FARM OPERATIONS IN JULY

PADDY

1. Complete transplanting of Punjab Basmati -7, 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 -7, 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.

2. For the control of 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.

3. 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.

4. For the control of broadleaf weeds, spray Algriz 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.

5. 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 126 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.

6. On coarse textured soils (sandy soils) iron deficiency may appear as interveinal chlorsis 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.

7. 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.

8. 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.

**COTTON**

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

2. 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.

3. 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 Fosmite/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.

4. 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.

5. 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.

6. 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. For control of weeds, use atrazine 50 WP as pre-emergence application @ 500g per acre on light textured soils and @ 800 g per acre on heavy textured soils. Atrazine can also be sprayed 10 days after sowing maize for controlling weeds.

2. 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.

3. 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 rainfed 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 is adequately fertilized with FYM.

4. Maize borer feeds on growing points of plants and forms dead hearts. Control this pest by spraying 30 ml Coragen 18.5 SC (chlorantraniliprole) in 60 litres of water per acre. Spray work should be initiated when the crop is 2-3 weeks old. Maize borer can also be controlled by using Trichogramma, a bioagent as per PAU recommendation.

5. 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. If the infestation is in patches or the crop is more than 40 days old and spraying is difficult, apply soil-insecticide mixture (about half gram) in the whorls of the infested plants. To prepare the soil–insecticide mixture, add 5 ml of Coragen 18.5 SC or Delegate 11.7 SC or Missile 5 SG in 10 ml of water and mix well in one kg of soil.

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

**SUGARCANE**

1. Earthing up of the sugarcane crop may be done if not done earlier during the first week of July. If sugarcane fields get flooded with water, excess water may be drained out.

2. The attack of top borer can be checked by applying 10 kg Ferterra 0.4 GR or 12 kg Furadan/ Diafuran/ carbofuran encapsulated 3 G at the base of the shoots upto first week of July. Earth up slightly to check the granules from flowing with the irrigation water and irrigate the crop immediately. Apply granules only if attack exceeds 5% level.

**GROUNDNUT**

1. The rainfed crop to be sown in the first week of July must be treated with fungicide for the control of collar rot disease. For this purpose, use 2ml Neonix or 1.5g Seedex or 5 g Thiram or 3 g Indofil M 45 per kg of kernels. Neonix will control white grubs and also the termites.

2. 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.

**KHARIF PULSES**

1. Sowing of mash (Mash 114, Mash 338) should be completed upto first week of July and moong (ML 1808, ML 2056 and ML 818) should be completed during the second fortnight of July as delayed sowing result in lower yields.

2. 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 rhyzobium culture for higher yield.
3. Check weeds in mash, moong and arhar by giving one or two hoeings.
4. Grow mosaic tolerant variety (ML 1808, ML 2056 and ML 818) for the control of yellow mosaic virus.
5. Tobacco caterpillar can be checked by collecting & destroying its egg masses & young larvae feeding gregariously on leaves.

**FODDER PRODUCTION**
1. Sowing of kharif fodders at regular intervals should be continued for regular supply of green fodders. Sorghum may be sown for providing fodders late in the kharif season.
2. 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.
3. Cultivate non-legume fodders in mixture with legume fodders like cowpea or guara
**VEGETABLES**

1. Start sowing of Punjab Suhawani variety of okra which is tolerant to yellow vein mosaic virus. Use 4-6 kg seed per acre and soak the seed in water for 24 hours before sowing. 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-4, PBHL-5, Punjab Raunak and Punjab Bargarh hybrids/varieties 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. The month of July is the ideal time for planting 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.
2. Drain out excess rain water from the orchards as it may cause severe damage to fruit plants particularly citrus and papaya.
3. 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.
4. To improve fruit size and increase yield in Kinnow mandarin, give foliar sprays of potassium nitrate @ 1.0%.
5. 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.
6. The full grown ber plants should be given 500 g urea per tree during this month.
7. The second coat of white wash should be given. This will help to check the adverse effect of heat on the exposed tree trunk.
8. To control insect pests of citrus like citrus psylla, whitefly and leaf miner, spray 200 ml Crocodile/Confidor 17.8 SL (imidacloprid) or 160g Actara (thiamethoxam) in 500 litres of water. This solution will be sufficient for one acre of full grown orchard.
9. 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.
10. In citrus to check withertip or dieback, scab and canker diseases, Bordeaux mixture (2: 2 : 250) should be sprayed at 15 days interval.
11. For the control of gummoss in citrus spray of sodium hypochlorite (5%) can be done on soil surface and main trunk under the tree canopies @ 50ml/tree in 10 litres of water.
12. In grapes, spray of Bordeaux mixture (2: 2 : 250) can be done in the first and last week of July.
13. To control fruit fly in guava, fix 16 PAU fruit fly traps/ acre in the first week of July and recharge the same if required. Continuously remove and burry the infected fruits from orchards. Bagging of individual mature green and hard fruits of guava with white coloured non-wooven bags will protect the fruits from fruit fly damage.
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**

Regular irrigation at weekly interval need to be continued. Poplar leaf defoliator and leaf webber should be controlled by collecting and destroying the infested leaves.
ORNAMENTALS

Permanent plants
1. This is the most suitable time for planting ornamental trees, shrubs and creepers in a planned way. The size of the pits for trees should be $3' \times 3' \times 3'$ and for shrubs and climbers $2' \times 2' \times 2'$.
2. Most of the shrubs like Hibiscus, Chandani, Bougainvillea, Hamelia, Har Shingar etc can be propagated from terminal shoot cuttings.

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. Avoid overwatering Move pot plants from indoor to outer shady place once or twice a week.

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 twice daily until the grass is well established. We can also rejuvenate the old lawns by scraping and applying fertilizers in this month. Water the lawn grass as per need.

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

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 transplanted during July for seed production.
DAIRY FARMING
1. Feed the animals early morning and late in the evening.
2. Do not feed wilted fodder crops, to avoid aflatoxins in milk, lameness and mastitis in animals.
3. 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.
4. Increase 2-4% crude protein content in the concentrate feed by adding 5 to 8 % more oilseed cakes in order to compensate specific gravity and SNF in the milk.
5. 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.
6. Save your animals from ticks, lice and flies as these parasites suck blood, cause irritation and spread diseases. Use butox or amitraz 2-3 ml/liter water for use on animals or dairy shed.
7. 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.
8. 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.
10. 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.
11. 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

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. Procurement and collection of fresh wheat straw and well decomposed farm yard manure for cultivation of button and dhingri mushroom in the coming season (October-March).
2. During this month, prepare paddy straw bundles (about 1.5 kg each), wetted and spawned for paddy straw mushroom cultivation.
3. Sprinkle the paddy straw beds with water twice a day till harvesting of mushroom continues. After complete harvesting, discard the old beds and prepare fresh beds for new crop.
4. During this month, the milky mushroom bags after complete spawn are to be cased with 1.0-1.5” layer of casing soil (disinfected farm yard manure and sandy soil 4:1 v/v).
5. Cropping of milky mushroom starts in bags after 15-17 days of casing.

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