Monthly Workshop for Capacity Building of Extension Functionaries
Message for the Month of September

Agronomy

S. No. Crop	*Operation/ Diseases/pests*	*Message/Impact points*
Paddy (Grain filling/ maturity)	*Weed management*	- Rouging should be done at dough stage of crop to remove the ear heads of *Echinochloa* (hama) and off type plants for quality produce.
	Water management	- Maintain thin film of water up to dough stage or adopt alternate wetting and drying. - Completely drain out water before 15 days of harvesting or after advanced dough stage.
	Harvesting / threshing	- Crop should be harvested at physiological maturity (when panicles turn to yellow in colour). - Harvesting may be done manually by sickle or mechanically by reaper/ combine if available to save the time and labour. - Binding and heaping should be done 2-3 days after harvesting. - Threshing should be done either manually or use power paddy thresher to save time and labour. - After threshing grain should be cleaned and sundried up to 12% moisture level before storage. - Paddy straw also be sundried properly for cattle feed before storage.
Maize (Grain filling / Maturity stage)	*Water management*	- Most of the maize area is rainfed. Avoid moisture stress if possible in irrigated areas during grain filling stage.
	Harvesting / shelling	- For selling of green cob harvest at dough stage. - For grain production crop should be harvested at physiological maturity when cob sheath (husk) turns yellowish brown in colour. - After picking of all matured cobs, crop should be harvested manually by sickle and properly sundry for cattle feed. - After picking of cob remove cob sheath and properly sundry before shelling. - Shelling can be done by manual sheller or mechanical sheller to save time and labour. - Before storage grains properly sundry up to 12% moisture level.
Sweet corn	*Picking/ Harvesting*	- Sweet corn cob should be harvested at dough stage. - Fresh cob should sell in local market or preserve and sell after processing / canning. - After picking of cob, crop should be harvested as green fodder or for making silage for cattle feed in winter.

Baby corn	*Picking/ Harvesting*	- Baby corn can be picked at 2-3 days after silk emergence. - If new cob formation is stopped after picking of baby corn then plants may be harvested as green fodder or for making silage for cattle feed in winter.
Kharif pulses (Seed development / maturity)	*Water management* *Harvesting/ picking*	- If irrigation facility is available then avoid moisture stress at seed development stage. - Determinate types of crop should be harvested as whole when more than 80% pods are matured. - Harvesting should be done at morning hours to avoid shattering. - Indeterminate types of crop need picking. - Mature pods should be picked during morning hours to avoid shattering. - Harvested crops or pods sundry and threshed by beating through sticks and seeds should be cleaned by winnowing. - After cleaning of seeds should be properly sundry before storage.
Rabi crops		- Arrange inputs for *rabi* crops

Entomology (Agriculture)

Maize	*Maize Stalk borer*	- Imidacloprid 17.8 SL @ 0.3ml/litre of water
	Cut worm (Agrotis ipsilon)	- Drenching with Chloropyriphos 20EC @2ml/lit. of water or Metarhizium anisopliae @ 10 gm/L of water - Flooding to expose larvae to birds (except chilli)
	Army warm Mythemna separata	- Quinalphos 25EC@ 1ml/lit of water - Clean cultivation of grasses to reduce the risk of population buildup of the pest

Impact Points:

- Spray should be carried out during early morning or late evening.
- Spray on need basis

Entomology (Horticulture)

Apple (Fruit Development -IV stage)	*San-Jose scale, Woolly apple aphid*	- Removal of infested twigs and leaves. Need Based - If more than 10 crawlers/ $cm^2$of SJS or 1-2 colonies of WAA on terminal shoots are observed, spray any one of the following Insecticide **Need Based**: - Chlorpyriphos 20 EC **Or** Quinalphos 25EC @ 100 ml/ 100 liters of water.
	European Red mite/Two spotted mite.	**Need Based** - If population is more than 10 mites/ leaf, spray any one of the following acaricides. - Fenazaquin 10 EC @ 40 ml/ 100 liters of water. **OR** - Cyanopyrafen 30SC @ 30ml/100 litres of water. **OR** - Etoxazole 10% SC @ 110ml/100 litres of water
	Apple Aphids	- Survey and Monitoring of the affected orchards. - 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 Thiacloprid 21.7 SC @ 40ml/100 litres of water - 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/100 lit of water after a gap of 4 days.
Hairy caterpillar/ Leaf roller.	- Collection, removal and destruction of egg masses. - If foliage damage is noticed, spray Chlorpyriphos 20 EC @ 100 ml/100 litres of water.
Stem borer	If adults are observed in the orchard, then spray trees with any one of the insecticide: - - Chlorpyriphos 20EC @ 100 ml/100 litres of water **OR** - Quinalphos 25EC @ 100 ml/100 litres of water. - For the management of grubs inside the trunk: - Clean the holes and plug it with cotton impregnated Chlorpyriphos 20 EC (2ml per litre of water) **or** apply petrol plugging **or** naphthalene balls @ 1 ball in each hole and seal with mud plaster.
Pin hole borer/shot hole borer	- The holes on trunk may be plastered with mixture of Chlorpyriphos 1.5% WP and soil in the ratio of 1:1. - If adults are observed in the orchard, then spray trees with Chlorpyriphos 30 EC @ 100 ml/100 litres of water.
Bark beetle/June beetle/ Chaffer beetle.	If beetles are observed in the orchard feeding on leaves spray: - - Chlorpyriphos 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 Chlorpyriphos 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.
White grub	If beetles are observed in the orchard, then spray trees with any one of the insecticides: - - Chlorpyriphos 20EC @ 100 ml/100 litres of water. - For immature stages (grubs), apply Carbofuran 3.0% CG @ 70-100 gm/ tree **OR** - Drench the soil with Chlorpyriphos 20EC @ 3.0 ml/ litre of water
Apple Blotch Leaf miner	- Survey and Monitoring of the affected orchards - Mass awareness about the pest among the farmers - 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 Imidacloprid 17.8 SL @ 30ml/100 litres of water OR - Thiamethoxam 12.6 + Lambda Cyhalothrin 9.5 ZC @ 50ml/ 100 litres of water OR - Imidacloprid 6 + Lambda Cyhalothrin 4 SL @ 50ml/ 100 litres of water.

Note:

- *If infestation of blotch leaf miner persists, then spray can be repeated with another insecticide after a gap of 10 days.*

	Fruit borer	- Survey monitoring and mass awareness of the pest should be done. - Monitor adult population through pheromone traps@20 traps/ha. - Collect dropped fruits and destroy. Use trunk bands - Apply Chlorpyriphos 50%EC+Cypermethrin5%EC@125ml/100litres of water. (Need **based**) **OR** - Chlorantraniliprole 18.5% SC @100 ml/100 litres of water. - Change lures and liners for the already installed traps(after every 30 days).
Pomegranate	*Fruit borer*	- Collection and destruction of affected and fallen fruits. - Chlorpyriphos 20EC @ 100 ml/ 100 litres of water **OR** - Spray Quinalphos 25EC 100 ml/100 litres of water. - If need arises(presence of live holes) one more insecticide can be sprayed in the first fortnight of September
All fruits	*Flea beetle*	- Spray the crop with Chlorpyriphos @100 ml/100 litres of water.
Plum	*Aphid*	- Same as Apple aphid.

Note: *All sprays are need based. The insecticides should not be mixed with any other plant protection chemical or plant nutrient. In case of heavy rains (within 12 hours of spray) the spray is to be repeated immediately. Stop spraying of any insecticide/acaricides before 14 days of harvest of apple.*

Vegetables -

Cole crops	*Diamond Backmoth/ Cabbage butterfly*	- Collect the egg masses, larvae and ensure their destruction if needed spray the foliage with: - - Chlorpyriphos 20EC @ 100 ml/100 litres of water. - **OR** Quinalphos 25EC @ 100 ml/100 litres of water.
	Cabbage Aphid	- Set up yellow sticky traps @ 10 per ha - For cabbage aphids use weekly application of Neem oil 1500 ppm @ 5.0 ml/ liter of water. - In case of severe infestation spray Imidacloprid 17.8 SL @ 30 ml/ 100 liters of water.
Solanaceous vegetables/ kale	*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. - Spay Imidacloprid 17.8 SL @ 30 ml/100 litres of water

		- **OR** Spray Chlorpyriphos 20EC @ 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 Chlorpyriphos 20EC @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 fruit and shoot borer	- Regular clipping and destruction of drooped/wilted shoots and infested fruits. - Moths can be mass trapped by installation of pheromone trap. - Avoid ratoon cropping. - Spay the crop alternately with Spinosad 2.5 SC @ 96ml/100 liters of water. - **OR** Spray Emamectin Benzoate 5 SG @ 40 ml/100 litres of water - **OR** Spray Quinalphos 25EC @ 100 ml/ 100 liters of water.
Cucurbitaceous crops	*Fruit fly*	- Installation of methyl Eugenol traps@ 5- 10 per ha. Lure and liner should be changed after every 15 days. - Infested fruits and dried leaves should be collected and burnt in deep pits. - Repeat the process 2-3 times in the cropping season. - **For Oviposition trap**: - Crush pumpkin 1 kg and add 100 gm jaggery and 10 ml Chlorpyriphos 20EC 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.
Polyhouse	*White fly*	- Use of sticky traps for effective trapping of whiteflies - Spray Imidacloprid 17.8 SL @ 30 ml/100 liters of water. - **OR** Spray Chlorpyriphos 20EC @ 100 ml/100 liters of water.
All vegetables	*Flea beetle*	- Spray the crop with Chlorpyriphos 20 EC @ 100 ml in 100 liters of water at early morning/evening hours.
Rabi vegetables (Carrot, spinach & kale)	*Overwintering Lepidopteran pests*	- Deep summer ploughing during day time for predation by birds. During preparation of land apply Carbofuran 3G@ 32.5 Kg/ ha.

Note: *The safe waiting period of ten days should be observed after spray before the crop is consumed. All sprays are need based.*

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:** 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

<u>Chemical control</u> (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 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 (0.25% BC) @ 10- 15 g per burrow to be placed inside the live burrows.

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

Apiculture

- ☞ Maintain proper hygiene of bee 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.
- ☞ Shift the colonies to areaswhere*Plectranthusrogusus* (solai) is available.
- ☞ For management of ants place the hive stands on the water filled bowl and clean the bowl regularly.

Plant Pathology (Agriculture)

Paddy	*Blast/ Brown leaf spot/ Sheath blight*	- Strictly follow recommended agronomic and water management practices until harvest. - Ensure proper drainage and aeration of the crop. - Avoid late and excessive application of nitrogenous fertilizers. - Keep fields and bunds free from weeds and remove severely infected plants wherever possible. - Avoid unnecessary chemical treatment at the pre-harvest stage and observe the prescribed waiting period wherever any pesticide has already been applied. - Avoid delayed harvesting to minimize lodging, grain sprouting and disease deterioration.
Common Bean	*Angular leaf spot/ Anthracnose*	- Spray Carbendazim 50 WP @ 0.05% or Mancozeb 75 WP @ 0.25%

	Bean Rust	- Spray Propiconazole 25 EC @ 0.1%.
Maize	*Turcicum leaf blight*	- Maintain good field sanitation and aeration and avoid excessive moisture in the field. - Do not allow susceptible collateral hosts/weeds such as Sorghum bicolor and Sorghum halepense to persist in or around fields. - Stop irrigation about 7–10 days before harvest, provided crop and soil conditions permit. - Harvest promptly at maturity to minimize lodging and field exposure to disease and weather-related deterioration. - Harvest when grain moisture is around 20–25%, followed by thorough drying. - For safe storage, dry maize grain to approximately 12–13% moisture.

Plant Pathology (Horticulture)

A Fruit

Apple	*Scab and other foliar diseases*	**Spray at Pre-Harvest Stage (25 days before harvest) for long time storage** - Spray with 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 Bordeux 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%).
	Canker	- Scrap the affected bark of trunks and limbs, and apply Bordeaux or Chaubatia paste on pruned/scarified area/ wound.
Almond, plum, peach, apricot and cherry	Foliar fungal disease	**Need based post-harvest spray if disease severity is high** - Spray with Carbendazim 50WP (0.05%) or Thiophanate Methyl 70WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75 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.

B 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, Pumpkin, Bottle, gouard, Cucumber etc.	*Angular leaf spot*	- Spray the crop with Streptocycline (0.02%).
	Powdery mildew	- Spray Flusilazole 40 EC (0.02%).

Downy mildew - Spray crop with metalaxyl 8% + mancozeb 64% MZ 72 WP (0.25%).

Impact points

- ☞ Avoid water stagnation
- ☞ Improve orchard sanitation
- ☞ 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.
- ☞ Ensure proper aeration and drainage in orchards.
- ☞ Do not conduct sprayings during high temperature. Spray be conducted during evening hours.
- ☞ Avoid consumption of fruits and vegetables immediately after pesticide application. Always follow the pre-harvest interval (PHI) of the pesticide used.

Vegetable Science

		Crop	Varieties	Seed rate/ kanal
Leafy vegetables	*Sowing*	Spinach	Shalimar Green,	250-300
			Prickly Seeded	500-600
		Fenugreek	Pusa Early Bunching, Kasuri Methi	1-1.25 kg

Onion *Sowing*
- Variety recommended are Red Globe and Yellow Globe @375-500 g/Kanal.
- Seeds to be sown in well prepared raised nursery beds.

Impact Points:

- ✓ Use only fresh seeds for assured germination.
- ✓ Deep sowing of onion seeds should be avoided.

Cole Crops
- Transplanting of cole crops may be continued.

Cucurbits *Harvesting*
- Harvest pumpkins at mature stage
- Store fruits in cool, dry and well ventilated rooms.

Impact Points:

- Harvest the fruits along with 5 cm fruit stalk to increase shelf life.

Chillies, Capsicum, Tomato, Cucurbits *Seed production*
- Harvest fully ripe fruits in chillies and capsicum.
- Scoop out seed of capsicum and dry to moisture content of 8% or less.
- Dry the red ripe fruits of chilli for better seed extraction.
- Seeds are extracted in tomato either by fermentation or acid treatment.
- Dry seeds to a moisture content of 8% or less.
- In cucumber and bitter gourd mature and ripe fruits should be harvested periodically for seed extraction.

Maturity indication for seed extraction:

Capsicum:

Nishat -1 - Yellow Colour

California Wonder – Scarlet Red Colour

Fertilizer Recommendation

Crop	Fertilizer Dose			
	FYM q/kanal	**Urea Kg/kanal**	**DAP Kg/kanal**	**MOP Kg/kanal**
Spinach	1.25-1.5	6.5	--	--
Methi	0.5-0.75	6.5	--	--
Onion	1.0-1.5	7.5	8.75	5.0

Impact Points:

- ✓ In spinach and methi apply entire FYM, DAP, MOP and half Urea before transplanting and remaining half urea when seedlings are established.
- ✓ In case of onion apply entire FYM, DAP, MOP and half Urea before transplanting and remaining half urea when seedlings are established.

Fruit Science

Fruit Harvesting

Apple

Varieties ready for harvesting include *Red Gold, Quince Apple/Queen Apple, Red Delicious* (in plains), *Golden Delicious, Royal Delicious, Scarlet Siberian, King Pippin, Lal Ambri, Super Chief, King of Pippin, American Apirouge, Fuji, Granny Smith.*

- ✓ Fruits must be harvested only after ensuring that they have attained characteristic colour of skin, size, flesh and seed colour. Mature fruits generally tend to hold less tightly to trees and as such detach easily.
- ✓ In case of apples, random samples should be subjected to starch-iodine test and starch rating should be from 2-2.5 for cold store and 3-3.5 for table purpose on 1-6 rating scale.
- ✓ In apples, fruit firmness tests should be done with the help of pressure tester and fruit pressure should range between 15 to 17 lbs/sq inch.
- ✓ Make sure that fruits do not get any bruises or wound while harvesting.

Pear

- Varieties ready for harvesting include Fertility, Chinese Sandy Pear, Vicar of Winkfield(Satarwati Kalan), Buerre Hardy.

Walnut

- ✓ Harvesting should be done only after ensuring that packing tissue of the nuts has turned brown and hull removal is easy.
- ✓ Walnuts can be harvested one week before expected date of harvest if sprayed with ethephon 2000 ppm. This will hasten the dehiscence process and hulls obtained shall be clear without dark spots.

Chestnut & Hazel nuts

- ✓ The burrs begin to dehisce between mid-September and early October. Chestnuts should be picked up daily during the harvest season to minimize fungal infection and growth.
- ✓ Harvest hazelnuts when husks begin to yellow, but before they start dropping.

Nursery Operations

- ✓ Carry budding operations in pome fruits.
- ✓ Irrigate nursery areas wherever needed to get adequate sap flow in the rootstock.

Precautions during harvesting

- ✓ Skilled labour should be engaged for picking the fruit.
- ✓ For every two pickers 1 person should be deployed to collect the field basket.
- ✓ There should be at least two baskets for each picker.
- ✓ Finger nails of all persons handling fruit should be clipped short to avoid bruising or injury to the fruit with nails.
- ✓ 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 coloured or small sized fruits to develop to a marketable condition.

Food Sciences & Technology

Apple ***Harvesting***
- Apples of early varieties can be harvested within Starch iodine rating of 3-4 on 6 Point scale.
- Do not need long term CA storage but should be kept under refrigeration till consumed to maintain quality and avoid market glut.

Pear ***Harvesting***
- 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.

Postharvest management of Walnuts
- The division of Food Science and Technology has standardized the post-harvest spray of 0.3% ethephon for hull dehiscence of green walnuts. The spray loosens the hull of green walnuts within 4 days.
- The division of Food Science and Technology has developed Walnut dehuller-cum-washer (Capacity = 430 Kg/hr Efficiency = 96.60%).
- The division of Food Science and Technology has standardized the bleaching process for walnuts. Use of 2% sodium hypochlorite solution in bleacher-cum-washer for seven minutes removes the shell stains and thus improves the shell appearance.
- Solar tunnel drying being a low cost technology can be a promising option for walnut drying at grower's level, whereas on industrial level cabinet drying can be the best option.
- Vacuum Packaging of Kernels after antioxidant in 100 grams to 20 kgs packs is recommended for quality maintenance during long duration storage under commercial conditions.

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.
- Drying of surplus vegetables viz brinjal, gourds, tomato till moisture content is reduced to 8-10% using solar drier.

Post-harvest handling of Red Chilli.
- Red chillies should be harvested at full ripe stage in the morning after dew is evaporated and subjected for drying along with petiole.
- Solar tunnel drying is recommended for drying of chillies because it speeds the process of drying, maintains hygiene and prevents the loss of volatile nutrients viz capsanthin, ascorbic acid etc.
- If drying is done in open, then the chillies should be taken off before dew.
- Drying is continued till the moisture content is reduced to 10-12 %.
- After drying the petiole should be detached. Seeds fall off automatically and whole chillies should be packed in airtight bags to prevent water absorption.
- Chillies can also be converted into powder using a grinder and then packed in airtight container to avoid loss of volatile compounds.
- Value added products that can be developed from red chillies is paste.

Floriculture and Landscape Architecture

Bulbous crops	*Bulb lifting/ preperation for planting*	- Lifting of Lilium and storage - Preparing land for cultivation of bulbous plants viz. Tulip, Hyacinth, Dutch Iris, Ranunculus, Freesia, Fritillaria, Oxalis, Muskari, Anemones, Daffodils, Allium, Crocus, Chinodoxa, Sparaxix etc.
Cut flowers Gerbera Carnation, Lilium, Gladiolus	*Inter cultural operations*	- Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management should be ensured.
Shrubs	*Intercultural operations*	- Pruning of shrubs which have completed flowering phase.
Edges		- Hedges/edges should be trimmed regularly.
Winter annuals	*raising*	- Raising of winter season annuals like Pansy, California Poppy, Verbena etc

Livestock Production Management

Sheep

- Cleaning and sanitization of sheds at home during 1st week should be completed
- Downward migration of livestock from highland pastures after 1st week.
- Shearing of sheep (autumn clip) from 2nd week should be done.
- Ectoparacidal dipping 5-7 days after shearing should be done.
- Proper anthelmintic dosing (according to veterinarian) before breeding should be done.
- Inspection & marking of ram and ewes (maiden ewes body weight > 28 Kg) before breeding.
- 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.

Ration Table

Category	Concentrates	Greens
Cow (15litre milk/day)	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
Mineral salts	2

Poultry/Chicken

- Apply proper windshield to poultry houses during gusty winds to avoid any untoward damage either to birds or to inanimate things.
- Change old damped litter with fresh litter to avoid coccidiosis outbreak due to present prevailing hot and humid conditions.
- Provide proper ventilation (exhaust fans /windows) in poultry sheds to avoid heat stress
- Offer plenty of clean and fresh water to the birds daily for optimum rehydration.
- Apply wet gunny bags at windows and door of poultry houses (at half-length).
- Give F1 or B1 vaccine at 6th day and IBD vaccine at 13/14th day of rearing.
- Continue to use electrolyte @ 30 gram per 10 litter of water daily.
- Check the colour and consistency of droppings and keep in touch with local vets for advice

Forestry

September is an important month for **nursery management, plantation establishment, seed collection, forest protection, and post-monsoon operations**. The following activities may be undertaken:

1. **Nursery Management**
   - Removal of weeds and unwanted vegetation from nursery beds.
   - Light hoeing and soil loosening around seedlings.
   - Monitoring seedling growth, mortality and general health.
   - Pest and disease surveillance and need-based management.
   - Gradual hardening of seedlings by regulating irrigation and shade.
2. **Seed Collection & Processing**
   - Identify and collect **mature seeds/fruits** of suitable indigenous and economically important tree species.
   - Record collection date, location, mother-tree information and seed characteristics.
   - Clean, process, dry and properly label collected seeds.
   - Conduct seed viability and germination tests where required.
   - Begin preparation of seeds for storage and future nursery production.
3. **Plantation & Afforestation**
   - Complete remaining **monsoon plantation activities** wherever suitable soil moisture is available.
   - Replace dead and damaged seedlings in established plantations.
   - Maintain basins around newly planted seedlings for moisture conservation.
4. **Forest Protection**
   - Conduct regular inspection of plantations and forest areas.
   - Monitor incidence of insect pests, fungal diseases and other biotic damage.
   - Inspect plantations for grazing, browsing, firewood collection and other disturbances.
   - Maintain fire lines and remove excessive dry biomass where appropriate in preparation for the coming dry season.
5. **Agroforestry & Farm Forestry**
   - Assess survival and growth of trees planted during the monsoon.
   - Undertake gap filling and intercultural operations.
   - Manage tree–crop competition through appropriate pruning and weeding.
   - Guide farmers on suitable tree species and agroforestry models.
6. **Biodiversity & Conservation**
   - Monitor regeneration of native tree and shrub species.
   - Record Phenological observations such as flowering, fruiting and seed maturation.
   - Collect and conserve germplasm of priority forest and medicinal plant species.

7. **Monitoring & Documentation**

- Update nursery stock registers and plantation records.
- Record survival percentage and growth performance of plantations.
- Document seed collection, germination, pest/disease incidence and mortality.
- Prepare **post-monsoon plantation and nursery status reports**.

Priority for September: *seed collection and processing, nursery hardening, gap filling, post-monsoon plantation assessment, weed management, forest protection and documentation*

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