FARM OPERATIONS FOR THE MONTH OF NOVEMBER

WHEAT

1. Sowing of long duration varieties of wheat like, Unnat PBW 343, PBW 1 Zn, PBW 725, PBW 677, HD 3086, WH 1105, PBW 621, HD 2967, WHD 943 and PDW 291 should be completed up to fourth week of November. After this, prefer PBW 752 or PBW 658. Under rainfed conditions grow PBW 660 and PBW 644. Do not grow durum wheat in light soils. Use of zero-till drill/strip till, happy seeder machine drill, PAU happy seeder can be used for sowing wheat.

2. Drill 55 kg DAP or 155 kg single super phosphate (SSP) at the time of sowing in medium fertility soil. No urea is required at sowing if DAP is used as source of phosphorus however, apply 20 kg urea per acre at sowing if phosphorus is applied through SSP. Apply muriate of potash @ 20 kg per acre in soils testing low in available potash. But in districts of Shaheed Bhagat Singh Nagar, Gurdaspur, Hoshiarpur, Mohali and Ropar, apply 40 kg muriate of potash per/acre. Apply microbial consortium (biofertilizer) to wheat seed before sowing. It enhances absorption of phosphorus from soil and improves plant growth. Apply 100 kg gypsum per acre at sowing in sandy soils to meet sulphur requirement. If wheat follows groundnut which received recommended dose of gypsum, apply 50 kg gypsum per acre.

3. For need based nitrogen application in wheat with the help of PAU-Leaf Color Chart (LCC), drill 55 kg DAP/acre at sowing to medium fertility soils. Apply 40kg urea/acre to timely sown and 25kg urea/acre to late sown wheat (Sown after 15th of December) with first irrigation.

4. To rainfed wheat, at the time of sowing, apply 35 kg urea, 100 kg single super phosphate and 20 kg muriate of potash per acre in medium to high moisture storage capacity soil (sandy loam and finer soils). In loamy sand soil (low moisture storage capacity), the fertilizer dose should be reduced to half. Apply potassium only to soils testing low in this nutrient.

5. In case zinc sulphate has not been applied to the previous crop of rice or maize, apply 25 kg zinc sulphate (21%) or 16 kg zinc sulphate (33%) per acre at the time of sowing in zinc deficient soils.

6. If manganese deficiency was noticed last year, avoid sowing of durum varieties in those fields. In case of manganese deficient soils give one spray of 0.5 % manganese sulphate (1 kg manganese sulphate in 200 litres of water) 2-4 days before first irrigation and three sprays afterwards at weekly interval.

7. Termite is a serious pest of wheat particularly in rainfed area. Before sowing, seed must be treated with 40g Cruizer 70 WS or 160 ml Dursban/Ruban/Durmet 20 EC (chloropyriphos). Dilute the above mentioned insecticide in one litre of water and spray on one acre seed (40 kg) spread on the pucca ground or polythene sheet or tarpaulin in a thin layer.

8. For control of loose smut of wheat, treat the seed of all wheat varieties except durum wheat varieties WHD 943 and PDW 291 with Raxil Easy/Orius 6 FS @ 13 ml or Vitavax Power @ 120g or Vitavax @ 80g or Tebuseed/Seedex / Exzole 2 DS @ 40g per 40 kg seed. This treatment also controls flag smut. Seed treatment should not be done earlier than one month of sowing as it affects seed germination. Neonex 20 FS @ 80ml/40kg seed can be used for the control of termite and loose smut of wheat.
Yellow and brown rust: Grow rust resistant varieties PBW 725, PBW 677, HD 3086 and Unnat PBW 550, WHD 943 in rust prone areas in the district of Ropar, Hoshiarpur, SBS Nagar and Gurdaspur. Other wheat varieties like HD 2967 and PBW 621 can be sown in other areas of the state under normal sown conditions and PBW 752 and PBW 658 under late sown conditions. In timely sown rainfed conditions grow yellow rust resistant cultivar PBW 660.

PULSES
1. In lentil, grow varieties LL 931 and LL 699. Complete sowing of lentil crop by first week of November. For higher yields, inoculate the seed with Rhizobium culture. Apply 11 kg urea and 50 kg single super phosphate per acre at the time of sowing. If the Rhizobium culture has not been used, then apply 100 kg super phosphate per acre at sowing. In gram, grow variety PBG 7 under irrigated conditions throughout Punjab state or PBG 5 in the submountain districts whereas Desi gram GPF 2 and kabli gram L 552 under irrigated conditions except submountain districts and PDG 4 for Barani conditions in the state except mountain areas should be sown. The sowing must be completed by 10th November as further delay in sowing results reduction in yield. Inoculate the seed with rhizobium culture and plant growth promoting rhizobium at sowing. Apply 13 kg urea and 50 kg single super single superphosphate/acre to rainfed/irrigated desi gram at sowing. For Kabuli gram application of 13 kg urea and 100 kg single super single superphosphate per acre is recommended.

2. To manage gram blight, grow resistant varieties PBG 7 and PBG 5.

3. Treat the seed of pea with Talc based formulation of Pseudomonas fluorescence @ 15 g/kg seed for control of wilt. Complete the sowing of field pea by mid November for higher yield. Apply 26 kg urea and 100 kg single superphosphate per acre at sowing.

RAPESEED AND MUSTARD
1. Under late sowing, transplanting of gobhi sarson is more profitable than direct sowing. Use 60 days old seedlings of gobhi sarson (GSL-1) but for gobhi sarson hybrid hyola PAC 401 use 35-45 days old seedlings.

2. To early sown raya, apply 45 kg urea per acre with first irrigation. In rainfed conditions, apply 35 kg urea and 50 kg single superphasphate per acre by drilling at the time of sowing.

SUGARCANE
Irrigate the crop at monthly interval. Start crushing/harvesting early maturing varieties like CoJ-64, CoJ-85 and Co 118.

CELERY
Start transplanting celery crop from 15th November at a spacing of 45 x 25 cm. Use 60-70 days old seedlings. At the time of transplanting, apply 45 kg urea and 100 kg single super phosphate per acre.

FODDER PRODUCTION
1. Take the first cutting of berseem. In case of manganese deficiency on the crop in light textured soils, spray Manganese Sulphate (0.5%) two weeks after the cutting.

2. Conserve the surplus maize fodder as silage at milk dough stage.
3. Take the last cutting of Napier *bajra* in early November because further delay will cause mortality of stumps.

4. Sow oats, white senji or *metha* or sarson as intercrop in Napier *bajra* and sow oats seed mixed with 1 kg seed of raya for more fodder yield.
VEGETABLES

Root crops

1. Start sowing European varieties of Radish (Japanese White), Carrot and Turnip. Treat the seed before sowing with 3g Captan per kg of seed.
2. Apply 15 tonnes of farmyard manure per acre and mix it with the soil by ploughing about 10 days before sowing these crops. Apply 55 kg urea and 75 kg single super phosphate per acre at the time of sowing. Apply 50 kg muriate of potash for carrot only.
3. Irrigate these crops only when it is must, otherwise excessive irrigation will lead to hairy, cracked, deformed, small and forked roots.

Cole crops

1. Transplant 4 to 6 weeks old seedlings of cabbage, chinese cabbage and late season cauliflower in lines at spacing of 60 cm × 45 cm, 30 cm × 30 cm and 45 cm × 30 cm, respectively. Repeat watering as and when required according to weather & soil conditions. Fill the gaps to obtain good crop stand after a week and irrigate.
2. For seed multiplication, transplant fully developed true to type and selected plants of early cauliflower along with root system intact. Keep lines and plant at 60 and 45 cm, respectively. Scoop the heads from the centre to obtain more seed stalks.

Potato

1. Rogue out virus affected plants from seed plots. Apply second dose of 85 kg urea per acre and increase the dose of urea to 115 kg per acre in case of light soils and do earthing up in 40-45 days old crop.
2. Spray crop with Indofil M-45/Mass M-45/Markzeb/Antracol/ Kavach @ 500-700 g or Copper Oxychloride 50 WP/Mark copper @ 750-1000 g/acre in 250-350 litres of water in the first week of November before the appearance of disease followed by 5 more sprays at 7 days interval. Under heavy disease situation instead of 3rd and 4th spray of Indofil M-45/Mass M-45/Markzeb/Antracol/Kavach give two sprays of Revus 250 SC @ 250 ml or Melody duo or Ridomil Gold or Curzate M-8 or Sectin 60 WG @ 700g or Equation Pro @ 200 ml per acre at 10 days interval.

Tomato

1. In the 1st week, sow 100 g seed of PTH-2/Punjab Ratta/Punjab Upma/ on raised beds. Treat the seed with Captan @ 3 g/kg of seed. Two marlas (50m²) area is sufficient to grow seedlings for an acre. At the time of preparing beds, add well rotten farmyard manure @ 250 kg per marla.
2. In the last week of this month, start transplanting. Prepare beds 0.75m wide and keep plant-plant distance at 30cm. Apply 10 tonnes farmyard manure and 55, 155, and 45 kg urea, single super phosphate and muriate of potash per acre, respectively. Transplant two seedlings at a 30 cm space between the plants. Irrigate immediately, fill gaps in the following week next week and irrigate.
3. For kitchen gardening and for local market, prefer Punjab Ratta. For processing, grow Punjab Ratta/PTH-2/Punjab Upma/Punjab Chhuhara. In nematode infested soils, plant only the resistant variety Punjab NR 7.

**Onion**

Sow 4-5 kg seed either of the varieties PRO-7, PRO-6, Punjab Naroya or Punjab White, PWO-35, PYO 102 in 8 marlas bed area to raise seedlings for transplanting an acre. For seed production of above mentioned varieties, plant 4-6/acre of medium size, healthy bulbs at a spacing of 60cm (Row to Row) and 30cm (bulbs to bulbs). Apply light irrigation once after 10 days.

**Leafy Vegetables**

1. Start harvesting, grading, packing and marketing of spinach, chinese cabbage and methi. After each harvest apply 20 kg urea per acre for quick rejuvenation and healthy foliage development.
2. Irrigate methi and palak once a week.
3. Sow seed or transplant seedlings of lettuce (Punjab Lettuce-1) after applying 55 kg urea and 75 kg of single super phosphate per acre. Keep lines and plants 45 and 30 cm apart, respectively.

**Pea**

1. Complete the sowing of Punjab 89 and Mithi Phali by the mid of November by keeping spacing of 30 cm × 10 cm.
2. Apply 45 kg urea and 155 kg single super phosphate/acre at the time of sowing.
3. Use 30 kg seed per acre. Treat the seed with Talk based formulation of *Pseudomonas fluoresce* @ 15g/per kg seed.
4. Sow peas for seed production during the 2nd fortnight of this month.

**Chilli**

For raising chilli nursery Sow seed of CH-1, CH-27, Punjab Surkh, Punjab Tej, Punjab Sindhuri and Punjab Guchhedar at 15 cm raised nursery beds. For transplanting an acre, 200 g seed is required for raising nursery in one marla area.
HORTICULTURAL OPERATIONS

1. The young as well as the newly planted fruit plants should be covered with thatches or *kullies* made of *sarkanda* or farm waste materials during late November to protect them from cold damage. The South-West side should be left open to allow sufficient sunlight.

2. The sowing of *rabi* intercrops like gram, peas and *senji* to utilize the vacant space in the non-bearing fruit plants can be done during this month.

3. It is the right time for planning and layout for planting deciduous plants such as pear, peach, plum, grapes etc.

4. It is advisable to withhold the irrigation right now to the deciduous fruits such as pear, peach, plum and grapes, so that the trees may enter dormancy and become sufficiently hard to withstand cool weather. The *ber* trees, which carry fruit load from October to February should be provided irrigation after every 3-4 weeks.

5. Harvesting of early variety of sweet orange like Mosambi will commence towards the end of this month. The daisy mandarin fruits should be harvested before 20th November to avoid development of granulation. While harvesting, the stalk should be cut close to the fruit with a secateur or special type of clipper.

6. Spray potassium nitrate (15g per litre of water) for quality improvement in ber in the middle of this month.

7. For management of black spot in ber spray the plant with bordeaux mixture (2:2:250) during this month.

8. To check physiological fruit drop in ber spray Naphthalene Acitic Acid (NAA) @ 15g in 500 litres of water per acre. Dissolve NAA in small quantity of Alcohol and then mix it in water. Wash the spray tank with washing soda before and after spray.

9. In the litchi orchards, irrigation should be applied at the end of November or first week of December to protect them from frost injury.
ORNAMENTALS

Annuals
1. Transplanting of annuals like Coreopsis, Phlox, Helichrysum and Gaillardia can be done successfully in this month also. Herbaceous border, with annuals can be made.
2. For large open area, use only single type with one colour in each bed to give mass effect.
3. Sweet peas, planted in October may need support of sarkanda for further upward growth.

Lawn
To protect the lawn from cold and to maintain lush green appearance, light irrigation is given at frequent internal.

Chrysanthemum
The dried flowers should be removed immediately after their flowering is over. Pots of chrysanthemum can be arranged in rows or in groups at suitable positions in and around the houses for decoration and can also be prepared for shows.

Rose
This is the best time for propagation of roses by T-budding. Watering and hoeing of already planted/established roses may be carried out regularly. The root stocks can also be propagated through cuttings in this month. Roses for loose flowers and oil extraction are planted in this month.

Bulbous plants
Plantation of bulbs of Gladiolus, Narcissus (Nargis), Hyacinth can be continued in this month also. Rooted cuttings of double Dahlia may be planted in pots or in the beds. Early planted gladiolus will have sprouted sufficiently and the plants with sickle shaped leaves must be uprooted and destroyed.

Marigold: Seed harvesting for Punjab Ganda No.1 can be started during this month.
AGROFORESTRY

Poplar
For higher economic returns crops should always be grown in Poplar plantation. Sow recommended wheat variety in the first fortnight of November in Poplar plantations. Wheat varieties PBW 677 and PBW 725 are suitable for cultivation under poplar. Irrigate the plantations at fortnightly intervals. In case of fields where poplar trees are to be planted in (January - February) sowing of wheat should be done after making channels for planting trees and their subsequent irrigation. Channels should be laid in N-S direction with 8x2.5m spacing, keeping wider spacing between row and narrow spacing between plant to plant. Fertilizers, Nitrogen/Phosphorus should be applied at 50 per cent higher dose in wheat intercropped plantations than in sole poplar plantations.

Safeda
Fodder crops (e.g. oats and berseem etc.) should be grown in 10-15 m wide strip running along the boundary plantation of Safeda. For good economic return, harvest the trees for timber after 12 years of growth when they attain 1.0 - 1.5 m girth (1.40 m above the ground level). For Paper pulp, fuelwood and poles, cut trees at 7 years of age when they attain 40 cm girth at breast height (1.40 m above the ground level). Cut the trees in winter and dry the logs in shade to avoid warping and cracking of wood.
BEE KEEPING

In the event of drone brood rearing and drone bees’ availability, queen bee rearing can be undertaken on toria/sarson crops for colonies multiplication or for replacement of old queen bees during the start of this month. The stock multiplication and requeening can be undertaken either through division method or through mass rearing of queen bees from selected better performing colonies. The progressive beekeepers should prefer the latter method for its well known advantages. Colonies should be provided need based space in the form of raised combs or frames with comb foundations and super chambers to cope-up with brood rearing and nectar/honey storage and should be managed for exploiting toria/sarson nectar flow to its maximum. The super should be baited with honey combs taken from brood chamber which should be replaced with empty worker brood cell combs near the centre of the brood chamber among the combs. Dust sulphur powder on the top bars of bee combs @ 1.0 g per comb against brood mite (Tropilaelaps clareae). Alternatively, fumigation with formic acid (85%) @ 5 ml daily for two weeks may be applied which, however, should be avoided during nectar flow. The latter treatment also takes care of Varroa mite. In the case of infestation by Varroa, destruction of sealed drone brood comb part, Varroa trapping on drone brood and then its destruction, dusting of icing sugar on bees @ 15g per 10 combs and use of sticky papers with Varroa bottom board can also be integrated. Late evening application of Oxalic acid (4.2%, w/v) prepared in sugar solution (60% in water, w/v) on the bees @ 5 ml through trickling in bee space between every two combs thrice at weekly interval is also effective against Varroa. Keep vigil of the brood diseases and on suspicion, the suspected colonies should immediately be isolated from the healthy stock; immediately consult experts and undertake the suggested measures. Proper spacing among the colonies and extraction of honey from the supers separated from brood chamber with queen excluder help in preventing spread of Varroa and brood diseases among colonies in the apiary. Ripe (sealed) honey from toria/sarson flow should be extracted. In areas where toria is not grown and colonies are not migrated to sarson areas and Eucalyptus is not in bloom yet, sugar feeding (sugar : water =2:1) can be given to the colonies if food reserves are either scanty or not available in the colonies. While feeding, take all necessary precautions to prevent robbing menace. By the end of November, ensure the placement of colonies under sunshine, near wind breaks for protection from ensuing chilling weather and arrange winter packing.
MUSHROOM GROWING

1. For button mushroom remove newspaper sheets after two weeks of spawning and cover the spawn run compost with 1¼ - 1½” thick layer of disinfected casing soil as recommended.
2. Continue fine spray of water directly on the casing soil using a spray pump.
3. Provide cross ventilation a week after casing for 4-6 hours a day.
4. Small pins start appearing two weeks after casing which mature into fruiting bodies in a week time.
5. Cultivation of dhingri should also be continued during this month.
DAIRY FARMING
1. Watch the animals in the early and late hours of the day especially at the time of milking for mucous discharge from vagina. If the mucous discharge is clear, get the animals inseminated/mated in late mid heat.
2. The animals should be got examined from qualified Veterinary Doctor for pregnancy status after 3 months of insemination/mating.
3. HS and FMD vaccination should be done for prevention of Gal Ghotu and Foot and Mouth disease.
4. Regularly deworm the calves with piperazine liquid (4 ml/kg body weight) first at 15 days of age, then 7 days later twice and then on 3 months of age and then 3 months after upto 1 year of age.
5. Disbudding should be done within 10-15 days of age.
6. Because of scarcity of green fodder during this month, give silage to the animals along with mineral mixture @ 50 g per animal per day and common salt @ 20 g per animal per day.
7. Protect young calves from cold weather by providing dry bedding and clothing (Jhull) and prevent chilly winds by sack curtains of Gunny bag (Bori) and other means like polythene sheets/tarpaulin sheet.

POULTRY
1. Cull out unproductive birds if your birds are of 18 months of age or above.
2. Prepare curtains needed for coming winter for poultry sheds to avoid sudden downfall of temperature in the shed.
3. Vaccinate the birds against Ranikhet disease and Fowl pox if not already done.
4. If paddy straw is available, the same can be put on the roof to protect the birds from cold during winter.
5. Keep poultry sheds clean, dry and warm.
6. Do not store the feed beyond 15 days period.
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