

FARM OPERATIONS FOR THE MONTH OF NOVEMBER

WHEAT

1. Sowing of timely sown varieties of wheat like, PBW 826, PBW 803, PBW 824, *Sunehri* PBW 766, PBW 1 *Chapati*, DBW 222, DBW 187, HD 3226, Unnat PBW 343, Unnat PBW 550, PBW Zn 2, PBW RS 1, PBW 1 Zn, PBW 725, PBW 677, HD 3086, should be completed up to fourth week of November. **PBW 869** variety has been recommended for sowing with Happy Seeder/Super Seeder in in-situ rice residue managed fields. After fourth of November prefer PBW 771 & PBW 752. Under rainfed conditions grow PBW 660 and under irrigated conditions farmers can grow durum wheat varieties WHD 943 & PDW 291 from the last week of October to the 1st week of November. Do not grow durum wheat in light soils.
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. Drill 65 kg DAP in Happy seeder or Super seeder sown wheat at the time of sowing.
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 Cruiser 70 WS (thiamethoxam) or 160 ml Dursban/Ruban/Durmet 20 EC (chlorpyrifos). 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. In case of severe infestation, broadcast 7 kg Mortel 0.3 G (fipronil) or 1.2 litre Dursban 20 EC (chlorpyrifos) per acre mixed with 20 kg moist sand before first irrigation. Fipronil and chlorpyrifos application also checks the pink stem borer damage in wheat.
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. Neonix 20 FS (imidacloprid + hexaconazole) @ 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 Zinc 2, PBW RS1, PBW 725, PBW 677 and Unnat PBW 550, WHD 943 in rust prone areas in the district of Ropar, Hoshiarpur, SBS Nagar and Gurdaspur. 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 1373, and LL 931 . 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 10 & PBG 7 under irrigated conditions throughout Punjab state or PBG 5 in the sub-mountain districts whereas Desi gram PBG 8, GPF 2 and Kabli gram L 552 under irrigated conditions except submountain districts and PDG 4 for Rainfed (*Barani*) conditions in the state except sub 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. Complete the sowing of Raya and African sarson upto 15 November. Under late sowing, transplanting of *gobhi sarson* is more profitable than direct sowing. Use 30 days old seedlings for canola *gobhi sarson*.
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 superphosphate per acre by drilling at the time of sowing.

SUGARCANE

Irrigate the crop at monthly interval. Start crushing/harvesting early maturing varieties like CoPb 95, CoPb 96, Co 15023, CoPb 92, CoJ64, CoJ85 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.
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.

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 Gaurav, Punjab Sartaj, Punjab Swarna, Punjab Red Cherry, Punjab Kaser Cherrry, Punjab Sona Cherry, Punjab *Chhuhara* varieties 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. 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, Punjab White, PWO-2, PYO 1 or POH-1 hybrid in 8 marlas bed area to raise seedlings for transplanting an acre. For seed production of onion 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

1. For raising chilli nursery sow seeds of CH-52, CH-27, Punjab Tej and Punjab Sindhuri at raised nursery beds.
2. For transplanting an acre, 200 g seed is required for raising nursery in one marla area.

HORTICULTURAL OPERATIONS

1. Withhold the irrigation in this month in deciduous fruit orchards like pear, peach, plum and grapes, so that the trees may enter dormancy and become sufficiently hard to withstand cool weather.
2. To protect the young fruit plants from upcoming winters, prepare the thatches or *kullies* of *sarkanda* or farm waste materials on the plants during late November. Care should be taken that the South-West side should be left open to allow sufficient sunlight.
3. Planning and layout for establishment of new deciduous plants orchards such as pear, peach, plum, grapes, fig etc. can be done during this month.
4. The intercropping of *rabi* season crops such as wheat, gram, peas and *senji* to utilize the vacant space in the non-bearing fruit plants can be done during this month.
5. Apply irrigation to *ber* orchards as the trees are loaded with fruits. Irrigation should be done at 3–4-week interval.
6. Harvesting of early variety of sweet orange like Mosambi and Early Gold 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 secateurs or special type of clipper.
7. For quality improvement in *ber*, spray potassium nitrate (15g per liter of water) in the middle of this month.
8. Black spot in *ber* can be managed with spray of Bordeaux mixture (2:2:250) during this month.
9. To check physiological fruit drop in *ber* spray Naphthalene Acetic Acid (NAA) @ 15g in 500 liters 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.
10. Clean and maintain the water channels, paths, surroundings of the orchards as the load of other horticultural operations in most of the orchards is very less in this month.

ORNAMENTALS

Annuals

Transplanting of seedlings of winter annuals like coreopsis, phlox, *Helichrysum gaillardia*, calendula, petunia etc. can be done in prepared beds. The height of annuals should be taken in to consideration during their selection for bed planting, pot culture, edging or for screening purpose.

Lawn

To protect the lawn from occasionally low night temperature, frequent but light irrigation should be given. Warm season grasses tend to stop growth, turn little pale and go dormant. Avoid water ponding over lawn.

Chrysanthemum

In early flowering types the dried flowers should be removed immediately after they wither to allow lateral buds to bloom. Continue disbudding of standard chrysanthemums and provide necessary support to potted plants as required. Ensure sufficient moisture in the potting media, as plants will start blooming during mid to end of this month. Remove dried leaves from base of the shoots and start colouring the pots for exhibit in show next month.

Rose

This is the best time for propagation of roses by T-budding. The rooted cuttings of Rose varieties for loose flowers and oil extraction are planted in the field during this month. Ensure proper soil moisture as rose bushes sprout vigorously. Continue removing rootstock suckers from the established rose bushes.

Bulbous plants

Plantation of corms of gladiolus and bulbs of narcissus (Nargis), Freezia, Iris can be continued in this month also. Rooted cuttings of decorative dahlias may be planted in pots or in the beds. Early planted gladiolus sprouts and unfolds its leaves. The plants with sickle shaped leaves must be identified in field, uprooted and destroyed as they are infected with *Fusarium* wilt.

Marigold: Seed harvesting for Punjab Gaiinda No.1 Marigold can be started during this month. Harvest the fully mature and dry flowers for seed purpose. Extract the seeds and keep for drying in well-ventilated and a bit warm place.

AGROFORESTRY

Poplar

Intercropping in poplar plantations gives higher wood productivity. Wheat varieties PBW 677 and PBW 725 are suitable for cultivation and wheat/potato should be sown during the first fortnight of November. 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. Nitrogen/Phosphorus should be applied at 50 per cent higher rate in wheat intercropped in poplar plantations (more than three year age) than in sole wheat.

Dek

Intercropping of *rabi* crops such as wheat, potato, mustard, oats etc. can be done in dek block 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. 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, 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 about 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 ectoparasitic 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 through bee space in between the combs very late in the evening 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. After the completion of white mycelial growth in button mushroom beds, remove the newspaper sheets and cover the bed surface with 1 - 1½" thick layer of disinfected casing soil (farmyard manure and sandy soil). In case of polythene bags, open the folded layer of polythene and cover it with casing soil as PAU recommendation.
2. On daily basis, sprinkle the water on the cased beds by using a spray pump.
3. After casing, open the doors and windows of the growing rooms for cross ventilation on daily basis for 6-8 hours.
4. Small pin heads start appearing on the cased beds after two weeks of casing, which later on turns into mature fruiting bodies.
5. Dhingri cultivation on wheat straw can also be continued during this month.

DAIRY FARMING

1. Observe 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 after 12 to 18 hours in cows and 18 to 24 hours in buffaloes after the onset of oestrus.
2. Animals must conceive within 60-90 days after calving. To achieve this skip first two heats after parturition.
3. Observe animals for heat symptoms after 18-21 days of insemination. If no symptoms of heat appear then get the animals checked for pregnancy after 3 months of insemination.
4. Regularly de-worm the calves at 15 days of age, with piperazine liquid (@5 ml/10 kg body weight) then at 7 days interval upto one month of age, then at monthly intervals upto six months of age and then at 3 months interval by changing salts.
5. Disbudding should be done within 14-21 days of age.
6. Commercial dairy farmers feed silage throughout the year but small farmers can also plan for silage making to avoid scarcity of green fodder along with mineral mixture and concentrate according to production potential of the animal during this period.
7. For appropriate milk yield, do the milking quickly, quietly, cleanly and correctly with full hand or with machine. Apply post teat dip for mastitis control with a combination of Povidone Iodine and glycerin in the ratio of 3:1. Let the animal stand for at-least one hour after milking to avoid mastitis.
8. Check the animal for lactic acidosis by observing dung for looseness. If dung is loose, use 50-70-gram sodium bicarbonate in diet of animals on daily basis it mostly occurs in early lactating animals and high yielders.
9. Vaccination should be done with goat-pox vaccine @3ml in all healthy dairy animals to prevent the spread of Lumpy skin disease, no vaccine should be administered to effected ones If animals show symptoms of high fever (104-105 F), Nodules or lumps on the body, Swelling on the forelegs isolate it from other herd to protect other animals also avoid anyone to enter at your farm and also restrict your movement to other farms. Milk of infected animals can be consumed after boiling as there is no evidence it can affect humans, if this disease enters at your farm consult your nearest Veterinary hospital.
10. Farmers can also use spray of 5% formalin (500 ml in 10 litre of water) to deactivate lumpy skin disease virus specially during the evening time.

POULTRY

1. Cull out the non productive birds.
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. Put paddy straw on the roof to protect the birds from cold during winter and use chaffed paddy straw mixed with rice husk as bedding material.
5. Keep poultry sheds clean, dry and warm. Do not store feed for more than 15 days.
6. Prepare brooders for upcoming winter season.

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