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

Agronomy

Crop	*Operation/ Diseases/pests*	*Message/Impact points*
Rabi Crops		
Wheat	Field preparation / Sowing	- Recommended varieties are Shalimar Wheat-1, Shalimar Wheat-1, VL-738 and HS-240. - After harvesting of previous crop, ensure proper moisture by pre-sowing irrigation wherever required. Field should be irrigated and ploughed at proper moisture condition. After 2-3 ploughings, one planking is desirable. - For wheat, 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 at the time of last ploughing and then level the land by planking before seed sowing. - For better germination and good establishment of wheat crop and its timely maturity, sowing should be completed between 10th to 20th October. - Sowing should be done in rows keeping row to row distance of 23 cm and at a depth of 4-5cm to ensure proper germination. - Seed rate of 100 kg/ha is recommended. However, in case of delayed sowing up to last week of October seed rate may be increased by 20 %.
Brown Sarson	Field preparation / Sowing	- Recommended varieties are Shalimar Brown Sarson-1, Shalimar Brown Sarson-2, Shalimar Brown Sarson-3. - Low productivity of brown sarson in the Valley is due to poor preparation of land. This results in poor germination of crop and ultimately low yield. So it is essential that after harvesting paddy, field be ploughed two to three times followed by clod breaking. Moisture deficient fields should be first irrigated and then prepared for sowing of oil seed crop. - Apply well decomposed compost or FYM uniformly @ 10-15 t/ha and should be incorporated in the soil at the time of land preparation. Application of vermicompost @ 2.5 t /ha will replace 5 t FYM/ha and 25% NPK from recommended dose of fertilizers. - For brown sarson urea @ 2.2 kg/kanal, DAP @ 5.5 kg/kanal, MOP 3.35 kg/kanal, Gypsum @ 6.25-7.5 kg/kanal and Borex @ 0.5 kg/kanal should be applied as basal dose before sowing of seeds. - Pre-emergence application of pendemethalin @ 1 kg a.i./ha within 2-3 Days After Sowing. - Pre-sowing irrigation for quick germination of crop is desirable where soil moisture is low. - Seed should be sown in first fortnight of October. Delay in sowing results in poor yield.

		- Seed should be treated with Captan @ 2-3 g per kg of seed for control of seed borne diseases. - Seed is required 7.5 kg/ha for line sowing, or 10-15 kg/ha for broadcasting. - A spacing of 30 cm row to row x 10 cm plant to plant is recommended.
Rabi Pulses		
Field Pea	Field preparation / Sowing	- Recommended varieties are Shalimar Pea-1, Rachna, Prakash, HUDP-15, VL-45 and HFP-715. - For pea cultivation 2-3 ploughings accompanied by planking will be sufficient to obtain desired seed bed. - Apply well decomposed compost or FYM uniformly @ 10-15 t/ha and should be incorporated in the soil at the time of land preparation. Application of vermicompost @ 2.5 t /ha will replace 5 t FYM/ha and 25% NPK from recommended dose of fertilizers. - For pea, urea @ 0.75 kg/kanal, DAP @ 6.5 kg/kanal, and MOP 3.4 kg/kanal should be applied as basal dose at the time of last ploughing and then level the land by planking before seed sowing. - Seed can be sown from 15th October to ending November. - Seed rate of 60 to 65 kg /ha is recommended. In case of bold seeded varieties, seed rate can be increased up to 100 kg/ha. - Make 10% gur/jagary solution and mix *Rhizobium* spp. @ 5-10 gm /kg seed in the solution. - Do not treat seeds with fungicides in case seeds are being inoculated. - Line sowing with the help of seed drill or opening the furrows at 30 cm apart. The seed should be placed 5 to 6 Cm deep in the soil. - Pre-emergence spray of pendimethalin @ 1 kg a.i./ha at 2-3 DAS.
Lentil		- Arrange input for lentil sowing
Oat fodder	Field preparation / Sowing	- Recommended varieties are Sabzar, Shalimar Fodder Oats-1 - Oats requires a well prepared and firm field for good germination of seed. Usually two ploughings followed by single harrowing should be given to bring the soil to a fine tilth. - Apply well decomposed compost or FYM uniformly @ 10-15 t/ha and should be incorporated in the soil at the time of land preparation. Application of vermicompost @ 2.5 t /ha will replace 5 t FYM/ha and 25% NPK from recommended dose of fertilizers. - In oat fodder the urea @ 5.6 kg/kanal, DAP @ 6.5 kg/kanal and MOP 3.4 kg/kanal should be applied as basal dose at the time of last ploughing and then level the land by planking before seed sowing. - Sowing of seed should be done up to 15th October. - Oat seed required 100 kg/ha (when sown as sole), Seed should be sown in lines 20 cm apart.

Entomology (Horticulture)

Apple	*San Jose Scale and Woolly apple aphid*	- Remove twigs infested with SJS and WAA during pruning and dispose them away from the orchards. Apply Chaubatia paste on cut areas.
	Mites	**Need based (Post harvest)** - If population is more than 20 mites/leaf, then spray Fenazaquin 10 EC @ 40 ml/100 litres of water

	Apple fruit borer	- Maintain good sanitation in the infested orchards, all the dropped and infested fruits should be collected and buried deep in the soil. - Burlapping practice should be followed and the overwintering stages should be destroyed along with the burlap.
	Apple stem borer	- Heavily infested branches, twigs and completely dried trees should be burnt from the orchard. - Clean the holes and plug them with cotton impregnated with chlorpyriphos 20 EC (undiluted). Alternatively, apply petrol/formalin 4% with a syringe injector or naphthalene balls @ 1 ball in each hole and seal with mud plaster.
	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. - Spray Thiamethoxam 25 WG @ 50g/100 litres of water **OR** Flubendiamide 39.35 SC @ 40ml/100 litres of water **OR** Chlorantraniliprole 18.5 SC @ 100ml/100 litres of water **OR** Thiacloprid 21.7 SC @ 60ml/100 litres of water OR 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 the infestation of blotch leaf miner persists, then the 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 - Essential Spray (In areas where blotch leaf miner is a problem) - Quinalphos 25 EC @ 100ml/100 litres of water.
Walnut	*Walnut fruit grub*	- Collection and disposal of fallen fruits to kill immature grubs inside fruit
Almond		- Pruning and destruction of insect infested branches.
Pomegranate	*Fruit borer*	- Collection and disposal of infested fruits, both fallen as well as on tree.
		- ***Note: All sprays are need based.***
Vegetables		-
Rabi vegetables (Carrot, spinach & kale)	*Overwintering soil insect pests*	- Deep ploughing during day time for predation by birds. During last ploughing apply Carbofuran 3 % CG @ 32.5 Kg/ ha.
Tomato	*Tomato fruit borer*	- Sanitation of field by removing left over stubbles - Collection and destruction of infested fruits and plant debris
Brinjal	*Brinjal shoot & Fruit borer*	- Sanitation of field by removing left over stubbles - Collection and disposal of infested fruits

Cole crops	*Cabbage aphids, Cabbage butter fly, DBM etc.*	- Collection and destruction of Cabbage aphids - Collection and destruction of eggs/ larvae of Cabbage butter fly - Collection and destruction of larvae/ pupae of DBM infesting leaves of Kale, cabbage and cauliflower.
Rodent management	*Horticulture*	- **Field sanitation :** Removal of dropped rotten fruits, 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 (Rodent Bait Schedule):</u>** **Rodent bait schedule:** ✓ **Day 1:** Plugging of rodent burrows ✓ **Day 2:** Identification of live burrows/pre-baiting (pre-baiting with plain bait (mix broken rice and wheat flour 100 g with vegetable oil 2 g and placed @10-15 g pre-bait/ burrow should be done prior to poison baiting). ✓ **Day 3:** 2.0% Zinc phosphide baiting (zinc phosphide is mixed with vegetable oil and any carrier such as crushed wheat and broken rice grains at 2 g: 2 g: 96g by weight to be placed inside the live burrow @ 6-10 g bait/ 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. **<u>For residual rodent population</u>**: ✓ **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 September, then do not repeat it during October**
Apiculture	• Extraction of honey from colonies. • Maintain proper hygiene of the colony. • Keep sufficient feeding in the colonies for winter. • Provide artificial feeding, if needed. • Remove super from the colonies. • Shift colonies from hilly areas to plains.	

<u>Plant Pathology (Agriculture)</u>

Wheat	*Yellow rust* *Leaf spot* *Loose smut*	- Ensure seed sowing from disease free crop/ Helathy seed should be procured from registered agency - Use resistant varieties (Shalimar wheat-1 is MR to YR) - Keep proper spacing (R-R=23 cm) as dense cropping

		provides the microclimatic conditions favorable for disease development. - Seed treatment with Mancozeb 75WP @ 3 gm/kg seed **or** Carboxin 75WP @ 2 gm/kg seed.
Brown Sarsoon	*White rust* *Downy mildew* *Alternaria blight*	- Ensure seed sowing from disease free crop - Use resistant varieties (KS-101, SS-1,SS-2,SS-3) - Keep proper spacing(30 cm x 10 cm) as dense cropping provides the microclimatic conditions favorable for disease development - Seed treatment with Metalaxyl Mz 72 WP @2 gm/kg seed
Pea	*Fusarium wilt*	- Crop rotation for 3 years in heavily wilt infected fields
Lentil	*Ascochyta blight*	- Provide proper drainage as water logging favours Fusarium wilt.
Chickpea	*Powdery Mildew*	- Seed treatment with Carbendazim @ 1 gm/ kg of seed

Plant Pathology (Horticulture)

Fruit

Apple/ pear	*Foliar fungal disease/ fruit rots* *Sooty blotch and Flyspeck* *Root rot*	- Collection and destruction of fallen leaves. - Bury the diseased mummified fruits in compost pits. - Dip the harvested fruits in 5% sodium bi-carbonate solution for 10 minutes and wipe with clean coarse cloth. - 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%.
Walnut	*Kernel rot*	- Properly dry the nuts before storage in ventilated rooms.

Impact Points

- ☞ Orchard sanitation
- ☞ Collection of mummified & rotten fruits from trees and their destruction
- ☞ Avoid injuries to fruits at the time of harvest, picking and storage.

Vegetables

Seed crops of tomato, chilli, Capsicum, & brinjal	-	- Select disease-free fruits for seed extraction - Wash extracted seeds thoroughly and sundry followed by proper storage. - Treat seeds before storage with Carbendazim 12% + Mancozeb 63% 75 WP @ 0.25% or Captan 50 WP @ 0.3%.
Cabbage, cauliflower and knol-khol	*Black rot / bacterial disease* *Alternaria leaf blight / downy mildew*	- Pluck the leaves showing initial symptoms of the disease and ensure their destruction - If severity is more, spray with Streptocyclin @ 0.03%. - Spray the crop with Ziram 80 WP @ 0.2% or Mancozeb 75 WP @ 0.3% or Hexaconazole 5 EC @ 0.03%.
Leafy vegetables (kale, knol-khol, spinach etc.)	*Foliar diseases*	- Pluck the leaves showing initial symptoms of the disease and ensure their destruction. - If severity is more spray the crop with Mancozeb 75 WP @ 0.3% or Hexaconazole 5 EC @ 0.03%.

Root vegetables	*Seed borne diseases*	- Treat seeds before sowing with Carbendazim 12% + Mancozeb 63% 75 WP @ 0.25% or Captan 50 WP @ 0.3%.
Onion and garlic	*Seed borne diseases*	- Treat seeds before sowing with Carbendazim 12% + Mancozeb 63% 75 WP @ 0.25% or metalaxyl MZ 72 WP @ 0.25%.

Impact points

☞ Do not use diseased vegetables fruits/ pods for seed extraction.

Vegetable Science

Peas	*Sowing*	- Prepare land thoroughly & apply FYM @ 1 ton per kanal along with Urea, DAP and MOP @ 4, 6.5 & 5kg per kanal. - Recommended varieties are Bonneville, Shalimar matter. - Seed rate 4-4.5kg/ kanal. - For obtaining early crop with higher yield apply 75% of urea DAP, MOP @ 3.75, 5, 4 kg/ kanal and supplying rest 25% through organic fertilizers (Poultry Manure @ 2 q/ha)
Spinach and Methi	*Sowing*	- Sowing of spinach and methi may be continued

Impact Points:

☞ Soil must be well drained.
☞ Seeds must not be sown deeper than 3-4 cm with a spacing of 30x10 cm.
☞ Sow 2-3 seeds per hill.
☞ Pre sowing irrigation must be done if required.
☞ Use treated seeds only.

Garlic and Pran	*Planting of cloves*	- Before planting cloves apply FYM 1 ton, urea 8kg, DAP 6.5kg and MOP 5kg per kanal. - Dibble the cloves in lines 5-7cm deep keeping their growing tip upwards.

Impact Points:

✓ Soil should be well drained and loose for proper development of bulbs.
✓ Apply sufficient quantity of well rotten FYM to make soil loose and porous..

Onion	Transplanting	- Divide land into convenient sized beds/strips and apply fertilizers Urea, DAP, MOP @ 21, 10, and 5 kg/ kanal. - Line planting may be adopted with a spacing of 20x15cm.

Impact Points:

☞ Uproot seedlings when bed is moist.
☞ Avoid damage to apical portion of plant.

Brinjal, chilli, capsicum and tomato	*Extraction of seeds*	- Harvest fully ripe fruits i.e. turning normal colour to yellow for seed purpose, extract the seeds and dry in shade. - 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.

- ***Impact points:***

☞ Maturity indication for Capsicum:
☞ Nishat -1 - Yellow Colour
☞ California Wonder – Scarlet Red Colour

Onion and Cabbage	*Seed production*	- Plant true to type bulbs at a distance of 45x45cm in well prepared land. - Select true to type and compact heads and transplant at a spacing of 60 x 45 cm in well prepared fields.

- Apply recommended dose of manures and fertilizers before transplanting.
- Remove the external leaves of cabbage and broccoli before transplanting.
- In cabbage transplanting should be done in a way that head rests on the ground.
- In cabbage, seed yield can be enhanced by applying five weekly foliar sprays of poly feed (19-19-19) @ 5 g/l starting from 30 days after transplanting.

Impact Points:

☞ Raised beds should be preferably made for transplanting of seedlings and planting of onion bulbs.

☞ Mother bulbs should be checked for diseases and rotting before planting for seed production.

Fruit Science

Harvesting of Fruits

Apple Varieties ready for harvesting include Kerry Pippin (Phokla) (168-175 DAFB), Lal Ambri/Lal Ambur (170-176 DAFB), Sunhari/Sona Ambur (172-177 DAFB), Red Delicious (175-182 DAFB), *Baldwin (Lal Farashi)(180-187 DAFB)*, Yellow Newton (Khour) (184-190DAFB), White Dotted Red (Maharaji) (204-211 Days After Full Bloom, DAFL).

☞ Fruits should be harvested only after ensuring that they have attained characteristic skin, flesh and seed colour.

☞ Mature fruits generally tend to hold less tightly to trees and as such detach easily.

☞ Specified days after full bloom is another reliable guide for harvesting fruits.

☞ In case of apples, random samples should be subjected to starch-iodine test and starch rating on 1-6 rating should be from 2-2.5 for cold store and 3.0 – 3.5 for table purpose

☞ In Apples, fruit firmness test should be done with the help of pressure tester and fruit pressure should range between 15 to 17 lbs/ sq inch.

Walnut

☞ Harvesting should be done only after ensuring that packing tissue of 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 nuts obtained shall be clear without dark spots.

Chestnut

☞ Nut should be harvested promptly so that they will not be on the ground for more than two days otherwise kernels get spoiled quickly due to high temperatures.

Hazelnuts

☞ Pick nuts (hazelnuts, cobnuts and filberts) when the husks begin to yellow, but before they start to drop from the tree.

Orchard Layout and pit digging

☞ Lay out the orchard in square or rectangular preferably in hexagonal System as it will increase 15% more plants.

☞ Planting of HDP should be done at a spacing of 1m x3 m.

☞ Pits measuring 1x1x1 meter should be dug and filling up with a mixture of top soil and 20 kg well rotten FYM in the last week of October.

Establishment of fruit plant nursery

☞ Preparation of nursery land and application of FYM and soil insecticides.

☞ Initiate arrangements for procurement of seeds/ nuts / stones / suckers and seedlings.

☞ Take hardwood cuttings of figs and grape vines after leaf fall; only use known, virus-free plants.

Rodents control

☞ Campaign against rodents should be initiated.

Marking of un-productive/ less productive and heavily infested/ infected, dried trees for top working and removal of diseased branches in December onwards	☞ Such trees should be identified in the orchard area and kept marked with some paint.
Preparation for Pruning Operation	☞ Arrangements for efficient pruning tools and white lead paint should be made.
Strawberry	☞ Make arrangement for obtaining strawberry runners from registered suppliers for planting in late October or early November for obtaining a good crop in the next season.
Irrigation	☞ Stop irrigation to the plants and allow it to prepare for the cold winter.

Food Sciences & Technology

Apple (all sweet varieties)

Harvesting

- When skin develops 80-85% red colour.
- TSS:14-15%
- Pressure: 16-18 lb/square inch.
- Seed colour: brown-blackish.
- Use plastic cushioned picking buckets.
- Do not overload the buckets.
- Avoid mechanical damage to the harvested crop.
- Harvest the crop during early hours or after 4-5 pm.
- Do not heap the harvested crop.
- Keep the harvested crop under shadow in cool place.

Impact Points:

✓ All these measures if adopted, maintains the quality and extends the shelf life of the crop.

Pre-cooling

- At 0-5^0 C for 14-16 hours for controlled atmosphere storage. Or at 10-15^0 C for 4-5 hours for immediate marketing.
- Keep the crop under shadow for 5-6 hours before packing

Impact Points:

✓ Removes field heat and increases shelf life and maintains quality.

Fresh table grapes

Sorting & Grading

- Remove the damaged, diseased and underutilized fruits from the lot.
- Grade the fruits on the basis of colour and size in four grades
  A = Extra Large
  B = Large
  C = Medium
  D = Small
- Use the undersized mechanically damaged and irregular shaped apple for processing and value addition.

Impact Points:

✓ Graded apples always fetch premium prize as grower gains the confidence of customers and customer gets satisfaction.

✓ Graded apples can be traded in international market also.

✓ Conversion of C grade apples into processed products increase their value by many folds.

Packaging

- Use CF Boxes for packaging of graded apples using fibre trays.
- Do not use wooden boxes and avoid use of paddy straw as cushioning material.
- For long storage of apples in C.A and Cold Stores, use either plastic crates or CF boxes with outer polyethylene lining or laminations.

Impact Points:

- ✓ Use of CF boxes makes the pack attractive and produce fetches good price.
- ✓ Use of fiber board boxes is internationally accepted and thus the produce can be marketed in international market as well.
- ✓ Use of plastic crates or laminated CF Boxes doesn't absorb moisture during long storage and as such maintain the quality and increases shelf life of apples.
- ✓ Prevents microbial infection also.

Transportation - Use refrigerated transport for dispatch of apples to distant markets if possible.

Impact Points:

- ✓ Maintains quality and increases shelf life.
- ✓ Reduces transport losses.

Storage - Store the apples in on-farm storage structures for a very short period of time.
- For long term storage, store only healthy, firm and disease free apples (A and B grade apples) in the C.A Stores at 0-2^0 C depending upon the variety.
  O_2 = 2%
  CO_2 = 1.5-3.0%

Impact Points:

- ✓ May help in regulating the market.
- ✓ Produce fetches good price.
- ✓ Leads to economic gains.

Walnut ***Harvesting*** - Harvest the crop at stick tight stage of hull.
- When packaging tissues turn brown
- Remove field heat and extends shelf life

Impact Points:

- ✓ Leads to production of quality kernels and whole walnuts which fetch premium price.

Collection - Collect the walnuts tree wise and keep them separately as one tree produce.

Impact Points:

- ✓ One tree produce being uniform in quality is always in demands and fetches more price than mixed lot.

Dehulling - Do not keep the green walnuts under straw for a long time for hull loosening.
- Give chemical/enzymic treatment to green walnut for hull loosening.
- Do not beat the walnuts with sticks/wooden logs, it leads to breakage of nuts. Use knives during manual dehulling.
- Use mechanical dehullers for mechanical dehulling.

Impact Points:

- ✓ Heaping leads to heat generation and ingress of moisture and juglone inside the nuts leading to darkening of both shell and kernel.
- ✓ Use of chemicals advances the hull loosening.
- ✓ Leads to uniform and synchronized dehulling.
- ✓ Increases efficiency
- ✓ Producing nuts of high quality.

Washing and bleaching - Avoid washing of dehulled nuts in running stream water without bleaching agents.
- Use 3% sodium hypochlorite + 0.2% Hcl solution for washing of dehulled walnuts.
- Dip the nuts in this solution for 7-10 minutes.

Impact Points:

- ✓ Shell seal remains intact.
- ✓ Nuts of high quality without any stain are produced.
- ✓ Non-significant loss of nuts due to breakage.

Drying
- Avoid open prolonged sun drying.
- Use solar tunnel dryers for drying.

Impact Points:

- ✓ Produces walnuts of inferior quality with dark colour and moldy kernels.
- ✓ Reduces the drying time.
- ✓ No contamination of produces by birds, rodents and other agencies.

Grading of whole walnuts
- Grade the lots on the basis of shell colour, thickness and size.
- Use mechanical grader developed by AICRP on PHET

Impact Points:

- ✓ Enhances the consumer acceptability.
- ✓ Graded clot always fetches better returns.

Packaging of walnuts
- Use plastic woven sacks for bulk packaging.
- Do not use gunny bags.

Impact Points:

- ✓ Use of gunny bags lead to quality deterioration and microbial infection of walnuts

Extraction of kernels
- Do not wash the walnuts before extraction of kernels.

Impact Points:

- ✓ Maintains the quality of kernels.

Conditioning of nuts
- Keep thin shelled nuts immersed in water for 8-10 hours only to get the moisture content of 15-18%.
- Keep medium shelled nuts for conditioning for 10-12 hours and thick shelled for 18-20 hours

Impact Points:

- ✓ Conditioning helps in extracting the kernels without any mechanical damage or breakage.

Extraction
- Use only experienced personals.

Impact Points:

- ✓ Minimizes the mechanical damage to the kernels and output is more.

Drying of kernels
- Use solar tunnel dryers or cabinet dryers for drying of kernels to get final moisture content of 4-4.5%.
- Avoid prolonged drying at high temperature (max. temperature of 40 ± 2^0 C)

Impact Points:

- ✓ Minimum quality deterioration of walnut kernels.
- ✓ Economical and time saving

Packaging
- Use vacuum packaging for walnut kernels.

Impact Points:

- ✓ Maintains the quality and increases the shelf life.

Storage
- Storage both walnuts and kernels at a temperature of $8\text{-}10^0$ C with RH of 68-70% under dark conditions.

Impact Points:

- ✓ Maintains the quality and increases the shelf life.

Floriculture and Landscape Architecture

Cut flowers	*Proper intercultural operations viz, Rose, Gerbera, Carnation*	- -Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management.
Winter Annuals	*Transplanting in polybags*	- Transplanting of winter season seedlings Pansy, Phlox, Antirrhinum etc in poly bags. Field beds to be prepared for planting of winter annuals.
Shrubs/ Edges	*Intercultural operations*	- Hedges/edges should be trimmed regularly.
Tulip , Hyacinth	*Preparation for planting*	- Beds to be prepared for planting of bulbs adding manure and basal doses of fertilizers.
Bulbous crops	*Tulip/Hyacinth*	- Stored tulips & Hyacinths need to be inspected regularly. - Harvesting of Lilium and Gladiolus after foliage is dry. - Care to be taken for avoiding any injury - Screening of bulbs/corms before storage
	Harvesting and storage of Lilium/ Gladiolus	- Shade drying and treatment with fungicides @0.2% - Lilium to be stored in Coca peat to avoid moisture loss. - Gladiolus to be stored in well ventilated moisture free conditions.
Ploy houses	*Management*	- Polyhouse ventilations need to be kept closed during nights to ovoid low temperature effects.
Pot plants/ indoor plants	*Exotic/ Indigenous*	- Management of light, irrigation and pests.
Turf grasses	*Management*	- Regular weeding, irrigation and light mowing

Livestock Production Management

Sheep/Goat

- ☞ Rams with any visible defects like undescended testicles or limb defects should not be put to breeding.
- ☞ Both very lean and fat ewes are undesirable for breeding. Similarly, ewes with defects like untreatable udder/teat abnormalities or limb defects that may hamper mounting may not be fit for breeding.
- ☞ Do not use the same breeding males that have been used in the same flock during two previous breeding seasons.
- ☞ Since breeding season is in progress, breeding males need to be marked in their brisket region so as to keep track of females which have been mounted.
- ☞ Perform routine cleaning/disinfection of animal sheds and ensure supply of clean drinking water.
- ☞ Concentrate supplementation may be needed in the absence of proper grazing facilities.

Cattle

- ☞ Grazing should be avoided in orchards which have fallen apples to avoid choking.
- ☞ 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 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.
- ☞ Ensure colostrum feeding to newly born calves. In the event of unavailability of colostrum, fostering should be done.
- ☞ Artificial colostrum may also be an option which can be prepared by mixing an egg, half litre of fresh warm water, half litre of whole milk, one teaspoonful of castor oil and similar amount of cord liver oil.

General precautionary measures against Lumpy skin disease

- ☞ Avoid intermixing of herdsand restrict the entry in farms/sheds.
- ☞ Maintain proper sanitary measures like cleaning and disinfection of animal sheds/premises.
- ☞ Quarantine the newly purchased animals for 4 weeks
- ☞ Since the disease can spread through vector bites, insect breeding places like stagnant water, manure pits need to properly managed.
- ☞ Observe the animals for common symptoms of the disease like high fever (41°C or105.8°F), nodules on the skin (~5 cm), mucous membranes, anorexia/off feed, emaciation, drop in milk yield, enlarged lymph nodes, oedema of the skin, salivation, ocular and nasal discharge, conjunctivitis.
- ☞ If any or all of the above symptoms are noticed, immediately isolate the animal as the disease may spread to other animals through vector bites like mosquitoes, flies, ticks besides contact with infected material like nodules, saliva, blood, ocular/nasal discharge.
- ☞ Call for veterinary assistance for vaccination/treatment.

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