



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 February

Agronomy

<i>Crop</i>	<i>Operation/ Diseases/pests</i>	<i>Message/Impact points</i>
Rabi Crops		
Wheat	Growth	<ul style="list-style-type: none"> - Clean fields and channels to avoid water stagnation in winter. - If temperature rises and growth starts in the last week of month apply top dose of urea @ 3.25 kg/kanal - If weed growth starts and weeds are visible in the field then apply post emergence herbicide like sulfosulfuron @ 30 g <i>a.i./ha</i> or clodinafop 20 g + 2,4-D 500 g <i>a.i./ha</i> or isoproturon 1 kg + 2,4-D 0.5 kg <i>a.i./ha</i>.
Brown Sarson	Growth	<ul style="list-style-type: none"> - Clean fields and channels to avoid water stagnation. - Thinning can be done in last week of Feb. to maintain proper plant population (depending up on field condition). - If temperature rises and growth starts in the last week of month apply top dose of urea @ 2.25 kg/kanal. - If weed growth starts, weed control can be achieved by manual/hand weeding at the time of thinning.
Rabi Pulses		
Field Pea	Growth	<ul style="list-style-type: none"> - Clean fields and channels to avoid water stagnation. - If weed growth starts then it can be controlled by hand weeding/mechanical weeding (as per field condition).
Lentil	Growth	<ul style="list-style-type: none"> - Same as in case of field pea.
Oat fodder	Growth	<ul style="list-style-type: none"> - Clean fields and channels to avoid water stagnation in winter. - If temperature rises and growth starts in the last week of month apply top dose of urea @ 4.1 kg/kanal.

Entomology (Horticulture)

Apple	<i>San Jose scale & wooly apple aphid Hairy caterpillar Apple stem borer</i>	<ul style="list-style-type: none"> - Removal and destruction of infested twigs of SJS & WAA from the field - Collection & Destruction of egg masses. - Borer infested branches, twigs should be pruned. - Completely dried up trees should be uprooted, removed from the orchard and burnt.
	<i>Apple fruit borer and leaf miner</i>	<ul style="list-style-type: none"> - Dispose pruned material of trees from the orchard. - Collection and destruction of fallen leaves, dropped and infested fruits from the orchard.
Vegetables	<i>Soil and other over wintering pests</i>	<ul style="list-style-type: none"> - Uprooting and dumping of left over residues from the field.
Rodent management	<i>Horticulture</i>	<p>If weather is dry and free from snow, follow the below mentioned practices:</p> <ul style="list-style-type: none"> - 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

Chemical control (Rodent bait schedule):

- ☞ **Day 1:** Plugging of rodent 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 worked together as a community.

- ☞ Note: If treatment has been carried out during January then do not repeat during February.

- Apiculture
- ☞ Narrow the entrance of the hive.
 - ☞ All crevices of the hive shall be closed.
 - ☞ Provide feeding as sugar candies 12 cm diameter and 2 cm thick on top bars near the cluster, if short of store food.
 - ☞ Remove the Snow from the top of the hives.
 - ☞ Colonies should be kept on stand to avoid moisture by rain /snow.
 - ☞ Do not disturb the cluster of bees in the hive.

Plant Pathology (Horticulture)

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| Fruits | <i>Water-logging</i> | - Provide proper drainage in orchards to drain off surface water. |
| All temperate fruits | <i>Foliar fungal disease</i> | - Collection and destruction of fallen leaves. |
| | <i>Fruit rots</i> | - Bury mummified and diseased fruits left in and around orchards in compost pits to avoid over-wintering of pathogens. |
| | <i>Cankers</i> | - Prune cankered twigs as well as dry branches & destroy them.
- Scrap the affected bark of trunks and limbs, and apply Bordeaux paste or Chaubatia paste on pruned/scarified area/ wound. |
| Vegetables | | |
| Turnip, radish, carrot, cabbage, cauliflower and knol-khol | <i>Water-logging</i> | - Provide proper drainage in orchards/fields to drain off surface water. |

Vegetable Science

Potato	<i>Arrangement of seed tubers</i>	<ul style="list-style-type: none">- An early arrangement of quality potato Seed tubers may be done from an authentic source- Recommended varieties for potato are:- Shalimar Potato-1, Shalimar Potato-2, Kufri Jyoti, Kufri Giriraj, Gulmarg Special, Hirpora, K. Shailja, K. Himalini
	- Construction of Hot bed	
	<i>Dimensions of hot bed</i>	Length: 2 mt, Breadth: 1 mt, Depth: 75 cm
	<i>Size of pegs</i>	Front side: 60 cm, Back side: 75 cm,
	<i>Material required</i>	<ul style="list-style-type: none">a. Paddy straw 1-1.5 khuroosb. Timber :0.8 cftc. Polythene sheet 200-250 gmd. Fresh Cow dung.
	<i>Construction procedure</i>	<ul style="list-style-type: none">- Dig a pit of above mentioned dimensions.- Cover the base of the pit with 10-12 cm thick layer of fresh cow dung, followed by 10 cm thick straw layer.- Repeat the above stated process twice.- Press and sprinkle water- Cover the substrate with 10 cm thick layer of garden soil.- Mix 40 g urea, 20 g each of DAP and MOP with working soil.- Cover top properly with polythene.
Tomato, Cauliflowe, Cabbage, Knol khol, Kale	<i>Seed sowing under Protected conditions</i>	<ul style="list-style-type: none">- Open furrows 2 cm deep and 6 cm apart. Sow seeds thinly and cover the furrows with layer of ash/fine soil.
	Impact Points:	
		☞ For early nursery sowing of seeds should be carried out in protected structures like clutches, low tunnels, poly houses, hot beds etc.
Kale, Orach, Spinach, Methi	<i>Sowing under low tunnels/clutches</i>	<ul style="list-style-type: none">- An early crop of leafy vegetables can be taken under clutches/low tunnels.- For early cauliflower, transplanting of snow ball group may be done in 2nd week of February.
Seed crop		<ul style="list-style-type: none">- Proper drainage of seed crops, Garlic, onion and pran should be maintained to avoid water logging.- Hoeing/earthing up (if weather permits) in onions for greens shall be done.- If weather permits. Planting of potato may be carried out in the last week of February for getting early crop.
Vermi wash		<ul style="list-style-type: none">- Big earthen pot/plastic drum (200 lit capacity) with inbuilt tap at the bottom is used for the purposes of vermi wash production.- First place 10 cm layer of pebbles and sand at the bottom of the pot/drum for effective drainage.- Then fill the drum with raw material such as raw cow dung, kitchen wastes and other biodegradable wastes.- Put 400-500 earth worms (red worms) in drum.- An earthen pot with minute hole in the bottom is placed over the drum after about one week of inoculation with worms.- The earthen pot is placed in such a way over the top of the drum that water trickles down drop by drop into the drum keeping the material moist.- After about 3 days a brownish liquid extract can be collected from the tap of the drum. This liquid is called the vermiwash.

- Vermiwash in diluted form is used as a foliar spray for enhancing growth as well as for controlling of certain disease and pests.

Impact Points:

- ☞ The container is to be placed in a shady environment.
- ☞ Cow dung must be kept for 2-3 days before hoeing used as raw material.

Fruit Science

- Training and pruning of young fruit tree*
- If weather condition permits, go for training and pruning of fruit trees if not done earlier.
 - Remove diseased, dried or narrow angled branches along with water sprouts.
 - In one or two year old shoots, heading back can be done to promote growth of the side shoots. In above three year old shoots, pruning should be shifted to thinning out to reduce vegetative growth and promote fruiting.
 - The competing branches should be thinned out rather than head back.
 - Apply white lead paint, Bordeaux paint or chaubattia paste on cut surface of 2 cm diameter or more to check the entry of rot causing fungi. It is better to apply these pastes after the wound has dried up.

Nursery Operations

- Bench Grafting*
- Bench grafting of nursery stock can be started from last week of the month.
 - After grafting, the plants should be put in well drained sandy loam soil to avoid their desiccation and low temperature injury. This will also help in callusing.

- Planting*
- If weather permits then perform the planting operations.
 - Before planting proper decision should be made on selection of varieties, rootstocks, tree size and spacing, placement of pollinizers/ pollinators and planting layout.
 - Graft union should be kept 25cm above the ground level to avoid collar rot and scion rooting.

- Planting of strawberries*
- Go for the planting of strawberries in the 3rd week of February if not done earlier.

- Other Measures/Operations*
- Stake budded or grafted nursery plants and weak branches of the bearing trees in order to avoid snow damage.
 - Shake trees to remove snow immediately after heavy snowfall and also remove snow from crotches of plants.
 - In case of uprooted plants consequent to heavy snowfall, cover their roots with soil to prevent their desiccation and subject such plants to heavy pruning before resumption of active growth in spring.
 - Ensure proper drainage in the orchard field to avoid water stagnation.

Floriculture and Landscape Architecture

- Shrubs/ Edges Intercultural operations*
- Snow to be removed from Hedges/edges to prevent damage.
- Bulbous crops Storage of Liliium/ Gladiolus*
- Liliium 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 to be closed so as to ensure proper temperature.
 - Proper sanitation to be maintained in polyhouses with crops like gerbera, rose etc.
- Pot plants/ indoor plants Exotic/ Indigenous*
- Indooring of pot plants and management of light, irrigation and pests.

Livestock Production Management

- Sheep** - Advanced pregnant animals should be observed regularly for Pregnancy toxaemia signs.

Glucose (I/V) and molasses orally should be administered after due consultation with a veterinarian. .

- Supplementation of molasses @ 5-10% of concentrate mixture should be done to prevent pregnancy toxemia in pregnant ewes. Root crops (Turnips/carrots) @ 500g/pregnant ewe may also be fed.
 - Prepare lambing pens in advance by cleaning, sanitizing and providing warming facilities in it.
 - Advanced pregnant animals should be regularly observed for approaching signs of parturition like restlessness, frequent urination etc.
 - Naval cords should be dipped in Povidone solution to avoid infection
 - Weak and underweight lambs along with dams should be kept in warm pen/ lambing pen (temperature 15-20 °C) for 1-3 days to reduce mortality from hypothermia.
 - Colostrum feeding should be ensured for initial three days followed by milk feeding.
 - Creep mixture should be fed to lambs (15 days and above) @ 40-50 gram/head /day.
 - Deworming with Amprolium should be done to lambs and kids at the age of 15-21 days @ 1gm/5kg body wt.
 - Multicomponent Clostridial (MCC) vaccination to lambs and kids should be ensured at 21-30 days age.
 - Ewes should be fed hay e.g sorghum/oats @ 1-1.5 kg/animal/day and pelleted feed @ 500-600gm/day and hay @0.5-1 kg/head/day and concentrate @ 400 gm/weaner/day.
- Cow**
- Cows should be fed 250 g -500 g of concentrate in addition to normal ration (dry matter @ 3% of body weight + additional concentrate @ 1 kg/3kg of Milk production= 6 kg for 15 litre cow).
 - Sufficient Hay (Maize, oats, rye, Sorghum) should be provided (12 kg).
 - **Pregnant Cow:** Additional concentrate (500g) should be provided to pregnant cow. Drying should be done after 7 months

Ration Table

<i>Animal</i>	<i>Concentrate</i>	<i>Hay</i>
Cow (15L milk/day)	6 Kg	10-12 Kg
Pregnant cow	6 kg +0.5 kg	do

Homemade Concentrate (for Bovines Horses, sheep and goat)

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

Horses should be given dry matter @ 1.5 Kg/100 kg weight i.e (1.5 Kg) concentrate + 4 -5 Kg hay in winter

Fish Aquaculture

Trout Fish Culture

Reductions in growth and condition during winter are generally attributed to the effects of decreased temperature. Reduce the feed levels and do not try to over feed the fish. Do not allow the water (raceways/ponds) to stay frozen.

S/d
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