



Monthly Workshop for Extension Functionaries

Message for the Month of May

Agronomy

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

For transplanting

- Transplanting may 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) (composite)	Seed rate (kg/ha) (hybrid)	Plant geometry (plant x row, cm)
1	Normal Maize	30	20	60 x 20 70 x 20
2	Sweet Corn	16	10	70 x 20 75 x 20
3	Baby corn	35	30	50 x 20 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⁻¹ 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 1st 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 1st 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 1st 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 1st 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	Sowing	<ul style="list-style-type: none">- Sowing of moong should be done from 15th May to 30th May.- Use 1-1.25 kg seeds for one kanal sowing. Spacing should be maintained 30x10 cm row to row and plant to plant.- Seeds should be inoculated with <i>Rhizobium</i> and PSB culture @ 5-10 gm/kg seed before sowing.- Fields should be well pulverized and leveled before sowing.- Ensure proper moisture for better germination at the time of sowing.- 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.- 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.- Pre-emergence spray of pendimethalin @ 1 kg a.i./ha within 2-3 DAS cane control the weed infestation during early crop stage.
Beans	Sowing	<ul style="list-style-type: none">- Sowing of beans should be completed in first fortnight of May.- 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,- Use 1.25-1.75 kg seeds/kanal for pole type beans with spacing of 60x20 cm row to row and plant to plant.- Rest of the practices are same as of moong.
Cowpea	sowing	<ul style="list-style-type: none">- Sowing of beans should be completed in first fortnight of May.- Use 2 kg seeds/kanal with spacing of 30x10 cm row to row and plant to plant.- Rest of the practices are same as of moong.
Soybean	Sowing	<ul style="list-style-type: none">- Sowing of soybean should be completed in first fortnight of May.- Use 2-2.5 kg seeds/kanal with spacing of 45x10 cm row to row and plant to plant.- Rest of the practices are same as of moong.

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

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
	Mustard saw fly (<i>Athalia proxima lugens</i>)	- Chlorpyrifos 20EC @1ml/lit. of water
	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 ²
Wheat	Cereal Wheat 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
Management of Flea Beetle		Found on different vegetable and fruit crops. - Removal and destruction of <i>Romex</i> (Alternate host)

Impact Points:

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

Note: Spray on need basis.

Entomology (Horticulture)

Fruit crops		
Apple (Pea stage) & other fruit crops	<i>San Jose scale, Woolly apple aphid</i>	<ul style="list-style-type: none"> - Apply Chlorpyrifos 20 EC OR Dimethoate 30 EC @ 100 ml/ 100 liters of water.
	<i>Aphid</i>	- Dimethoate 30 EC @ 100 ml/ 100 liters of water.
	<i>Hairy caterpillars</i>	<ul style="list-style-type: none"> - 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</i>	<ul style="list-style-type: none"> - If adults are observed in the orchard, then spray trees with any one of the insecticides: - Chlorpyriphos 20EC @ 100 ml/100 lit. of water. OR - Quinalphos 25EC @ 100 ml/100 lit. of water.
	<i>Bark beetle/ June beetle</i>	<ul style="list-style-type: none"> - When bark and June beetles are trapped under light spray - Chlorpyriphos 20 EC or Quinalphos 25 EC@ 100 ml/100 litres of water.
	<i>Red mite</i>	<ul style="list-style-type: none"> - <u>Need Based</u> - Apply acaricide when more than 5 mites/leaf are observed: Hexythiazox 5.45 EC (40ml) OR Spiromesifen 22.9SC (40ml) in 100 litres of water.
	<i>Blotch Leaf miner</i>	<ul style="list-style-type: none"> - Survey monitoring and mass awareness of the pest should be done. - Installation of traps (yellow sticky traps @ 1/10 m apart or Pheromone traps @ 1 trap/ ha for monitoring of moth emergence) - After first moth catch in trap; spray Deltamethrin 2.8 EC @ 1ml/ litre of water or Chlorpyrifos 50% + Cypermethrin 5% EC @ 1.25ml/ litre of water at 15 days interval.
	<i>Fruit borer</i>	<ul style="list-style-type: none"> - Survey monitoring and mass awareness of the pest should be done. - Monitor adult population through pheromone traps@20 traps/ha - If adults are noticed then spray Chlorpyrifos 50% EC + Cypermethrin 5% EC @ 125ml/ 100 litres of water OR Chlorpyrifos 20% EC @100ml / 100litres of water OR Chlorantraniliprole 18.5%SC @100ml/100litres of water.
Pomegranate	<i>Fruit borer</i>	<ul style="list-style-type: none"> - Remove and destroy the left over fruits - Spray Dimethoate 30 EC @ 100 ml/ 100 lit. of water.
Plum	<i>Aphid</i>	<ul style="list-style-type: none"> - In case aphid population is high, spray Dimethoate 30EC @ 100 ml/100 litres of water
		Note: In case of heavy rains (within 12 hours of spray) the spray is to be repeated immediately.
Vegetables	<i>Overwintering insects (cut worm, white grubs etc.)</i>	<ul style="list-style-type: none"> - Under heavy infestation apply Carbofuran 3% CG @ 32.5 Kg/ha. at the time of land preparation. - Change sowing time to reduce damage by cutworm. - Put small heaps of grass as artificial shelter to collect and kill caterpillars. - Flood the crop early in the morning to force larvae to come up the water for predation by birds. - In case of severe infestation of the standing crop, drench field with Chlorpyriphos 20 EC @ 3.0 ml/ litre of water. - Use light traps @ 5.0 traps/ha. To trap and kill adults of cut worm and white grub
Cabbage	<i>Diamond Back Moth</i>	<ul style="list-style-type: none"> - Foliar spray of Chlorpyriphos 20EC @ 100 ml/100 lit. of water.
Flowers	<i>Tulip (Grubs)</i>	<ul style="list-style-type: none"> - When 2-3 grub/m² in the soil is recorded; - Apply Carbofuran 3% CG @ 32.5 Kg/ha in between the rows of field OR Drench field either with Chlorpyriphos 20 EC @ 300 ml /100 litres of water or Cypermethrin 10EC @ 100 ml /100 litres of water.
Rodent management	<i>Horticulture</i>	<p>If weather is dry, follow the below mentioned practices:</p> <ul style="list-style-type: none"> - Field Sanitation: Removal of left over debris and grasses from orchards to discourage rodents from availability of food and shelter.

- Reduction in bund size: 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 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 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.

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 ☞ Artificial feeding of sugar syrup @ 1:1 to be continued if weather conditions become unfavourable otherwise not needed.
- ☞ Wasp queens should be killed and their nests should be identified and destroyed.
 - ☞ Raising of new frames by providing comb foundation sheets to healthy colonies.
 - ☞ 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.
 - ☞ Old and unhealthy queens should be replaced by young ones.
 - ☞ Hives should be cleaned properly for pest and disease management.
 - ☞ Keep bee colonies in shade if it is dry and hot.
 - ☞ Division should be done in order to increase the stock. Super should be added to strong colonies.
 - ☞ Five *Apis mellifera* Colonies/ha should be kept on bunds of onion and carrot grown for seed production

Plant Pathology (Horticulture)

A. Fruits

Apple

Scab and other foliar diseases

Spray at Fruit let (Pea size) stage

- 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%).

Spray at Fruit development-I stage

- Mancozeb 75 WP (0.3%) or Zineb 75WP (0.3%) or Captan 50WP (0.3%) or Propineb 70WP (0.3%) or Ziram 80WP (0.2%)

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
	<i>Collar rot</i>	- 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%)
Almond, plum, peach, apricot and cherry	<i>Foliar fungal disease</i>	- Spray Carbendazim 50WP (0.05%) or Thiophanate Methyl 70WP (0.05%) or Dodine 65WP (0.06%).
Pear	<i>Fabrea leaf & 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%).
Grapes	<i>Anthracoese</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.

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 Carbendazim 12% + Mancozeb 63% 75WP (0.5%). - 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 Stemphylium blight</i>	- Spray with Metalaxyl MZ 72 WP (0.25%) - 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. - 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. - Seedlings should be planted with soil ball intact for better establishment.

- Fertilizer schedule for cucurbits on kanal basis

Crop	Urea kg/kanal	DAP kg/kanal	MOP 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
Transplanting of seedlings produced under open conditions

- Thorough field preparation is needed.
- Vigorous seedlings may be transplanted during evening on sunny days.
- Weak and lanky seedlings should be avoided.
- Grow chillies on raised beds/ridges as a prophylactic measure to avoid wilt.

Fertilizers schedule for Solonaceous vegetables on kanal basis:

Crop	Urea (kg/ kanal)	DAP (kg/kanal)	MOP (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

Potato
Earthing up

- First earthing up to be done.
- Apply top dose of urea.
- Pinching of flowers should be done. This adds to the bulking of potato.

Cole and root crops
Seed production

- Apply irrigation as soon as possible.
- Proper staking to be done in seed crops.
- Start harvesting when 75-80% pods change colour from green to straw yellow.
- Heap up the harvested material at protected places for about a week for curing.
- Thrashing should be done by beating the lot on clean cemented floor.
- Dry seeds under shade so as to bring down moisture level.
- Clean the seed, remove dirt, dust and shrivelled seed.

Floriculture

Spring flowering Annuals/ bulbous crops
Weeding/ top dressing and inter-cultural operation

- Weeding/top dressing of Spring flowering annuals like Pansy, California poppy, Candy tuft, Verbena, Sweet pea, Sweet Foliar etc.
- Tulip, Hyacinth, oxalis, freesia, fritillaria, Dutch Iris etc
- Foliar application of micronutrients/growth retardants after flowering is over which will enhance propagation ratio.

Cut flowers
Gerbera
Carnation,
Lilium,
Gladiolus
Planting/ Inter cultural operations

- Planting of plants/bulbs/corms.
- Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management should be ensured.

Turf grasses
Raising

- Raising through different methods like seeds, dibbling, turfing etc

Shrubs	<i>Intercultural</i>	- Pruning of shrubs which have completed flowering phase.
Edges	<i>operations</i>	- Hedges/edges should be trimmed regularly.
summer annuals	<i>Nursery raising</i>	- Nursery raising of marigold, zinnia salvia etc.

Fruit Science

Orchard Management

Fertilization of Trees	- Under rainfed conditions apply 2 nd half dose of N and under irrigated conditions apply 2 nd half dose of N and K three weeks after fruit set. - Spray Solubor @1g per litre of water at pre-bloom stage in grapes. - Over-vigorous apple and pear trees can be ring-barked. Heavy crops of blossom can also be thinned to reduce the number of fruits that form with the aim of encouraging more even ripening, better fruit quality and reduce problems with biennial bearing.
Mulching (Particularly under Karewa Conditions)	- Mulching with green grass or straw or black polythene so as to conserve moisture. and suppress weed growth around the tree basin.
Orchard Sanitation	- Scrap lichens and dead bark from trees with bark scrapper as these harbour different insect pests preferably after rains. - Remove suckers and water sprouts. - Control weeds to prevent them competing for moisture and nutrients. Hoe regularly between rows on hot days to make sure the weeds dry up.
Nursery Management	- De-shooting of budded/grafted plants. - Hoeing and weeding of nursery beds.
White washing	- White washing of tree trunks with - Hydrated lime = 5 kg - Copper Sulphate = 310 gram - Water = 100 litre - Keep stone fruits well watered during fruit set and fruit development, harvest rain water where ever possible. - Place net on soft fruits as they begin to ripen. - Shorten leaders and side shoots on over-vigorous well-trained apples and pears, to weaken their growth and to divert their energy for fruit production rather than shoot growth
Cherry and Strawberry	- Harvesting of early varieties of cherry (Awal No. and Makhmali) and strawberry by adopting maturity indices. - Cover the cherry plants with antihail nets (when there is colour change in cherry) to prevent from hail and bird damage.

Soil Science

<i>Application of 2nd dose of fertilizers in Fruit Orchards</i>	It is recommended that 2 nd dose of fertilizers Comprising of 1/3 rd doze of Urea & 1/2 nd doze of MOP should be applied to the fruit trees when fruit is of peanut size, probably 21days 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.
<i>Application of Calcium</i>	It is advisable to conduct foliar spray of CaCl ₂ @ 3gms/litre of water at peanut stage. Where ever, deficiency of calcium has been observed.
<i>Application of Boron</i>	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.

Food Science & Technology

Fresh Strawberry

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

Livestock Production Management

Sheep	<ul style="list-style-type: none">- Ensure vaccination against sheep/goat pox to adult ovine/caprine 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 atleast 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.
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- 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

Animal	Concentrates	Greens
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

Sd/
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