FARM OPERATIONS IN MAY

RICE
1. May is the month for sowing paddy nursery. Grow recommended varieties i.e. PR 127, PR 126, PR 127, PR 124, PR 123, PR 122, PR 121, PR 114, PR 113 etc. Complete the sowing of paddy nursery during the second fortnight of this month. Apply 12-15 tonnes of well-rotten farmyard manure per acre. Plough the field twice after about a week to kill germinated weeds. Flood the field and puddle it well. Apply 26 kg urea, 60 kg single superphosphate and 40 kg zinc sulphate (heptahydrate) or 25 kg zinc sulphate (monohydrate) per acre at puddling. Prepare plots of convenient size.
2. Treat seed before sowing to prevent primary seed borne infection.
3. Sow the treated and pre-germinated seed @ 1kg/20 sq.m. Keep the soil moist by irrigating the plot frequently. Apply another dose of 26 kg urea per acre about a fortnight after sowing.
4. Weeds in paddy nursery can effectively be controlled by applying 1200 ml per acre of any recommended brand formulations of Butachlor 50 EC or Thiobencarb 50 EC. The herbicide should be applied 7 days after sowing of the pre-germinated seed of paddy. Similarly weeds can also be controlled by applying Nominee Gold 10 SC @ 100 ml/acre as spray in 150 litres of water at 15-20 days after sowing of nursery.
5. During the initial stages of growth, light irrigation should be given but after about 10 days, irrigation should be given regularly to avoid iron deficiency particularly in case of coarse textured soil. If the seedlings in the nursery show yellowing of younger leaves, spray 0.5-1 % ferrous sulphate solution (0.5-1 kg ferrous sulphate in 100 litres of water) thrice at weekly intervals. If the leaves turn rusty brown after becoming yellow, give a spray of 0.5 % zinc sulphate (heptahydrate) or 0.3% zinc sulphate (monohydrate) solution.
6. If the attack of Hispa is noticed in the nursery, clip off and destroy the leaf tips of the affected seedlings before transplanting.

COTTON
1. Complete the sowing of cotton in the first fortnight of this month and follow clean cultivation, destroy Kanghi buti (Sida sp.) and Peeli buti (Abutilon sp.) which act as collateral host of cotton leaf curl virus.
2. Eradicate the weeds like kanghi buti, peeli buti, puth kanda etc. growing on field bunds, waste lands, road side and irrigation channels/canals to avoid further spread of whitefly to cotton fields.
3. Whitefly also attacks other alternate host crops like brinjal, potato, tomato, okra, moong, mash and guar. Regular surveillance should be done for timely management of whitefly on these crops. Regular surveillance of whitefly on cotton should also be done.
4. In situations, where Itsit emerges after first irrigation or with the rain shower, Stomp 30 EC @ 1.0 litre/acre can also be applied as post-emergence after first irrigation to cotton. Spray herbicide uniformly by dissolving in 200 litres of water. If some weeds emerge before the application of herbicide, those should be control by hoeing or interculture as stomp does not control germinated weeds. Give one hoeing/interculture about 45 days after sowing to control the weeds.

MAIZE
1. Start sowing maize during the last week of this month.
2. Sow only the PAU recommended hybrids/varieties.
3. Sowing can be done in trenches. Trench planted maize resist lodging and gives more yield.
4. Apply fertilizers on soil test basis. To medium fertility soils, apply one third i.e. 35 kg urea, 150 kg single superphosphate and 20 kg muriate of potash per acre to maize PMH 1, Parbhat & Sweet corn 1 and 25 kg urea, 75 kg single superphosphate and 20 kg muriate of potash per acre to maize PMH 2, Kesri and Pearl Popcorn at sowing. Omit the application of phosphorus, if maize follows wheat which received the recommended dose of phosphorus. Apply potash only to soil testing low in this nutrient. Application of FYM @ 6 tonnes per acre or green manuring before sowing is very beneficial.
5. For the control of weeds depending upon the soil type, Atrataf 50 WP @ 500-800 g/acre can be sprayed up to 10 days of sowing.

SUGARCANE

1. Control weeds in the planted as well as ratoon crop. Due to prevailing hot weather conditions, sugarcane crop require frequent irrigations at 8 to 10 days interval. Apply 65 kg urea per acre to ratoon crop. Moisture conservation may be done by spreading mulch in between cane rows. Use rice straw/wheat straw/rice husk as mulch. This also checks the growth of weeds.
2. For checking attack of black bug, spray 350 ml of Dursban/Lethal/Massban/Goldban 20 EC in 400 litres of water per acre. Direct the spray material into the leaf whorl for better results.
3. Sugarcane mite can be checked by destroying Baru (Sorghum halepanse) weed growing nearby which is an alternative host for mite.
4. Early shoot borer can be controlled by applying 10 kg Regent/Mortel/Rippen 0.3 G (fipronil) mixed in 20 kg sand or 150 ml Coragen 18.5 SC (chlorantraniliprole) or 2 litres of Durmet/Classic/Dursban/Markpyrphos 20 EC (chlorpyriphos) in 400 litres of water per acre with sprinkler along the rows at post germination stage (about 45 days after planting). Earth up slightly and follow with light irrigation. These insecticides will also control termites.
5. Sometimes iron deficiency appears in ratoon and planted crops on light textured and calcareous soils. The deficiency symptoms first appear on younger leaves as yellow stripes between green veins. Later, the veins also turn yellow. To control this, spray the crop with 1.0 kg ferrous sulphate dissolved in 100 litres of water. Two-three sprays at weekly intervals are sufficient.

GROUNDNUT

1. After the harvest of wheat, groundnut can be sown upto the end of May after applying rauni. The seed should be further treated with 1.5g Seedex or 5 g Thiram or 3 g of Indofil M-45 per kg of kernels.
2. Apply 13 kg urea, 50 kg single superphosphate, 17 kg Muriate of Potash and 50 kg gypsum per acre at the time of sowing. If recommended dose of phosphorus had been applied to wheat, its application to groundnut can be omitted. Apply potassium only to soils testing low in this nutrient. In fields having zinc deficiency, apply 25 kg zinc sulphate (21% heptahydrate) or 16kg zinc sulphate (33% monohydrate ) per acre this quantity is sufficient for 2-3 years.
**SUMMER MOONG**
1. Summer moong is severely attacked by the thrips, which are small, dark brown and found in flowers and cause flower drop, deformation of pods, deterioration of grain quality and ultimately heavy reduction in yield.
2. Last irrigation to summer moong should be stopped 55 days after sowing. This would help in uniform ripening of the crop.

**SUNFLOWER**
1. Due to prevailing hot weather conditions, sunflower would require irrigation at 8-10 days interval during this period. Various types of caterpillars such as Tobacco caterpillar and hairy caterpillar feed on green leaves and defoliate the attacked plants. Monitor the field regularly at weekly interval and collect and destroy egg masses/gregarious larvae of these pests.

**MENTHA**
1. Due to prevailing hot temperature conditions, mentha crop requires frequent but light irrigations.

**TURMERIC**
Complete the sowing of turmeric during the first week of this month in the submontaneous and Northern districts. Do not allow the planted crop to suffer from water stress. Give light and frequent irrigations till crop emerges. After the sowing of crop spread the paddy/wheat straw over the crop. It helps in reducing irrigations and weeds.

**FODDER PRODUCTION**
1. Grow mixture of non-leguminous and leguminous crops i.e. maize + cowpea to get more nutrients.
2. Treat cowpea with Bavistin @ 2g/kg of seed before sowing.

**VEGETABLES**
1. Irrigate vegetable crops at weekly intervals depending upon soil and climate conditions.
2. Harvest fruits of bhindi bottle gourd, cucumber, bittergourd, spongegourd, tinda, summer squash when green and tender. Harvest muskmelon and watermelon after checking for sweetness and flesh colour. Chilli can be harvest green or red depending upon requirement. Harvest in incurring to avoid disruption in pollution.
3. Harvest mature umbels of seed crop of onion and carrot at weekly intervals. Dry, thrash, clean and store the dry seed in a damp proof place. Harvesting should be completed in 3 to 4 rounds in the morning as it prevents shattering of seed.
4. Harvest the onion and garlic bulbs. Cure under shade and store them in a dry place. The garlic should be stored with stalks intact and after tying in small bundles. The onion stalk should be cut just 2-3 cm above the bulb before storage, to prevent the infection during storage.
5. Since prices are low during this period buy tomato in bulk to prepare ketchup, chutany, juice etc. for later use.
6. Fruit and shoot borer of brinjal should be controlled by spraying 100 ml Sumicidin 20 EC or 200 ml Ripcord 10 EC or 160 ml Decis 2.8 EC in 100-125 litres of water per acre.

7. Brinjal mite may also be checked by spraying 300 ml Omite 57 EC or 450 ml Fosmite 50 EC or 250 ml of Metasystox 25 EC in 100-150 litres of water per acre.

8. For the control of powdery mildew in cucurbit, spray the crop with Karathane 50-80 ml/acre at the appearance of powdery patches on the leaves. Avoid sprays of sulphur or copper based fungicide on cucurbits.

9. For the control of downy mildew, spray the crop with Indofil M 45 at the rate of 300-600 g in 100-200 litres of water. Repeat sprays at 7 days interval. Under heavy disease situation give two sprays of Ridomil Gold @ 500 g or Aliette @ 600 g per acre in 200 litres of water at 10 days interval followed by one more spray of Indofil M-45 @ 600 g/acre.
HORTICULTURAL OPERATIONS

1. Second fortnight of May is the best time for pruning of ber, as trees shed their leaves and become dormant in May. Annual pruning should be practised. Severe pruning may be done after every 4-5 years. After pruning, 100 kg well rotten farm yard manure should be applied to a full grown tree.

2. To avoid the adverse effect of hot weather on fruit trees apply white-wash on the trunks of the trees if it is not done earlier.

3. To maintain good health and ensure regular cropping in Kinnow, the fruits on young trees must be thinned out judiciously soon after fruit set. To improve the fruit quality, spray 1.0 % potassium nitrate (10g/litre water) at the end of May in Kinnow specially in the areas of Potassium deficient soils.

4. To avoid rainy season crop in guava, spray 10% urea or 600g NAA, when full bloom in guava occur during April-May. Dissolve NAA 600g in 1.5-2.0 litre alcobhal before making solution in 1000 litres of water.

5. The recommended dose half of the inorganic fertilizers along with full dose of FYM should be given to guava by the end of this month. Apply paddy straw mulch @4 tones per acre during this month.

6. For Banana, apply 60 g urea and 60 g muriate of potash per plant.

7. During summer, splitting of fruits is quite common in litchi, pomegranate and lemons. Water spray may prove useful in keeping the ambient atmosphere of the fruit humid as moisture has a good local effect on the fruit against splitting.

8. To peach, plum and pear trees, give light and frequent irrigations for proper development of fruit size and better quality. To grapes, apply irrigation at weekly intervals during this month. The young litchi plants may need irrigation twice a week.

9. Zinc deficiency in citrus and plum can be controlled by giving foliar spray with 0.3 per cent (3.0g/litre water) zinc sulphate solution.

10. Harvesting of fruits of peach, plum, phalsa and mature bunches of perlette grapes may be undertaken and marketed after proper grading and packing.

11. In spray grapes Bordeaux mixture 2: 2: 250 in the last week of May for controlling anthracnose.

12. Spray 10g of 2, 4-D Sodium salt (Horticulture grade) by dissolving it in 500 litres of water in the first week of this month to check fruit drop in mango.

ORNAMENTALS

Lawns

In this month, timely irrigation and frequent mowing is required as the growth of grass is very fast due to rising temperature. Soil can be prepared for establishing the new lawn in rainy season.

Annuals
Judicious watering and weeding of summer season annuals is required and the gaps in the plots should be filled up with new plants. Preferably in the evening only.

**Roses**
Due to hot season, roses require judicious watering in this month but over-watering should be avoided. The rootsuckers and diseased/dried parts of plant should be removed frequently.

**Chrysanthemum**
In case of large flowered varieties, plants should be repotted and in case of small flowered varieties second pinching should be done followed by nutrient application for getting more number of cuttings.

**Permanent plants**
Trees, shrubs and climbers should be watered at required intervals of 5-7 days. Care should be taken for the newly planted young plants and if required, staking of young saplings should also be done.

**Pot plants**
The pot plants should be transferred to a shady area in this month to protect them from direct sunlight. This can be done by placing them under the trees or by employing shade nets over the pot plants.
FARM FORESTRY

Poplar
1. Turmeric can be sown in poplar having less than three years of age. In the plantations of three year and more than three years age, *kharif* fodders such as maize, sorghum, bajra, guinea grass etc. should be grown.

2. Poplar leaf defoliator and leaf webber should be controlled by collecting and destroying infested leaves.
BEEKEEPING

For protecting honey bee colonies from harsh summer heat, make suitable arrangements to place the colonies under thick shade of trees, else make other alternative arrangements to provide some artificial shade. In no case, the colonies be displaced by more than three feet on any day to move colonies to closer distant shade. In case the colonies are to be shifted to longer distance to move to the shade and by above proposed movement, longer period is required, close the colonies in the late evening and shift these to some suitable place more than three kilometers from the original site and bring these to the already selected shady place after about seven days. In any case, sufficient distances among the colonies must be maintained to prevent drifting and robbing menaces which inter alia are the causes of the spread of bee diseases and mites. To meet the increased water requirement, put a few sticks/bushes or pieces of wooden planks, in the water tanks of tube wells, for the bees to sit on for collecting the water. This requirement can also be met by providing water in earthen pots kept under the legs of hive stand. This would also keep the ants away from the colonies. Colonies should be made more ventilated by placing thin twig pieces (splinters) between bottom board and brood chamber and, between brood chamber and super chamber, but ensure the bee tightness of such spaces so created. The increased ventilation also hastens the honey ripening. Extract sealed (ripe) honey from earlier clover (Berseem) or sunflower nectar flow. Follow all recommended precautions to avoid robbing during and after honey extraction. Dust sulphur powder on the top bars of bee combs @ 1.0 g per comb against Tropilaelaps clareae, the brood mite. Alternatively, fumigation with formic acid (85%) @ 5 ml daily for two weeks may be applied which, however, should be avoided during nectar flow. The latter treatment will also take care of Varroa mite. In the case of infestation by Varroa, destruction of sealed drone brood comb part, Varroa trapping on drone brood and then its destruction along with the capped drone brood, dusting of finely ground sugar powder on bees and the use of sticky papers with wire mesh on Varroa bottom board, can also be integrated. Proper spacing among the colonies and extraction of honey from only the brood free combs in supers separated from brood chamber with queen excluder help in preventing spread of brood menaces 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 and avoid the use of antibiotics.
MUSHROOM GROWING

1. Procurement of wheat straw and storage at a dry place for composting to be started in September for button mushroom.
2. Clean and disinfect growing space for laying of beds of paddy straw mushroom (summer variety).
3. Wet the bundles (approx 1-1½ kg each) and lay beds as per recommended PAU technology.
4. Continue watering twice a day on the beds and floors.
5. Complete harvesting of crop in one month.
6. Spawn the bags of milky mushroom after pretreatment of wheat straw by boiling.
7. Case the spawn run bags of milky mushroom after 15-18 days.
DAIRY AND ANIMAL HEALTH

1. Silent heat is the major problem in buffaloes during hot months. Observe the heat symptoms in the early hours of morning and late hours in the evening. Mucous discharge from vagina is the only prominent sign while other symptoms are weak in summer.

2. Gal Ghotu, Black Quarter (Pat Soja) can cause heavy loss of animal life in unvaccinated animals. If it is not already done, get your animals vaccinated immediately against the disease.

3. Save your animals, from ticks, lice and flies. These suck blood, cause irritation and spread diseases. Due precautions should be taken while applying the insecticide on the animal body. Follow the instructions of veterinarian/manufacturer strictly.

4. Keep the animals in shade and provide clean fresh drinking water.

5. Draft animals should not be made to work during peak hours of summer.

6. Due to sun stroke if an animal starts bleeding from nose, do not disturb it much and pour ice cold water over face and head and keep its head lifted. Transfer animal to a cool shady place. Consult Veterinarian at the earliest.

7. In case of high rise of temperature in dairy animals, get their blood tested for protozoan diseases from the Department of Parasitology, Guru Angad Dev Veterinary and Animal Science University, Ludhiana or State District Laboratories near to your place.

POULTRY FARMING

1. Provide double number of waterers for increasing space to meet increasing requirement of water. Change the water frequently to provide cool water.

2. Sprinkling of water around the shed, more green area surrounding this shed is helpful in reduction of heat. White washing of poultry shed from outside will be helpful in reflecting the sun rays back from the shed.

3. Increase protein, minerals and vitamins in feed as the feed intake is reduced during summer.

4. Provide no light to growers of 6-16 weeks age but layers must be provided light at night and early in morning to compensate the decreased feed consumption during the day time.

5. Get your birds of 6-8 weeks of age vaccinated with injection of R2B Ranikhet disease. 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. If there is sudden fall in egg production or mortality, consult the Poultry Expert immediately.

7. Do not provide feed during day hours to the birds as it will increase heat load. Therefore, feed the birds during cool hours preferably during early hours in the morning and late in the evening.
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