Monthly Workshop for Extension Functionaries

Message for the Month of December

Agronomy

Crop	*Operation/ Diseases/pests*	*Message/Impact points*
Rabi Crops		
Wheat	Establishment / growth	- Ensure proper drainage by Cleaning the channels and fields to avoid water stagnation during winter.
Brown Sarson	Establishment / growth	-
Rabi Pulses		
Field Pea	Establishment / growth	-
Lentil	Establishment / growth	-
Oat fodder	Establishment / growth	-

Entomology (Agriculture)

Stored cereals and food commodities	Stored grain pests	- Ensure safe storage of cereals by drying, so that the moisture content is reduced to less than 9 per cent. - Proper seed bins be used after thorough cleaning and sun drying.

Entomology (Horticulture)

Apple	*San Jose scale & 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.
	Apple fruit borer	- To maintain good sanitation in the infested orchards, all the dropped/infested fruits of apple or other fruits should be collected and buried deep in the soil. - Burlaping should be practiced and overwintered stages should be destroyed along with the burlap.
	Apple stem borer	- Heavily infested branches, twigs and completely dried trees should be uprooted, removed from the orchard and burnt. - Clean the holes and plug them with cotton impregnated with chlorpyriphos 20 EC (undiluted) or apply petrol/formalin 4% with 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 of the orchards at community level. - 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 diapausing pupa from tree trunks followed by its destruction.
Vegetables		-
Rabi vegetables Garden pea, Spinach, Kale	*Flea beetle/ Cabbage aphid*	- If flea beetle damage is noticed (> 5 holes /leaf), spray the crop and bunds with Chlorpyriphos 20EC @ 100ml/100 liter of water. - If cabbage aphid is observed on kale, removal and destruction of infested leaves should be done.
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:</u>** **Rodent bait schedule:** ✓ **Day 1:** Plugging of rodent burrows. ✓ **Day 2:** Identification of live burrows for pre-baiting prior to poison baiting; For prebaiting 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. **<u>For residual rodent population</u>** : **Bromadiolone**: Bromadiolone (0.25% BC) @ 10- 15 g per burrow to be placed inside the live burrows. * **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. **Note:** If treatment has been carried out in November then **do not repeat during December.**

Apiculture	-	Unite weak colonies with strong colonies.
	-	Give winter packing to colonies.
	-	Narrow the entrances of the colonies.
	-	Provide winter feeding in the form of sugar candies if required.
	-	Migratory bee keepers may migrate their bee colonies to the plain areas.

Plant Pathology (Horticulture)

Fruit

All temperate fruits	*Foliar fungal disease*	- Collection and destruction of fallen leaves.
	Fruit rots	- Bury mummified and diseased fruits left in and around orchards in compost pits to avoid over-wintering of pathogens.
	Cankers	- Prune the cankered twigs as well as dry & dead branches and destroy them. - Scrap the affected bark of trunks and limbs, and apply Bordeaux or Chaubatia paste on pruned/scarified area/ wound.

Impact Points:

- ☞ Ensure orchard sanitation.
- ☞ Ensure proper drained.

Vegetables

Turnip, radish, carrot, cabbage, cauliflower and knol-khol	*Water-logging related problems*	- Provide proper drainage in orchards to drain off surface water.

Vegetable Science

Garlic	*Sowing*	- Planting of garlic and pran may be continued with the spacing of 15 cm x 10 cm.

Impact Points:

- ☞ Avoid diseased and damaged cloves.
- ☞ Cloves should be planted deep to avoid frost injury.
- ☞ To ease out germination cloves should be planted upright not horizontally .

Cole crops	Seed Production	- In insitu method, rouge out undesirable plants and allow true to type plants to produce seeds. - In transplanting method select true to type plants and replant them at a spacing of 30x30cm in kale, 50x30cm in knol khol, 60x45cm in cabbage and 45x45cm in broccoli. - Before replanting, apply well rotten FYM @ 1-1.5t, 6kg DAP and 5kg MOP per kanal. - Do not remove apical rosette in kale and crown in knol khol and remove outer leaves in cabbage and broccoli. - Planting must be done in such a way that cabbage head and knob in case of knol khol rests on the soil.

Impact Points:

- ☞ To avoid crossing, isolation distance of 1000 m for certified seed must be maintained.

Root crops (carrot, radish, turnip)	*Seed Production*	- Select true to type roots. Prepare stecklings by trimming ¾ of root and ½ of shoot. - Before planting apply 1 t FYM, half Urea @ 4.5 kg, full DAP and MOP@ 10kg and 5kg per kanal. - Replant steckling at a distance of 60x30cm on well prepared ridges.

Impact Points:

- ☞ To avoid crossing isolation distance of 1000 m should be maintained
- ☞ Turnip should be isolated from sarson also.
- ☞ During selection core size in carrot, pithiness in turnip and radish should be taken into consideration.

Bulb Crop (Onion)	*Seed Production*	- Plant true to type bulbs at a distance of 45x45cm in well prepared land. Avoid diseased and damaged bulbs. - Over sized under sized and diseased bulbs should not be used for seed production.

Impact Points:

- ☞ Apply manures and fertilizers @ 1.5 t/kanal FYM, 9.5 kg urea, 8.75 kg DAP and 3.5 kg MOP after land preparation.

Transplanting	- Divide land into convenient sized beds/ strips and apply fertilizers Urea, DAP, MOP @ 7kg, 9kg & 5kg/ kanal. - Line planting may be adopted with a spacing of 30x15cm. - For obtaining higher bulb yield in onion var. Yellow globe apply Urea, DAP, MOP @ 225:375:100kg per hectare.

Impact Points:

- ☞ Uproot seedlings when bed is moist.
- ☞ Use healthy and well established seedlings only.
- ☞ At the time of transplanting 1/3rd of seedling foliage should be cut to get good establishment of seedlings.
- ☞ Maintain optimum moisture in the soil this protects plants from freezing injuries during frost period.

Fruit Science

Training of young fruit trees	☞ The plants are trained according to growth habit and vigor of the rootstock. ☞ Adopt modified leader system for pome, stone and nut fruits. ☞ Adopt Tall spindle for High Density plantation In apple and pear. ☞ Adopt kniffin, bower or head system for grapes. ☞ Adopt T- bar or pergola system for kiwi. ☞ After the plants have been trained to a particular form, precautions should be taken to maintain the desired frame work of the tree. This is possible by avoiding the formation of water shoots, suckers and weak crotches.
Pruning of bearing fruit trees	It is critical to know the bearing habit of fruits before undertaking the pruning. ☞ Keep tools clean and blades sharp so that they do not produce a ragged cut that is slow to heal. ☞ Thin out dry, diseased and intercepting branches. ☞ Remove shoots with unproductive spurs. ☞ While removing a thick branch, first small cut should be made on underside of limb to avoid bark peeling.

		☞ Divert branches to open areas by pruning to desirable laterals. ☞ In one or two year old shoots, heading back can be done to promote growth of the side shoots and quick wound healing. In three year old and older shoots, pruning should be shifted to thinning out cuts to reduce vegetative growth and promote fruiting. ☞ The competing branches should be thinned out rather than head back. ☞ In case of old trees with open centre system, retain only 4-5 wide angled scaffold branches uniformly distributed around the trunk. This will take care of the apprehended snow damage. ☞ Apply white lead paint or Bordeaux paint or chaubattia paste on cut surface with diameter 1-2 cm or more to check the entry of rot causing fungi. It is better to apply these pastes after the wound has dried up. ☞ Stop pruning activity during freezing temperatures. ☞ Graft sticks from identified source should be kept under store.
	Orchard Floor operations	☞ Orchard sanitation must be ensured so as to eradicate the primary inoculums of various diseases. ☞ Clean and store bamboo canes in the shed (or other dry place) to ensure they're still in good condition for next year. Broken ones can be shortened, where possible, for re-use. ☞ Water channels and drains should be cleared. ☞ Removal of suckers and water sprouts.
	Nursery Operations	☞ A nursery bed should be prepared by repeated ploughing and pulverizing the soil to obtain a fine tilth. ☞ Dig the nursery soil about 45 cm deep and follow with application of well decomposed manure @ 13,200cft/ha. ☞ Sow seeds of apple and pear 2-4 cm deep on raised beds to avoid water stagnation. ☞ Proper drainage system of the nursery must be ensured. ☞ Stratification of Pome and Nut seeds to meet the requirement for germination.
	Orchard layout and pit digging	☞ Layout the orchard in square, rectangular or hexagonal system as per fruit crop and land topography. ☞ Pits measuring 1x1x1 m should be dug and filling up of pits with a mixture of top soil and 20 kg well rotten FYM per pit should be done.
	Gap filling	☞ Pits of same dimension must be prepared for gap filling also.
	Rodents	☞ Campaign against the rodents must be initiated.
	Strawberry mulching	☞ Cover strawberry plants with a mulch about 3-4 inches thick if plants are prone to winter injury.

Food Sciences & Technology

Apple	***Weather advisory***	- Shifting of leftover harvested apples from orchids to on-farm storage structures or other protected structures. ***Impact Points:*** - Due to persistent snowfall and decrease in temperature the apples left in open spaces should be shifted to safe and protected storage structures where temperature should be above 0^0C to protect them from frost and chilling injuries.
	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.

Whole Walnut

Size Grading

- ➢ The dried walnuts with a moisture content of 10-12% should be graded into following grades:

Grades	Length (mm)	Width (mm)	Thickness (mm)
Garde-I (very small)	≤ 25	≤ 22	≤ 20
Grade-II (small)	>25- ≤ 32	>22 - ≤ 29	>20 - ≤ 27
Grade-III (large)	>32 - ≤ 39	>29 - ≤ 36	>27 - ≤ 34
Grade-IV (extra large)	>39	>36	>34

- **Note: -** Grading can be done by using sieves already in use or by the power operated walnut developed by AICRP on PHET, Division of FST, SKUAST-K, Shalimar

Impact Points:

- ✓ Graded walnuts always fetch better return and help during extraction of kernels either mechanically or manually

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 8-10^0 C with RH of 68-70% under dark conditions.

Impact Points:

- ✓ Maintains the quality and increases the shelf life.

Quince

Conversion into value added products

- ➢ Quince being rich in pectin and other nutrients can be converted into following value added products:
  1. Quince Jam
  2. Quince Jelly
  3. Quince Preserve
  4. Dried Quince rings

Impact Points:

- ☞ Reduces post harvest losses.
- ☞ Value added products fetch better returns

Vegetables	**Processing into mixed vegetable pickle** ✓ Mixed vegetable pickles are naturally appetizing fomented products, where in vegetables can be successfully converted into this value added product. ✓ Vegetables pickles have exceptional probity activity and as such can prove beneficial for overall human health.
Message	Use surplus vegetables that are produced in bulk particularly for those vegetable belts where glut in the market may generate post harvest losses due to rotting and decay for the preparation of mixed vegetable pickle for fetching better returns.

Floriculture and Landscape Architecture

Cut flowers	*Proper intercultural operations viz, Rose, Gerbera and carnation*	- Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management.
Winter Annuals	*Transplanting (Late)*	- Transplanting of hybrid winter season seedlingslike Pansy, Phlox, Antirrhinum etccan be carried out in poly bagsunder protected conditions for sale in spring.
Shrubs/ Edges	*Intercultural operations*	- Hedges/edges should be trimmed regularly. Pruning of shrubs can also be carried out if not done earlier.
Tulip , Hyacinth	*Planting*	- Planting operation can be carried out up to 21st Dec.
Bulbous crops	*Storage of Lilium/ Gladiolus*	- Lilium to be stored in Coca peat to avoid moisture loss. - Gladiolus to be stored in well ventilated moisture free conditions.
Ploy houses	*Management*	- Vents of polyhouse need closed so as to ensure proper temperature
Pot plants/ indoor plants	*Exotic/ Indigenous*	- Indooring of pot plants and management of light, irrigation and pests.

Livestock Production Management

Small ruminants (Sheep/ goat)	- Due to decrease in grazing resources, gradual shift to intensive feeding should be done. - Dry fodder (Sorghum/oats) should be provided @ 0.5 kg/animal and pelleted feed @ 300 gm/adult and 200 gm/weaner from 1st week of Dec. - Dry fodder should be gradually increased to 1 kg/animal and concentrate/pelleted feed up to @ 500 gm/adult and 400 gm/young stock by last week. - If dry fodder is scarce, silage can be given once a day upto ½ kg per day and ½ kg as dry fodder. - Sanitation and cleanness in and around the livestock sheds should be maintained. - Multicomponent Clostridial vaccination (MCC) to pregnant ewes before one month of expected date of lambing should be ensured for protection against Lamb dysentery, Struck, Pulpy kidney disease, Black disease and Braxy. - Broad spectrum anthelmintic (**pregnancy safe**) dosing to pregnant ewes should be ensured before 7-15 days of expected date of lambing as advised by veterinarian. - Routine recording of body weight during last three days of every month. - While ensuring heating arrangement for the newborn animals, ventilation should not be compromised.
Cattle	- Ensure cleanliness in and around animals 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.

- 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	10
Rice bran	12
Mustard oil cake	30
Maize	40
Molasses/Gur	5
Salts (mixture of iodized salt)	1
Mineral salts	2

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