



Directorate of Extension



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"An institution
striving to achieve excellence in
Mountain Agricultural Systems"

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 Water management Harvesting / threshing	<ul style="list-style-type: none">- Rouging should be done at dough stage of crop to remove the ear heads of Echinochloa (hama) and off type plants for quality produce.- 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.- 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 Harvesting / shelling	<ul style="list-style-type: none">- Most of the maize area is rainfed. Avoid moisture stress if possible in irrigated areas during grain filling stage.- 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.
Sweet corn	Picking/ Harvesting	<ul style="list-style-type: none">- Before storage grains properly sundry up to 12% moisture level.- 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	<i>Picking/ Harvesting</i>	<ul style="list-style-type: none"> - 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)	<i>Water management Harvesting/ picking</i>	<ul style="list-style-type: none"> - 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		<ul style="list-style-type: none"> - Arrange inputs for <i>rabi</i> crops

Entomology (Agriculture)

Cruciferous crops	<i>Flea Beetle (Phyllotreta striolata)</i>	<ul style="list-style-type: none"> - Spray of Malathion 50 EC or dimethoate 30 EC @ 1ml/lit OR - Imidacloprid 17.8 SL @ 0.3ml/litr of water.
Cereals	<i>Grasshopper</i>	<ul style="list-style-type: none"> - Trimming of field bunds. - Removal of weeds. - Spray of insecticide is not required as crop is attaining maturity.

Entomology (Horticulture)

Apple	<i>San-Jose scale, Woolly apple aphid</i>	<ul style="list-style-type: none"> - Removal of infested twigs and leaves. <p><u>Need Based</u></p> <ul style="list-style-type: none"> - If more than 10 crawlers/ cm²of SJS or 1-2 colonies of WAA on terminal shoots are observed : - Spray any one of the following Insecticide. - Dimethoate 30 EC or Chlorpyrifos 20 EC @ 100 ml/ 100 liters of water.
	<i>European Red mite</i>	<p><u>Need Based</u></p> <ul style="list-style-type: none"> - If population is more than 15 mites/ leaf. Spray any one of the following acaricides. - Fenazaquin 10 EC or Spiromesifen 22.9SC @ 40 ml/ 100 liters of water.OR - Cyanopyrafen 30SC @ 30ml/100 litres of water
	<i>Aphids</i>	<p><u>Need Based</u></p> <ul style="list-style-type: none"> - Spray any one of the following Insecticide. - Dimethoate 30 EC or Chlorpyrifos 20 EC @ 100 ml/ 100 liters of water.
Pomegranate	<i>Fruit borer</i>	<ul style="list-style-type: none"> - Collect and dispose off fallen and infested fruits - Spray Quinalphos 25EC or Dimethoate 30EC100 ml/100 litres of water.

		<ul style="list-style-type: none"> - If need arises(presence of live holes) one more insecticide can be sprayed in the first fortnight of September
All fruits	<i>Stem borer</i>	<ul style="list-style-type: none"> - Clean the holes and plug it with cotton impregnated Chlorpyrifos (2ml per litre of water) or apply petrol plugging or formalin 4% plugging or naphthalene balls @ 1 ball in each hole and seal with mud plaster. <p>Note: Stop spray of Insecticides/acaricides 14 days prior to harvesting. All sprays are need based.</p>
Vegetables		
Brinjal	<i>Brinjal Shoot and fruit borer</i>	<ul style="list-style-type: none"> - Regular clipping and destruction of drooped/wilted shoots and infested fruits. - Moths can be mass trapped by installation of pheromone trap (lucin-lure) in case of late planting. - Spay the crop alternately with Spinosad 2.5 SC @ 96 ml/100 lit. of water OR - Emamectin benzoate 5 SG @ 40 ml/100 lit. of water OR
Tomato	<i>Fruit borer</i>	<ul style="list-style-type: none"> - Collection and destruction of infested fruits - Installation of pheromone traps (<i>heli-lure</i>) @ 5-7 trap/ha. in case of late planting. Lures and liners should be changed after every 15 days.
	<i>White flies (in poly house)</i>	<ul style="list-style-type: none"> - Use of yellow sticky traps for effective trapping of whiteflies - Spray Imidacloprid 17.8 SL @ 30 ml/100 lit. of water. OR - Dimethoate 30 EC @ 100 ml/100 lit. of water.
Cucurbits	<i>Fruit fly</i>	<ul style="list-style-type: none"> - Infested fruits and dried leaves should be collected and burnt in deep pits. - Installation of cue lure pheromone traps @ 5-10 trap/ha. Lures should be changed after every 15 days. - Poison baiting of saturated sugar solution 5ml+ Malathion 50 EC 0.5 ml + 100 ml of fermented pumpkin pulp will reduce the population.
Rabi vegetables (Carrot, spinach & kale)	<i>Overwintering lepidopteran pests</i>	<ul style="list-style-type: none"> - Deep summer ploughing during day time for predation by birds. During preparation of land apply Carbofuran 3G@ 32.5 Kg/ ha.
All Vegetables	<i>Flea beetle</i>	<ul style="list-style-type: none"> - Spray the crop with Chlorpyrifos @1ml/litre of water if infestation is noticed. <p>Note: All sprays are need based. The safe waiting period of eight days should be observed before the crop is consumed.</p>
Rodent management	<i>Horticulture</i>	<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. - Trapping - Burrow Fumigation : Smoking the burrow with cow dung +Maize straw/maize pith + weeds with the help of burrow fumigator <p>Chemical control (Rodent bait schedule) :</p> <ul style="list-style-type: none"> ✓ Day 1: Plugging of 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: 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.

For residual rodent population :

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

Note: If treatment has been carried 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 diet (sugar solution) if required.
 - ☞ Keep regular vigil to check robbing.
 - ☞ Shift the colonies to areas where *Plectranthus rogusus* (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	- Remove all weeds from the field and surrounding bunds. Echinochloa (Hama) serve as collateral host for Paddy blast pathogen, so should not be allowed to grow in/near fields - Spray Tricyclazole 75 WP @ 60 gm/ 100 litre or Ediphenphos 50 EC @ 100 ml/100 litre or Hexaconazole 5EC @ 50 ml/100 litre of water
Maize	Turicum leaf blight	- <i>Sorghum bicolor</i> and <i>Sorghum helepense</i> should not be allowed to grow in or near the field as they are collateral hosts of the pathogen - Spray Propiconazole 25 EC @ 100 ml/ 100 litre of water
Common Bean	Angular leaf spot /Anthracnose Rust BCMV(Virus)	- Spray Carbendazim 50 WP @ 50 gm/ 100 litre or Mancozeb 75 WP @ 250gm/ 100 litre of water - Spray Propiconazole 25 EC @ 100 ml/ 100 litre of water - Roughing out of infected bean or other collateral hosts - Spray Insecticide Dimethoate 30 EC @ 100 ml/100 litre of water to control vectors (Aphids)
Moong bean	Cercospora leaf spot	- Spray Carbendazim 50 WP or Thiophanate methyl 70 WP @ 50 gm / 100 litre of water

Plant Pathology (Horticulture)

A Fruit

Apple	<i>Marssonina sooty blotch, and Flyspeck</i>	Need based: For Marssonina/ Sooty blotch/ Flyspeck Spray with Mancozeb 75WP (0.3%) or Ziram 27SC (0.6%) or Propineb 70WP (0.3%) or Ziram 80WP (0.2%) -Spray at Pre-harvest Stage (25 days before harvest) for long time storage - Spray with Mancozeb 75WP (0.3%) or Captan 50 WP (0.3%) or Ziram 80WP (0.2%) or Zineb 75WP (0.3%). - 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 - 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%). - Scrap the affected bark of trunks and limbs, and apply Bordeaux or Chaubatia paste on pruned/scarified area/ wound.
	<i>Root rot</i>	- 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%).
	<i>Canker</i>	- 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	<i>Blight and leaf spot</i>	- Spray with Mancozeb 75WP (0.3%) or Hexaconazole 5 EC (0.05%)
	<i>Fruit rot</i>	- Spray with Metalaxyl 8% + Mancozeb 64% MZ 72 WP (0.25%) or Mancozeb 75 WP (0.3%)
	<i>Wilt/root rot</i>	- Drench the soil with Carbendazim 50 WP (0.1%) or Carbendazim 12% + Mancozeb 63% 75 WP (0.5%).
Cucurbits, Pumpkin, Bottle, gourd, etc.	<i>Angular leaf spot</i>	- Spray the crop with Streptocycline (0.02%).
	<i>Powdery mildew</i>	- Spray Flusilazole 40 EC (0.02%).
	<i>Downy mildew</i>	- Spray crop with metalaxyl 8% + mancozeb 64% MZ 72 WP (0.25%).

Impact points

- ☞ Avoid water stagnation
 - ☞ Ensure proper support to tomato, beans and cucurbit plants to avoid fruit/leaf contact with soil.
 - ☞ Rogue-out wilted/rotted plants from the fields and ensure their safe destruction.
 - ☞ Wait for requisite period before consumption of vegetables if sprayed with any fungicide.
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Vegetable Science

Leafy vegetables	<i>Sowing</i>	Crop	Varieties	Seed rate/ kanal
		Spinach	Shalimar Green, Prickly Seeded	250-300 500-600
		Fenugreek	Pusa Early Bunching, Kasuri Methi	1-1.25 kg
Onion	<i>Sowing</i>	- 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	<i>Harvesting</i>	- 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	<i>Seed</i>	- Harvest fully ripe fruits in chillies and capsicum.		
Capsicum	<i>production</i>	- Scoop out seed of capsicum and dry to moisture content of 8% or less.		
Tomato		- Dry the red ripe fruits of chilli for better seed extraction.		
Cucurbits		- Seeds are extracted in tomato either by fermentation or acid treatment.		
Bhindi		- 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. - Bhindi pods are dried in sun for two to three days and seeds are extracted by beating with sticks.		

Maturity indication for seed extraction:

Capsicum:

- Nishat -1 - Yellow Colour
- California Wonder – Scarlet Red Colour

Bhindi: Pods turn brown and develop hairline cracks along with ridges.

Bitter Gourd: Fruits turn bright yellow in 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	<i>Apple</i>	<p>Varieties ready for harvesting include <i>Red Gold, Quince Apple/Queen Apple, Red Delicious</i> (in plains), <i>Golden Delicious, Royal Delicious, Lal Ambri, Super Chief, American Apirouge</i></p> <ul style="list-style-type: none">✓ 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 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.✓ In case harvested fruits are to be stored in CA stores, harvest ripe fruits not ripe one.✓ Make sure that fruits do not get any bruises or wound while harvesting.
	<i>Pear</i>	<ul style="list-style-type: none">- Varieties ready for harvesting include <i>Fertility, Chinese Sandy Pear, Vicar of Winkfield(Satarwati Kalan)</i> etc.
	<i>Walnut</i>	<ul style="list-style-type: none">✓ 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.
	<i>Chestnut & Hazel nuts</i>	<ul style="list-style-type: none">✓ 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		<ul style="list-style-type: none">✓ Carry budding operations in pome fruits.✓ Irrigate nursery areas wherever needed to get adequate sap flow in the rootstock.
Precautions during harvesting		<ul style="list-style-type: none">✓ Skilled labour should be engaged for picking the fruit.✓ For every two picker 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 (all sweet varieties)

- Harvesting**
- When skin develops 70-80% colour (Variety specific)
 - TSS:- 12-14⁰B -
 - Pressure: 15-18 lb/square inch. -
 - Seed colour: brown-blackish. Use 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 0-5⁰ C for 14-16 hours for controlled atmosphere storage. Or
 - At 10-15⁰ 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.
- ✓ Use the undersized mechanically damaged and irregular shaped apple for processing and value addition.
- ✓ 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 0-2⁰ C depending upon the variety.

O₂ = 2%

CO₂ = 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

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.

Floriculture and Landscape Architecture

Cut flowers	<i>Gerbera, Carnation, Rose, Lilium, Alstroemeria</i>	- Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest of cut flowers.
Winter Annuals	<i>Nursery raising</i>	- Nursery raising of winter season annuals viz. Pansy, Antirrhinum etc ,
Pot plants/ indoor plants	<i>Exotic/Indigenous</i>	- Management of light, irrigation and pests
Landscape plants	<i>Shrubs/Edges</i>	- Proper trimming operations to be carried out wherever necessary.
Bulbous crops	<i>Gladiolus, Lilium</i>	- Monitoring for drying of leaves and subsequent lifting of bulbs/corms.
Turf	<i>Lawn grasses</i>	- Cool season Lawn grasses raising through different means can be carried out. - Weed management, mowing and irrigation of established lawns.
Storage	<i>Bulbs</i>	- Proper storage of Tulip, Hyacinth, Dutch iris etc to be ensured under well ventilated and moisture free conditions. - Regular turning and inspection after fortnightly intervals to be carried out.

Livestock Production Management

FMD out break

- Avoid mixing of livestock these days to break the chain of FMD
 - In sheep it is not problematic but in cattle especially in calves it may cause death of calves
- Symptomatic treatment:** Use PPM (potassium permanganate) washing of feed and outer mouth,
- Glycerine may be applied inner side of mouth, If need antibiotic then consult veterinarian
 - Avoid coarse feed and forage, use soft wet feeds and chaffed green fodder.

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.
- Ectoparasiticide 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.

Cattle

- Grazing should be avoided in orchards which have fallen apples to avoid choking of 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.
- Ensure 6-8 hrs of daily grazing to animals if community pastures are available.

❖ 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

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