



Monthly Workshop for Capacity Building of Extension Functionaries

Message for the Month of August

Agronomy

Crop	Operation/ Diseases/pests	Message/Impact points
Rice	Nutrient management	- For varieties planted in lower belts, urea @ 3.6 kg/kanal, should be applied as second top dose if not applied earlier. - For varieties planted in higher belts, urea @ 2.25 kg/kanal, should be applied as second top dose if not applied earlier. - For varieties planted in water logged areas, urea @ 2.45 kg/kanal, should be applied as second top dose if not applied earlier. - After anthesis stage (60-65 DAT) do not apply top dose of urea.
	Weed management	- Manual weeding should be carried out at 40-45 days after application of weedicide. - Wherever the incidence of weeds like <i>Potamogeton distinctus</i> and <i>Marsilia quadrifolia</i> is observed alternate wetting and drying should be carried out - Keep bunds and channels clean.
	Water management	- 2-3 cm level of water should be maintained. - Completely drain out water from the field at booting stage (50-55 DAT) and re-irrigate the crop after hair-like cracks appear in the field.
Maize	Weeding/ Hoeing/ earthingup	- Weeding, hoeing and earthingup should be done wherever maize is at before tassaling stage (45-50 DAS)
	Tassaling stage	
	Nutrient management	For irrigated maize (per hectare) - Top dose of nitrogen application be restricted after silking stage. - For hybrid maize urea @ 4 kg/kanal should be apply as 2nd top dose if not applied earlier. - For composite varieties of maize 2nd top dose of urea @ 3.25 kg/kanal if not applied earlier. For rainfed maize (per hectare) - Top dose of nitrogen application be restricted after silking stage - For hybrids: urea @ 2.5 kg/kanal should be applied as 2nd top dose if not applied earlier. - For composites: urea @ 2 kg/kanal should be applied as 2nd top dose if not applied earlier. - Top dose of nitrogen should be preferred after a shower of rain. Avoid nitrogen application in dry field.
	Weed management	- One hoeing followed by earthingup should be done at 45-50 DAS. No need to do hoeing and weeding after tasseling.
	Water management	- Most of the maize area is rainfed. If possible give irrigation at the most critical periods i.e. at, silking and grain filling stage.
Baby corn	Management	- All practices similar to that of main crop.

	<i>Picking</i>	- Baby corn can be picked at 3-4 days after silk emergence. - If new cob formation has stopped after harvesting of baby corn then plants may be harvested as green fodder.
Kharif pulses	<i>Weeding</i>	- If the crop has attained full canopy, weeding should be avoided. However, emergent weed above the canopy may be pulled out / cut out carefully.
	<i>Irrigation</i>	- If irrigation facility is available then avoid moisture stress at pre flowering and seed development stage which comes in this month.
Saffron	<i>Planting</i>	- To maintain soil health apply half dose of urea (4.6 kg/kanal under high density and 3.6 kg/ kanal in case of normal density) and full dose of DAP (9.8kg/kanal under high density and 6.6 kg/kanal in case of normal density), MOP (6.7 kg/ kanal under high density and 4.2 kg/kanal in case of normal density), well rotten FYM (7.5 quintals/kanal under high density and 5 quintals/kanal in case of normal density) and vermicompost (50kg per kanal under high density and 25kg per kanal in case of normal density) before final ploughing (fresh plantation) and 2nd hoeing (existing crop). - Hand sowing of corms at a depth of 6 inches (15 cm) with a plant geometry of 25*15 cm and plant density of 12 lac corms per ha (under high density plantation) using ditch method of plantation (5 corms/ ditch) should be completed by 1st week of August. - Hand sowing of corms at a depth of 6 inches (15 cm) with a plant geometry of 20*10 cm and plant density of 5 lac corms (under normal density plantation) using 1 corm/hill and row method of plantation should be completed by 1st week of August. - To avoid water stagnation field should be laid out in to 2m wide and 5m long stripes across the field slope with 30cm wide and 15cm deep drainage channels on all sides. - For existing crop 2nd light hoeing should be followed by fine racking and bed formation to facilitate sprout initiation. - 1st cycle of irrigation @ 690 m³/ha (that includes 550 m³ received through rainfall) using pressurised irrigation system should be applied in 2nd fortnight of August.

Entomology (Agriculture)

Cruciferous crops	<i>Diamond back moth (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 m².
	<i>Cabbage butterfly (Pieris brassicae)</i>	- Hand picking of egg patches and larvae.
	<i>Flea Beetle (Phyllotreta striolata)</i>	- Chlorpyrifos 20EC OR Quinolphos 25EC @1ml/lit. of water - Spray of dimethoate 30 EC @ 1ml/lit or Imidacloprid 17.8 SL @ 0.3ml/litr of water.
Paddy	<i>Snails</i>	- Install screens with 5mm mesh at water inlets to minimise the entry of snails and facilitate hand collection - Herding ducks in the paddy fields can act as biological control. - Draining the fields to expose snails to sun.
	<i>Grasshopper</i>	- Trimming of field bunds. - Removal of weeds.
Maize	<i>Maize stalk borer (Chilo partellus)</i>	- Imidacloprid 17.8 SL @ 0.3ml/litr of water.
	<i>Armyworm (Mythimna separate)</i>	- Whorl application of carbofuran 3G @35kg/ ha

Entomology (Horticulture)

Apple	San Jose scale/ Woolly apple aphid	<u>Need Based</u> If more than 13 SJS crawlers/ cm² of twig or colonies of WAA on terminal shoots are observed, spray any of the following insecticides: - Chlorpyrifos 20 EC @ 100 ml/ 100 liters of water. OR - Quinalphos 25EC @ 100 ml/ 100 liters of water. OR - Thiacloprid 21.7 SC @ 40ml/100 litres of water.OR - Neem oil (1500 ppm) @ 300ml followed by *Lecanicillium lecanii 1.15% WP (1x10⁸ CFU/gm) @ 500 gm. OR - *Metarhizium anisopliae 1.0% WP (1x10⁸ CFU/gm) @ 500 gm after a gap of 4 days. *The bio-insecticide should not be sprayed in areas where the farmers practice sericulture.
European Red Two spotted mite.	Red Mite/Two spotted mite.	<u>Need Based</u> If population is more than 15 mites/ leaf, spray any of the following: - Fenazaquin 10 EC @ 40 ml/ 100 liters of water. OR - Etoxazole 10% SC (110ml). OR - Cyenopyrafen 30 SC @ 30ml/ 100 litres of water
Apple Aphid	Apple Aphid	<i>Survey and Monitoring of the affected orchards:</i> Aphids prefer feeding on succulent shoots or leaves and if 40 percent of those succulent areas are infested, then spray with any one of the following insecticides: - Spray Thiamethoxam 25 WG @ 50g/100 litres of water. OR - Spray Thiacloprid 21.7 SC @ 40ml/100 litres of water. OR - Spray Chlorpyrifos 20 EC OR Quinalphos 25 EC @100 ml/100 litres of water - OR-Neem oil (1500 ppm) @ 300 ml followed by Lacanicillium lecani 1.15% WP (1X10⁸CFU/gm) @ 500gm after a gap of 4 days. Note: ☞ If infestation of aphids persist, then spray can be repeated with another insecticide after a gap of 10 days. ☞ The insecticides should not be mixed with any other plant protection chemical or plant nutrient. Note: Stop spraying of any insecticide/acaricide before 14 days of harvest of apple
Fruit Fly	Fruit Fly	- All the dropped fruits of apple should be collected and buried deep in the soil. - Install traps made from used water bottles/plastic boxes baited with methyl eugenol How to make methyl eugenol baited trap: - 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. - Yellow sticky traps @ 25/ha upto to September. <i>Note: Apply need-based label claim insecticides giving sufficient waiting period.</i>

<i>Hairy caterpillar/ leaf roller</i>	- Collection, removal and destruction of egg masses. - If foliage damage is noticed, Spray Chlorpyrifos 20 EC @ 100 ml/ 100 liters of water.
<i>Stem borer</i>	If adults are observed in the orchard, then spray trees with any one of the insecticide: - - Chlorpyrifos 20EC @ 100 ml/100 litres of water. OR - Quinalphos 25EC @ 100 ml/100 litres of water.
<i>Pin hole borer/shot hole borer</i>	- The holes may be plastered with mixture of Chlorpyrifos 1.5% WP and soil in the ratio of 1:1. - If adults are observed in the orchard, then spray trees with Dimethoate 30 EC @ 100 ml/100 litres of water.
<i>Bark beetle/June beetle/Chaffer beetle.</i>	- If beetles are observed in the orchard feeding on leaves spray: - Chlorpyrifos 20EC @ 100 ml/100 litres of water. OR - Quinalphos 25EC @ 100 ml/100 litres of water. - For immature stages (grubs) in soil, apply Carbofuran 3.0% CG @ 70-100 gm/ tree. OR - Drench the soil with Chlorpyrifos 20EC @ 300 ml/100 liters of water. - Install light traps for monitoring and mass trapping of beetle emergence. Collect and destroy the trapped beetles in insecticide spray solution.
<i>White grub</i>	- If beetles are observed in the orchard, then spray trees with any one of the insecticides: - - Chlorpyrifos 20EC @ 100 ml/100 litres of water. - For immature stages (grubs), apply Carbofuran 3.0% CG @ 70-100 gms/ tree - OR Drench the soil with Chlorpyrifos 20EC @ 3.0 ml/ litre of water
<i>Apple Blotch</i>	- Survey and Monitoring of the affected orchards - Mass awareness about the pest among the farmers -
<i>Leaf miner</i>	- Proper sanitation in the vicinity of the orchard - Procure disease and pest free planting material - Collection of fallen leaves/ fruits/other debris and their subsequent destruction - Scrapping of loose bark for exposing the pupa from tree trunks followed by its destruction - Installation of sticky traps@10m apart for monitoring of moth emergence) - Installation of yellow sticky traps @ 1/10 meters apart - Spray Thiamethoxam 25 WG @ 50g/100 litres of water OR - Spray Flubendiamide 39.35 SC @ 40ml/100 litres of water OR - Spray Chlorantraniliprole 18.5 SC @ 100ml/100 litres of water OR - Spray Thiacloprid 21.7 SC @ 60ml/100 litres of water OR - Spray Lambda cyhalothrin 5%EC @50ml/100litres of water at 15 day interval - OR Spray Thiamethoxam 12.6 + Lambda Cyhalothrin 9.5 ZC @ 50ml/ 100 litres of water OR - Spray Imidacloprid 6 + Lambda Cyhalothrin 4 SL @ 50ml/ 100 litres of water
	Note: - <i>If infestation of blotch leaf miner persists, then spray can be repeated with another insecticide after a gap of 10 days. The insecticides should not be mixed with any other plant protection chemical or plant nutrient.</i> - <i>Change lures and liners for the already installed traps(after every 30 days)</i>
<i>Fruit borer</i>	- Survey monitoring and mass awareness of the pest should be done. - Monitor adult population through pheromone traps@20 traps/ha - Apply Chlorpyrifos 50%EC+Cypermethrin5%EC@125ml/100litres of water OR

Chlorantraniliprole 18.5% SC @100 ml/100 litres of water

Change lures and liners for the already installed traps(after every 30 days)

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|-----------------|-------------|--|
| Pomegranate | Fruit borer | - Collection and destruction of affected and fallen fruits.
- Spray Chlorpyrifos 20 EC @ 100 ml/100 litres of water
- OR Quinalphos 25 EC @ 100 ml/100 litres of water.
- Repeat the insecticidal spray after 15 days if damage is noticed. |
| All fruit crops | Flea beetle | - Spray the crop with Chlorpyrifos 20 EC @100 ml/100 litres of water. |
| Plum | Aphid | - Same as apple aphid. |

Note: In case of heavy rains (within 12 hours of spray) the spray is to be repeated immediately. All sprays are need based. Stop spraying of any insecticide/acaricide before 14 days of harvest of apple.

Vegetables

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|------------------------|---|--|
| Cole crops | Diamond Back Moth/
Cabbage butterfly
Cabbage aphids | - Collect the egg masses, larvae and ensure their destruction if needed spray the foliage with: -
- Chlorpyrifos 20EC @ 100 ml/100 litres of water. OR
- Quinalphos 25EC @ 100 ml/100 litres of water.
- Set up yellow sticky traps @ 10 per ha.
- For cabbage aphids use weekly application of Neem oil @ 5.0 ml/ liter of water.
- In case of severe infestation spray imidacloprid 17.8 SL @ 30 ml/ 100 liters of water. |
| Solanaceous vegetables | Fruit borer | Hand picking of caterpillars and their mechanical destruction in the early stage of infestation.
- Installation of pheromone traps @ 10-12 traps/ha. Lures should be changed after every 15 days.
- Spray Chlorpyrifos 20 EC @ 100 ml/100 litres of water OR - Spray Quinalphos 25 EC @ 100 ml/ 100 litres of water.
- Impact point: ETL for fruit borer is 8-10 moth/night/trap |
| | Aphids | Install yellow sticky traps@10/ha
- Spray Quinalphos 25 EC @100ml/100 litres of water. OR
- Spray Imidacloprid 17.8 SL @ 30ml/100litres of water
- Repeat the sprays after 14 days if damage is noticed |
| | Brinjal Shoot and fruit borer | Regular clipping and destruction of drooped/wilted shoots and infested fruits.
- Moth can be mass trapped by installation of pheromone trap.
- Spray the crop alternately with Spinosad 2.5 SC @ 96ml/100 liters of water OR
- Emamectin benzoate 5 SG @ 40 ml/100 lit. of water OR
- Spray Quinalphos 25EC @ 100 ml/ 100 liters of water.
- Avoid ratoon cropping. |
| Cucurbitaceous crops | Fruit fly | - Installation of methyl Eugenol traps@ 5- 10 per ha.
- Infested fruits and dried leaves should be collected and burnt in deep pits.
- For Oviposition traps: Crush pumpkin 1 kg and add 100 gm jaggery and 10 ml Dimethoate 30 EC and keep in the plot in earthen lids (@ 4-6 per acre). Adults are attracted to the fermenting pumpkin and lay eggs and get killed. Repeat the process 2-3 times in the cropping season. |
| | Aphid | - Management Same as cabbage aphid. |
| Poly House | White fly, Aphids | - Use of sticky traps for effective trapping of whiteflies and aphids
- - Spray Imidacloprid 17.8 SL @ 30 ml/100 liters of water. OR
- - Spray Quinalphos 25 EC @ 100 ml/100 liters of water. |
| All vegetables | Flea beetle | - Spray the crop with Chlorpyrifos 20 EC @ 100 ml in 100 liters of water early morning or late evening hours. |
- Impact Point: The safe waiting period of ten days should be observed after spray before the crop is consumed.**

Rodent
management

Horticulture

If weather is dry, follow the below mentioned practices:

- **Field sanitation:** Removal of left over debris and grasses from orchards to discourage rodents from availability of food and shelter.
- **Reduction in bund size** (upto 30 cm): Reduce the size of bunds or boundaries around the orchards up to 30cm to force the rodents to leave the burrows
- **Burrow Fumigation:** Smoking the burrow with cow dung+Maize straw/maize pith + weeds with the help of burrow fumigator.

Chemical control (Rodent bait schedule) :

- ✓ **Day 1:** Plugging of rodent burrows.
- ✓ **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.
- ✓ **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 rodents. Close all burrows at evening hours.
- ✓ **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.

***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 work together as a community.

For residual rodent population:

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

Note: If treatment has been carried out during July then do not repeat during August.

Apiculture

- ✓ Maintain proper hygiene of the colonies
- ✓ Close all cracks and crevices in the hive so as to prevent entry of the enemies and robber.
- ✓ Protection of colonies from wasp by installing wasp traps or by manual flapping.
- ✓ Provide artificial feeding in the form of sugar syrup(1:1) if needed
- ✓ Keep regular vigil to check robbing.
- ✓ Apply formic acid for mite management @ 5ml/day/colony in vials.
- ✓ Control wax moth by sulphur dusting @1-2 g per frame
- ✓ Migrate bee colonies to suitable areas where bee flora is abundant. For management of ants place the hives stands post on the water filled bowl and clean the bowl regularly

Plant Pathology (Agriculture)

Paddy	<i>Blast/ Brown leaf spot/ Sheath blight</i>	- Avoid the use of sewage or contaminated water for irrigation purposes. - Prevent the movement of irrigation water from diseased or infected fields to healthy fields to minimize disease spread. - Maintain adequate soil moisture and avoid prolonged drying of the field. - Apply recommended doses of nitrogen, phosphorus, and potash as per the prescribed nutrient management schedule. - Adhere strictly to the recommended agronomic and crop management practices. - Regularly remove weeds from the field and adjoining bunds to reduce potential sources of inoculum and alternate hosts. - Upon the appearance of disease symptoms, immediately undertake fungicidal application using any one of the following: Tricyclazole 75 WP @ 6 g per 10 litres of water, or Carbendazim (12%) + Mancozeb (63%) WP @ 25 g per 10 litres of water, or Hexaconazole 5 EC @ 5 ml per 10 litres of water. - Avoid consecutive applications of the same fungicide and adopt fungicide rotation strategies to minimize the risk of resistance development. - Do not repeat the spray of same fungicide.
Maize	<i>Turcicum leaf blight</i>	- Maintain proper field sanitation by removing and destroying infected plant debris and other potential sources of inoculum. - Initiate fungicidal application immediately upon the appearance of disease symptoms using either: - Mancozeb @ 3.0 g per litre of water, or Propiconazole 25 EC @ 1 ml per litre of water. - The first spray should be applied at the onset of disease incidence. Subsequent applications may be repeated at an interval of 10–14 days, depending on disease severity and prevailing environmental conditions.
Common Bean	<i>Fusarium Wilt Rhizoctonia Root rot</i>	- Adopt appropriate cultural practices to minimize the risk of disease development. These include the use of disease-free planting material, crop rotation, destruction of infected plant residues, deep ploughing, maintenance of proper drainage, and recommended plant spacing. - Drench the soil with Carbendazim @ 1 g per litre of water to suppress soil-borne inoculum and reduce disease incidence. - Spray Mancozeb 75 WP @3g/ litre of water
	<i>Anthracnose/ Ascochyta leaf spot</i>	
Moong bean	<i>Wilt, root rot, Blight, Leaf spot</i>	- Ensure proper drainage in the field to prevent water stagnation. - Regularly monitor the crop and promptly remove wilt infected plants. The diseased plant material should be destroyed by burning to prevent further spread of the pathogen. - Apply fungicidal sprays using any one of the following recommendations: Mancozeb 75 WP @ 3 g per litre of water or Carbendazim 50 WP @ 1 g per litre of water. - Fungicide application should be undertaken immediately upon disease

detection and repeated as necessary based on disease incidence and environmental conditions.

<u>Plant Pathology (Horticulture)</u>		
Apple	Scab and other foliar diseases	- Spray at fruit development stage-IV <u>For Alternaria Leaf Blotch and Scab</u> - Zineb 68% + Hexaconazole 4% 72WP (0.1%) or Hexaconazole 5EC (0.05%) or Myclobutanil 10WP (0.07%) or Metiram 55% + Pyraclostrobin 5% 60WG (0.1%) or Pyraclostrobin 12.8% + Boscalid 25.2% WG (0.03%) - <u>For Marssonina Leaf Blotch /Sooty blotch/Flyspeck</u> - Mancozeb 75WP (0.3%) or Ziram 27SC (0.6%) or Propineb 70 WP (0.3%) or Ziram 80WP (0.2%) or Mancozeb 75 WG (0.3%). -Spray at Pre-harvest Stage (For long time storage 25 days before harvest) - Captan 50 WP (0.3%) or Propineb 70 WP (0.3%) or Ziram 80WP (0.2%) or Zineb 75 WP (0.3%).
	Root rot	- 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.
	Collar rot	- Clean the affected collar area and apply Chaubatia or Bordeaux paste. - Drench the soil under tree canopy with Metalaxyl MZ 72WP (0.5%) or Mancozeb 75WP (0.6%) or Copper oxychloride 50 WP (0.6%)
	Foliar fungal disease	- Spray Carbendazim 50WP (0.05%) or Thiophanate Methyl 70WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75 WP (0.25%). Note: Need based sprays in case of stone fruits based on the severity of post-harvest fungal foliar diseases.
Pear	Febrea leaf & fruit spot	- Spray Thiophanate Methyl 70WP (0.05%) or Carbendazim 50WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75 WP (0.25%).
Grapes	Anthraco nose	- Spray with Thiophanate Methyl 70 WP (0.05%) or Carbendazim 50WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75WP (0.25%)
	Powdery mildew	- Spray with Flusilazole 40EC (0.02%) immediately after disease appearance.
	Downy mildew	- Spray crop with Metalaxyl 8% + Mancozeb 64% MZ 72 WP (@ 0.25%).

Impact Points

- ☞ Improve orchard sanitation
- ☞ Ensure proper aeration and drainage in orchards.
- ☞ Do not conduct sprayings during high temperature. Spray be conducted during evening hours.

Vegetables

Tomato, chilli, brinjal & capsicum	Blight and leaf spot	- Spray with Mancozeb 75WP (0.3%) or Hexaconazole 5 EC (0.05%)
	Fruit rot	- Spray with Metalaxyl 8% + Mancozeb 64% MZ 72 WP (0.25%) or Mancozeb 75 WP (0.3%).
	Wilt/root rot	- Drench the soil with Carbendazim 50 WP (0.1%) or Carbendazim 12% + Mancozeb 63% 75 WP (0.5%).

Cucurbits	<i>Powdery</i>	-	Spray Flusilazole 40 EC (0.02%).
Pumpkin,	<i>mildew</i>		
Bottle gourd,	<i>Downy mildew</i>	-	Spray crop with metalaxyl 8% + mancozeb 64% MZ 72 WP (0.25%).
cucumber etc.			

Impact points

- ☞ Do not consume fruits or vegetables treated with pesticides until the recommended waiting is over.
- ☞ Avoid water stagnation
- ☞ Ensure proper support to tomato, beans and cucurbit plants to avoid fruit/leaf contact with soil.
- ☞ Rogue-out wilted/rotted plants from the fields and ensure their safe destruction.

Vegetable Science

Cole crops	<i>Transplanting</i>	- Apply basal dose of manures and fertilizers before transplanting. - Avoid weak and lanky seedlings. - Transplanting should be done preferably during evening hours.
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	Cabbage	Cauliflower	K. Khol	Kale
FYM	10 t/ha	25-30 t/ha	10 t/ha	10 t/ha
N	75 kg/ha	50 kg/ha	62.5 kg/ha	45 kg/ha
P	60 kg/ha	120 kg/ha	60 kg/ha	60 kg/ha
K	60 kg/ha	60 kg/ha	80 kg/ha	60 kg/ha

Turnip,	<i>Sowing</i>	- Prefer line sowing to broadcasting.
Beet, root,	<i>of root</i>	- Sowing should be done preferably on ridges.
Carrot,	<i>crops</i>	- Treat seeds with Captan @ 1.5g per kg of seed.
Radish		

Cucurbits	Pollination - Bottlegourd, cucumber, musk melon may be hand pollinated with fresh pollen wherever pollinators are not sufficient in order to ensure proper fruit set. - Pollination in cucumber must be done in morning hours and in bottlegourd in evening hours. For production on commercial scale bee hives (5-7 per hectare) may be used for successful pollination and high fruit set. - Excessive fertilization especially nitrogen promotes foliage growth at the expense of blossom formation. So fertilizers should be applied as per schedule. - Encourage pollinators by planting companion crops in proximity. - Use pesticides with caution and avoid their use between 9 am to 4 pm when pollinators are active.
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Root Crops, recommended varieties, seed rate and fertilizer requirement

Crop	Recommended varieties	Seed rate/ kanal	Fertilizer requirement kg/ kanal		
			Urea	DAP	MOP
Turnip	Purple Top White globe, Nageen-1	250-300 g	6.0	9.5	5.0
Beet root	Crimson Globe, Detroit Dark Red	500-600 g	6.5	3.0	5.0
Carrot	Early Nantes, Chamman, Local Black, Shalimar Carrot-1	150-175 g	7.0	6.5	5.0
Radish	White Round, Japanese White Long, Red Round	375-500 g	7.0	6.5	5.0

Fruit Science

Harvesting of Fruits

- Apple and Pear* - Fruits should be harvested when they attain proper size and develop at least 70% of the variety colour. Fruits should be harvested by giving upward twist and collect them in baskets to avoid bruises and cuts.
- Put them in cool place
 - Sort and grade the harvested fruits.
 - Staking of heavy fruit laden branches.
- Grapes* - Grapes are harvested when berries in the bunch have attained proper size, colour and sweetness.
- TSS should be > 16 °Brix
 - Keep the fruits under shade and clip-off damaged and diseased berries from bunches.
- Almond* - Almond should be harvested when the hulls begin to separate from the nut.
- Walnut* - Walnut should be harvested when packing tissue of nut turns brown

Late maturing varieties of Peach Plum Apricot: Proper maturity indices should be followed while harvesting the fruit

Impact Points:

- Skilled labour should be engaged for picking the fruit.
- Finger nails of all persons handling fruit should be clipped short to avoid bruising or injury to the fruit with nails.
- Harvested fruits should be put in padded baskets to avoid bruising.
- The exact size, colour and stage of the maturity of the fruit to be picked must be explained to the pickers, when selective picking is desired.
- Picked fruit should be kept in the shade and shifted to the godown as soon as possible to extract field heat.
- Two to three pickings at weekly or fortnightly intervals should be carried out on each tree to enable the poorly colored fruits to develop colour properly.

- Other operations* - Maintain orchard sanitation
- Perform leaf tissue testing in apple.
 - Foliar spray of potassium sulphate (5g/L) can be done for late varieties in apple.
- Nursery Operations* - Collect the bud material from the known mother plant.
- Rootstock must have full sap flow during nursery operations.
- Budding operation* - Perform T-budding in apple, pear and Almond and Patch budding in walnut.
- Irrigate the nursery, if needed.
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Floriculture and Landscape Architechure

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| <i>Bulbous crops</i> | <i>Bulb lifting</i> | - Lifting of Tulip, Hyacinth, oxalis, freesia, fritillaria, Dutch Iris bulbs and storage |
| <i>Cut flowers</i> | <i>Planting/Inter cultural operations</i> | - Planting of plants/bulbs/corms. |
| <i>Gerbera</i> | | - Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management should be ensured. |
| <i>Carnation, Lilium, Gladiolus</i> | | |
| <i>Shrubs</i> | <i>Intercultural operations</i> | - Pruning of shrubs which have completed flowering phase. |
| <i>Edges</i> | | - Hedges/edges should be trimmed regularly. |
| <i>Summer annuals</i> | <i>Raising</i> | - Transplanting |
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Food Science & Technology

Apple & Pear	Harvesting	Apple: Apples of early varieties can be harvested within Starch iodine rating of 3-4 on 6 Point scale. ✓ Do not need long term storage. ✓ Should be kept under refrigeration till consumed to maintain quality and avoid market glut. Pear ✓ At yellowish green skin colour for direct marketing. ✓ Hand picking by expert pickers to avoid harvesting loss. ✓ TSS% = 14-15% and Acidity = 0.20-0.25% ✓ Should be kept under refrigeration till consumed to maintain quality and avoid market glut.
		Precautions: ✓ Harvest during early hours ✓ Harvest by hand picking and avoid beating/shaking the crop. ✓ Use cushioned basket-when-soft surface ✓ Avoid harvesting during rains. ✓ Avoids bruising mechanical damage and microbial infection.
Apricot:	Harvesting	✓ Harvest when surface colour changes from green to yellow i.e ¾ yellowish green ✓ TSS: 10-12 OB ✓ Surplus Apricots can be Osmo-dried, (Dipping in 6% KMS plus 0.1% citric acid solution for 1 hour) converted into pulp and preserved either by addition of class II preservative or by pasteurization. Apricot can also be spray dried to apricot powder for export purposes.
Peach		✓ Surface colour changes from green to yellow. ✓ Shape: fullness of shoulders and suture. ✓ TSS: 10-12 OB
Postharvest management of vegetables On-farm storage of vegetables for few days to avoid market glut. Surplus tomatoes can be converted into tomato puree and tomato sauce. Root crops like onion, garlic, shellat and potato should be properly cured before storing for longer periods. Rub away any dirt and Never wash potatoes, onions, garlic or shellat when you plan to store because this can introduce too much moisture. Curing should be done for 2-3 weeks. Storage of these crops should be well ventilated and low in humidity Value addition of garlic, onion, potato and shellat : Garlic can be processed into garlic paste which can packed properly and preserved up to 10 months. Garlic and onion can be processed into garlic pickle and preserved up to 10 months. Garlic, onion, shellat and potato can also be processed into powder and preserved up to 12 months. Shellat can be fried in ghee and preserved upto 12 months after proper sealing. Drying of surplus vegetables viz brinjal, gourds, tomato till moisture content is reduced to 8-10% .		

Soil Science

1. Leaf Sampling in Apple (15 July – 15 August)

- **Timing & Conditions:** Collect mature, healthy, sun-exposed leaves between **15 July – 15 August**, preferably before applying fertilizer, foliar sprays, pesticides, or irrigation.
- **Sampling Area & Method:**
 - Sample uniform orchard blocks separately based on variety, age, rootstock, tree vigour, soil type, irrigation, and crop load.
 - Select at least **25 representative trees** in a zig-zag or diagonal pattern across **8–40 kanals**.
 - Collect **4–8 leaves per tree** to form a composite sample of **100–200 leaves**.
- **Selection Criteria:**
 - Collect leaves from the middle of current-season terminal shoots from all canopy directions (North, South, East, West), retaining petioles.
 - **Avoid:** Immature, old, shaded, diseased, insect-damaged, dusty, stressed, spray-contaminated leaves, and boundary trees.
- **Handling & Submission:** Place samples in labelled paper bags, protect from heat, sunlight, and moisture, and send quickly to the laboratory.
- **Records:** Record fertilizer, manure, sprays, irrigation method/frequency, soil type, date of last soil test, crop load, symptoms, and yield history (last 2–3 years).

2. Nutrient & Soil Management in Apple

- **Nitrogen Application:** Do **not** apply additional soil nitrogen fertilizers during August. Late nitrogen encourages excessive vegetative growth, delays fruit maturity, reduces colour development, and increases storage disorders.
- **Foliar Sprays:**
 - **Calcium:** Apply Calcium Nitrate (0.5–0.75%) or Calcium Chloride (0.4–0.5%) at 10–15 day intervals to improve firmness, reduce bitter pit, and enhance storage quality.
 - **Potassium:** For heavy crop loads or confirmed deficiency, apply a 1% Potassium Sulphate foliar spray to improve fruit size, colour, and sweetness.
 - **Micronutrients:** Apply Boric Acid (0.1%) or Borax (0.2%) and Magnesium Sulphate (1%) where deficiencies are confirmed. Apply routine zinc or mixed micronutrient sprays only after confirmation through leaf analysis.
- **Moisture & Water Management:** Maintain uniform soil moisture through proper irrigation; avoid both waterlogging and moisture stress.

Advisory for Rice

1. Water Management

- **Depth & Moisture:** Maintain a shallow water layer of **2–5 cm** after establishment in late transplanting (or **3–5 cm** during the August panicle initiation stage); avoid deep continuous flooding.
- **Water Scarcity:** Use alternate wetting and drying where water is scarce, but prevent moisture stress during tillering and panicle initiation to flowering.
- **Drainage:** Maintain bunds, channels, and drainage outlets to prevent nutrient loss, waterlogging, and moisture stress.

2. Nitrogen & Potassium Application

- **Tillering Stage (July):** Apply nitrogen top dressing on moist soil after draining excess water; irrigate lightly afterward. Use split nitrogen applications and neem-coated urea for better efficiency. Avoid application before heavy rain, deep flooding, or immediate irrigation.
- **Panicle Initiation Stage (August):** Apply the final scheduled nitrogen top dressing of **25–30 kg N ha⁻¹** (equivalent to **6 kg urea per Kanal**) on moist soil.
 - **Potassium:** In potassium-deficient fields, apply **20–25 kg K₂O ha⁻¹** (**3.5 kg MOP ha⁻¹**).

3. Zinc & Micronutrient Correction

- **Symptoms:** Watch for zinc deficiency in high-pH, puddled, and continuously submerged soils (stunting, poor tillering, brown spots, leaf bronzing).
- **Application:** Apply Zinc Sulphate after confirmation through soil/plant analysis, or spray **0.5%** Zinc Sulphate during August, repeating after **10–12 days** if necessary.

4. Field Monitoring & Protection

- **Observation:** Inspect fields for yellowing, poor patches, and uneven tillering. Test affected patches separately.
- **Pest & Disease Control:** Monitor regularly for stem borer, leaf folder, and blast disease during the reproductive stage.

Advisory for Vegetables

1. Nitrogen Management

- **Dosing:** Apply nitrogen in split doses during active growth, early flowering, and harvesting stages.
- **Rates (August):**
 - **Fruiting vegetables:** Apply **25–30 kg N ha⁻¹** where top dressing is due.
 - **Cole crops:** Apply **20–30 kg N ha⁻¹** where top dressing is due.
- **Application Rules:** Apply on moist soil followed by light irrigation. Avoid application before rain, under excessive humidity, or near harvest.

2. Potassium & Calcium Management

- **Potassium:** Apply as per soil test during flowering, fruit set, fruit enlargement, curd formation, and root development. Apply via soil or as a **1%** Potassium Sulphate foliar spray to improve fruit size, colour, firmness, disease tolerance, shelf life, and market quality.
- **Calcium:** Apply Calcium Nitrate (**0.5–0.75%**) foliar sprays at **10–15 day intervals** for tomato, chilli, capsicum, and cole crops to prevent blossom-end rot, tip burn, and improve produce quality.

3. Micronutrient Correction & Soil Management

- **Foliar Sprays:** Where deficiencies are observed, apply Magnesium Sulphate (**1%**), Boric Acid (**0.1%**) or Borax (**0.2%**), and Zinc Sulphate (**0.5%**).
 - **Note: Boron supports cauliflower curd and cabbage head development.**
- ✓ **Drainage & Soil:** Maintain uniform soil moisture and ensure effective drainage during periods of frequent rainfall. Base long-term management on soil and plant analysis.

Livestock Production Management

Sheep

- ✓ Fox torches/fire crackers/guard dogs should be carried along to repel any predators especially during night hours.
- ✓ Weight of the animals should be recorded periodically to assess the growth rate.
- ✓ Mixing of male and female animals should be avoided to check indiscriminate breeding.
- ✓ Cleaning and disinfection of paddock at highland pasture should be ensured at regular intervals.
- ✓ 2nd dose of MCC vaccination to ram, weaners and caprine stock (after six months of 1st vaccination).
- ✓ Preparation of culling list to remove surplus/unwanted animals
- ✓ Preparation of breeding plan should be made in consultation with breeding experts

Cattle

- ✓ Ensure cleanliness in and around animal sheds to ward off flies.
- ✓ Ensure washing of udder of milch animals with a mild disinfectant solution (e.g Potassium permanganate) before and after milking to prevent mastitis.
- ✓ Ensure vaccination against Haemorrhagic Septicaemia and Black Quarter
- ✓ Ensure 6-8 hrs of daily grazing to animals if community pastures are available. Grazing should be avoided in orchards which have been sprayed with pesticides, fungicides as these may cause poisoning.
- ✓ Provide Common salt @30g per sheep/per day (15g per calf per day)

❖ **Ration Table thumb rule for dairy cattle**

Lactating animals	Maintenance requirement	Dry roughage	Extra allowance feed pregnancy	Extra allowance feed for milk production
Zebu cattle	1-1.25	4	1.25	1 kg/2.5 litres of milk
Cross bred	2	4-6	1.75	1 kg/2.5 kg of milk
buffaloes	2	0.75	1.75	1 kg/2 kg of milk

❖ **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
Mineral salts	2

* It is advised to conserve surplus green fodders either as hay or silage for winter feeding.

Poultry

- Maintain proper condition of litter material to avoid coccidiosis
- Provide proper ventilation (exhaust fans/windows) in poultry sheds
- Provide clean water and increased Protein, minerals and vitamins in diets during summer
- Provide feed during cool hours of day
- Give F1 or B1 vaccine at 6th day and IBD vaccine at 13/14th day of rearing
- Give electrolyte @30 gram per 10 litter of water daily.

Forestry

Summary: June, July and August are the crucial months in temperate regions for timely management of forestry, agroforestry, medicinal & aromatic plant systems and related. Newly planted saplings should be provided with irrigation, mulching, and staking for better establishment. Weeding, hoeing, and basin preparation around young trees help conserve soil moisture and promote healthy growth. In agroforestry systems, proper irrigation, application of bio-fertilizers, and regular crop management are essential, while orchard-based systems require monitoring of fruit setting and development along with recommended nutrient and plant protection measures. Medicinal and aromatic plants also need proper irrigation and weed management for healthy growth. Timely field management during Summer period ensures better productivity and higher income.

Strategies/ Operations

Strategies, Operations, and Field Management of Forest, Agroforestry, and Medicinal & Aromatic Plant Nurseries

Message/ Impact/ Action points

Provide partial shade to tender seedlings and protect nursery plants from heat stress, strong winds, and grazing animals. Ensure regular morning or evening irrigation to maintain optimum soil moisture and proper drainage to prevent root diseases. Carry out timely weeding, hoeing, and soil loosening to improve aeration and reduce weed competition. Apply organic manures or recommended fertilizers in light doses and regularly monitor nurseries for pests, diseases, and nutrient deficiencies. Repair fencing, irrigation channels, and nursery structures, and maintain records of seedling survival and stock

for future plantation programmes. Proper nursery management during summer months ensures healthy planting material and successful plantations.

Capacity Building in
Forest, Agroforestry
and Medicinal &
Aromatic Plant
Nurseries

Summer are suitable month in our regions for capacity building in forest, agroforestry, medicinal & aromatic plant nurseries and related fields. Farmers and rural youth should be trained through demonstrations and awareness programmes on nursery management, propagation techniques, nutrient management, and eco-friendly pest and disease control. Formation of farmer groups and nursery enterprises, along with training in record keeping and market linkages, can improve quality plant production, generate employment, and promote sustainable land-use systems.



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