FARM OPERATIONS IN DECEMBER
WHEAT

1. Under late sown conditions, short duration varieties PBW 752 and PBW 658 should be sown. For wheat sown after 15th December, apply 55 kg DAP or 155 kg single super-phosphate per acre at sowing. If DAP is used as source of phosphorus, no need to apply urea at sowing, however, if single superphosphate is used then apply 20 kg urea per acre. PAU-LCC method of N application can also be used for late sown wheat.

2. (a) For the control of loose smut and flag smut in late sown wheat, treat the seed in seed treating drum with Raxil Easy/Orius 6 FS @ 13ml or Vitavax Power @ 120g or Vitavax @ 80g or Tebuseed 2DS/ Seedex 2 DS/Exzole 2 DS @ 40g per 40kg seed before sowing.

(b) Neonex 20 FS @ 80ml/40kg seed can be used for the control of termite and loose smut of wheat. Seed treatment should not be done earlier than one month of sowing as it affects seed germination

3. (a) *Phalaris minor* and wild oats can also be controlled by spraying isoproturon herbicide 2 to 3 days before first irrigation using 100 litres of water. On heavy textured soil, use isoproturon 75 WP @ 500 g/acre. In case of medium textured soils, isoproturon 75 WP can be used @ 400 g/acre. In case of light textured soils, the dose can be reduced to 300 g/acre of isoproturon 75 WP.

(b) Sulfosulfuron @ 13g/ are can be sprayed before irrigation using 50 litres of water. Do not use sulfosulfuron if any broad leaf crop is sown in wheat and where jowar or maize to be sown after wheat.

(c) In case of mixed infestation of grasses and broadleaf weeds, 2, 4-D @ 250 g/acre or metasulfuron can be tank mixed with isoproturon or clodinafop 15 WP 160g/acre or Fenoxaprop-p-ethyl 10 EC 400 ml/acre or use Atlantis 3.6 WDG at 160 g or Total or Markpower 75 WG 16 g or Accord Plus 500g /acre or Shagun 21-11 @ 200g/acre after first irrigation.

(c) For the control of isoproturon resistant biotypes of *Phalaris* in rice-wheat cropping system use Stomp/Dost/Markpendi/Penda/Pendin/ Bunker/Zokiyama 30 EC (Pendimethalin) at 1.5 litre/acre as pre-emergence by dissolving the herbicide in 200 litres of water. Alternately, use Clodinafop 15 WP @ 160 g/acre or Fenoxaprop ethyl 10 EC @ 400 ml/acre or Leader/SF 10/ Safal/Mark sulfo 75 WG (Sul fosulfuron) @ 13 g/acre or Axial 5 EC (Pinoxaden) 400 ml/acre or Atlantis 3.6 WDG (mesosulfuron+iodosulfuron) 160 g/acre or Total/Markpower 75 WG (sul fosulfuron + metsulfuron) 16 g/acre or Accord Plus (Fenoxaprop+ Metribuzin) 500ml/acre or Shagun 21-11 @ 200g/acre or ACM-9@240g/acre. Spray either of the herbicide in 150 litres of water after 30-35 days of sowing wheat by using flat fan nozzle. Do not apply Accord Plus and Shagun 21-11 on PBW 550 and Unnat PBW 550 wheat variety. Avoid the use of Shagun 21-11 on light textured soils.

4. For control of broadleaf weeds only, use 2,4-D @ 250 g/acre at 35-45 days after sowing in case of normal sown (October-November) and 45-55 days after sowing for late sown wheat (December sown). Algrip/Agrip Royal/Markgrip 20 WP (metsulfuron) @ 10 g/acre can also be used for control of *Kandia wali Palak (Jangli Palak)* and other hardy broadleaf weeds by using 150 litres of water and its time of
application is 30-35 days after sowing. *Button weed* and other broadleaf weeds can also be controlled with the application of Aim/Affinity 40 DF @ 20g/acre by dissolving in 200 litre of water at 25-30 days after sowing. For control of *makoh rari/rewari, kandali palak, hirankhuri* spray lanfida 50 DF @ 20g/acre in 150 litres of water at 25-30 days of sowing. Do not use 2, 4-D/ Algrip/lanfida in wheat intercropped with Raya/Gobhi sarson/Gram.

5. Wheat crop sown after October should be given first irrigation after four weeks of sowing. On light textured soils, first irrigation should be advanced by one week. Apply second dose of 45 kg urea per acre with first irrigation.

6. If the wheat follows potato, which received 10 tonnes FYM per acre, no phosphorus and one half of nitrogen may be applied.

7. On light textured and *kallar* (reclaimed) soils, zinc deficiency is expected after application of first irrigation. The deficiency symptoms appear on third and fourth leaves from the top and the leaves become yellow in the middle, while the tip and bottom remain green. To correct zinc deficiency, broadcast 25 kg zinc sulphate (21%) per acre by mixing with the same quantity of dry soil.

8. In light textured soils, where wheat follows paddy, manganese deficiency may develop light greyish yellow to pinkish brown streaks on leaves and the veins remain green. If such deficiency symptoms are noticed, 0.5 % manganese sulphate solution i.e. 1 kg manganese sulphate in 200 litres of water per acre may be sprayed. One spray before first irrigation and two to three sprays at weekly interval after irrigation are sufficient.

9. In case of sulphur deficiency, the upper leaves become light green and later on yellow but the lower leaves remain green. If such symptoms are noticed, broadcast one quintal gypsum/acre followed by a light irrigation or if the soil is in proper moisture condition, this may be mixed by hoeing.

10. In sub-mountainous tracts of the state monitor the crop for occurrence of yellow rust infection foci and manage these by spot application of Nativo @ 0.6ml or Tilt or Shine or Bumper or Compass or Stilt or Markzole @ 1 ml in 1 litre of water.

**PULSES**

Give hoeing to gram and lentil to keep weeds under check. Give irrigation to normal sown gram crop around mid December and to lentil after about one month of sowing.

**OILSEEDS**

1. The harvesting of *toria* should be completed to avoid losses owing to shattering.

2. If the infestation of aphid reach the economic threshold level in sarson/ raya then spray the crop with 40 g Actara 25 WG (thiamethoxam) or 400 ml of Rogor 30 EC/(dimethoate) or 600 ml of Dursban 20 EC (chlorpyriphos) in 100 litres of water per acre.

3. Avoid irrigation to sarson /raya during 25th December to 15th January to manage Sclerotinia stem rot.

**SUGARCANE**

Save the crop from frost by applying irrigation around mid December. Start crushing/harvesting (for mill purpose) early maturing varieties. Soon after the
harvesting, burn the trash and irrigate the fields. When the soil attains the optimum moisture condition, loosen it by inter-culture. Do not cover stubble with cane trash.

**FODDER PRODUCTION**

1. First cutting of early sown oats may be taken during this month to meet the fodder scarcity. Avoid taking 2 cuttings from oats where heavy infestation of the *Poa* is there.

2. Lucerne cutting can be adjusted to provide fodder during the lean months.

3. In light textured soils in paddy based system, the deficiency of manganese may appear in barseem crop. The mid stem leaves show pinkish brown spots which later on form necrotic lesions. To control this deficiency, spray the crop after two weeks of cutting with 0.5% manganese sulphate solution (1 kg manganese sulphate in 200 litres of water per acre). Two to three sprays are required at weekly interval on sunny days. In Barseem crop affected with stem rot, cut the crop and expose the soil to the sun.
VEGETABLES

Potato
In seed crop, towards mid-December, restrict irrigation and later with-hold completely so that the haulms wilt and fall down before the aphid population build up. At the end of this month as soon as aphid population reaches 20 aphids per 100 leaves, cut the haulms. The crop should be left underground to allow the tubers to mature. On young potato crop, spray Indofil M-45 to manage late blight if disease pressure is low. In case of high disease severity, spray the crop with Ridomil Gold/Curzate M8/Sectin/Equation Pro/Revus/Melody Duo.

Tomato
Complete transplanting of tomato seedlings in the first fortnight of this month. Provide polythene sheet/Sarkanda/Kahi/ rice straw to protect the plants from frost. Dwarf tomato varieties can be saved from frost injury by covering of individual plants with 100 gauge thick white plastic bags of 35 x 25 cm size. Twenty five kg bags are sufficient for an acre and these can be used for 2 to 3 years.

Radish, Turnip and Carrot
Sowing of European varieties of radish, turnip and carrot must be completed in the first week of this month. Marketing of roots of Asiatic varieties is to be continued as an when roots mature. For seed multiplication select true type roots at full growth and at the peak of edible stage for preparing stecklings. Before transplanting, apply 35 kg urea and 50 kg single superphosphate per acre. Keep a distance of 60 x 22 cm for radish, 45x15 cm for turnip and 45 x 30 cm for carrot.

Cauliflower
For seed multiplication, select the most ideal true to type heads of the main season varieties and rogue out loose, ricy, leafy and otherwise undesirable heads. In case, seed multiplication is to be done on a small scale, transplant the selected heads alongwith root system intact at the desired place.
HORTICULTURAL OPERATIONS

1. The best time for the application of farmyard manure and compost to the fruit trees except guava, ber, loquat and Amla in Punjab is the second fortnight of December. Inorganic fertilizers like single superphosphate and muriate of potash are also applied along with the farmyard manure especially in deciduous fruit plants like pear, peach, plum, pomegranate, etc.

2. It is the right time for layout, preparation of fields (digging and filling of pits) for planting deciduous fruit plants in the month of January.

3. If the growers have not properly covered the young fruit plants until now, they should do so without any further delay to save them from frost.

4. The pruning and training in of the deciduous fruit plant such as pear, peach, plum, grapes, fig etc. can be started at the end of this month.

5. The ber trees need an irrigation or so during this month as the fruits are in developing stage. If there is rainfall, this irrigation can be skipped.

6. The fruit of Guava, malta and grapefruit should be properly harvested, sorted, graded and packed for market.

7. Young nymphs of mango mealy bug should be prevented from crawling up the trunks of mango trees by applying slippery bands one metre above the ground level by middle of December.

8. Irrigation to the bearing litchi orchards should be applied during first week of December to protect it from frost injury.

9. For management of citrus canker, second spray of streptocycline 50g + copper sulphate 25g in 500 litres of water should be done in the second fortnight of December.
ORNAMENTAL

1. Frost sensitive plants like Crotons, Palms, Diffenbachia etc. are to be placed either in varendah or covered with some suitable material or shifted to protected structures.

2. “T” budding can be done in rose.

3. Faded flowers of chrysanthemum should be removed from the plants.

4. Nitrogen fertilizer may be applied to the gladiolus crop at 3 leaf stage and at 6 leaf stage as the case may be. After fertilizer application, earthing up must be done.

5. In Marigold, the plants with single flowers should be removed. This is the appropriate time for selecting the plants for seed production. Choose healthy plants with complete double flowers for seed production.

6. Seasonal flowers and Lawn are to be irrigated to protect from frost Injury.
AGROFORESTRY

**Poplar**
In poplar plantations, onion should be planted in first fortnight of December.

**Training and Pruning of Poplar**

**Training the leader:** A straight and clean bole of poplar is always preferred by the wood industry. Keeping one sprout, healthy shoot as leader, all other shoots should be removed with a sharp knife or secateur without causing any damage to the plant.

**Pruning:** Pruning is necessary to improve stem form and timber quality. Superior stem form adds more wood to the main stem. Pruning intensity depends upon the growth of the plants and their age.

Main target should be to remove thick upright branches that compete with main tree stem. Avoid removing thin branches as these are required for better growth of trees.

Do not forget to apply Bordeaux paste on cut ends of the tree stem. Excessive pruning should be avoided, as it encourages epicornic shoots and causes swelling which may deteriorate the quality of timber wood. It is also detrimental to the tree growth.

**Safeda**
1. For good marketing, harvest the trees for timber after 8-10 years when they attain 0.8-1.0 m girth at breast height (1.37 m above the ground level). For paper pulp, fell the trees at 6 years of age when they attain 40 cm girth. For poles, fell the trees at 4 years of age.
2. Harvest the trees in winter and keep the logs in shade for drying to avoid wraping and cracking of wood.

**Tahli**
For growing nursery of Tahli, its pods should be collected from healthy and straight trees during December. The pods should be dried and stored in air tight containers.
BEE KEEPING

Examine the honey bee colonies, only if necessary, at noon time on a calm and sunny day. Don’t keep the colony exposed for a long time; examination and interior needful be done very quickly. If the colonies have sealed honey from *toria* crop, extract it in the start of winter before it gets granulated in the combs itself. Unite weak and queenless/laying worker colonies with the average strength queen-right colonies so that they are able to maintain the required brood nest temperature and pass the winter successfully. If the colonies are short of honey stores and/or weather is harsh for bees' foraging, provide concentrated sugar syrup (sugar: water = 2 : 1) as supplementary feeding, preferably in empty combs. If the colonies are still lying in shade, shift these to sun gradually (less than 3 feet daily). Don’t keep the colonies in the wide open all around, rather these be placed with one or two sides blocked as wind breaks. Keep only as many number of combs in the colony as are just sufficient according to bee strength. Remove all the extra empty combs and store them properly. Plug the cracks and crevices in the hives and provide winter packing for protection of bees from low temperature. Commercial beekeepers should migrate their colonies to *raya/gobhi sarson* growing areas.
MUSHROOM GROWING

1. Picking and cropping of the first crop of white button mushroom is continued.
2. Simultaneously, start composting for the second crop of button mushroom during 1st week of December. Book spawn as per your requirement.
3. The first crop of button mushroom is terminated after 50-60 days of cropping and rooms vacated, cleaned and disinfected for second crop.
4. Spawning for the second crop of dhingri is carried out during this month.
DAIRY FARMING
1. Keep the animals in dry place and change the bedding material as and when required. Newly born calves need special care during cold weather as they are susceptible to attack of pneumonia. Keep them warm by providing clean & dry bedding.
2. Keep the animals under roof at night time and in the sun during the day. The construction of sheds should be such that allows the entry of sun rays inside the shed during the day. Cover the animals with Jhull (Jute cloth) in extreme cold. Fix pallis/tat/plastic cover if required in the shed to prevent animals from direct cold winds.
3. The energy content of the concentrate mixture should be increased by 5-10 % where the protein in the concentrate can be reduced by 2-3 per cent during cold season.
4. Do not apply milk on teats. Teat dipping should be done with a solution of glycerine and betadine mixed in the ratio of 1:4 which will take care of mastitis as well as teat cracking.
5. Get all the animals vaccinated against foot and mouth disease (FMD).
6. Always handle the healthy animals first and sick ones at last.
7. Feed well chaffed berseem mixed with wheat straw to avoid Tympany (Aphara). Do not feed Parali (rice straw) alone to the animals because it is rich in silica & causes diarrhoea.
8. Observe the animals in the early and late hours of the day, especially at the time of milking for mucous/watery discharge from vagina, if mucous discharge is clean, get the animals inseminated or mated in late mid heat period. Get your animals examined for pregnancy after 2-3 months of mating/artificial insemination.
10. Deworming should be done in the calves especially against Ascariasis/Malap.

POULTRY FARMING
1. Provide the curtain at the windows in poultry sheds. Temperature inside the shed should not be below 60°F. If the temperature falls, there is need for doubling the curtains and to provide artificial heating system so that production did not drop.
2. Keep the chicks warm by giving them artificial heat according to age. For the first week keep 90-95° F and go on decreasing 5° F per week according to the season.
3. Poultry ration should have more energy. Therefore, increase cereals by 5-8% in the ration and adjust the rice bran content.
4. Add Coccidiostat in the ration to prevent occurrence of coccidiosis.
5. If the birds are kept on deep litter then stir the litter 2-3 times in a week to keep it dry.