



## Monthly Workshop for Extension Functionaries

### Message for the Month of May

| <u><b>Agronomy</b></u> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <b>Crop</b>            | <b>Operation/<br/>Diseases/pests</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Message/Impact points</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Rabi Crops</b>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Wheat                  | Booting to grain filling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>- Fields and channels should be kept clean to avoid water stagnation during rain.</li> <li>- Rouging (off type plant removal) should be done to maintain purity of plant population.</li> <li>- Avoid water stress at anthesis and grain filling stage if possible.</li> </ul>                                                                                                                                                                |
| Brown Sarson           | Seed development and maturity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>- Fields and channels should be kept clean to avoid water stagnation during rain.</li> <li>- Avoid moisture stress during seed development stage if possible.</li> <li>- Crop should be harvested at physiological maturity, when 80% siliquae turn yellow.</li> <li>- After harvesting it should be collected on threshing floor for drying threshing and cleaning.</li> <li>- Before storage seeds should be sun dried properly.</li> </ul> |
| <b>Rabi Pulses</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Field Pea              | Flowering and pod filling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>- Fields and channels should be kept clean to avoid water stagnation during rain.</li> <li>- Avoid moisture stress during seed development stage if possible.</li> </ul>                                                                                                                                                                                                                                                                      |
| Lentil                 | Growth, flowering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>- Same as in case of field pea.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    |
| Oat fodder             | Late jointing to flowering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>- Fields and channels should be kept clean to avoid water stagnation during rain.</li> <li>- Harvest the crop at 50 % flowering stage for good quality green fodder or making hay.</li> <li>- For making good quality hay harvested crop should be collected from field after depletion of excess moisture and properly drying it in shade before storage.</li> </ul>                                                                         |
| <b>Kharif crops</b>    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Rice                   | <b>For Nursery</b> (Sowing/ Transplanting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                        | <ul style="list-style-type: none"> <li>- Seed treatment and soaking is necessary for sprouting.</li> <li>- Prepare 1m wide nursery beds with convenient length as per requirement.</li> <li>- Make low poly tunnel with the help of willow sticks and polyethylene on nursery beds to avoid chilling injury and for growing healthy seedling of rice.</li> <li>- The nursery should be free from weeds and the area should have adequate water for irrigation and facilities for drainage should be there.</li> <li>- Sowing of seeds in nursery should be completed in first fortnight of May.</li> <li>- Use 50-60 kg seed for 1 ha transplanting in lower belts and 80 kg seed for 1 ha transplanting in higher belts.</li> <li>- Sow pre-sprouted rice seeds in nursery beds.</li> <li>- In the nursery beds apply pre stored ponded water instead of running water to avoid chilling injury.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### For transplanting

- Transplanting should be started from last week of May in lower belts.
  - Field should be free from weeds.
  - Check the rat burrows in bunds to avoid water loss from field.
  - Apply FYM @ 10-15 t/ha, which should be incorporated in the soil at final preparation of land.
  - For varieties planted in lower belts, the urea @ 4 kg/kanal, DAP @ 6.5 kg/kanal, and MOP 2.5 kg/kanal should be applied as basal dose before transplanting of paddy. Besides zinc sulphate @ 0.5-0.75 kg/kanal should be applied as basal dose if soils are deficient.
  - For varieties planted in higher belts, the urea @ 1.8 kg/kanal, DAP @ 6.5 kg/kanal, MOP 2.5 kg/kanal and zinc sulphate @ 0.5-0.75 kg/kanal should be applied as basal dose before transplanting of paddy.
  - For varieties planted in water logged areas, urea @ 2.35 kg/kanal, DAP @ 6.5 kg/kanal, MOP 2.5 kg/kanal and zinc sulphate @ 0.5-0.75 kg/kanal should be applied as basal dose before transplanting of seedlings.
  - Transplant 30 days old, healthy seedlings (about 20 cm tall) grown in traditional nursery or 25 days old grown under protected nursery conditions.
  - Transplant 2-3 seedlings per hill at a spacing of 15x15 cm. For better tillering shallow transplanting should be adopted.
  - Avoid root damage to seedlings during uprooting and wilting of seedlings after uprooting.
  - Gap filling should be carried out within week's time.
  - Weeds can be reduced by proper puddling and water management in paddy. Maintenance of 5 cm water level in rice fields reduces weed growth by smothering effect.
  - Butachlor @ 1.5 kg a.i. per can be applied within 2-4 days after transplanting as pre-emergence.
  - Eros @ 0.5 kg/kanal or Erase @ 0.5 kg /kanal can be applied 3-5 days after transplanting as pre-emergence to control grasses, sedges and first flush of *Potamogeton*.
  - Erase @ 0.5 kg /kanal should be applied 3-5 days after transplanting as pre-emergence. It controls grasses, sedges.
  - At the time of herbicide application, water level of 2-3 cm should be maintained in the field and kept as such for at least 4-5 days.
- Maize
- Sowing of maize crop can be extended up to end of the month in lower belts of valley.
  - Ensure sufficient moisture in the field before sowing.

### Seed rate and planting geometry for different maize types.

| S. No. | Purpose      | Seed rate (kg/ha)<br>(composite) | Seed rate (kg/ha)<br>(hybrid) | Plant geometry<br>(plant x row, cm) |
|--------|--------------|----------------------------------|-------------------------------|-------------------------------------|
| 1      | Normal Maize | 30                               | 20                            | 60 x 20<br>70 x 20                  |
| 2      | Sweet Corn   | 16                               | 10                            | 70 x 20<br>75 x 20                  |
| 3      | Baby corn    | 35                               | 30                            | 50 x 20<br>55 x 20                  |
| 4      | Pop corn     | 18                               | 14                            | 60 x 20                             |
| 5      | QPM          | 30                               | 20                            | 70 x 20                             |
| 6      | Fodder       | 70                               | 60                            | 25 x 10                             |

*Note: If due to some practical limitations, farmer is practicing broadcasting method of sowing, enhance seed rate by 10-15 per cent*

### Nutrient management

Apply well decomposed compost or FYM uniformly @ 15-20 t/ha which should be incorporated into the soil at the time of land preparation.

**Note :** Application of vermicompost @ 2.5 t /ha will replace 5 t FYM/ha and 25% NPK from recommended dose of fertilizers.

#### For irrigated maize,

- **In hybrid varieties:** Urea @ 5 kg/kanal, DAP @ 8.15 kg/kanal, MOP 3.35 kg/kanal and zinc sulphate @ 1.0 kg/kanal should be applied as basal dose.
- **In composite varieties:** Urea @ 4 kg/kanal, DAP @ 6.5 kg/kanal, MOP 2.5 kg/kanal and zinc sulphate @ 0.75-1.0 kg/kanal should be applied as basal dose

#### For rainfed maize

- **In hybrid varieties:** Urea @ 3 kg/kanal, DAP @ 5 kg/kanal, MOP 1.7 kg/kanal and zinc sulphate @ 0.75 kg/kanal should be applied as basal dose.
- **In composite varieties:** Urea @ 2.4 kg/kanal, DAP @ 4.35 kg/kanal, MOP 1.65 kg/kanal and zinc sulphate @ 0.5 kg/kanal should be applied as basal dose.
- Apply Atrazine (Atratraf 50 wp, Gesaprim 500 fw) @ of 1.0-1.5 kg a.i. ha<sup>-1</sup> in 600 litre water 2-3 days after sowing to avoid weed infestation.
- Earthing up should be done at knee high stage (35-40DAS) in early sown crop.
- In irrigated hybrid maize apply first top dose urea @ 4 kg/kanal at the time of 1<sup>st</sup> weeding, hoeing and earthingup at knee high stage in early sown crop.
- In irrigated composite maize apply first top dose urea @ 3.25 kg/kanal at the time of 1<sup>st</sup> weeding, hoeing and earthingup at knee high stage in early sown crop.
- In rainfed hybrid maize apply first top dose urea @ 2.5 kg/kanal at the time of 1<sup>st</sup> weeding, hoeing and earthingup at knee high stage in early sown crop.
- In rainfed composite maize apply first top dose urea @ 2 kg/kanal at the time of 1<sup>st</sup> weeding, hoeing and earthingup at knee high stage in early sown crop.
- Avoid moisture stress at knee high stage in early sown crop if possible.

|         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Moong   | <b>Sowing</b> | <ul style="list-style-type: none"><li>- Sowing of moong should be done from 15<sup>th</sup> May to 30<sup>th</sup> May.</li><li>- Use 1 – 1.25 kg seeds for one kanal sowing. Spacing should be maintained 30x10 cm row to row and plant to plant.</li><li>- Seeds should be inoculated with <i>Rhizobium</i> and PSB culture @ 5-10 gm/kg seed before sowing.</li><li>- Fields should be well pulverized and leveled before sowing.</li><li>- Ensure proper moisture for better germination at the time of sowing.</li><li>- Apply well decomposed compost or FYM uniformly @ 0.5-0.75 t/kanal and should be incorporated in the soil at the time of land preparation.</li><li>- Apply urea @ 0.75 kg/kanal, DAP @ 6.5 kg/kanal, and MOP 2.5 kg/kanal as basal dose at the time of last ploughing.</li><li>- Pre-emergence spray of pendimethalin @ 1 kg a.i./ha within 2-3 DAS can control the weed infestation during early crop stage.</li></ul> |
| Beans   | <b>Sowing</b> | <ul style="list-style-type: none"><li>- Sowing of beans should be completed in first fortnight of May.</li><li>- Use 3-3.5 kg seeds/kanal in case of bushy type of beans with spacing of 30x10 cm row to row and plant to plant,</li><li>- Use 1.25-1.75 kg seeds/kanal for pole type beans with spacing of 60x20 cm row to row and plant to plant.</li><li>- Rest of the practices are same as of moong.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Cowpea  | <b>sowing</b> | <ul style="list-style-type: none"><li>- Sowing of beans should be completed in first fortnight of May.</li><li>- Use 2 kg seeds/kanal with spacing of 30x10 cm row to row and plant to plant.</li><li>- Rest of the practices are same as of moong.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Soybean | <b>Sowing</b> | <ul style="list-style-type: none"><li>- Sowing of soybean should be completed in first fortnight of May.</li><li>- Use 2-2.5 kg seeds/kanal with spacing of 45x10 cm row to row and plant to plant.</li><li>- Rest of the practices are same as of moong.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| Sunflower                     | sowing | <ul style="list-style-type: none"> <li>- It can be sown as contingent crop.</li> <li>- Use 0.5-0.6 kg seeds/kanal with spacing of 45x30 cm row to row and plant to plant,</li> <li>- Maintain plant to plant distance 30 cm by thinning after 10-12 days of germination.</li> <li>- Apply well decomposed compost or FYM uniformly @ 0.5-0.75 t/kanal at the time of land preparation.</li> <li>- Apply urea @ 2.35 kg/kanal, DAP @ 6.5 kg/kanal, MOP 3.83 kg/kanal and Gypsum @ 7.5-10 kg/kanal as basal dose before sowing of seeds.</li> <li>- Pre-emergence spray of pendimethalin @ 1 kg a.i./ha within 2-3 DAS can control the weed infestation during early crop stage.</li> </ul> |
| Kharif fodder (Maize/sorghum) | Sowing | <ul style="list-style-type: none"> <li>- Sowing can be done during the entire month of May.</li> <li>- Maize fodder, seed rate is 2 kg/kanal for sole crop and 1.25-1.5 kg/kanal for intercropping with legume.</li> <li>- For sorghum fodder, seed rate is 1 kg/kanal for broadcasting and 0.75 kg/kanal for line sowing.</li> <li>- Apply well decomposed compost or FYM uniformly @ 0.5-0.75 t/kanal at the time of land preparation.</li> <li>- In maize/ sorghum fodder apply urea @ 5.6 kg/kanal, DAP @ 6.5 kg/kanal, MOP 3.4 kg/kanal and zinc sulphate @ 1.0 kg/kanal as basal at the time of last ploughing.</li> </ul>                                                          |

### **Entomology (Agriculture)**

|         |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mustard | Mustard Aphid ( <i>Lipaphis erysimi</i> )        | - Dimethoate 30 EC @ 1ml/lit. of water when 50 – 60 aphids per 10 cm terminal shoot or 0.5 – 1.0 cm colony size on terminal portion of central shoot or 30-40 % plants are infested by aphid colonies                                                                                                                                                                                                                                                                                                                                              |
|         | Diamond back moth ( <i>Plutella xylostella</i> ) | - Dimethoate 30 EC @ 1ml/lit. of water when 2-3 larvae per plant if plant population is close to 100 plants per m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Wheat   | Cereal beetle ( <i>Oulema melanopus</i> )        | - Chlorpyrifos 20EC @1ml/lit. of water when 1-2 larvae per flag are present                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|         | Wheat maggot fly ( <i>Delia Platura</i> )        | - Chlorpyrifos 20EC @1ml/lit. of water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|         | Flea beetles ( <i>Phyllotreta vittula</i> )      | - Removal and destruction of <i>Romex</i> (Alternate host).<br>- Chlorpyrifos 20EC @1ml/lit. of water                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Oats    | Oriental armyworm ( <i>Mythimna separata</i> )   | - Chlorpyrifos 20EC @1ml/lit. of water                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Maize   | Cut worm ( <i>Agrotis ipsilon</i> )              | <ul style="list-style-type: none"> <li>- Under heavy infestation apply Carbofuran 3% CG @ 32.5 Kg/ha. at the time of land preparation.</li> <li>- Change sowing time to reduce damage by cutworm.</li> <li>- Put small heaps of grass as artificial shelter to collect and kill caterpillars.</li> <li>- Flood the crop early in the morning to force larvae to come up the water for predation by birds.</li> <li>- In case of severe infestation of the standing crop, drench field with Chlorpyrifos 20 EC @ 3.0 ml/ litre of water.</li> </ul> |

#### **Impact Points:**

☞ Spray should be carried out during early morning or late evening hrs.

**Note: Spray on need basis.**

## **Entomology (Horticulture)**

### **Fruit crops**

|       |                                                     |                                                                                                                                                                                                                               |
|-------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Apple | <i>San Jose scale,</i>                              | - Apply Chlorpyrifos 20 EC OR Quinalphos 25 EC @100 ml/100 litres of water.                                                                                                                                                   |
|       | <i>Woolly apple aphid</i>                           |                                                                                                                                                                                                                               |
|       | <i>Two-spotted spider mite</i>                      | - Removal and destruction of weeds in and around orchards                                                                                                                                                                     |
|       |                                                     | - If 4-5 mites/ leaf are observed spray with: Etoxazole 10 % EC @ 110ml/100 litres of water.                                                                                                                                  |
|       |                                                     | - OR Fenazaquin 10 EC @ 40ml/100 litres of water                                                                                                                                                                              |
|       |                                                     | - OR Bifenthrin 8 SC @ 100 ml/100 litres of water.                                                                                                                                                                            |
|       | <i>Aphid</i>                                        | - Apply Neem oil (1500ppm) @ 300ml OR Chlorpyrifos 20 EC OR Quinalphos 25 EC @100 ml/100 litres of water.                                                                                                                     |
|       | <i>Leaf Roller</i>                                  | - When 10-12 larvae per plant are observed spray Thiacloprid 21.7 SC (40 ml)                                                                                                                                                  |
|       | <i>Hairy caterpillars</i>                           | - Burlapping may be adopted followed by mechanical killing of caterpillars.                                                                                                                                                   |
|       |                                                     | - If foliage damage is noticed, spray Chlorpyrifos 20 EC @ 100 ml/100 liters of water.                                                                                                                                        |
|       | <i>Stem borer/ Pin hole borer/ Short hole borer</i> | - If adults are observed in the orchard, then spray trees with any one of the insecticides:                                                                                                                                   |
|       |                                                     | - Chlorpyrifos 20EC @ 100 ml/100 lit. of water. OR                                                                                                                                                                            |
|       |                                                     | - Quinalphos 25EC @ 100 ml/100 lit. of water.                                                                                                                                                                                 |
|       | <i>Bark beetle</i>                                  | - When bark beetles are trapped under light spray.                                                                                                                                                                            |
|       |                                                     | - Chlorpyrifos 20 EC OR Quinalphos 25 EC@ 100 ml/100 litres of water.                                                                                                                                                         |
|       | <i>Fruit fly</i>                                    | - Install traps made from used water bottles/plastic boxes baited with methyl eugenol                                                                                                                                         |
|       |                                                     | <b>Making of methyl eugenol baited trap:</b>                                                                                                                                                                                  |
|       |                                                     | - Mix ethyl alcohol (60 ml), methyl eugenol (40 ml) & a contact insecticide (20 ml) in a glass container in the ratio of 6:4:2.                                                                                               |
|       |                                                     | - Add plywood blocks of size 5 × 5 × 1 cm (l × b × h) or cotton rope pieces (½ inch thick & about 2 inches long) to the prepared mixture. Soak the plywood or cotton rope pieces in the methyl eugenol solution for 24 hours. |
|       |                                                     | - Approximately 4 ml of the solution is required for the preparation of one lure.                                                                                                                                             |
|       |                                                     | - The prepared lures should be wrapped in aluminum foil & stored until use.                                                                                                                                                   |
|       |                                                     | - This contact insecticide (in the ratio of 6: 4: 2) should be used @ 25 traps/ha, from the onset of flowering in the month of April and May.                                                                                 |
|       |                                                     | - Yellow sticky traps @ 25/ha from the onset of flowering during the month of April to September.                                                                                                                             |
|       |                                                     | - Apply need-based label claim insecticides giving sufficient waiting period.                                                                                                                                                 |
|       | <i>European Red mite</i>                            | <b>Need Based</b>                                                                                                                                                                                                             |
|       |                                                     | - Apply acaricide when more than 5 mites/leaf are observed: Hexythiazox 5.45 EC (40ml) OR Spiromesifen 22.9SC (40ml) OR Cyenopyrafen 30 SC (30ml)in 100 litres of water.                                                      |
|       | <i>Blotch Leaf miner</i>                            | - Survey, monitoring and mass awareness of the pest should be done.                                                                                                                                                           |
|       |                                                     | - Proper sanitation in and around the orchard.                                                                                                                                                                                |
|       |                                                     | - Monitor adult population through pheromone baited traps @8-10/ha.                                                                                                                                                           |

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|             |                    | <ul style="list-style-type: none"> <li>- Installation of traps (yellow sticky traps @ 1/10 m apart or Pheromone traps @ 1 trap/ ha for monitoring of moth emergence)</li> <li>- After first moth catch in trap; spray Thiamethoxam 25 WG @ 50g/ 100 litres of water OR Thiamethoxam 12.6 + Lambda Cyhalothrin 9.5 ZC @ 50ml/100 litres of water OR Imidacloprid 6.0 + Lambda Cyhalothrin 4.0 SL @ 50ml/100 litres of water.</li> </ul> |
|             | <i>Fruit borer</i> | <ul style="list-style-type: none"> <li>- Survey, monitoring and mass awareness of the pest should be done.</li> <li>- Monitor adult population through pheromone traps@20 traps/ha</li> <li>- If adults are noticed then spray Chlorpyrifos 50% EC + Cypermethrin 5% EC @ 125ml/ 100 litres of water OR</li> </ul>                                                                                                                     |
| Pomegranate | <i>Fruit borer</i> | <ul style="list-style-type: none"> <li>- Remove and destroy the left over fruits</li> <li>- Spray Chlorpyrifos 20 EC @ 100 ml/ 100 lit. of water.</li> </ul>                                                                                                                                                                                                                                                                           |
| Plum        | <i>Aphid</i>       | <ul style="list-style-type: none"> <li>- In case aphid population is high, spray Chlorpyrifos 20 EC @ 100 ml/100 litres of water.</li> </ul>                                                                                                                                                                                                                                                                                           |

**Note: In case of heavy rains (within 12 hours of spray) the spray is to be repeated immediately.**

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| Vegetables        | <i>Overwintering insects (cut worm, white grubs etc.)</i> | <ul style="list-style-type: none"> <li>- Under heavy infestation apply Carbofuran 3% CG @ 32.5 Kg/ha. at the time of land preparation.</li> <li>- Change sowing time to reduce damage by cutworm.</li> <li>- Put small heaps of grass as artificial shelter to collect and kill caterpillars.</li> <li>- Flood the crop early in the morning to force larvae to come up the water for predation by birds.</li> <li>- In case of severe infestation of the standing crop, drench field with Chlorpyrifos 20 EC @ 3.0 ml/ litre of water.</li> <li>- Use light traps @ 5.0 traps/ha. To trap and kill adults of cut worm and white grub</li> </ul>                                                                                                                                                                                                                                                                                                                          |
| Cabbage           | <i>Diamond Back Moth</i>                                  | <ul style="list-style-type: none"> <li>- Foliar spray of Chlorpyrifos 20EC @ 100 ml/100 lit. of water.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Flowers           | <i>Tulip (Grubs)</i>                                      | <ul style="list-style-type: none"> <li>- When 2-3 grub/m<sup>2</sup> in the soil is recorded;</li> <li>- Apply Carbofuran 3% CG @ 32.5 Kg/ha in between the rows of field <b>OR</b> Drench field either with Chlorpyrifos 20 EC @ 300 ml /100 litres of water <b>OR</b> Cypermethrin 10EC @ 100 ml /100 litres of water.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                   | <i>Sucking pests in open and polyhouse</i>                | <ul style="list-style-type: none"> <li>- Apply Thiacloprid 21.7 SC @ 60ml/ 100 litres of water if infestation is noticed</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                   | <i>Mites in open and polyhouse</i>                        | <ul style="list-style-type: none"> <li>- Apply acaricide when more than 5 mites/leaf or flower are observed:</li> <li>- Hexythiazox 5.45 EC (40ml) OR Spiromesifen 22.9 SC (40ml) in 100 litres of water.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Rodent management | <i>Horticulture</i>                                       | <p><b>If weather is dry, follow the below mentioned practices:</b></p> <ul style="list-style-type: none"> <li>- <b>Field Sanitation:</b> Removal of left over debris and grasses from orchards to discourage rodents from availability of food and shelter.</li> <li>- <b>Reduction in bund size:</b> Reduce the size of bunds or boundaries. around the orchards up to 30cm to force the rodents to leave the burrows.</li> <li>- <b>Burrow Fumigation:</b> Smoking the burrow with cow dung + Maize straw/maize pith + weeds with the help of burrow fumigator.</li> </ul> <p><b>Chemical control (Rodent bait schedule):</b></p> <ul style="list-style-type: none"> <li>✓ Day 1: Plugging of burrows.</li> <li>✓ Day 2: Identification of live burrows for pre-baiting prior to poison baiting; For pre baiting with plain bait (crushed rice (48 gm) + broken wheat grain (48 gm) + sugar (2.0 gm and 2.0 ml. mustard oil) and place 10-15gm/ live burrow.</li> </ul> |

- ✓ Day 3: 2.0% Zinc Phosphide\* baiting during late evening with (crushed rice (48 gm) + broken wheat grain (48 gm) + Zinc Phosphide 2.0 gm and 2.0 ml. mustard oil, all mixed together) be placed inside the live burrow @ 6-10 g bait/ live burrow).
- ✓ Day 4: Collection and burying of dead rodent. Close all burrows.
- ✓ Day 5: Identification of live burrows.
- ✓ Day 6: Fumigate live reopened burrows with Aluminum phosphide pellets @ 2 pellets/burrow or 5-10 g pouch/burrow and cover with wet mud.

**For residual rodent population:**

**Bromadiolone:** Bromadiolone (0.25% BC) @ 10- 15 g per burrow to be placed inside the live burrows.

- ✓ Bromadiolone (0.25% CB) @ 10- 15 g per burrow to be placed inside the live burrows in the ratio of 1 part Bromadiolone with 49 parts crushed grain( Rice or wheat)

**Precautions:** Since residual rodent population develops bait shyness after one baiting with Zinc Phosphide, a minimum of 50-60 days' gap should be given before it is used again.

- ✓ Since rodents are a serious constraint in horticulture their effective control is only possible, if farmers worked together as a community.

**Note:** If treatment has been carried out during April then do not repeat during May.

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Apiculture | <ul style="list-style-type: none"> <li>☞ Artificial feeding of sugar syrup @ 1:1 to be continued if weather conditions become unfavourable otherwise not needed.</li> <li>☞ Wasp queens should be killed and their nests should be identified and destroyed.</li> <li>☞ Raising of new frames by providing comb foundation sheets to healthy colonies.</li> <li>☞ Weekly inspection of the colonies to check the status of brood and adult bees. New frames should be added to healthy colonies and strong colonies.</li> <li>☞ Old and unhealthy queens should be replaced by young ones.</li> <li>☞ Hives should be cleaned properly for pest and disease management.</li> <li>☞ Keep bee colonies in shade if it is dry and hot.</li> <li>☞ Division should be done in order to increase the stock. Super should be added to strong colonies.</li> <li>☞ Five <i>Apis mellifera</i> Colonies/ha should be kept on bunds of onion and carrot grown for seed production</li> </ul> |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Plant Pathology (Agriculture)**

|                         |                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Paddy                   | <i>Seedling blight/Blast</i><br><i>/ Brown Spot</i>                                                                  | <ul style="list-style-type: none"> <li>- Use well decomposed FYM and avoid fresh manure to reduce pathogen load.</li> <li>- Seed treatment with carbendazim 1gm /Kg seed or Tricyclazole 75 WP @0.6g/kg seed (Blast prone areas).</li> <li>- In case, any disease symptom is observed in nursery immediately spray Carbendazim (12%) + Mancozeb (63%) 75WP @2.5 gms per litre of water OR Tricyclazole 6gm/10 litre water.</li> </ul> |
| Maize                   | <i>Seed borne diseases</i>                                                                                           | - Treat the seeds with Mancozeb 75WP or Captan 50WP @3g/Kg of seed.                                                                                                                                                                                                                                                                                                                                                                   |
| Lentil and Common Beans | <i>Leaf spots</i><br><i>Fusarium Wilt</i><br><i>Rhizoctonia</i><br><i>Root rot</i><br><i>Anthrachnose/ Ascochyta</i> | <ul style="list-style-type: none"> <li>- Spray Mancozeb 75 WP @2.5g/lit of water</li> <li>- Seed treatment with carbendazim 1gm /Kg seed</li> <li>- Seed treatment by Mancozeb 75 WP @3g/Kg of seed</li> </ul>                                                                                                                                                                                                                        |

|       |                    |                                                             |
|-------|--------------------|-------------------------------------------------------------|
| Wheat | <i>leaf spot</i>   |                                                             |
|       | <i>Yellow Rust</i> | - Spray by Propiconazole 25EC@1mlper litre of water         |
|       | <i>Loose Smut</i>  | - Remove the diseased ear head and ensure their destruction |

### **Plant Pathology (Horticulture)**

#### **A. Fruits**

|       |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Apple | <i>Scab and other foliar diseases</i>   | <b>Spray at Fruit let (Pea size) stage</b><br>- Zineb (68%) + Hexaconazole (4%) 72WP (0.1%) or Dodine 65WP (0.06%) or Dodine 40 SC (0.09%) or Fluxapyroxad 250g/l + Pyraclostrobin 250g/l 500 SC (0.02%) or Tebuconazole (6.7%) + Captan (26.9%) 33.6 SC (0.25%) OR Pyraclostrobin 12.8% + Boscalid 25.2% 38 WG (0.03%) or Tebuconazole 38.9 SC (0.04%).<br>- Mancozeb (63%) + Carbendazim (12%) 75 WP (@0.25%)<br><b>Spray at Fruit Development-I stage</b><br>- Mancozeb 75 WP (0.3%) or Captan 50WP (0.3%) or Propineb 70WP (0.3%) or Zineb 75WP (0.3%) or Ziram 80WP (0.2%) or Metiram 70 WG (0.3%).<br><b>Spray at Fruit Development-II stage</b><br>- Spray Difenconazole 25 EC (@0.03%) or Flusilazole 40EC (@0.02%) or Penconazole 10 EC (@0.05%) or Trifloxystrobin 25% + Tebuconazole 50% 75WG (@0.04%) or Fluxapyroxad 250g/l + Pyraclostrobin 250g/l 500 SC (@0.02%) or Fluxapyroxad 75g/l + Difenconazole 50g/l SC (@0.03%) or Chlorothalonil 40% + Difenconazole 4% 44 SC (0.180%) or Mancozeb 63% + Carbendazim 12% 75 WP (@0.25%) or Trifloxystrobin 10% + Difenconazole 12.25% + Sulphur 3% SC (@0.09%)<br><i>Root rot</i> - Drench tree basin of affected tree with Carbendazim 50 WP (0.1%) or Carbendazim 12% + Mancozeb 63% 75WP (0.5%). Apply fungicide suspension in 15-20 cm deep holes at a distance of 30 cm throughout the tree basin<br><i>Collar rot</i> - Clean the affected collar area and apply Chaubatia or Bordeaux paste.<br>- Drench the soil under tree canopy with Metalaxyl MZ 72WP (0.5%) or Mancozeb 75WP (0.6%) or Copper oxychloride 50 WP (0.6%).<br><i>Cankers</i> - Scrap the affected bark and apply Bordeaux or Chaubatia paste on pruned/scarified area/ wound.<br><i>Foliar fungal disease</i> - Spray Carbendazim 50WP (0.05%) or Thiophanate Methyl 70WP (0.05%) or Dodine 65WP (0.06%). |
|       | Almond, plum, peach, apricot and cherry |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|       | <i>Fabrea leaf &amp; fruit spot</i>     | - Spray Thiophanate Methyl 70WP (0.05%) or Carbendazim 50WP (0.05%) or Mancozeb 75WP (0.3%) or chlorothalonil 75 WP (0.25%).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|       | <i>Anthracoise</i>                      | - Spray with Thiophanate Methyl 70 WP (0.05%) or Carbendazim 50WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75WP (0.25%) or Captan 70% + Hexaconazole 5% 75WP (0.05%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|       | <i>Powdery mildew</i>                   | - Spray with Flusilazole 40EC (0.02%) or Hexaconazole 5 EC (0.05%) immediately after disease appearance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|       | Pear                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|       | Grapes                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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#### **Impact Points:**

- ☞ Proper orchard sanitation
- ☞ Ensure proper aeration and drainage in orchards.
- ☞ Maintain a gap of 3-4 days between insecticide and fungicide spray
- ☞ Do not conduct sprayings during high temperature. Conduct spray during evening or morning hours.



## B. Vegetables

|                                    |                                                    |                                                                                                                                                                      |
|------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tomato, chilli, brinjal & capsicum | <i>Post-emergence damping off/ seedling blight</i> | - Drench the nursery beds with Metalaxyl MZ 72 WP (0.5%) or Carbendazim 12% + Mancozeb 63% 75WP (0.5%).<br>- Avoid heavy irrigation / flooding and water stagnation. |
|                                    | <i>Wilt/root rot</i>                               | - Dip seedling in carbendazim 50 WP (0.1%) for 30 minutes before transplanting                                                                                       |
| Onion                              | <i>Downy mildew</i>                                | - Spray with Metalaxyl MZ 72 WP (0.25%)                                                                                                                              |
|                                    | <i>Stemphylium blight</i>                          | - Spray with Mancozeb 75 WP (0.3%) OR Hexaconazole 5EC (0.05%)                                                                                                       |
| Cucurbits                          | <i>Downy mildew</i>                                | - Spray with Metalaxyl MZ 72 WP (0.25%) OR Mancozeb 75WP (0.3%)                                                                                                      |
|                                    | <i>Powdery mildew</i>                              | - Spray with Hexaconazole 5 EC (0.05%) OR Flusilazole 40 EC (0.02%).                                                                                                 |

### Vegetable Science

|                                          |                                                                                   |                                                                                                                                                                                                                                                                                                   |
|------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cucurbits, Bhindi, Beans                 | <i>Seed sowing</i>                                                                | - Sowing of cucurbit seeds in situ can be continued.<br>- For improving germination in bhindi, soaking of seeds in hot water for 30 minutes before sowing is beneficial.                                                                                                                          |
| Cucumber, Bottle Gourd, and Bitter Gourd | <i>Transplanting of cucurbits raised in poly packs under protected conditions</i> | - Precautions should be taken while removing seedling from poly pack. For that poly pack should be cut instead of pulling seedling out from the polythene.<br>- Seedlings should be planted with soil ball intact for better establishment.<br>- Fertilizer schedule for cucurbits on kanal basis |

| Crop         | Urea<br>kg/kanal | DAP<br>kg/kanal | MOP<br>kg/kanal |
|--------------|------------------|-----------------|-----------------|
| Cucumber     | 6.0              | 3.0             | 2.5             |
| Pumpkin      | 6.0              | 3.0             | 2.5             |
| Squash       | 5.5              | 5.5             | 4.25            |
| Bitter gourd | 5.5              | 5.5             | 4.25            |

Apply full dose of P&K and half dose of N as basal dose and remaining half N is applied in two splits, when plants start to run and fruiting has started.

|                        |                                                                  |                                                                                                                                                                                                                                                      |
|------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solanaceous vegetables | <i>Transplanting of seedlings produced under open conditions</i> | - Thorough field preparation is needed.<br>- Vigorous seedlings may be transplanted during evening on sunny days.<br>- Weak and lanky seedlings should be avoided.<br>- Grow chillies on raised beds/ridges as a prophylactic measure to avoid wilt. |
|------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Fertilizers schedule for Solonaceous vegetables on kanl basis:

| Crop     | Urea<br>(kg/ kanal) | DAP<br>(kg/kanal) | MOP<br>(kg/kanal) |
|----------|---------------------|-------------------|-------------------|
| Tomato   | 9.25                | 13kg              | 10.0              |
| Brinajal | 11.0                | 13kg              | 10.0              |
| Chilli   | 9.0                 | 9.0               | 5.3               |
| Capsicum | 9.0                 | 9.0               | 3.0               |

- Apply half N as basal dose and half N as top dressing 30 to 40 days after transplanting.

|        |                    |                                                                                                                                           |
|--------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Potato | <i>Earthing up</i> | - First earthing up to be done.<br>- Apply top dose of urea.<br>- Pinching of flowers should be done. This adds to the bulking of potato. |
|--------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|

|                     |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cole and root crops | Seed production | <ul style="list-style-type: none"> <li>- Apply irrigation as soon as possible.</li> <li>- Proper staking to be done in seed crops.</li> <li>- Start harvesting when 75-80% pods change colour from green to straw yellow.</li> <li>- Heap up the harvested material at protected places for about a week for curing.</li> <li>- Thrashing should be done by beating the lot on clean cemented floor.</li> <li>- Dry seeds under shade so as to bring down moisture level.</li> <li>- Clean the seed, remove dirt, dust and shrivelled seed.</li> </ul> |
|---------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### **Floriculture**

|                                                   |                                                   |                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spring flowering Annuals/bulbous crops            | Weeding/top dressing and inter-cultural operation | <ul style="list-style-type: none"> <li>- Weeding/top dressing of Spring flowering annuals like Pansy, California poppy, Candy tuft, Verbena, Sweet pea, Sweet Foliar etc.</li> <li>- Tulip, Hyacinth, oxalis, freesia, fritillaria, Dutch Iris etc</li> <li>- Foliar application of micronutrients/growth retardants after flowering is over which will enhance propagation ratio.</li> </ul> |
| Cut flowers Gerbera, Carnation, Lilium, Gladiolus | Planting/Inter cultural operations                | <ul style="list-style-type: none"> <li>- Planting of plants/bulbs/corms.</li> <li>- Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management should be ensured.</li> </ul>                                                                                                                                                 |
| Turf grasses                                      | Raising                                           | <ul style="list-style-type: none"> <li>- Raising through different methods like seeds, dibbling, turfing etc</li> </ul>                                                                                                                                                                                                                                                                       |
| Shrubs Edges summer annuals                       | Intercultural operations Nursery raising          | <ul style="list-style-type: none"> <li>- Pruning of shrubs which have completed flowering phase.</li> <li>- Hedges/edges should be trimmed regularly.</li> <li>- Nursery raising of marigold, zinnia salvia etc.</li> </ul>                                                                                                                                                                   |

### **Fruit Science**

#### **Orchard Management**

|                                                 |                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fertilization of Trees                          | <ul style="list-style-type: none"> <li>- Apply 2<sup>nd</sup> half dose of <b>N</b> and remaining <b>K</b> three weeks after fruit set.</li> <li>- Spray Solubor @1g per litre of water at pre-bloom stage in grapes.</li> <li>- Thinning of fruit trees with heavy bearing should be done.</li> </ul> |
| Thinning of fruit trees                         | <ul style="list-style-type: none"> <li>- Fruit trees with heavy bearing should be thinned.</li> </ul>                                                                                                                                                                                                  |
| Mulching (Particularly under Karewa Conditions) | <ul style="list-style-type: none"> <li>- Mulching with green grass or straw to conserve moisture through precipitation. This will also help in suppressing weed growth.</li> </ul>                                                                                                                     |
| Inclement weather                               | <ul style="list-style-type: none"> <li>- Ensure proper drainage management.</li> <li>- Maintain orchard sanitation by removing fallen flowers and fruitlets.</li> <li>- Installation of antihail nets in orchards</li> </ul>                                                                           |
| Nursery Management                              | <ul style="list-style-type: none"> <li>- Remove suckers and water sprouts in the nursery plants and maintain orchard sanitation.</li> <li>- De-shooting of budded/grafted plants at regular intervals.</li> <li>- Hoeing and weeding of nursery beds.</li> </ul>                                       |
| White washing                                   | <ul style="list-style-type: none"> <li>- White washing of tree trunks with               <ul style="list-style-type: none"> <li>- Hydrated lime = 5 kg</li> <li>- Copper Sulphate = 310 gram</li> <li>- Water = 100 litre</li> </ul> </li> <li>-</li> </ul>                                            |
| Stone fruits/                                   | <ul style="list-style-type: none"> <li>- Keep stone fruits well-watered during fruit set and fruit developmental stages.</li> </ul>                                                                                                                                                                    |

|            |                                                                                                                                                                                                          |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strawberry | <ul style="list-style-type: none"> <li>- Use hail nets when there is colour change in cherry.</li> <li>- Harvesting of early varieties of cherry and strawberry by adopting maturity indices.</li> </ul> |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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### **Soil Science**

|                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application of 2 <sup>nd</sup> dose of fertilizers in Fruit Orchards | It is recommended that 2 <sup>nd</sup> dose of fertilizers comprising of 1/3 <sup>rd</sup> dose of Urea & 1/2 <sup>nd</sup> dose of MOP should be applied to the fruit trees when fruit is of peanut size, probably 21 days after petal fall. The fertilizer should be applied uniformly and well mixed with soil at the time of application. It is important to ensure the moisture content of the soil at the time of fertilizer application. |
| Application of Calcium                                               | It is advisable to conduct foliar spray of CaCl <sub>2</sub> @ 3gms/litre of water at peanut stage. Where ever, deficiency of calcium has been observed.                                                                                                                                                                                                                                                                                        |
| Application of Boron                                                 | If Boron deficiency has been observed in the orchards, then conduct foliar spray of boric acid @ 1.5gms/litre of water at 15-20 days after petal fall.                                                                                                                                                                                                                                                                                          |

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### **Food Science & Technology**

#### **Fresh Strawberry**

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Harvesting time      | <ul style="list-style-type: none"> <li>- Fruit is ready for harvesting 4-6 weeks from blossom</li> <li>- Harvesting lasts upto 3 weeks</li> <li>- Harvest only full red ripe berries &amp; pick berries every alternate day or after every two days. (Impact: Considered as quality product)</li> <li>- Harvest fruit when TSS is 8.5-10.0<sup>0</sup>B depending upon the variety.</li> <li>- To prevent bird damage, use scare crows or reflectors in the field when the crop is ready for harvest (Impact: Prevents bird damage.).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Method of harvesting | <ul style="list-style-type: none"> <li>- Grasp the stem just above berry with forefinger &amp; thumb nail and pinch the stem behind berry with your thumbnail with 1/4 of stem attached to fruit.</li> <li>- Picking should be done in the morning when strawberries are still cool (Impact: Harvesting during early hours increases shelf-life).</li> <li>- Do not pick berries which have green tips or are white (Impact: Fruits which are unripe will not develop colour and will be lacking typical strawberry flavor).</li> <li>- Allow immature white berries to grow to their maximum size and turn full red ripe before picking.</li> <li>- Cut the stem, do not pull berry and do not leave berry remnants on plant (Impact: Berry remnants encourage plant rot)</li> <li>- Avoid bruising while harvesting (Impact: Bruising deteriorates quality very quickly, rendering fruit unmarketable.)</li> <li>- Do not overload picking containers as bottom fruits will get crushed.</li> </ul> |
| Pre-cooling          | <ul style="list-style-type: none"> <li>- Store unwashed berries under shade till grading and packaging (Impact: Reduces rate of respiration and increases shelf-life)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sorting & grading    | <ul style="list-style-type: none"> <li>- Sort and grade fruit on the basis of colour, size &amp; mechanical injury (Impact: Graded produce has more consumer acceptability).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Packaging            | <ul style="list-style-type: none"> <li>- Gently place the fruit in containers for marketing, make sure not to overfill the container.</li> <li>- Pack in perforated transparent, plastic punnets of 250-500 gm capacity or CFB boxes of 1-2 Kg capacity (Impact: Small packs have more consumer acceptability and are easy to handle)</li> <li>- Avoid topping of packs (Impact: Topping deceives consumers and the producers loose reputation).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Transportation       | <ul style="list-style-type: none"> <li>- Transport the crop immediately to market or mandi using refrigerated vans (Impact: Delay in transportation leads to quick deterioration of quality)</li> <li>- Avoid over-stacking of boxes during transportation (Impact: Prevents mechanical damage).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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## **Forestry**

**Summary:** May is a crucial month for farmers in temperate regions to carry out timely operations in forestry, agroforestry, and medicinal and aromatic plant cultivation. Complete planting of tree saplings such as poplar, willow, mulberry, walnut, and fruit plants before the onset of summer stress. Provide regular irrigation, mulching, and staking to newly planted saplings for better establishment. Carry out weeding, hoeing, and basin preparation around young trees to conserve soil moisture and promote healthy growth.

In agroforestry systems, sow suitable intercrops such as maize, pulses, fodder crops, and vegetables between tree rows where spacing permits. Monitor flowering and fruit setting in orchard-based systems and apply recommended nutrients and plant protection measures. Repair fencing and protect plantations from grazing animals.

For medicinal and aromatic plants, complete sowing or transplanting of crops like mint, rosemary, lavender, and other suitable species. Maintain proper irrigation and weed control for healthy crop growth. Timely management during May ensures better productivity and higher income.

| <b>Strategies/<br/>Operations</b>                                                                                 | <b>Message/ Impact/ Action points</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Field Work Execution in Forest, Agroforestry and Medicinal &amp; Aromatic Plant Nurseries</b>                  | <p>May is an important month for executing field operations in forest, agroforestry and medicinal &amp; aromatic plant nurseries in temperate regions. Complete land preparation, levelling, and layout of nursery beds with proper irrigation and drainage facilities. Prepare raised beds and fill polybags with fertile soil, sand, and well-decomposed farmyard manure in recommended proportions.</p> <p>Transplanting, and pricking out of healthy seedlings in nursery beds or containers. Ensure timely irrigation during morning or evening hours to maintain optimum soil moisture. Provide partial shade to tender seedlings and protect nursery plants from heat stress, strong winds, and grazing animals.</p> <p>Carry out regular weeding, hoeing, and soil loosening to improve aeration and reduce weed competition. Apply organic manures or recommended fertilizers in light doses for healthy growth. Monitor nurseries regularly for insect pests, fungal diseases, and nutrient deficiencies, and adopt timely management practices.</p>                                                                                                                                                                                                                                                                                                                                                     |
| <b>Strategies, Operations and Management of Forest, Agroforestry and Medicinal &amp; Aromatic Plant Nurseries</b> | <p>For nursery management in temperate regions due to rising temperatures and rapid plant growth. Ensure regular irrigation during morning or evening hours to maintain optimum soil moisture in nursery beds, containers, and polybags. Avoid water stagnation by maintaining proper drainage channels to prevent root diseases and damping-off.</p> <p>Provide partial shade to tender seedlings of forest, agroforestry, medicinal, and aromatic species using shade nets or locally available materials to protect them from heat stress. Carry out timely weeding, hoeing, and soil loosening to improve aeration, conserve moisture, and reduce weed competition. Apply well-decomposed farmyard manure, vermin-compost, or recommended fertilizers in light doses for healthy seedling growth.</p> <p>Complete pricking out of healthy nursery seedlings of a conifer forest species such as deodar, kail and Cupressus etc Regularly inspect nurseries for insect pests, fungal diseases, and nutrient deficiencies, and adopt timely control measures. Harden seedlings gradually by reducing shade and irrigation before field planting. Repair fencing, irrigation channels, and nursery infrastructure, and maintain records of seedling stock for timely distribution. Proper nursery management during May ensures vigorous planting material and successful plantation during the coming season</p> |

### **Livestock Production Management**

- Sheep**
- Ensure vaccination against sheep/goat pox to adult ovine/caprines flock and lambs/kids after 15-21 days of FMD vaccination.
  - Weaning of lambs/kids may be done after 90 days' age (except weak lambs/kids).
  - Feeding of Creep mixture (CP >20%) should be ensured to lambs/kids
  - Lam/kid growth rate should be regularly monitored by recording their body weight at regular intervals.
  - Ensure at least 6-8 hrs. of daily grazing to animals. If good grazing facilities are available, no concentrate supplementation is required.
  - While grazing, animals should be monitored continuously for development of bloat due to excess consumption of certain excess green fodders (e.g clovers) and in case of any such eventuality, veterinary assistance should be sought.
  - If deworming has not been done recently, ensure that the whole flock is dewormed with a suitable anthelmintic at specified dosages
- Cattle**
- Maintain cleanliness in and around farms and ensure availability of clean water.
  - Ensure that the sheds receive enough sunlight during the day to prevent dampness and to complement the cleaning process.
  - Ensure 6-8 hrs of daily grazing to animals if community pastures are available. In the absence of such facilities, green fodder and concentrate should be fed as per the body weight and Stage of production.
  - Avoid too much of rice during marriage season to prevent acidosis

#### **Ration Table**

| <b>Animal</b> | <b>Concentrates</b> | <b>Greens</b> |
|---------------|---------------------|---------------|
| Cow (15l)     | 6 Kg                | Adlib.*       |
| Pregnant cow  | 6 kg +0.5 kg        | Do            |

*\*If quality green fodder is available, 7-8 kg can replace 1 kg of concentrate*

#### **❖ Homemade Concentrate**

| Feed ingredient                              | Parts |
|----------------------------------------------|-------|
| Wheat bran                                   | 20    |
| Rice bran                                    | 15    |
| Mustard oil cake                             | 22    |
| Maize                                        | 35    |
| Molasses/Gur                                 | 5     |
| Salts (mixture of iodized salt 1 part)       | 1     |
| Mineral salts like ostocalcium/ Agrimin fort | 2     |

Horses should be given access to free grazing. Pregnant mares should be fed (1.5-2 Kg) concentrate + free grazing.



I/C Monthly Workshop

No. Au/De/MW/ 2026/141-180

Dated: 04-05-2026

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