

FARM OPERATIONS FOR THE MONTH OF OCTOBER

SUGARCANE

Complete the planting of sugarcane in the first fortnight. Intercropping of wheat, *raya*, *toria*, *gobhi sarson*, pea, gram, potato, cabbage, radish, garlic etc. can be done successfully in this crop.

WHEAT

1. Start sowing wheat varieties, namely, PBW 621, HD 2967, DBW-17, PBW-502, PBW-343, WH-542, and durum wheat WHD 943, PDW 291 and PDW-233 under irrigated conditions and PBW-644, PBW-527, PBW-175 under rainfed conditions from last week of October. Termite is a serious pest in light textured soil, particularly in *Barani* areas. Before sowing, treat wheat seed with chlorpyrifos 20 EC @ 4 ml/kg seed or Regent 5% SC @ 6ml/kg seed to check the termite damage at early stage.
 - i) Loose smut : Treat the seed of all the varieties of wheat except all varieties of durum wheat with Raxil @ 1g/kg seed or Vitavax @ 2 g/kg or Bavistin/ Agrozim/ Derosal/ J.K. Stein/Sten 50 @ 2.5 g/kg seed for the control of loose smut. Seed treatment should be done with seed treating drum.
 - ii) Flag smut : To control flag smut, treat the seed before sowing with Thiram @ 3 g/kg or Raxil 1g/kg or Vitavax @ 2 g or Bavistin @ 2.5 g/kg seed.
 - iii) Other diseases : Treat the seed with Captan or Thiram @ 3 g/kg seed for the control of root rot, foot rot, seedling blight, black tip and black spot of glumes. Captan and Thiram treatment should not be done earlier than one month of sowing as it affects seed germination.
2. In medium fertility soils, apply 55 kg urea and 155 kg single super phosphate or 55kg DAP/Acre to irrigated wheat as a source of nitrogen and phosphorus at the time of sowing. The urea may be applied just before pre sowing irrigation or with the preparatory tillage. If 55 kg DAP/acre is used as a source of phosphorus, reduce the dose of urea by 20 kg/ acre. In potassium deficient soils, apply 20 muriate of potash/acre alongwith above mentioned fertilizers. The dose of muriate of potash may be doubled in the districts of Gurdaspur, Hoshiarpur, Roopnagar and Shahid Bhagat Singh Nagar. Nitrophosphate @ 125/ acre can also be used as source of phosphorus. In such case, there is no need of urea application at sowing. Use Leaf Color Chart (LCC) for need based nitrogen fertilizer management in wheat. Drill only 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. Match leaf colour of the topmost fully exposed leaf with LCC under shade of your body before second irrigation (about 50 to 55 days after sowing). If leaf colour greenness of six or more (out of 10) leafs is less than shade 4 on LCC, top dress 40 kg urea/acre to timely sown and 25 kg urea/acre to late sown wheat with second irrigation. Otherwise, if leaf greenness is equal/more than shade 4 on LCC, top dress 25 kg urea/acre to timely sown and 15 kg urea/acre to late sown wheat with second irrigation.

Note:-

- LCC based N application should be ensured at 50-55 days after sowing even if the second irrigation is delayed due to rainfall.
- The leaves selected for matching colour with LCC should be free from disease/insect incidence and other nutrient deficiencies.

In rainfed areas, apply 35 kg urea, 100 kg single superphosphate and 20 kg muriate of potash/acre at sowing in sandy loam to clay loam soils. Drill 35 kg urea, 50 kg superphosphate and 10 kg muriate of potash/acre at sowing in loamy sand to sand soils.

PULSES

Gram

1. Grow varieties PDG-4, PDG-3 and GPF-2 from 10 to 25 October in the Central and South-Western districts and varieties PBG 5 and PBG-1 which has resistance to gram blight in the sub-montane districts.
2. The best time of sowing Kabuli gram (L 552, L 550 & BG-1053) in the entire state except humid areas of Gurdaspur, Hoshiarpur and Ropar is 25 October to 10 November under irrigated conditions.
3. In termite infested soil, first treat the seed with chlorpyrifos 20 EC @ 10 ml/kg seed, dry the seed in shade and then treat the seed with Bavistin/Captan/Captaf @ 3 g per kg of seed or Rovral @ 2.5g/kg seed for the control of blight. Grow PBG-1 or PBG 5 in disease prone areas.
4. At the time of sowing, drill 13 kg urea and 50 kg single superphosphate per acre for desi gram but in case of Kabuli gram, drill 13 kg urea and 100 kg single superphosphate/acre.

Lentil

Use varieties LL-931/ LL 699 and start sowing from end of October. Treat the seed with 2 g Captan/kg seed and inoculate seed with *Rhizobium* culture which ensure higher yield. Drill 11 kg urea and 50 kg single superphosphate/acre in case of inoculated seed otherwise double the dose of single superphosphate at the time of sowing. For control of weeds, spray Stomp 30 EC 600 ml or Treflan 48 EC 400 ml/ac within 2-3 days after sowing in 200 litres of water.

OILSEEDS

1. For *raya*, use varieties RLC-1, PBR-210, RLM-619, PBR-91 under irrigated conditions and PBR-97 under rainfed conditions. The optimum period for sowing *raya* is the second fortnight of October. RLC-1, PBR 210 and PBR 91 are recommended for South-Western districts only. *Gobhi sarson* (GSC-6, GSC-5, GSL-1, GSL-2, PGSH-51, Hyola (PAC-401) should be sown from 10th of October to end of October. African sarson PC-5 can also be sown during whole month.
2. Drill 45 kg urea, 75 kg single superphosphate and 10 kg muriate of potash per acre before sowing of *raya* and *gobhi sarson* but in *gobhi sarson* sown on light textured soils, increase the dose of urea to 65 kg per acre. In rainfed conditions, apply 33 kg urea and 50 kg single superphosphate/acre at sowing.
3. Sometimes hairy caterpillars become a serious pest on *toria*. For its control, apply Malathion 5 % dust @ 15 kg per acre or 200 ml of Nuvan 85 SL in 80-125 litres of water per acre.
4. **Weed Control:** One hoeing to *toria* after the third week of sowing and one or two hoeings preferably with improved wheel hoe to *raya*, *gobhi sarson* and *taramira* are adequate. Weeds can also be controlled through herbicides as given below:

Crop	Herbicide recommended	Dose/acre	Time of application
Raya	Isoproturon 75 WP or	400 g	Pre-emergence within 2 days of sowing or post-emergence 25-30 days after sowing.
	Treflan 48 EC (Trifluralin)	625 ml	Pre-plant incorporation
Gobhi sarson (GSL-1, GSL-2, PGSH-51) and African sarson (PC-5) Seeded	Isoproturon 75 WP or	300 g	Post-emergence before first irrigation
	Basalin 45 EC (Fluchloralin) or	650 ml	Pre-plant incorporation
	Treflan 48 EC (Trifluralin)	625 ml	-do-
Transplanted gobhi sarson	Isoproturon 75 WP	300 g	Immediately after transplanting but before irrigation
Gobhi sarson (GSL-2) Seeded	Atrataf 50 WP (Atrazine)	320 g	Pre-emergence or post-emergence 20-25 days after sowing but 2-3 days before first irrigation

FODDER PRODUCTION

1. *Berseem* and shaftal sowing should be completed in first week of October. This month is also ideal for sowing lucerne, oats and senji. *Berseem* crop may be supplied six tonnes farm yard manure (FYM) and 125 kg single superphosphate per acre before sowing and where FYM is not added, 185 kg single superphosphate should be applied alongwith 22 kg urea per acre.
2. For the control of *Poa* grass (Buien), Basalin 45 EC can be sprayed @ 400 ml per acre in 200 litres of water before sowing of berseem.
3. In order to get higher yield from first cutting, sow *berseem* or lucerne in mixture with oats and *sarson*. This mixture also helps in keeping the *itsit* under check.
4. Conserve surplus maize/sorghum as silage to meet the fodder requirements in lean period for cheaper milk production.

STORED GRAIN PESTS

Control grain pests in stores by carrying out fumigation with Aluminium phosphide @ 25 tablets/100 cu.m of space in air tight condition. Exposure period should be seven days. Aluminum phosphide must not be used in living quarters. Its use in godowns next to the living rooms may also prove hazardous.

VEGETABLE CROPS

Cole Crops

Start transplanting of 4-6 weeks old seedlings of cabbage, mid season cauliflower, Chinese cabbage and Broccoli. Keep line and plant to plant spacings at 30 × 30 cm for Chinese cabbage, 45 × 30 cm for cauliflower and 60 × 45 cm for cabbage and 45 × 45 cm for Broccoli. Apply irrigation once a week. Do gap filling for good crop stand.

Pea

1. Start sowing mid season pea for green pods from mid October to mid of November. Sow varieties Punjab 89 and Mithi Phali. Use 30 kg seed per acre. Drill seed in lines at 30 cm apart.
2. Wilt and stemfly are serious problems of field pea, hence avoid early sowing in badly infested area. Treat the seed with talc formulation of *Pseudomonas fluorescens* @ 15g + 1 g Captan or Bavistin per kg of seed for the control of wilt. Apply 3 kg Thimet 10 G or 10 kg Furadan 3 G per acre in furrows at the time of sowing for the control of stemfly.
3. Weeds can effectively be controlled with the use of Stomp 30 EC @ 1 litre/acre as pre-emergence application i.e. within two days of sowing. Use 150-200 litres of water for uniform spray and use flat fan/flood jet nozzle only for this purpose.

Potato

1. Complete sowing of autumn potato crop in the first fortnight of October particularly for seed production purpose. Use healthy seed tubers.
2. Sow potato after applying 20 tonnes of farm yard manure, 80 kg urea, 155 kg single superphosphate, and 40 kg muriate of potash per acre. Farm yard manure should be applied about ten days before planting potato whereas fertilizer should be applied at the time of sowing preferably mixed with soil to avoid injury to tubers. Higher doses of nutrients can be applied if soil test shows low to very low status of these nutrients.
3. For weed control, use Atrataf 50 WP (Atrazine) @ 200 g/acre or Isoproturon 75 WP @ 500 g/acre or Stomp 30 EC @ 1.0 litre/acre or Sencor 70 WP (metribuzin) @ 200 g/acre as pre-emergence or spray Gramoxon @ 500-750 ml/acre upto 5-10 % emergence of potato crop and complete germination of weeds. Do not use Atrataf in those fields where succeeding crop is to be a cucurbit.
4. For the control of late blight, use selected healthy tubers for sowing. Infected/rejected tubers taken out of cold stores should be buried instead of keeping such tubers in the open area as such. Follow high ridge method to avoid tuber infection.
5. Disinfect the seed tubers in 0.5 % solution of Agallol or 0.25 % Emisan by dipping for 10 minutes to control black scurf and common scab. In soils where black scurf is a major problem, dipping of tubers in 0.25% Monceren solution for 10 minutes ensures complete control of the disease. Avoid sowing of potato in fields with high incidence of common scab. Keep the soil wet at tuberization to minimise the scab infection. If there is a heavy shower in 3rd /4th week of October, protect the crop immediately by spraying Indofil M-45 @ 500-700 g/acre.

Onion

1. On 15-20 cm raised nursery beds, sow 4-5 kg seed on 8 marlas. Use Punjab Naroya, Punjab White and PRO 6 varieties to raise seedlings for transplanting in one acre. Keep the ratio of nursery bed and field area to 1 : 20 (8 marlas : 1 acre).
2. Irrigate *kharif* planted crop once a week. Plant bulbs for seed production.

Tomato

Start sowing nursery of tomato. Use 100 g seed of the recommended varieties in two marla (50 m²) bed area to grow seedlings for an acre. Sow Punjab NR-7 for local markets and kitchen gardens and Punjab *Chuhara* and TH-1 for long distance marketing and processing purpose. For planting in nematode infested fields, sow nursery of only the resistant variety Punjab NR-7. New varieties like Punjab Ratta, Punjab Upma and Castle Rock can also be planted. To check damping off of seedlings in nursery, treat the seed with Captan or Thiram @ 3 g/kg seed before sowing.

Root Crops

Apply 55 kg urea and 75 kg single superphosphate per acre for radish, turnip and carrot. Carrot also requires 50 kg muriate of potash per acre. Sow varieties Punjab Pasand and Japanese white of radish, L-1 of turnip and Punjab Black Beauty and PC-34 of carrot using 4, 2 and 4 kg seed per acre, respectively. Sowing on 45 cm ridges is better than in flat planting because of high yield, easy harvesting, better root shape, less forking and richness in nutrients. Before sowing, treat the seed with Captan or Thiram @ 3 g per kg seed.

Leafy Vegetables

Sow Palak by using 5 kg seed per acre at a spacing of 20 cm between rows. Apply 10 tonnes FYM, 35 kg urea, and 75 kg single superphosphate per acre before sowing. Use 400 g seed of Lettuce for raising nursery for transplanting an acre and apply 55 kg urea and 75 kg super phosphate. Keep 45 cm distance between rows and 30 cm between plants.

HORTICULTURAL OPERATIONS

1. The newly planted young fruit plants being tender, need lot of care and attention for their survival and growth. These should be watered at frequent intervals. The young plants of mango, litchi etc. need staking so as to make them grow upright and straight. Remove all the sprouts on root stock which have grown below the bud-union. The termite attack, if noticed, should be checked by applying 500 ml chlorpyrifos 20 EC per acre followed by light irrigation.
2. This would be the most appropriate time for preparation of land and sowing of *rabi* intercrops like wheat, peas, senji and black gram. Keep separate irrigation system for intercrop and fruit plants.
3. The orchard soil should be cultivated for the control of perennial weeds like *baru*, *kahi*, *motha*, *Parthenium* etc.
4. Apply first half dose of N (0.5 kg urea/plant) to the loquat plants.
5. To control citrus leaf miner, spray 500 ml Sumicidin 20 EC or 1000 ml Ripcord 10 EC or 1875 ml Durmet/Massban 20 EC or 200 ml Crocodile 17.8 SL/acre in 500 litres of water.
6. Transplanting of papaya seedlings (15-20 cm tall) should be completed by mid October.
7. To control the insect-pests of citrus like white and black fly, spray 1000 ml Fosmite 50 EC or 1250 ml Triazophos 40 EC/acre in 500 litres of water. Triazophos is also effective against citrus psylla.
8. To control citrus leaf folder, spray 1250 ml Dursban 20 EC or 1000 ml Ekalux 25 EC per acre in 500 litres of water. Remove webbing to check the bark eating caterpillar and inject kerosine into the holes. Treat all the alternate host plants in the vicinity.
9. To control citrus canker, spray the crop with 50 g of Streptocycline + 25 g of Copper sulphate + 500 litres of water/acre during this month and repeat during December and February. Bordeaux mixture (2:2:250) or copper oxychloride (0.3%) can also be sprayed.
10. Spray *ber* trees with 0.25 % wettable sulphur (250 g in 100 litres of water) or 0.05 % karathane 40 EC (50 ml in 100 litres of water) or Bayleton (50 g in 100 litres of water per acre. The spraying should be done in September, mid-October, mid-November and mid-December to control powdery mildew of *ber*.
11. To control root rot in affected tree of pear apply to each full grown tree, 10 g Bavistin 50% WP+ 5 g Vitavax 75% WP in 10 litres of water along the trunk and around the drip area after the monsoon (October) and apply light irrigation to the tree.
12. Remove malformed panicles of mango along with about 15 cm of healthy shoots and spray the whole tree with NAA at the rate of 200 ppm.(Dissolve 100g NAA in 100-150 ml alcohol and make the volume to 500 litres for one acre

For control of mealy bugs in fruit plants, maintain the orchards neat and clean and drench spraying of insecticides like 1875 ml Dursban/Durmet/Coroban/Massban 20 EC in 500 litres of water.

ORNAMENTALS

Annuals

The seedlings of winter season annuals should be transplanted during this month when the seedlings are at 4-6 leaf stage or one month old, in beds or pots. The pot flowering plants like *Calendula*, *Gazania*, *Pansy*, *Allyssum*, *Petunia* etc. can be planted in the pots to allow sufficient time for their development. If the seed sowing is not undertaken, the seeds can also be sown for raising seedlings.

Chrysanthemum

Manuring of weak plants and staking of heavy branches using bamboo sticks is required to prevent the lodging of plants. Disbudding of side branches should be done, if desired in standard types. The root suckers should be removed. Staking is necessary for the plant grown in pots for both standard and spray types.

Roses

1. Pruning of roses is done in this month for removing the diseased/dead and criss-crossing branches. The cut ends should be treated with Blitox or Bordeaux paste immediately after pruning. As general rule, rose plants are headed back 45 cm (from the ground level) and keep only 4-5 strong canes, which are growing outside from the centre. Centre of the plant should be kept open for penetration of sunlight.
2. Hoeing of rose beds and application of FYM (2-3 kg per plant) near base of the plants after exposing roots is done in this month. Irrigate the plants after application of FYM.
3. The new plants of roses can also be planted in this month.
4. Root suckers will be arising at very fast rate, these must be removed.

Bulbous Plants

The bulbs of Narcissus (Nargis), Gladiolus, Dahlia etc. can be planted in this month. Stop watering summer bulbous plants like Caladium, Tuberose, Football Lilly etc. when these shed leaves and uproot the bulbs 7-10 days after stopping water. Store the bulbs in cool place after treating with Bavistin @ 0.2 % for 20 minutes.

DAIRY AND ANIMAL HEALTH

1. Watch the animals regularly in the morning and evening for heat symptoms like mucous discharge, bellowing etc. Animals must conceive within 60-90 days after calving.
2. When heat signs are observed, get the dairy animals inseminated by adopting morning-evening formula. Animals seen in heat in morning are to be inseminated in evening and vice versa. Double insemination can be done in cows if their heat is prolonged.
3. Provide clean, dry and good bedding especially for young calves. Colostrum must be fed to the calves within 30 minutes after their birth. Get the calves disbudded and dewormed within 10 days of birth. Apply antiseptic cream on the wound regularly after dehorning.
4. Regular grooming of calves should be done to keep them clean. This practice will also help in detecting wound or tick infection.
5. The crossbred animals are more susceptible to various diseases associated with change in climatic conditions. These animals and their calves are likely to get diarrhoea may be due to internal parasites. Seek veterinary advice immediately and get the calves dewormed and diarrhoea treated.
6. For appropriate milk yield, do the milking quickly, quietly, cleanly and correctly with full hand.
7. Regularly feed the mineral mixture to the animal and give fresh water and green fodder.
8. The adult animals should be dewormed with broad spectrum anthelmintic. The anthelmintic used earlier should be changed in consultation with local Veterinarian to avoid anthelmintic resistance.
9. Prophylactic measures for control of tick, flies and mites should be taken.

POULTRY

1. Provide 14-16 hours lights including daylight to your flock if the flock has come in production.
2. Provide extra grit in addition to marble powder in feed for better quality of egg shell.
3. Keep the litter dry by stirring it 2-3 times in a week. If there is any wet part of litter, remove it immediately. Keep the litter depth 4-5 inches.
4. It is good time for raising broiler chicks. Get your chicks from hatchery of repute. Provide broiler chick feed for the first 4 weeks and then broiler finishes ration for 2-3 weeks to attain proper weight.
5. Always use good quality feed free from dust and molds to avoid infections and drop in egg production.

AGROFORESTRY

Poplar

Irrigate the plantations fortnightly. Control bark eating caterpillar by spraying Quinalphos 25 EC on Chlorpyrifos 20 EC @ 0.05% by using 500 litres of water. Sowing of wheat/sugarcane as intercrop can be done. Poplar leaf defoliator and leaf webber can be controlled with the spray of Quinalphos 25 EC @ 4 ml/lit or Profenophos 50 EC @ 2 ml/lit of water with manually operated rocking sprayer or with a long arm tractor mounted sprayer using 500 litres of water.

Safeda (Eucalyptus)

Sow the seeds on raised beds either by broadcasting or in lines 10 cm apart at a rate of 20 g/m². Cover the beds with a thatch and sprinkle water frequently (4-5 times) to keep the upper soil layer moist. When plants attain 3-4 leaves then transfer these plants into poly bags of 9"x6". Fill these poly bags with nursery soil and farm yard manure in 1:1 ratio and prick these bags at 4-6 points to drain out excess water transfer of seedling to poly bags should be done in the evening. Shift the poly bags containing seedling after every month to avoid root penetration soil. When these plants attain a height of 50 cm then these plants should be planted in 50x50x50 cm pits. Pits should be filled with upper soil and farm yard manure in 1:1 ratio along with 10-15 g Lindane 20 EC and then irrigate regularly. Fodder crops should be grown in 10-15 m wide strip running along the boundary plantation of Safeda.

MUSHROOM CULTIVATION

1. Clean and disinfect your growing rooms using 4-5 % formalin preferably a week before the completion of composting for button mushroom.
2. The ready compost is spawned in the 2nd-3rd week of October in the cross ventilated covered space.
3. If cultivation is carried out on shelves or in trays, the top surface is covered with newspaper sheets and water spray is continued on these papers once a day.
4. For growing in bags, no watering is required in the first two weeks.
5. No cross ventilation is required during spawn run.
6. Disinfect farm yard manure with 4-5 % formalin for its use as casing soil two weeks after spawning.
7. Cultivation of *dhingri* can also be started during this month.
8. Procure fresh paddy straw and make them into bundles for growing paddy straw mushroom during summer season.

BEE KEEPING

Measures should be undertaken to strengthen honey bee colonies to exploit honey flow from *ber* and ensuing flow from *toria* crop. If feasible, the colonies may be migrated to areas where these crops are grown in abundance, for increasing honey production and colonies growth. However, safe distance among the migratory apiaries of different beekeepers must be maintained to prevent the spread of bee diseases and mites. Dust sulphur powder on the top bars of bee combs underneath inner cover @ 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. The latter treatment will also take care of *Varroa* mite. However, formic acid should be avoided during nectar flow. In the case of heavy infestation by *Varroa* mite, destruction of capped drone brood comb part, *Varroa* trapping on drone brood and then its destruction and the use of sticky papers on bottom board can also be integrated. Dusting of icing sugar @ 15g per 10-bee frame strength colony at the evening time in between the bee combs is also helpful in reducing the mite population. Spray of freshly prepared oxalic acid solution (4.2% in 60% sugar solution) @ 5 ml per comb of bees in late evening is also helpful against *Varroa* mite. Proper spacing among the colonies and the extraction of honey from only the brood free supers separated from brood chamber with queen excluder help in preventing spread of *Varroa* among the colonies in apiary. Keep vigil of the brood diseases and on suspicion, immediately consult experts and appropriate control measures should be undertaken; non-chemical methods should be preferred. The suspected colonies should immediately be isolated from the healthy stock. Use of chemicals and antibiotics against bee diseases should be avoided. In the areas of congenial climate and floral conditions, depending upon the colony performance/development including drone bees availability, mass queen bee rearing and colony multiplication or requeening can also be undertaken.

FISH FARMING

1. Apply doses of organic manure – 120 kg of FYM/week or 60 kg/week of poultry manure or 112 kg/week of a mixture of FYM (3 parts) and poultry manure (1 part) or 20 litre/day of biogas slurry
2. Apply 15 kg of single super phosphate (commonly called as super) or 5 kg of diammonium phosphate (DAP) per acre of pond area.
3. Apply quick lime @ 50 kg per acre 2 days after the application of the organic manure and inorganic fertilizer.
4. Continue to feed the fish according to the following feeding table :

Fish weight (g)	Upto 50	50-100	100-200	200-300	300-400	400-500	500-600
Feed per thousand fish /day (kg)	0.1	0.3	1.2	1.3	4.5	8.9	10.4

5. Suspend feeding and fertilization if algal blooms appear on pond surface.
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