

## FARM OPERATIONS FOR SEPTEMBER

### PADDY

1. Irrigate the paddy field two days after the ponded water has infiltrated into the soil and stop irrigation two weeks before maturity for easy harvesting and timely sowing of next *rabi* season crop.
2. Rogue out the weeds and off type plants from the paddy.
3. Control leaf folder when leaf damage reaches 10 per cent by spraying 20 ml Fame 480 SC (flubendiamide 39.35%) or 50 g Takumi 20 WG (flubendiamide 20%) or 60 ml Coragen 18.5 SC (chlorantraniliprole) or 170g Mortar 75 SG (cartap hydrochloride) **or 400 g Supremo 50 WP (thiocyclam hydrogen oxalate)** in 100 litres of water per acre.
4. Planthoppers some time become serious in paddy. The crop dries up in patches. The plant hoppers can be controlled by spraying 94 ml Pexalon 10 SC (triflumezopyrim) or 120g Chess 50 WG (pymetrozine) or 80 g Osheen/Token /Dominant 20 SG (dinotefuran) or 400 ml Orchestra 10 SC (benzpyimoxan) or 300 ml Imagine 10 SC (flupyrimin) or **60 g Ulala 50 WG (flonicamid) or 800 ml of Ekalux/Quinalmass 25 EC (quinalphos) or 80 ml neem based bio-pesticide, Ecotin (azadirachtin 5%) in 100 litres of water per acre.** For better results, direct the spray towards the base of the plants.
5. Rice stemborers cause dead hearts during vegetative stage and white erect ears near maturity. Rice fields showing more than 5% dead hearts can be sprayed with 20 ml Fame 480 SC or 50 g Takumi 20 WG or 60 ml Coragen 18.5 SC or 170g Mortar 75 SG **or 400 g Supremo 50 WP (thiocyclam hydrogen oxalate)** in 100 litres of water/acre. In *basmati* rice, when 2% dead hearts are noticed these can be controlled by applying any of above insecticide or 4 kg Ferterra /Markterra 0.4 GR (chlorantraniliprole) or 6 kg Regent/Mortel/Mifpro G/Mahavir GR/Shinzen 0.3 G (fipronil) or 10 kg Padan/Kritap/Sanvex/Caldan/Nidan/Marktap/Miftap 4 G (cartap hydrochloride) or 4 kg Vibrant 4 GR (thiocyclam hydrogen oxalate) per acre in standing water. Fame 480 SC/ Martar 75 SG/ Coragen 20 SC/**Supremo 50 WP/** Padan / Kritap / Sanvex / Caldan / Nidan / Marktap 4 G Regent / Mortel/Mifpro G/Mahavir GR 0.3 G / Ferterra 0.4 GR or Vibrant 4 GR also control leaf folder effectively.
6. To save the crop from sheath blight, keep the bunds of the fields clean by removing grass. On noticing the disease symptoms spray the crop with Iglare/ Pulsur 24 SC (thiifluzamide) @ 150ml or Epic75 WG (hexaconazole) @ 26.8g or Nativo 75 WG (trifloxystrobin + tebuconazole) @ 80 g or Galileo Way 18.76 SC (picoxystrobin + propiconazole) @ 400ml or Lustre 37.5 SE (flusilazole + carbendazim) @ 320 ml or Amistar Top 325 SC (azoxystrobin + difenconazole) or Tilt/Bumper 25 EC (propiconazole) or Folicur/Orius 25 EC (tebuconazole) or Monceren (pencycuron) @ 200ml in 200 litres of water per acre. Repeat the spray after 15 days interval.
7. If high humidity and cloudy weather persists, the crop may be sprayed at boot stage with Galileo Way 18.76 SC (picoxystrobin + propiconazole) @ 400ml or Kocide 46 DF (Chopper hydroxide) @ 500 g in 200 litres of water per acre to control false smut.

### MAIZE

1. Maintain adequate water supply particularly at tasseling and silking stages. Stress at these stages causes considerable losses in yield.
2. After heavy rains if water stagnates in the fields, drain out the excessive water to keep the plants free from bacterial stalk rot.
3. If damage occurs due to water stagnation spray 6 kg urea per acre in two sprays at weekly interval (3% solution) in case of moderate damage or broadcast additional nitrogen @ 25 to 50 kg urea per acre in case of moderate to severe damage only after the flooding of the crop is over.
4. Fall armyworm (FAW) in grain maize can be checked by spraying 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. If 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 5 g of Missile 5 SG **or 25 g Delfin WG (*Bt kurstaki*) or 25 ml Dipel 8L** in 10 ml of water and mix well in one kg of soil. In case of fodder crop, use Coragen 18.5 SC @ 0.4 ml per litre of water and do not harvest fodder for 21 days after its application to ensure safety to farm animals.

5. Fall armyworm (FAW) in grain maize can be checked by spraying 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. If 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 **5 g of Missile 5 SG** in 10 ml of water and mix well in one kg of soil. In case of fodder crop, use Coragen 18.5 SC @ 0.4 ml per litre of water and do not harvest fodder for 21 days after its application to ensure safety to farm animals.

### COTTON

1. Do not allow the cotton crop to suffer from water stress during flowering and fruiting stages, otherwise lot of shedding of flowers and bolls will take place which results in poor yield. To hasten boll opening last irrigation may be given at the end of September.
2. If the damage/population of sucking insect pests reaches economic threshold levels, spray the crop with **Clasto 20 WG (pyriflucinazon) @ 200 ml/acre or** Sefina 50 DC (afidopyropen) @ 400 ml/acre or Osheen 20 SG (dinotefuran) @ 60 g/acre or Polo/Craze/Ruby/Ludo/Shoku 50 WP (diafenthiuron) @ 200 g/acre or Lano/Daita 10 EC (pyriproxifen) @ 500 ml acre or Oberon/Voltage 22.9 SC (spiromesifen) @ 200 ml/acre for the control of whitefly. For the control of jassid, use Osheen 20 SG **@ 60 g/acre** or Keefun 15 EC (tolfenpyrad) @ **300 ml/acre** or Neon 5 EC (fenpyroximate) @ 300 ml/acre or Ulala 50 WG @ 80g/acre or Actara/Extra super/Dotara/Thomson (thiamethoxam) 25 WG @ 40 g/acre in 125-150 litres of water with manually operated knapsack sprayer. To check the attack of pink bollworm, prefer to spray Proclaim 5 SG (emamectin benzoate) @ 100 g or Curacron/Profex/Celron Carina 50 EC (profenofos) @ 500 ml or Avaunt 15 SC (indoxacarb) @ 200 ml per acre. Repeat the spray if it rains within 24 hours of spraying. Mealy bug infested rows/plants should be sprayed with 150 ml Transform 21.8 SC (sulfoxaflor) in 125 -150 litres of water.
3. To get higher yields, give four sprays of 2% potassium nitrate 13:0:45 (2 kg potassium nitrate in 100 litres of water) at weekly intervals starting from flower initiation.
4. Do not use synthetic pyrethroids on cotton for the control of bollworm complex after mid-September.
5. To control fungal foliar leaf spots, the crop should be sprayed with Amistar Top 325 SC @ 200 ml/acre in 200 liters of water at 15-20 days interval.

### SUGARCANE

1. Prop up the sugarcane crop in the beginning of this month by using trash-twist method. Irrigate the crop at regular intervals for getting better yields.
2. Rogue out the canes affected by red rot and wilt. Collect and destroy the shoots infested with Gurdaspur borer. Repeat this operation at weekly intervals.
3. Start sowing of early maturing sugarcane varieties like CoPb 95, CoPb 96, Co 15023, CoPb 92, Co 118, CoJ 85 and CoJ 64 from second fortnight of this month. Sugarcane can be planted with paired row trench planting method with the help of tractor operated PAU designed trencher for saving irrigation water. Plant two rows of sugarcane 30 cm apart in 20-25 cm deep trenches and place the cane setts at the bottom of the trenches and cover with the soil left in between two rows. Distance between two trenches should be 90 cm.
4. Grow *toria*, potato or garlic as intercrops in sugarcane for getting higher returns.

### OILSEEDS

### **Toria**

September is the optimum period for sowing of *toria*. Use short duration variety TL 17 and TL 15 for better yield and getting the field vacated well in time. *Toria* may be sown after applying 55 kg urea and 50 kg single superphosphate per acre. If single superphosphate is not available, apply gypsum @ 80 kg per acre particularly in sulphur deficient soils along with nitrogen and phosphatic fertilizers. For getting higher productivity, grow *toria* + *gobhi sarson* as intercrops at 22.5 cm row spacing by third week of September or broadcast 1 kg seed of *toria* and then sow *gobhi sarson* at 45 cm row to row distance with 1 kg seed.

### **Groundnut**

Do not allow the crop to suffer water stress at the pod development stage. Any stress at this stage cause drastic reduction in yield of groundnut. Control Tikka disease by spraying with wettable sulphur @ 500-750 g/acre in 200-300 litres of water per acre or Bavistin/Derosal/Agrozim @ 50-60 g/acre in 100 litres of water per acre. Give 3-4 sprays at 15 days interval starting from August.

### **FODDER PRODUCTION**

1. Sow maize (J-1007 and J-1006) for fodder production upto mid September to have fodder for the scarcity period.
2. Prepare the land for the sowing of *berseem* during last week of September. Mix oats and *sarson/raya* in *berseem* to get first cutting early. Berseem seed should be free from Kashni seed. Inoculate the *berseem* seed with *Rhizobium* culture. Apply 22 kg urea and 185 kg super phosphate/acre at the time of sowing *berseem*. If 6 tonnes of FYM has been applied then 125 kg superphosphate/acre will be sufficient. Where *rye* grass has been mixed in *berseem* apply 22 kg urea/acre after each cutting.
3. Preserve the surplus green fodder of maize or *bajra* as silage or hay to supplement the shortage of green fodder.

## VEGETABLES

### Potato

1. The climatic conditions are ideal for sowing early varieties i.e. Kufri Surya, Kufri Pukhraj, Kufri Ashoka, Kufri Chandramukhi. Take out seed potato from the cold storage in the first fortnight of this month and spread in ventilated place under diffused sunlight in thin layers. Turn the surface of tubers once in a day and allow buds to sprout for a week. Sprouts should attain 0.5 - 1.0 cm length before sowing.
2. Use healthy and disease free seed.
3. Disinfect the tubers before sowing with solution of 0.08 % Systiva (80ml in 100 litre water) or 0.083 % of Emesto Prime (83 ml per 100 litre water) or 0.25 % Monceren (250ml per 100 litre water) for 10 minutes to check black scurf of potato.
4. Application of FYM @ 20 tonnes per acre or green manuring is beneficial for this crop. Drill 82.5 kg urea, 155 kg superphosphate and 40 kg muriate of potash per acre at the time of sowing and remaining urea of 82.5kg at the time of earthing-up.
5. For weed control, use Gramoxone/Kabuto 24 SL (paraquat) @ 500-750 ml per acre at the stage when most of the weeds have emerged and potato crop showed 5-10 % emergence. Use 250 to 300 litres of water in knap sack sprayer fitted with flat fan nozzle and 100 litres of water with power sprayer.

### Peas

1. If pea crop is to be sown for the first time treat the seed (40kg/acre) of early maturing varieties i.e AP-3 and Mater Ageta-7 with Rhizobium culture specific for pea. Apply 8 tonnes of FYM, 45 kg urea and 155 kg superphosphate per acre before sowing.
2. Apply 10 kg Furadan 3G per acre in furrows at sowing for reducing the infestation of stem fly in early sown pea crop.

### Garlic

Sow the cloves garlic variety PG-18 in the second fortnight of this month. Apply 20 tonnes of well rotten farmyard manure per acre along with 40kg urea 155 kg superphosphate per acre at sowing. Apply two split doses of urea @ 40kg at 30 and 60 days of sowing. Dibble or drill 225 to 250 kg healthy cloves of garlic in *wattar* condition on ridges. Keep lines 15 cm and plants 7.5 cm apart. Irrigate immediately after sowing.

### Palak

Use 4-6 kg/acre seed of Punjab Green. Seed should be sown 3-4 cm deep in rows at 20 cm apart in *wattar* conditions.

### Cole crops

1. Transplant fully developed seedlings (4-6 weeks old) of main season varieties of cauliflower. Apply 45 kg urea, 155 kg superphosphate and 40 kg muriate of potash before transplanting. Apply 55kg urea as a top-dressing four weeks after transplanting.
2. Sowing of late season varieties of cauliflower i.e. Pusa Snow Ball-1 and Pusa Snow Ball K-1 can be started. Sow 250 g seed in one marla to grow seedlings for planting an acre.

### Root Crops

Start sowing of “*desi*” varieties of radish (Punjab Safed Mooli-2), turnip (L-1) and carrot (Punjab Black Beauty and PC 161), using 4-5 kg seed rate of radish and carrot and 2-3 kg seed rate of turnip per acre. Keep ridges 45 cm and plants 7.5 cm apart. Cultivation of root crops on ridges help in better growth and development of roots and easy harvest. To maintain plant- plant distance, do the thinning of seedlings 15 days after emergence.

## HORTICULTURAL OPERATIONS

1. It is highly suitable time of planting of evergreen fruit plants, but it should be completed as soon as possible during this month because with the declining temperature, growth of newly planted plants will not take place. Planting of mango, sweet orange, mandarin, lime, lemon, litchi, guava, aonla, loquat, ber and papaya can be done.
2. The newly planted fruit plants are very tender and therefore, operations like irrigation, removal of sprouts stock, training, staking and plant protection measures should be undertaken with extreme care.
3. Pre-harvest fruit drop in citrus can be reduced with the spray of Gibberellic acid (5 gm) in 500 litre of water during mid September.
4. In citrus, leaf miner can be checked by spraying 200 ml Crocodile/Confidor 17.8 SL (imidacloprid) and citrus psylla can be checked by spraying 200 ml Crocodile/Confidor 17.8 SL or 160g Actara/Dotara 25 WG or 6.25 litres Mak HMO in 500 litres water per acre. To check withertip or die back, anthracnose or stem-end rot diseases, spray the plants with Bordeaux mixture 2 : 2 : 250.
5. In grapes for the control of anthracnose disease, spray the vines with Bordeaux Mixture in the middle of September and again in end-September for the control of downy mildew.
6. In ber, the incidence of black leaf spots can be managed with spray of Bordeaux mixture 2 : 2 : 250 during this month. To minimize the incidence of 'lac' insect in ber, remove the infested shoots.
7. Apply 50 kg FYM along with 2 kg Single Superphosphate and 1.5 kg Muriate of Potash to full grown *Loquat* tree in this month.
8. Apply supplemental dose of urea @ 500 g to full grown plants of Punjab Beauty pear in this month in addition to recommended dose of fertilizers.
9. Apply 500 g urea, 1250g S.S.P. and 750g Muriate of Potash to full grown guava trees as second installment of in organic fertilizers.

## **ORNAMENTALS**

### **Annuals**

Nursery of winter annuals can be raised during end of this month on well prepared raised beds. Bold seeds with hard seed coat like sweet peas and Nasturtium are soaked in water overnight and can be sown directly in prepared beds, next day. Sprinkle water lightly over seed-sown beds to ensure adequate moisture in soil for their germination. Avoid over watering to protect growing seedlings from damping-off in the nursery beds.

### **Lawns**

For obtaining a lush green appearance of a lawn, broadcast 2.2 Kg urea per 100 square meter during active growth period from March to October. Sprinkle water immediately after fertilization to wash off the fertilizer granules from leaves. Adjust the height of lawn mower blades in such a way that the lawn is mowed as close to the ground (approx. 3cm) as possible.

### **Chrysanthemum**

Ensure drainage of excess water in the chrysanthemum pots as poor drainage will lead to aeration stress and will cause yellowing of leaves. Practice pinching (in Korean types) and disbudding (in Japanese types) to ensure profuse branching and development of single terminal bud respectively.

### **Roses**

In the second half of this month, withhold irrigation to prepare rose plants for pruning, during second fortnight of October-

### **Marigold**

Marigold seed sowing is done during this month for winter season crop. The plants of variety 'Punjab Gairda No.1' planted for seed production during July -August are pinched to get more lateral spread. Periodic monitoring for Alternaria leaf blight should be carried on regularly.

### **Gladiolus and other Bulbous crops**

Planting of gladiolus corms should be started during end of this month. Preferably, varieties resistant to Fusarium should be cultivated. Bulbs of Narcissus (Nargis), Freesia etc. can also be planted in the well drained soil rich in organic matter. Heat tolerant varieties of Dahlia can be raised both from the terminal cuttings and tubers during end of this month.



## **AGRO FORESTRY**

### **Poplar**

1. Irrigate the poplar plantations at fortnightly interval.
2. In poplar nurseries, the caterpillars of Leaf Defoliator and Leaf Webber feed on leaves. Control the insects by collecting and destroying the infested leaves.
3. Autumn crop of sugarcane can be sown if the Poplar age is less than 3 years, however, maize/*bajra*/sorghum can be taken as fodder upto 3 years of Poplar growth.

### **Safeda**

The nursery growers can sow the seeds of Safeda on raised beds in lines 10 cm apart at a rate of 20 g/m<sup>2</sup>. Cover the beds with thatches and give light irrigation by sprinklers. When seedlings attain height of 4-5 cm, transfer them in perforated polybags ( size 9"×6") filled with a mixture of soil, sand and FYM (1:1:1). The seedlings will be ready for transplantation during March.



## BEE KEEPING

Provide drawn combs or comb foundation fitted frames and super chambers as per requirement, during the nectar and pollen flow period. Super chambers should be separated from the brood chamber with queen excluder. Ripe (sealed) honey should be extracted from brood-free honey combs. In case of pollen flow, provide raised empty worker brood cell combs in the brood chamber to hasten colony growth. Take all precautions during and after honey extraction to avoid robbing. This would also curb spread of bee diseases and *Varroa destructor* mite. Dust sulphur powder on the top bars of the bee combs @ 1.0 g per comb against *Tropilaelaps clareae* brood mite's infestation. Alternatively, fumigation with formic acid @ 5 ml daily for two weeks may be applied. The latter treatment will also take care of *Varroa* mite but it should be avoided during nectar flow. In the case of heavy infestation by *Varroa* mite, the destruction of sealed drone brood comb part, *Varroa* trapping in sealed drone brood and then its destruction, and use of sticky papers on bottom board coupled with the use of *Varroa* board can also be integrated. Dusting of icing sugar @ 1.5 g per frame in the late evening time in-between every two bee combs 8 times at three days interval is also helpful in reducing the mite infestation. Spray of freshly prepared oxalic acid solution (4.2%) prepared in 60 per cent sugar solution in water, on the adult bees @ 5 ml per bee comb in the late evening thrice at weekly interval, is also helpful in the reduction of the mite population. Proper spacing among the colonies and also among the migrated apiaries, and extraction of honey from only the super separated from the brood chamber with queen excluder help in preventing spread of *Varroa*. 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. The suspected colonies should immediately be isolated from the healthy looking stock. Adopt necessary apiary management operations to avoid wax moth attack inside the colonies. Inspect the stored combs for wax moth attack and apply fumigation with burning sulphur, if necessary. In areas of floral dearth, give sugar feeding (sugar: water = 1:1) to the honey bee colonies according to the needs and take all measures to prevent/check robbing. In the event of pollen flow and drone brood rearing, queen bee rearing can be undertaken depending upon the prevailing weather conditions, for stock multiplication or for requeening. For this purpose progressive beekeepers can follow mass queen bee rearing technique for which the best performing selected colonies should be used as 'breeder colonies'. For augmenting apiary productivity and profitability, adopt diversification in apiculture. For further information, consult apiculture experts.

### **MUSHROOM GROWING**

1. Start preparing compost using wheat straw or wheat straw: paddy straw (1:1) as substrate for the cultivation of button mushroom as per PAU recommended technology during 2<sup>nd</sup>-3<sup>rd</sup> week of this month.
2. During compost preparation, book your spawn as per requirement for growing button mushroom.
3. Discard the spent material (bags) of milky and paddy straw mushroom from the growing rooms. Clean and disinfect the growing rooms with 4-5% formalin for growing button mushroom.
4. During 3<sup>rd</sup> week of this month, start preparing the bags of dhingri mushroom on wheat straw or wheat straw: paddy straw (1:1) based substrates.

## DAIRY FARMING

1. Healthy animals usually come in heat within 19-22 days after parturition. Observe fresh calved animals for heat symptoms and get the animals inseminated after 2 estrus cycles to avoid complications and within 12 to 18 hrs after onset of heat in order to reduce calving interval.
2. Animals usually lose weight after calving during first 100 days of lactation. Hence farmers should follow practices of good management and balanced feeding to overcome negative energy balance e.g. quality green fodder, balance feed, bypass fat and mineral mixture so that the weight loss is minimum for maintenance of body condition score.
3. Early lactating and other lactating animals should be fed on dry matter basis. To calculate dry matter intake, use formula:  $2\% \text{ body weight of animal} + \frac{1}{3} \text{ of milk production}$ . For every 2.5 liters milk produced by cows and 2 liters by buffaloes, Provide 1 Kg concentrate.
4. Provide dry bedding (paddy straw) to young calves and follow the recommended practices of de-worming and vaccination.
5. In case of tick infestation, control it by spraying Butox (2 ml/litre of water) on the animals as well as in the sheds and repeat the spray after 10-15 days. Do not spray animals below six months of age. Animal sheds especially corners, crevices etc. should also be sprayed. Strictly follow the manufacturer's instructions while spraying the insecticides. Keep the animal sheds and surroundings clean to keep the fly population under control.
6. For prophylaxis against trypanosomiasis (surra) disease, so spray insecticides to keep the flies away, Since the disease is transmitted by flies.
7. Deworm the adult animals regularly at an interval of three months with broad spectrum anthelmintics, by changing salt of de-wormers keeping in view the prevalence of parasites in your area.
8. By the end of September, prepare the fields for sowing of berseem and other **legume** fodders.
9. Protect udder of animals from mastitis by proper sanitation and using teat dip by the solution of 75 ml povidone iodine plus 25 ml glycerine.
10. The pregnant animals should be segregated from rest of the herd at least 15 days prior to parturition.

## POULTRY

1. Light plays an important role in egg production. Provide 14-16 hours of total light to layers, including the day light. Gradually go on increasing the light when egg production starts.
2. Provide extra grit (5 gm per bird) in the layer ration to avoid production of thin shelled eggs.
3. Stir the litter regularly to avoid dampness. At the same time, sufficient air movement should be made possible inside the poultry shed.
4. It is best season to raise the broilers. Get your broiler chicks from a reputed hatchery.
5. Protect the sheds from rodents as they eat feed meant for poultry.

**Compiled by: Amarjit Singh**

**Information supplied by:** K.S. Suri, Amit Kaul, Arsh Alam Singh Gill, Jaswinder Singh Brar, Jaspal Singh, Navneet Kaur, Simrat Singh, Ruma Devi, Tejveer Singh and Shivani Sharma.