FARM OPERATIONS FOR THE MONTH OF OCTOBER

SUGARCANE
Complete the planting of sugarcane upto 20th October. 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 725, PBW 677, HD-3086, WH 1105, PBW 621, HD 2967 and durum wheat WHD 943 and PDW 291 under irrigated conditions and PBW 660 and PBW-644 under rainfed conditions from last week of October.
2. In medium fertility soils, apply 55 kg DAP/acre at sowing to irrigated wheat as a source of nitrogen and phosphorus. If 155 kg single super phosphate is applied as a source of phosphorus then apply 20 kg urea just before pre sowing irrigation or with the preparatory tillage. In potassium deficient soils, apply 20 kg 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.
3. For Judicious use of nitrogen fertilizer use PAU LCC as described below.

- Drill 55 kg di-ammonium phosphate (DAP) per acre at sowing in medium fertility soils. Apply 40 kg urea per acre for timely sown and 25 kg urea per acre for late sown (after mid December) wheat with first irrigation.
- Match leaf colour of the topmost fully exposed intact leaf from the randomly selected ten plants with LCC under shade of your body before second irrigation (about 50-55 days after sowing). Apply urea based on leaf greenness of majority of leaves as per following table:

<table>
<thead>
<tr>
<th>PAU- LCC reading</th>
<th>More than LCC 5</th>
<th>LCC 4.5 to LCC 5</th>
<th>LCC 4 to 4.5</th>
<th>Less than LCC 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea dose (Kg/acre)</td>
<td>15</td>
<td>30</td>
<td>40</td>
<td>55</td>
</tr>
</tbody>
</table>

Note: 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. Termite is a serious pest in light textured soil, particularly in Barani areas. Before sowing, treat wheat seed with Cruiser 70 WS @ 1g/kg or Dursban/Ruban/Durmet 20 EC (chlorpyriphos) @ 4 ml/kg seed to check the termite damage at early stage.

Loose smut and Flag smut: Treat the seed of wheat with Raxil Easy/Orius @ 0.33 ml/kg seed (Dissolve 13 ml Raxil Easy in 400 ml water and mix with 40 kg seed) or Vitavax @ 2 g/kg or Vitavax Power @ 3g/kg or Tebuseed/Exzole/Seedex 2 DS @ 1g/kg for the management of loose smut and flag smut. Seed treatment should be done with seed
treating drum. Seed treatment should not be done earlier than one month of sowing as it affects seed germination.

**PULSES**

**Gram**
1. Grow varieties PDG-4, PDG-3 (under rainfed from 10 to 25 October) and GPF-2 in the Central and South-Western districts and varieties PBG 5 which have resistance to gram blight in the sub-mountainous districts and PBG-7 in all the districts under irrigated conditions.
2. The best time of sowing of Desi and Kabuli gram in the entire state is 25 October to 10 November under irrigated conditions.
3. To manage gram blight, grow PBG-7 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. Also, inoculate the seed with biofertilizer consortium before sowing.

**Lentil**
Use varieties LL-931/ LL 699 and start sowing from end of October. Inoculate the 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.

**OILSEEDS**
1. For *raya*, use varieties RLC-3, PBR 357, 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. PBR 210 and PBR 91 are recommended for South-Western districts only. *Gobhi sarson* (GSC-7, GSC-6, GSL-1, GSL-2, 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. **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.

**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. 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.
3. Conserve surplus maize/sorghum as silage to meet the fodder requirements in lean period for cheaper milk production.

VEGETABLE CROPS

Root Crops
Mix 15 tons of well rotten FYM in soil 10 days before sowing. 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. Complete sowing of varieties of Punjab Safed Mooli-2, Punjab Pasand of radish, L-1 of turnip and Punjab Black Beauty, Punjab Carrot Red and PC-34 of carrot. Use 2-3 kg seed/acre for turnip and 4-5 kg seed per acre for carrot and radish. Sowing on 45 cm ridges is better for obtaining higher yield, easy harvesting, better root shape, less forking and richness in nutrients. Do thinning 15 days after sowing to maintain plant-plant distance for better root development.

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 spacing 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 as per soil and climate conditions. Do gap filling for good crop stand.

Pea
1. Start sowing of early season pea variety Matar Ageta-7, AP-3. Arkel and Matar Ageta-6 in first week of October. Seed rate is 45kg/acre for early crop. Start sowing main 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 seeds with ridger at 15 cm spacing.
2. Wilt and stemfly are serious problems of early sown pea, hence avoid early sowing in badly infested area or when temperatures is too high. Treat the seed with talc formulation of *Pseudomonas fluorescens* @ 15g per kg of seed for the control of wilt. Apply 10 kg Furadan 3 G per acre in furrows at the time of sowing for the control of stemfly.

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, or Isoproturon 75 WP @ 500 g/acre or spray Gramoxone @ 500-750 ml/acre upto 5-10 % emergence of potato crop and complete germination of weeds.
4. For the control of late blight, select healthy tubers for sowing. Infected/rejected tubers taken out of cold stores should be buried instead of keeping such tubers in the open area. Follow high ridge method to avoid tuber infection.
5. Disinfect the seed tubers in 0.083% Emesto Prime 240 FS or 0.25 % Monceren by dipping for 10 minutes to control black scurf. Avoid sowing of potato in fields with high incidence of common scab. Keep the soil wet at tuberization to minimize 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. Sow 4-5 kg seed on raised beds on an area of 8 marlas for raising nursery for one acre. For red onions, sow PRO-7/PRO-6/Pb Naroya; for white sow PWO-35/Pb White and for yellow onions sow PYO-102.
2. Irrigate *kharif* planted crop as per soil and prevailing climate conditions.
3. Plant 8-10 as bulbs at 60 cmx45 cm for raising seed crop on one acre.

**Tomato**
Start sowing nursery of tomato. Use 100 g seed of the recommended varieties/hybrids in two marlas (50 m²) bed area to grow seedlings for an acre. Sow Punjab Ratta for local markets and Cherry tomato varieties, Punjab Red Cherry, Punjab Kaser Cherrry, Punjab Sona Cherry and kitchen gardens and Punjab *Chhuhara* and PTH-2 for long distance marketing and processing purpose. For planting in nematode infested fields, sow nursery of only the resistant variety Punjab NR-7. Varieties like Punjab Ratta and Punjab Upma can also be planted. To check damping off of seedlings in nursery, treat the seed with Captan @ 3 g/kg seed before sowing.

**Leafy Vegetables**
Sow Palak by using 5 kg seed per acre at 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. Sow Kasuri methi variety Punjab Supreme using 10kg seed per acre. Sow by pora method in rows 20 cm apart. Apply 65kg urea in 3 split doses, half at sowing and remaining two in equal split after 1st & 2nd harvesting of leaves.
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.

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. For management of physiological fruit drop in 'Umran' ber spray 15 g NAA (Naphthalene Acetic Acid) in 500 litres of water in 2nd fortnight of October and again in 2nd fortnight of November. Dissolve NAA in small quantity of Alcohol.

4. The orchard soil should be cultivated for the control of perennial weeds like baru, kahi, motha, Parthenium etc.

5. Apply paddy straw mulch @ 5.0 ton/acre under the tree canopies in ber orchards during the second fortnight of October.

6. Apply first half dose of N (500 g urea/plant) to the loquat plants.

7. To control citrus leaf miner, spray 200 ml Crocodile/Confidor 17.8 SL in 500 litres of water.

8. Transplanting of papaya seedlings (15-20 cm tall) should be completed by mid October.

8. To control citrus canker, spray the crop with 50 g of Streptocycline + 25 g of Copper sulphate in 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 Bordeaux mixture (2:2:250) for managing leaf mold and leaf spots.
ORNAMENTALS

**Annuals**

One month old the seedlings of winter season annuals should be transplanted during this month in the beds or pots. The annual flowering plants suitable for pots are *Calendula, Gazania, Pansy, Allyssum, Petunia*, etc.

**Chrysanthemum**

Staking of heavy branches using wooden sticks is required to prevent the lodging of plants. Staking is necessary for the plants grown in pots both for standard and spray types. Disbudding of side branches should be done in standard types.

**Roses**

1. Roses are pruned in this month for removing the diseased/dead and criss-crossing branches. The cut ends should be treated with Bordeaux paste immediately after pruning. As general rule, rose plants are headed back 45 cm (from the ground level) and keep only 3-5 strong canes, which are growing outwards from the centre to the centre of the plant open.
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 rose 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 Gladiolus, Narcissus (Nargis), 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 and store them if necessary.

**Marigold**

Seed sown during September month, will be ready for transplanting in the field. The seedlings which have acquired 3-4 leaves will be ideal for transplanting. Both African and French marigold can be planted for cultivation.

**Gerbera**

Gerbera grown under protected cultivation during previous year will start flowering. Take care while harvesting the flower, so that plant is uprooted while plucking the flowers. Care must be taken for aphid and whitefly.
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 Poplar plantations fortnightly. Control bark eating caterpillar by collecting and destroying the infested leaves. Sowing of wheat/sugarcane as intercrop can be done. In the light soils, deficiency of zinc is observed which is observed in upper leaves. The leaves turn into yellow. Apply 100g, 200g ZnSo4 (21%) per plants in the plantations of 1, 3 and 5 years age.

**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 into the soil. When these plants attain a height of 50 cm then these plants should be planted in 50×50×50 cm pits. Pits should be filled with upper soil and farm yard manure in 1:1 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 (1st – 2nd week of October).
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 (1st two weeks after spawning).
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 in the Punjab and from sarson in Rajasthan. 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 in the evening 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 thrice at weekly interval 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 horizontal 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 suggested control measures should be undertaken; non-chemical methods should be preferred. The suspected colonies should immediately be isolated from the healthy stock. Use of antibiotics against bee diseases should be avoided. In the areas of congenial climate and floral conditions and depending upon the colony performance/development including drone bees availability, mass queen bee rearing and colony multiplication or requeening can also be undertaken.
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