# FARM OPERATIONS FOR FEBRUARY

## WHEAT

1. Apply second irrigation to December sown wheat.
2. Wheat plants affected with flag smut should be rouged out and burnt. Special attention should be given in Ropar and Hoshiarpur areas.
3. Observe the wheat fields for appearance of yellow rust. As soon as the disease appears, spray the crop with Taqat @ 300g or Caviet @ 200g or Nativo @ 120g or Impact xtra or Opera or Tilt or Shine or Bumper or Stilt or Compass or Markzole @ 200 ml in 200 litres of water per acre. Repeat the spray at 15 days interval.
4. Observe the fields for appearance of aphids, if the population reach the economic threshold level (ETL) i.e. 5 aphids/earhead, **give two sprays of 2 litre PAU Homemade neem extract at weekly interval or single** spray of 20g Actara/Taiyo 25 WG (thiamethoxam) in 80-100 liter of water per acre.

## SPRING MAIZE

1. Sow P-1844, PMH-10, DKC-9108, PMH-8, PMH-7 and PMH-1 upto 15 February on southern side of 60 cm spaced East-West ridges or 67.5 cm spaced beds keeping plant to plant spacing of 20 cm for ridges and 18 cm for bed planting by using 10 kg seed per acre.
2. For the control of maize shoot fly, treat the seed with 6 ml Gaucho 600 FS (imidacloprid) per kg seed. If seed treatment is not done, then apply 5 kg Furadan 3 G (carbofuran) per acre in the furrows at the time of sowing.
3. For controlling weeds, apply Atrataf 50 WP (atrazine) @ 500 g / acre in lights soils and 800 g per acre on medium to heavy soils within two days of sowing in 200 litres of water.

## OILSEED CROPS

1. To save the oilseed crops from frost damage, irrigation may be applied.
2. In case mustard aphid population reach the economic threshold level (ETL), spray the crop with 40 g Actara 25 WG or 400 ml Rogor 30 EC or 600 ml of Dursban/ Coroban 20 EC in 80-125 litres of water per acre. The spray must be carried out in the after-noon when the pollinators are less active.

## SUNFLOWER

1. Sowing of sunflower should be completed in the first week of Ferruary and preference should be given to the early maturing hybrids such as PSH 2080, PSH 1962, PSH 996 and PSH 569. Under late-sown conditions in February transplanting one month old seedlings of sunflower hybrids give better yield than direct seeded crop. Direct seeded crop matures late causing delay in the sowing of the succeeding crops while transplanted crop matures early. Sow the crop in rows 60 cm apart with plant to plant spacing of 30 cm. The sunflower performs better when planted on Southern side of East-West ridges. Place the seed about 6-8 cm below the ridge top. Apply irrigation to ridge sown crop 2-3 days after sowing and water level in the ridges should remain well below the seed placement line.
2. Treat the seed with Tegran 35 WS @ 6g/kg seed before sowing. Two kg seed is sufficient for sowing one acre.
3. Apply 50 kg urea and 75 kg single superphosphate/acre at the time of sowing. In coarse textured soils, apply 50 kg urea/acre in two equal splits, half at sowing and remaining half one month after sowing. Sunflower grown after potato receiving 20 tonnes FYM requires only 25 kg urea/acre. Also drill 20 kg muriate of potash/acre on soils testing low in potassium. In Hoshiarpur and Shahid Bhagat Singh Nagar districts, apply 40 kg muriate of potash/acre.

## PULSES

1. Lentil may be irrigated for getting better returns.
2. Gram caterpillar feeds on leaves, flowers and pods and grains in the pods of gram crop. If a total of 16 or more larvae of gram caterpillar are observed from 100 plants, spray 800 g *Bacillus thuringiensis* var *kurstaki* 0.5 WP (DOR Bt-1) or 200 ml Helicop 2% **AS** (HaNPV) or 50 ml

Coragen 18.5 SC (chlorantraniliprole) or 80 g Proclaim 5 SG (emamectin benzoate) or 160 ml Rimon 10 EC (novaluron) in 80-100 litres of water per acre. **Prefer to use biopesticides as first spray for younger larvae and repeat the spray after a week, if necessary.** Ensure a waiting period of 3 days for consuming leaves and green grains, after spray of Coragen 18.5 SC.

3. To check powdery mildew on peas, spray the crop with Sulfex @ 600g in 100 litres of water per acre**.** Repeat spray at 10 days interval.

## SUGARCANE

1. Start sowing of sugarcane from second fortnight of this month and use recommended varieties i.e. CoPB-95, CoPB-96, Co15023, CoPB-92, Co118, CoJ-85, CoJ-64 (early maturing), CoPB-94, CoPB-93, CoPB-98, CoPB-91, Co-238, CoJ-88 for mid season and late maturing.
2. The sets selected for planting should be free from diseases like red rot, wilt, ratoon-stunting and grassy shoot.
3. To avoid the attack of termites apply well rotten farmyard manure and remove stubbles and debris of previous crop from the field. For the control of termites, apply 200 ml Coragen 18.5 SC (chlorantraniliprole) using 400 litres of water over seed setts in furrows before covering them with soil or spray 45 ml Imidagold 17.8 SL (imidacloprid) dissolved in 400 litres of water per acre with sprinkler along the rows 45 days after planting. Earth up slightly and follow with light irrigation.
4. For early shoot borer, apply 10 kg granules of **Regent**/Mortel/Rippen 0.3G (fipronil) before the sets are covered with soil by planking or apply 10 kg **Regent**/Mortel/Rippen 0.3G mixed in 20 kg moist sand/soil or 150 g Takumi 20 WG (flubendiamide) or 150 ml Coragen 18.5SL or 2 litre **Durmet/Classic/Dursban/Markpyriphos 20 EC (**chlorpyriphos**)** in 400 litres of water per acre at post germination stage (about 45 days after planting).
5. Application of Karmex 80 WP/Klass 80 WP (diuron) @ 800 g/acre as pre-emergence application provides effective control of annual grasses and broadleaf weeds.
6. Apply 8 tones FYM/press mud per acre 15 days before sowing and mix it thoroughly. In case FYM/press mud is applied, apply 40 kg N/acre, otherwise apply 60 kg N/acre. Apply half N (65 kg urea) at sowing. However, on coarse textured soil, if FYM is applied, do not reduce the dose of nitrogen fertilizer. Apply phosphate fertilizer on soil test basis at sowing. Apply *Azotobactor* biofertilizer @ 4 kg/acre at sowing.

## FODDERS

1. Irrigate Berseem and Lucerne at 15-20 days interval depending upon the weather conditions and soil type. Have regular cuttings of Berseem. Avoid delay for next cutting.
2. Make silage of oats in late February to early March when the crop is at milk stage if the fodder is surplus.

## VEGETABLES

## Cucurbits

1. As soon as the risk of frost is over, remove "*Sarkanda*" or plastic cover from the crop sown in November-December and irrigate the field. Apply remaining half dose of nitrogen in channels, earth up and train vines towards the bed. Thereafter, apply light irrigation once a week in sandy soil and after 10 days interval in heavy textured soil regularly.
2. Draw bed marks East to West at the recommended spacing for each crop. Apply 35 kg urea, 155 kg single superphosphate and 40 kg muriate of potash per acre in a band at 15 cm on southern side of each bed mark and prepare channels and irrigate. Sow the seed of different cucurbits on the moist edge of beds.
3. In the second fortnight of this month, nurseries of muskmelon, water-melon, bottle-gourd, pumpkin etc. should be transplanted on recommended spacings of the respective crop. Before transplanting cut & remove plastic bags.
4. Most ideal varieties are Punjab Barkat and PunjabBahar of bottle-gourd;ChappanKaddu No. 1 of Summer Squash;MH-27, MH-51, Punjab Sunheri, Punjab hybrid and Hara Madhu of muskmelon; Sugarbaby of watermelon; Punjab Tinda -1, S-48 of Tinda;Punjab Jhar Karela-1, Punjab Karela-15, Punjab-14 and Punjab Kareli No.1 of bitter gourd; PSG-9 of Ashgourd, PPH-1, PPH-2, Punjab Nawab and Punjab Magaz Kaddu-1of Pumpkin.

**Caution**: Do not sow cucurbits in those fields where Atrazine herbicide has been used for weed control in potato.

## Chilli and capsicum

1. Remove "Sarkanda" or plastic cover from the fields of chilli and capsicum in the afternoon when the risk of frost is over and irrigate the fields. After a week, apply 90 kg urea per acre in channels and earth up near the base of plants.
2. Transplant the nurseries of chilli and capsicum raised under protection on the ridges at the recommended spacings. Before transplanting, apply 35 kg Urea, 175 kg superphosphate and 20 kg muriate of potash per acre in capsicum and 30 kg Urea, 75 kg superphosphate and 20 kg muriate of potash in Chilli. Dose of nitrogen can be increased for Chilli hybrids. Irrigate the field after transplanting of seedlings and repeat the irrigation once in 7 to 10 days depending on upon soil and climate. Fill the gaps after 7-10 days to ensure complete plant population of the crop.

### Brinjal

1. After the frost period is over, remove "Sarkanda" or plastic sheet in the afternoon and irrigate the field as and when required. After a week, apply 55 kg urea and earth up the crop.
2. Transplant nursery of *Punjab Sada Bahar,* hybrid BH-2, PBH-3 and PBH-4, PBH-5, PBH-41, PBH-42 and Punjab Raunak. Apply 10 tonnes of well rotton FYM, 55 kg urea, 155 kg superphosphate and 20 kg muriate of potash per acre by broadcast. After a week, fill the gaps and irrigate again.

### Okra

Prepare the field and apply 40 kg urea per acre in bands kept 45 cm apart from East to West. Prepare ridges and apply irrigation. Dibble seeds at a spacing of 15cm on ridges 45 cm apart. Sowing on ridges ensure quick germination and better stand of the crop. Varieties recommended for sowing in this season are Punjab Suhawani, Punjab Padmini, Punjab-7 and Punjab-8. Use 15-18kg seed per acre, since germination is low in this period.

### Tomato

1. When frost period is over, remove "*Sarkanda*" or plastic bags/sheets from the fields and irrigate the crop. After a week, apply 55 kg urea per acre in channels. Repeat watering after 7 to 10 days.
2. Spray the crop in the middle of February with Indofil M-45 @ 600 g per acre in 200 litres of water at 7 days intervals to control late blight.

## Onion

1. For the control of purple blotch, spray the crop with 300g of Caviet or 600g of Indofil M-45 mixed with 200 ml of Triton or linseed oil in 200 litres of water per acre as soon as first symptom of purple blotch appears in the crop. The spray should be repeated at 10 days interval.

## HORTICULTURAL OPERATIONS

1. It's an appropriate time for the application of inorganic fertilizers to majority of fruit plants as per recommendations. Apply the fertilizers under the canopies of trees and mix in the soil gently.
2. To control citrus psylla, spray 200 ml Crocodile/Confidor 17.8 SL (imidacloprid) or 160g Actara 25 WG (thiamethoxam) in 500 litres of water per acre basis on spring flush before opening of the flowers **or 10 litres of Soybean oil/ cottonseed oil + 1.25 kg detergent powder (surfactant) in 500 litres of water per acre.**
3. The planning, layout as well as pit digging and filling for new plantation of evergreen fruit plants like citrus, mango, guava, loquat, *ber* etc. can be done in late February when the weather warms up, however, the period of July-September is more suitable for planting of this category of fruit plants.
4. Citrus orchards should be irrigated before the commencement of new growth in February. Loquat trees which have already set their fruits will need 1-2 irrigations. *Ber* trees should also be irrigated for proper development of fruits. In grapes, one irrigation should also be given after pruning in the first fortnight of February.
5. The protective covers erected to protect the plants against possible frost injury should preferably be kept intact and remove it slowly with rising temperature up to the end of this month.
6. Give a spray of 50 g Streptocycline+25 g copper sulphate in 500 litres of water for the control of citrus canker. Bordeaux mixture (2:2:250) or copper oxychloride (0.3%) are the other alternatives.
7. To check foot rot of citrus (gummosis) drench the affected trees with 25 g Curzate M-8 in 10 litres of water per tree. Application of sodium hypochlorite (5%) @ 50ml per tree in 10 litres of water can be done on the main trunk and on soil surface under the canopy of trees.
8. To check powdery mildew, give one spray of 1 g Karathane or 2.5 g Wettable Sulphur or 1.0 ml Contaf per liter of water before flowering in mango.
9. For management of mango hopper, spray 200 ml Confidor 17.8 SL (imidacloprid) in 500 liters of water per acre basis on spring flush before opening of the flowers.

## ORNAMENTALS

1. The deciduous ornamental plants (such as *Sawani, Mehandi, Nirgundi, Jatropha* etc.) can be transplanted bare rooted before sprouting of buds.
2. Off type plants in the fieldand flower bedsof winter annuals should be removed to ensure true to type plants for seed production.
3. The summer flowering bulbous ornamentals can be planted in well drained soils rich in organic matter.
4. Seed sowing of summer annuals like *kochia, zinnia, gomphrena* etc. can be done over raised nursery beds in the last week.
5. The layout for new plantation of ornamental trees and shrubs should be done after undertaking the site survey and site measurements.
6. Suckers of Chrysanthemum are planted in the field over raised beds to grow these as mother stock.
7. Layout and field preparation for establishment of lawn should be done.
8. Potting and repotting of potted ornamentals can be during end of this month.

# FORESTRY

## Poplar

1. **Nursery raising**: Plant the cuttings of poplar at 50 cm x 50 cm or 60 cm x 60 cm apart during the first fortnight of February. Cuttings of 2 - 3 cm diameter and 20 - 25 cm length should be prepared from one year old plants. Soak the cuttings in fresh water for 24 hours before planting. Plant the cutting in the beds prepared after adding 8-12 tons FYM per acre. Apply 40-80 kg single super phosphate and 20-40 kg muriate of potash per acre depending upon the soil type. Uniform spread of paddy straw mulch @ 4 t/acre immediately after planting of cutting provides the effective weed control.
2. **Field planting**: Transplant bare-rooted plants of poplar before the end of February in channels. In block plantations, plant the poplars at 5 m x 4 m or 8 m x 2.5 m apart and in single line on boundary at 3 m apart in North-South direction. Clones PL-1, PL-2, PL-3, PL-4, PL-5, L-47/88 and L-48/89 should be planted in Central Plain Region and Clones PL-3, PL-6, PL-7 and L-48/89 are suitable in semi-arid regions of Punjab. Dig the pits of 15-20 cm diameter with the help of an auger. The depth of pit should be 75 cm in heavy soils and 100 cm in light soils. Soak the plants for about 48 hours in running fresh water before planting. After planting, the pits should be filled with top soil and FYM (1:1) mixed with 110 g urea and 315 g single super phosphate.
3. Sugarcane can be planted from mid February in poplar plantations of less than three years age.

## Eucalyptus

1. Sow the seeds on raised in lines 10 cm apart at the rate of 20 $g/m^2$ size. Cover the beds with a thatch and sprinkle water frequently to keep the upper soil layer moist. When seedling attains 3-4 leaves, transplant them in polybags of 9”x6” filled with soil and FYM in 1:1 ratio. Keep on irrigating the seedlings as and when required till they become saleable and shifting of polybags containing seedling every month to avoid the root going deep in the soil.

# BEE KEEPING

The weather generally starts warming in February. During this month, abundant pollen and nectar rewarding important bee flora such as *Brassica* (*sarson/raya/gobhi sarson*) and *Eucalyptus* are on bloom. Peach, pear and citrus are also on bloom. This is thus a favourable period for colony growth, and thus also ideal for starting beekeeping. With the onset of spring, remove the winter packing from honey bee colonies and clean the bottom board. Thoroughly examine the colonies at noon time on some calm and sunny day for availability of food stores, bee strength, brood rearing and performance of the queen bee. Unite the weak colonies, and queenless colonies with queen-right ones. Provide stimulative sugar syrup (sugar: water = 1:2) feeding if needed. Prefer to provide this feed in empty drawn combs. Else, provide it in division-board feeders. Depending upon the strength of the colonies, provide already raised worker brood combs/frames with comb foundations. Depending upon the need, super chambers can be added wherein, to enhance bees' activity on new frames with comb foundations, raised combs with honey should be provided as bait. Equalize the colonies the maximum possible for food reserves, brood and bee strength following standard techniques. Infestation of ectoparasitic mites (*Tropilaelaps clareae & Varroa destructor*) and brood diseases may be noticed in the honey bee colonies. Dust sulphur powder on the top bars of bee combs @ 1.0 g per comb against the *Tropilaelaps* mite – must use inner cover for the effectiveness of this treatment. 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*, non-chemical measures, such as the destruction of sealed drone brood comb part, *Varroa* trapping on drone brood and then its destruction, dusting of icing sugar powder on bees during late evening and use of sticky papers with *Varroa* bottom board can be followed. Oxalic acid (4.2 % in 60 % sugar solution) spray @ 5 ml per comb or trickling in between every two combs late in the evening once every week for three weeks can also be used. Keep vigil on the brood diseases, and on suspicion, immediately consult experts and appropriate/advised control measures should be undertaken; non-chemical methods should be preferred. Use of antibiotics should be avoided. Colonies may also be prepared towards end February for mass queen bee rearing for requeening or for stock multiplication or for selling the bee colonies. For queens production, follow modified Doolittle Mass Queen Bee Rearing Technique using larvae for grafting from the best performing selected 'breeder' colonies. Beekeepers can also use cup-kit system for mass queen bee rearing for its distinct advantages, particularly bypassing of manual grafting. The beekeepers, who have already migrated their apiaries to *sarson/raya* belts, can extract ripe (sealed) *Brassica* honey. Follow recommended measures to prevent swarming of the colonies. During the second fortnight of the month, the colonies may be prepared for migration to *Eucalyptus* plantation.

## DAIRY FARMING

1. Protect all the dairy animals from direct cold winds during the winter months by using palli during night.
2. Crack/sore/chapped/injured teat (s) should be treated with teat dips (Glycerin: Povidine/ Betadine 1:3) or filmadin preparation. It should be used after every milking.
3. New born calves need special care during winter months. They are susceptible to Pneumonia and large number of them dies due to this disease. Keep them warm by providing clean and dry bedding.
4. Start colostrums feeding at early as possible after birth to increase immunity of calves and fed colostrums 1/3$^{rd}$ of body weight in morning and evening.Do not green fodder or wheat straw to calves till two months of age as rumen is not developed.
5. Deworming should be done every month upto six months age thereafter at three months interval by using different combination of drugs to avoid drug resistance. Calves should be reared on calf starter ration instead of whole milk for at least 2 months. Then green fodder can also be started little bit along with feed
6. Get your animals examined after 3 months of artificial insemination for pregnancy diagnosis.
7. Do not feed green, sprouted, soiled or rotten potatoes to dairy animals. These can cause serious and fatal poisoning.
8. Add grains upto 40% in the concentrate and oil cakes upto 25% as leguminous fodders in winter season contain 19-21% proteins..
9. Make hay during last week of February from surplus leguminous fodders to replace concentrates which can be used in scarce period. It is highly beneficial for growing calves.
10. Follow vaccination schedule as per advice of veterinarian of your area.
11. Use mats in tying system to prevent hoof deformity.

## POULTRY FARMING

1. February month is the best time for starting the broiler rearing as the day temperature starts rising. Get egg type chicks booked well in advance with a hatchery of repute in the adjoining area.
2. Purchase the day-old chicks duly vaccinated against Marek's disease from reputed hatchery. It is essential to clean and disinfect the poultry sheds before putting the chicks. Luke warm 5% solution of jaggery (Gur) or sugar for 3 days of arrival before starter feed.
3. Provide proper temperature under the brooder i.e. 95º F and decrease it by 5º F every week until it reaches to 70º F. Switch on the brooder 24 hours before arrival of chicks.
4. Spread old newspapers on bedding and put maize dalia on them as day old chicks cannot locate feeders.
5. Provide balanced ration to birds according to their requirements.
6. De-worm the chicks regularly.
7. Cull all the uneconomical layers regularly because they are increasing your feed costs.
8. Do not allow visitors to enter inside the poultry house. Put shoe covers before entering poultry farms.
9. Do not disturb poultry birds frequently as it will result in reduced growth as well as production.

## MUSHROOM GROWING

1. The cropping of white button mushroom continues during this month.
2. Harvesting ofmatured mushrooms (closed form) should be done on time by gentle twisting of buttons.
3. Spray water once or twice a day on compost bags to maintain 65-70% moisture and open the growing rooms for 4-6 hours for ventilation.
4. Dhingri mushroom should also be harvested on time by seeing the margins of mushroom which starts rolling inwards. Picking should be done by holding the upper portion of the fruiting body and harvest the mushrooms by gentle twisting.

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