+Chlorpyrifos @ 2ml OR Thiamethoxam 25% WG @ 1-1.5g/l (10 l solution). After 30 days of first application 2nd drenching with *Aspergillus niger* AN 27 (New Packs have AN27 with IRAG07) fungus @ 5g/plant with 2Kg FYM/plant 3rd application after 30 days of 2nd application - VAM fungus(Vesicular arbuscular mycorrhizae - *Rhizophagus irregularis* @ 25g/plant with 2Kg FYM/plant)

OR

**Method II:** Propiconazole 25% @2ml/l+Chlorpyrifos @ 2ml (3 drenchings at 20 days interval)

OR

**Method III:** 1<sup>st</sup> and 3<sup>rd</sup> drenching Fosetyl Al 80% WP @ 6g/plant (10 l solution)] [2<sup>nd</sup> and 4<sup>th</sup> drenching with Tebuconazole 25.9% w/w EC @3ml/plant (10 l solution)]. Drench at 20 days interval

**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* 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 to be applied through drip irrigation
2. Apply Fluensulfone 2% GR @ 40g/plant in a pit of 5-10 cm deep below each dripper equally and give light irrigation or dissolve 40g in 4-5 litre water and drench around the plant at crop initiation.
3. Fluopyram 34.48% SC @2 ml/pla. Plants should be watered sufficiently before drenching. Drenching should be done @ 2ml/plant in 1 liter of water.

### **NOTE:**

- 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.

- For the information on management of diseases on Pomegranate in above bahars, farmers are advice to use following links.

1. Adhoc list of chemicals: <http://nrcpomegranate.icar.gov.in/files/Advisory/30.pdf> link
2. IDIPM Schedule :- <http://nrcpomegranate.icar.gov.in/files/Advisory/12.pdf>
3. Wilt disease management :- <http://nrcpomegranate.icar.gov.in/files/Advisory/34.pdf>