FARM OPERATIONS IN JUNE - JULY

PADDY

1. Apply second dose of nitrogen @ 26 kg urea/acre to the nursery sown during mid May.
2. Start transplanting varieties PR-129, PR-128, PR-127, PR-126, PR-124, PR-123, PR-121, PR-122, PR-114 and PR 113, from 20 June onward. PR-126 vacates the fields earlier and facilitates timely sowing of potato, peas or berseem crops. Transplant 25-30 days old nursery for PR-126 and PR-124 whereas 30-35 days old for medium duration varieties.
3. Paddy seedlings in the nursery sown in light textured soils generally become yellow or whitish due to iron deficiency. To such nursery, spray 0.5 to 1.0 kg ferrous sulphate dissolved in 100 litres of water. Apply 2-3 sprays at weekly interval.
4. Dhaincha grown for green manuring should be buried at the time of puddling, a day before transplanting.
5. At the time of transplanting, apply 30 kg urea per acre to medium soils. Apply 25 kg urea/acre at last puddling, when leaf color chart (LCC) is to be used for need based nitrogen application to paddy. Phosphorus application should be omitted where paddy follows wheat which had received recommended dose of phosphorus. Apply 75 kg single superphosphate or 27 kg DAP per acre and 20 kg muriate of potash per acre to soil testing low in phosphorus and potash, respectively. Avoid excessive use of nitrogen as it leads to higher incidence of diseases and insect pests.
6. In transplanted rice, apply second and third dose of 30 kg urea per acre each after 3 and 6 weeks of transplanting. In short duration varieties like PR 124 and PR 124, apply third dose of urea, 5 weeks after transplanting. For need based nitrogen application by using PAU-Leaf Color Chart (LCC), match the color of randomly selected 10 fully expanded new leaves after 2 weeks of transplanting. If the color of 6 or more leaves out of 10 is less than the shade 4 on LCC, apply 25 kg urea per acre. On the other hand if color of 6 or more leaves out of 10 is darker or equal to shade 4 on LCC do not apply urea. Follow the procedure at 7-10 days interval till flower initiation and apply urea if needed. In ‘Direct Seeded Rice’ apply 43 kg urea per acre each at 4, 6 and 9 weeks of sowing.
7. On coarse textured soils (sandy soils) iron deficiency may appear as interveinal chlorosis of younger leaves along with poor growth. In excessive iron deficiency, the new leaves turn white. To correct it, spray 1% Ferrous Sulphate solution (1 kg ferrous sulphate in 100 litres of water) 2-3 times at weekly intervals. Soil application of Ferrous Sulphate is not effective.
8. For control of weeds, use 45 g Topstar 80 WP (oxadiargyl) or 60 g Sathi 10 WP (pyrazosulfuron) or 1200 ml of any recommended formulations of butachlor 50 EC or butachlor 50 EW or 500 ml of anilofos 30 EC or pretilachlor 50 EC @ 600 ml or Rifit Plus 37 EW 750 ml or Stomp 30 EC @ 1000-1200 ml/acre by mixing with 60 kg of sand. Broadcast any one of the herbicides uniformly in standing water within 2-3 days of transplanting.
10. To check foot rot of Basmati rice, treat the seed with talc based formulation of *Trichoderma harzianum* @ 15g/kg and then dip the roots in solution of *Trichoderma harzianum* @ 15g/ litres of water for 6 hours before transplanting.

11. Complete transplanting of Punjab Basmati -5, Punjab Basmati -4, Punjab Basmati 3, Punjab Basmati 2, Pusa basmati 1637, Pusa basmati 1718, Pusa Basmati 1121 and during the first fortnight of July and CSR 30, Pusa Basmati 1509, Basmati 370 and Basmati 386 should be transplanted during the second fortnight of July. After 3 weeks of transplanting, apply first half dose of 9 kg urea/acre to CSR 30, Basmati 370 and Basmati 386, 18 kg to Pusa Basmati 1121, Punjab Basmati -5, Punjab Basmati -4, Punjab Basmati 3, Punjab Basmati 2, Pusa basmati 1637 and Pusa basmati 1718 and 27 kg to Pusa Basmati 1509. Omit application of P fertilizer to basmati, if recommended amount of P was applied to wheat.

12. For control of weeds, use 1200 ml of any recommended brand formulation of Butachlor 50 EC or Pendimethalin 30 EC 1000-1200 ml or Pretilachlor 50 EC 600 ml or Pretilachlor 37 EW 750 ml or Oxadiargyl 80 WP 45 g or Anilofos 30 EC 500 ml or Pyrazosulfuron ethyl 10 WP 60 g/acre by mixing with 60 kg of sand. Broadcast any one of the above herbicides uniformly in 4-5 cm deep standing water within 2-3 days of transplanting.

13. For the control of broadleaf weeds, spray Algrip 20 WG 30 g or Sunrice 15 WDG 50 g or Londex 60 DF 40g or Segment 50 DF 16 g/acre in 150 litres of water after 20-25 days of transplanting. Before spray, the standing water from the field should be drained out and irrigation may be applied one day after spray. The spray should be done on a clear and calm day.

14. The rice fields showing more than 5% dead hearts due to attack of stem borer should be sprayed with either of the insecticide i.e. 20 ml Fame 480 SC (flubendiamide) or 170 g Mortar 75 SG (cartap hydrochloride) or one litre of chlorpyriphos 20 EC in 100 litres of water per acre. Further application of any of these insecticides may be repeated as and when damage reaches economic threshold level. These insecticides also control leaf folder. Leaf folder infested plants show white streaks on leaves. When the leaf damage reaches 10 per cent (ETL) then spray either of the above said insecticides.

15. The crop planted early, may show the *Kresek* phase of bacterial leaf blight. In case of *Kresek* attack, the whole plant wilts and become straw coloured. Avoid excessive use of nitrogen and flooding of fields.

**SUGARCANE**

1. During the month of June, irrigate the crop at 7-12 days interval and apply second dose of urea @ 65 kg per acre along the rows to plant crop.

2. Check attack of top borer by applying 10 kg Ferterra 0.4 GR or 12 kg of Furadan/Diafuran/Furacarb/Fury 3G (carbofuran) per acre at the base of shoots of sugarcane during the last week of June, only if the top borer damage exceeds 5 % level. Earth up slightly and give light irrigation to the crop immediately. If sugarcane fields get flooded with water in July, excess water may be drained out.

3. Black bug sometimes becomes serious particularly on ratoon crop during this month. Check this pest by spraying 350 ml of Dursban/Lethal/Massban/Goldban 20 EC (chlorpyriphos) in 400 litres of water per acre. Direct the spray into the leaf whorl.
4. If dry weather conditions prevail, mite may also cause severe damage to this crop. Baru is the alternative host plant from which spreads mite to sugarcane crop. So remove Baru weed growing around the sugarcane fields.

**COTTON**

1. In situations where it sits emerges after first irrigation or with the rain shower, Stomp 30 EC @ 1 litre/acre dissolved in 200 litres of water can also be applied as post-emergence after first irrigation to cotton in the month of June. If the weeds emerge before the application of the herbicide, a light hoeing/inter-culture may be done as the Stomp does not control the emerged weeds.

2. Apply 33 kg urea/acre to cotton varieties and 45 kg urea/acre to Bt/non Bt hybrids after thinning. PAU-LCC can also be used to apply need based N, in Bt cotton.

3. To ensure optimum stand of the crop, 3 week old cotton seedlings which were sown earlier in polythene bags filled with soil and farm yard manure in equal parts can be transplanted in the gaps.

4. To control weeds in between the crop rows in place of hoeing/interculture, apply Gramoxone 24 SL (paraquat) at 500 ml/acre in 100 litres of water when crop is 6-8 weeks old and about 40-45 cm in height as directed spray. To avoid drift, spray the herbicide on non windy days, using a protective hood so that herbicide does not fall on crop leaves. Avoid application of the herbicide on the top foliage of the cotton plants. Application of either herbicide at 6-8 weeks after sowing when crop is 40-45 cm high can replace hand weeding/hoeing etc.

5. Cotton crop is highly sensitive to standing water during early growth stages. Hence, drain out the excess water from the cotton fields.

6. Regularly monitor the whitefly infestation on cotton crop and also on alternate hosts like brinjal, potato, tomato, okra, moong, mash and guar. Spray the crop when its population reached 6 whiteflies per leaf in the upper canopy before 10 AM with 80g Ulala 50 WG (flonicamid) or 200g Polo/Craze/Ruby/Ludo/Shoku 50 WP (diafenthiuron) or 200 ml Oberon/Voltage 22.9 SC (spiromesifen) or 800 ml Fosome/E-mite/Volthion/ Gold Mit 50 EC in 125-150 litres of water/acre. In case severe attack of thrips, mites and jassid is noticed i.e. the leaves start curling, spray the crop with 80 g Ulala 50 WG or 40 ml of Confidor 200 SL /Confidence 555/ Imidacel or Markdor (imidacloprid) 17.8% or 40 g Actara/Extra Super/ Dotara/Thomson 25 WG (thiamethoxam) in 100 litres of water per acre.

7. Uproot and destroy leaf curl infected American cotton plants upto initiation of fruiting phase. Protect the crop against white fly vector by using recommended insecticides. Keep the fields free from Kanghi buti (Sida sp.) and Peeli buti (Abutilon sp.) which act as collateral hosts of leaf curl virus.

8. To control fungal foliar leaf spots or blight, spray the crop with Amistar Top @ 0.1% (200ml in 200 litres of water) per acre at an interval of 15 to 20 days starting just after appearance of symptoms.

9. After rains or irrigation some plants show wilting. This is Parawilt which can be checked by spraying cobalt chloride @ 10 mg/ litre of water on the affected plants at the initial stage of wilting

**MAIZE**
1. Start sowing maize from the beginning of June in the submontane districts or areas which are prone to damage by water stagnation. If there are no weeds and stubbles of the previous crop then maize can be sown without preparatory cultivation. For weed control, use Atrataf 50 WP (atrazine) @ 800 g/acre in heavy textured soils and 500 g/acre in light soils in 200 litres of water within 10 days of sowing. Atrazine can also be sprayed 10 days after sowing maize for controlling weeds.

2. Maize can be sown in trenches, this practice saves irrigation water and protect the crop from lodging.

3. Apply 37 kg urea per acre to maize PMH11, PMH 1, Prabhat & Punjab Sweet Corn 1 and 25 kg urea to PMH 2, Kesri and Pearl Pop Corn at the time of sowing. If farmyard manure has been applied at the rate of 6 tonnes per acre year after year, there is no need to apply any fertilizer at sowing.

4. Apply second dose of nitrogen (37 or 25 kg per acre, respectively for the long and medium/short duration cultivars) at knee high stage. In rainfed areas, the response of fertilizer application varies with the stored moisture in the soil and according to soil texture. Apply 70 kg urea, 35 kg DAP or 100 kg single super phosphate and 15 kg muriate of potash to sandy loam to clay loam soils with adequate stored moisture. For loamy sand soils having low moisture stored, reduce the doses of all the fertilizers to half. In雨fed areas, drill half nitrogen and all phosphorus and potash at sowing and top dress the other half of nitrogen one month later. Omit application of P and K fertilizers, if maize in adequately fertilized with FYM.

5. Do not allow the rain water to stand in the main crop as this crop is highly sensitive to standing water and promotes bacterial stalk rot.

6. To check the attack of maize borer, uproot the borer damaged plants and bury them at the time of thinning or use Trichogramma bioagent for controlling this borer. Spray the crop with 30 ml Coragen 18.5 SC using 60 litres of water per acre. Spray work should be initiated when the crop is 2-3 weeks old. After this application, there will be no need to spray further any pesticide to check this pest. Maize borer can be controlled by using Trichogramma, a bioagent as per PAU recommendation.

7. Fall armyworm, a new insect pest of maize, feeds voraciously on the central whorl leaves causing round to oblong holes and producing a large amount of faecal matter. The larvae can be easily identified by the presence of four spots arranged in square pattern at tail end, and a predominant white coloured inverted Y-shaped mark on the head. Avoid staggered sowing in adjacent fields to minimize the spread of this insect. Spray the grain crop with Coragen 18.5 SC (chlorantraniliprole) @ 0.4 ml or Delegate 11.7 SC (spinetoram) @ 0.5 ml or Missile 5 SG (emamectin benzoate) @ 0.4 g per litre of water. Direct the spray nozzle towards the whorl, for its effective control.

8. Spray the crop with Indofil M 45 @ 200 g/100 litres of water to protect against diseases.

**GROUNDNUT**

1. Sow groundnut with the advent of monsoon from end of June under rainfed conditions.
2. Treat the seed with 1.5g seedex or 5 g Thiram or 3 g Indofil M-45/kg of kernels before sowing, to control collar rot disease. The rainfed crop to be sown in the first week of July must be treated.
3. Use 38 kg kernels for M-522 and SG-84 and 40 kg for SG-99.
4. Apply 13 kg urea, 50 kg single superphosphate, and 17 kg muriate of potash per acre at the time of sowing. If the source of phosphorus is other than single superphosphate, 50 kg gypsum/acre should be applied. If groundnut follows wheat which received recommended dose of phosphorus, omit application of phosphorus. Zinc deficiency can be corrected by applying 25 kg zinc sulphate (21%) or 16 kg zinc sulphate (33%) per acre.
5. The white grub attack can also be reduced by applying 13 kg Furadan 3 G per acre in the soil at or before sowing.

**Kharif Pulses**

1. Sowing of mash (Mash 114, Mash 338) should be started from last week of June and completed upto first week of July. Sowing of moong (ML 2056 and ML 818) should be completed during the second fortnight of July as delayed sowing result in lower yields.
2. Grow SL-958, SL-744, SL-525 varieties of soybean which are resistant to yellow mosaic virus, using seed rate of 25-30 kg/acre. Seed of soybean should be treated with specific bacterial culture at the time of sowing. If soybean is being sown for the first time in the field, use of bacterial culture is very important practice.
3. Sow the crop in good water with a pre-sowing irrigation during the first fortnight of June. The crop should be sown in lines 45 cm apart. This crop can also be sown on beds. Crop sown on beds is not affected by the stagnation of rain water. Prefer bed sowing in heavy soils.
4. For moong, apply 11 kg urea and 100 kg single superphosphate and for mash, apply 11 kg urea and 60 kg single superphosphate at the time of sowing. Treat the sowing with recommended rhizobium culture for higher yield.
5. To soybean, apply 4 tonnes farm yard manure, 28 kg urea and 200 kg single superphosphate/acre at sowing. Apply only 150 kg single superphosphate/acre, when it follows wheat which had received recommended dose of phosphorus.
6. Check weeds in mash, moong and arhar by giving one or two hoeings. In soybean, weeds can be controlled with the use of Stomp 30 EC @ 600 ml/acre within two days of sowing. Dissolve the recommended quantity of herbicide in 200 litres of water per acre and spray it uniformly. Alternatively weeds can be controlled by post emergence application of Parimaze 10 SL at 300 ml/acre after 15-20 days of sowing.
7. Grow mosaic tolerant variety (ML 2056 and ML 818) for the control of yellow mosaic virus.
8. Tobacco caterpillar can be checked by collecting & destroying its egg masses & young larvae feeding gregariously on leaves.

**Fodder Production**

1. Berseem crop for seed production may be harvested and threshed in June to save it from being damaged by rain.
2. *Kharif* fodders sowing at regular intervals may be continued for continuous supply of sufficient green fodder. Irrigate the fodder crops regularly. Sorghum may be sown for providing fodders late in the *kharif* season.

3. Harvest the green fodder at optimum stage of harvesting to provide maximum nutrients to animals for cheap milk production and save concentrate.

4. Sowing of cowpea variety 88 should be carried out during the last week of July and cowpea variety CL 367 should be sown in first week of August. Use 8 Kg seed for CL 367 and 16 kg in case of cowpea 88 per acre if cowpea seed crop is to be sown.

5. Cultivate non-legume fodders in mixture with legume fodders like cowpea or guara

**VEGETABLES**

1. Start sowing of okra varieties Punjab Suhawani and Punjab-8 which are tolerant to yellow vein mosaic virus. Use 4-6 kg seed per acre and soak the seed in water for 24 hours before sowing. Sow Punjab Suhawani variety of okra. Apply 15-20 tonnes of FYM and 40 kg urea per acre for average fertility soils at the time of sowing. Second dose of 40 kg urea/acre should be applied after first picking.

2. Irrigate the standing vegetable crops once a week, however, in light soils, the interval may be reduced to 4 to 5 days.

3. For raising nursery of different vegetables, apply 20 to 25 baskets of well rotten farmyard manure per marla and mix it thoroughly in to the soil and irrigate the plot. Sow 500 g seed of early variety of cauliflower, and 300 g seed of PBHR-41, PBHR-42, PBH-3, PBHL-5, Punjab Barsati, Punjab Nagina and Punjab Neelam of Brinjal in one marla bed area to obtain seedlings for transplanting in one acre.

4. Uproot the bulbset raised for Kharif onion and store them in baskets under shade at cool place for transplanting in August.

5. To check fruit and shoot borer attack in brinjal, spray 80 ml Coragen 18.5 SC or 80 g Proclaim 5SG in 100-125 litres of water per acre.

6. Sow radish variety Pusa Chetki, Punjab Pasand in this month of July. Roots of Pusa Chetki are small to medium, thick white in colour and rat tailed. Use 4-5 kg seed for sowing one acre by keeping 45 cm spacing between ridges and 7.5 cm between plants.

7. Sow 8-10 kg seed of Cowpea 263 per acre at a distance of 45 cm between rows and 15 cm between plants. Apply 45 kg urea, 100 kg single superphosphate and 16 kg muriate of potash per acre at sowing.

8. Use 2 kg seed per acre for sowing of bottle gourd, sponge gourd, bitter gourd, ash gourd, tinda and 1.0 kg seed for wanga as per recommendations.

9. Transplanting of suitable early varieties of cauliflower should be done at 45 x 30 cm spacing. Apply 40 tonnes of FYM, 55 kg urea, 155 kg single superphosphate and 40 kg muriate of potash per acre at the time of sowing. Apply second dose of 55 kg urea/acre after 4 weeks of transplanting.

10. Plant 25000 - 30000 cuttings of sweet potato variety Punjab Sweet Potato-21 at a distance of 60 cm between ridges and 30 cm between plants. Apply 10 tonnes of FYM, 125 kg CAN, 155 kg single superphosphate and 35 kg muriate of potash per acre to raise a good crop.

**HORTICULTURAL OPERATIONS**
1. Many fruit trees like citrus, mango, pear, litchi etc. are carrying fruits. It is, therefore, essential that the irrigation be given at proper interval. The litchi trees need irrigation twice a week during this period, it reduces cracking of fruits to a great extent and helps in proper size development.

2. The newly planted young and tender plants should be protected from hot weather by applying light and frequent irrigation, white-washing or wrapping over the exposed trunk portions.

3. The pruning of ber trees should be completed upto the first week of June. The farmyard manure to ber trees should be applied after the completion of their pruning. Inorganic fertilizers to guava should be added to encourage growth in July-August for getting maximum flowering during August-September for winter season crop. Cultivate the guava orchards in June so that the field can be made weed free and pupae of fruit flies can be exposed to reduce the menace of fruit fly.

4. To correct zinc deficiency in citrus, spray the trees with 0.3% zinc sulphate solution without adding lime to summer flush in June.

5. Mango trees carrying good load of fruits should be applied with additional one kg CAN per tree during this month.

6. To control insect pests of citrus like citrus psylla, and leaf miner, spray 200 ml Crocodile/Confidor 17.8 SL or 160g Actara/Dotara 25 WG in 500 litres of water per acre. To control fruit fly in peach, pick and destroy the infested fruits by burrying atleast 60 cm deep in the soil. Stir the soil well during this month to expose and kill the pupating larvae/pupae. Fix PAU fruit fly traps @ 16 traps/acre during first week of May.

7. In citrus to check withertip or dieback, scab and canker diseases, Bordeaux mixture (2: 2: 250) should be sprayed at 15 days interval. In mango, spray Bordeaux mixture 2: 2: 250 at fortnightly interval for control of diseases.

8. To check rotting of grape berries, spray grapevine with 0.2% Ziram at 7 days interval. Stop spraying a week before harvesting the bunches. Bordeaux mixture (2 : 2 : 250) can be sprayed in the first and last week of July to check anthracnose.

9. To control pear disease (shoot blight and canker), spray Bordeaux mixture 2: 2: 250 or 0.3% copper oxychloride.

10. Layout, preparation of soil, pit digging and filling for planting evergreen fruit plants in July-August can be started of the middle of June.

11. Drain out excess rain water from the orchards in July as it may cause severe damage to fruit plants particularly citrus and papaya.

12. The month of July is the right time for planning of evergreen fruit plants such as citrus, mango, litchi, guava, loquat, ber, Amla and papaya. It is also suitable time for the transplanting of papaya seedlings in the fields.

13. The vacant land in between the fruit plants may be put under kharif pulses like moong, mash, moth or jantar, etc. for green manuring or as an inter crop.

14. To improve fruit size and increase yield in Kinnow mandarin, give foliar sprays of potassium nitrate @ 1.0%.

15. Pear fruit should be carefully picked so that the spurs are not damaged/broken. The fully developed hard ripe mangoes should be picked for artificial ripening.

16. The full grown ber plants should be given 500 g urea per tree during this month. The second coat of white wash should be given. This will help to check the adverse effect of heat on the exposed tree trunk.
17. For control of mealy bugs in citrus and grapes; monitor regularly the infestation of trees by observing the underside of leaves, young shoots, fruits and branches. Maintain the orchards neat and clean. Do not allow the branches of trees to touch the ground. Prune or remove the infested branches and destroy the same.

18. For the control of gummosis in citrus spray of sodium hypochlorite (5%) can be done on soil surface and main trunk under the tree canopy @ 50ml/tree in 10 litres of water.

19. Bagging of individual mature green and hard fruits of guava with white coloured non-wooven bags at the end of June will protect the fruits from fruit fly damage. Fix 16 PAU fruit fly traps/acre in the first week of July and recharge the same if required. Continuously remove and bury the infected fruits from orchards.

FARM FORESTRY

Transplanting of most of the tree species like Safeda, Kikar, Subabul, Tahli, Dek, Nim, Sagwan etc. should be done during rainy season. The pits of 50 x 50 x 50 cm should be filled with 50% top soil and 50% farm yard manure. Plant the seedlings in the centre of the pit after gently removing the polythene bag. Care should be taken that the earth ball and roots may not get damaged. The plants should be watered immediately after planting.

Poplar
1. All the kharif crops (except paddy) can be grown in poplar during first two years of tree growth. In the plantations of more than three years age, kharif fodders such as sorghum, bajra, guinea grass etc. can be grown.
2. Poplar leaf defoliator and leaf webber should be controlled by collecting and destroying infested leaves.

Safeda
Safeda is commonly planted on the field boundaries. Eucalyptus clones C-72, C-413 and C-2045 are suitable for cultivation under Punjab conditions. Plant the Eucalyptus on boundary in North-South row orientation to minimize the light competition of trees with agriculture crops. Separate agronomic management of crops is required for 10-15 m wide strip running along the boundary plantation of Safeda. Fodder crops (e.g. bajra, jowar) should be grown rather than grain crops in 10-15 m wide strip running along the boundary plantation.

ORNAMENTALS

Permanent plants
1. This is the most suitable time for planting ornamental trees, shrubs and creepers in a planned way. They can be planted in the well prepared pits. The size of the pits for trees should be 3’×3’×3’ and for shrubs and climbers 2’×2’×2’.
2. Most of the shrubs like Hibiscus, Chandani. Bougainvillea, Hamelia, Har Shingar etc can be propagated from terminal shoot cuttings.
3. The saplings planted during February-March should be protected from hot winds by using sarkanda. Irrigate the plants twice a week in July. Bougainvillea can be pruned after flowering.
**Pot plants**

It is the suitable time for potting and repotting and also for propagation of pot plants. Care must be taken while filling pots for drainage hole. Water the pot plants 2-3 times a week in July but avoid overwatering and move pot plants from indoor to outer shady place once or twice a week. Keep the pot plants in groups.

**Lawns**

For making a new lawn, grass roots of the desired variety are dibbled 10-15 cm apart in the already prepared land, followed by irrigation, watering should be given daily until the grass is well established. We can also rejuvenate the old lawns by scraping and applying fertilizers in this month. Watering of lawn may be done depending upon the rains. The lawns must be watered twice a week in July.

**Annuals**

The summer season flowering annuals should be watered 2-3 times a week. Seeds of rainy season flowering annuals like balsam, gailardia, cosmos, cockscob etc. may be sown on the raised beds. The balsam seeds can be sown directly in the pots/bed.

**Rose**

Keep on removing the dried, diseased shoots and root suckers. Water the beds twice a week for proper health of the plants.

**Chrysanthemum**

End of June is the right time for propagation of chrysanthemum. Terminal cuttings 5-7 cm long are taken from the mother plants and planted in sand bed under shade for rooting. Remove lower 2-3 leaves before planting in the beds. Keep the beds moist by watering. The rooting will take place in 2-3 weeks. The plantation of terminal cuttings of chrysanthemum in pure sand or in the burnt rice husk can be continued. Such cuttings planted in June, must have rooted by July. These can be transplanted in the pots or in the beds.

**Marigold**: Marigold variety Punjab Gainda No 1 can be planted during July for seed production.

**DAIRY FARMING**

1. Feed the animal during the cooler hours of the day. Do not feed wilted fodder crops.
2. Keep all the dairy animals in shade and provide wallowing (particularly for buffaloes) or bath the animals 1-2 times daily to avoid the heat stress.
3. Increase 2-4% crude protein content in the concentrate feed by adding 5 to 8% more oilseed cakes in order to compensate for lowered dry matter intake.
4. Silent heat is a major problem during this period especially in buffaloes. Judge the heat symptoms of animals in the morning and evening from mucous discharge from vagina rather than other symptoms in summer.
5. Get all the animals vaccinated against *Haemorrhagic septicaemia (Gal Ghuto)* and Black quarter (Pat Soj) if not done in the month of May.
6. Save your animals from ticks, lice and flies as these parasites suck blood, cause irritation and spread diseases.
7. If an animal starts bleeding from nose, don’t disturb it much and pour cold water over face and keep head lifted. Transfer animal to a cool shady place. Consult your Veterinarian as early as possible.
8. In case of high rise of temperature in dairy animals, get their blood tested for protozoan disease from the Department of Parasitology, Guru Angad Dev Veterinary and Animal Science University, Ludhiana or State District Laboratories/Polyclinics near to your area.
9. During summer season, concentrate should contain 2-3 per cent more crude protein content and therefore increase 5 to 7 per cent more oilseed cakes in the concentrate mixture.
10. The animals in heat should be judged for signs of frequent urination and vaginal discharge.
11. Care of new born calves should be carried out. Steps for dehorning of buffalo calves must be taken during the first week. Deworm the calves at 2 weeks of age and thereafter repeat deworming after 2 weeks.
12. The animals which have not been vaccinated against H.S. (Gal Ghotu) yet, must be got vaccinated. In case of any outbreak of Gal Ghotu consult your local Veterinary Doctor immediately for treatment.
13. Hot and humid climate may lead to conditions of ring worm in animals so keep the animals clean and dry. Similarly, protect wounds from flies to avoid maggots infestation.
14. Animal shed should be dry, airy and well ventilated.

POULTRY FARMING

1. During hot months, double the number of water containers to meet the increased requirement of water. However, during these days automatic waterers should be used.
2. Sprinkling of water around the poultry sheds, and green area surrounding the shed is helpful in reducing the heat. White washing of poultry shed from outside will be helpful in reflecting the sun rays back from the shed.
3. Increase the proteins, minerals and vitamins level in feed as the feed intake is reduced during summer.
4. If there is sudden fall in egg production or mortality, consult the poultry expert immediately.
5. Get the birds of 6 to 8 weeks of age vaccinated with injection of R2B Ranikhet disease vaccine. Do not give this, vaccine in drinking water or Lassi. In the case of an outbreak of Ranikhet disease immediately give R2B vaccine injection to healthy birds to avoid further loss. Provide vitamin supplemented water to vaccinated birds.
6. Provide no light to growers of 6 to 16 weeks age but layers must be provided light at night to compensate the decreased feed consumption during the day time.
7. The poultry feed to be used in hot and humid season should have 15-20 per cent more proteins, minerals and vitamins in order to compensate reduced feed intake.
8. The number of water containers should be sufficient so that the birds do not have to walk more than 8 feet to reach them. Water must remain cool and clean. Change water 3-4 times during the day. If possible, fix automatic waterers in order to provide clean and cool water.
9. Avoid dampness during rainy season to avoid incidence of coccidiosis. Add coccidiostats in the poultry feed for prevention of this disease. Avoid the entry of rain inside the sheds.
10. Be careful about the health of the birds. If there is any sick bird, consult the poultry specialists of your area. Follow bio security measures strictly.

HONEY BEE MANAGEMENT
For protecting honey bee colonies from harsh summer heat, arrange to place them under thick shade of trees or make alternate provision of some artificial shade. To meet the increased water requirement, put a few sticks/bushes, etc. in the water tanks of tube wells, for the bees to sit on while lapping the water. This requirement can also be met by providing water in earthen bowls and keeping these under the legs of hive stand. This will also keep the ants away from the colonies. Colonies should be made ventilated by placing thin twig pieces (splinters) between bottom board & brood chamber, and between brood chamber & super chamber, but ensure bee tightness of such created spaces. Even staggering brood chamber on bottom board and super chamber on brood chamber facilitate increase in ventilation by creating a little bee-tight space. Even the gate can be enlarged if need be. Extract sealed (ripe) honey from sunflower flow from broodless combs preferably from honey supers. During the nectar flow, these honey supers should be separated from brood chamber by placing horizontal queen excluder in between the two chambers. Follow all precautions to avoid robbing during and following honey extraction.

Inspect all the colonies quickly in the evening and in the case of floral dearth and scarcity of nectar/honey reserves in the colony, provide sugar solution (sugar and water mixed in ratio 1 : 1) to all the colonies in the late evening, using Division Board Feeder. In the case of pollen dearth, feed bee collected trapped and stored pollen or PAU pollen supplement/substitute. Take measures to avoid and check robbing. Protect colonies from the attack of wax moth, ants, wasps and green bee eater by following the recommended measures. Also protect the stored combs against wax moths' infestation. Unite weak, queenless and laying worker colonies, if any, with strong queen-right colonies. Must keep the colonies on high stands and tilt their anterior a little downwards to prevent the entry of rain water into the colonies or its accumulation inside the hive. Do not keep colonies in the way of dry water-way/channels. Must use top cover covered with galvanized iron sheet. Shift the colonies from low land areas to upland. Keep the surroundings cleaned of vegetation growth for proper aeration of the colonies to promote bee foraging. Ensure that aeration facilitating wire gauge of inner cover is clean and not clogged with propolis.
MUSHROOM GROWING

1. Procure and store fresh wheat straw and well decomposed farm yard manure during the month of April for cultivating white button mushroom in the coming season of the year (October-March).

2. Paddy straw mushroom cultivation is carried out during the month of June on paddy straw bundles (about 1.5 kg each), wetted and spawned.

3. Paddy straw beds should be watered twice a day and harvesting of mushrooms to be continued for one month on daily basis. Discard the old beds once harvesting is done and make fresh beds for new crop.

4. Bags of milky mushroom spawned during April-May are to be cased with 1” layer of casing soil (disinfected farm yard manure).

5. Cropping of milky mushroom starts in bags after 15-17 days of casing.

6. Procure decomposed FYM for its use for white button mushroom cultivation (Oct.-March) and store it in the form of a loose pile about 2’ high.

Compiled by: Amarjit Singh