ICAR-Central Institute for Cotton Research, Nagpur

XII Weekly Advisory for Cotton Cultivation from 8th to 14th August, 2023

	ACTUAL RAINFALL in mm IMD					PREDICTED RAINFALL in mm IMD					ADVISORY
	AUGUST					AUGUST					
Date	**04**	**05**	**06**	**07**	**08**	**10**	**11**	**12**	**13**	**14**	
PUNJAB											
Firozpur	0	0	0	0	0	0	0	0	0	0	At Bathinda, the crop is 84 to 95 days old at flowering to boll formation stage. Hoeing and weeding are in progress. Sprayed 2% Potassium nitrate (13:0:45) in cotton fields where flowering has initiated. Weeds like *Dodhak* (*Euphorbia* spp.), *Tandla* (*Digera arvensis*), Madhana (*Eleusine* spp.), *Trianthema monogyna,* Makru (*Ipomea* spp.), Khabbal (*Cynodon dactylon*) have dominated the fields. Whitefly population ranged between 0-12/ 3 leaves, jassid between 0-9/3 leaves and thrips between 0-30/3 leaves. Incidence of pink bollworm ranged between 0-10%. Incidence of CLCuV and boll rot was observed in some of the fields. At Faridkot, the crop is 90 to 100 days old at flowering stage. Mechanical/ manual intercultural operations, fertilizer application and three/four sprays against sucking pests and pink bollworm were taken up. Limited mechanical intercultural operations only could be done due to rains wherein herbicide spray with Pyrithiobac Sodium 6% + Quizalofop ethyl 4% MEC and Glufosinate were given to control the weeds. Whitefly incidence was near ETL at some of the locations. Thrips incidence was below ETL and jassid population has gone beyond ETL at most of the spots. Pink bollworm incidence was near ETL ranging between 5-12%. After heavy rains, parawilt and cotton leaf curl disease up to grade I was observed at few locations. **Advisory**: At Bathinda, farmers are advised to drain out the excess water from cotton fields in case of heavy rainfall. Give four sprays of 2% Potassium nitrate (13:0:45) at weekly intervals in cotton fields where flowering has started which would reduce flower drop and improve boll setting in cotton. If whitefly adult population is above ETL, spray Afidopyropen 50 DC @ 400 ml/acre or Flonicamid 50 WG @ 80 g/acre or Clothianidin 50 WDG @ 20 g/acre or Dinotefuran 20 SG @ 60 g/acre. For jassids above ETL, spray Dinotefuran 20 SG @ 60 g/acre or Thiamethoxam 25 WG @ 40 g/acre. Rosette flowers, if any, should be removed and destroyed. Monitor them in fields where crop is at flowering stage and spray Profenofos 50 EC @ 600 ml/acre or Emamectin benzoate 5 SG @ 100 g/acre or Indoxacarb 14.5 SC/15.8 EC @ 200 ml/acre if the incidence of pink bollworm goes above 5 per cent. Give
Bhatinda	0	0	0	0	0	0	0	0	0	0	
Muktsar	0	0	0	0	0	0	0	0	0	0	
Faridkot	0	0	0	0	0	0	0	0	0	0	
Sangrur	0	0	0	0	0	0	3	5	0	0	
Ludhiana	27.2	2.4	7.9	1.8	0	4	3	8	3	4	

											foliar spray of Carbendazim 50 WP@ 0.04% or Carbendazim 12%+Mancozeb 63% WP@0.3% or Kresoxim methyl 44.3 SC @ 0.1% or Propineb 70 WP @ 0.25 % or Propiconazole 25 EC @ 0.1% or Metiram 55% +Pyraclostrobin 5% WG @ 0.2% or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @ 0.1% or Fluxapyroxad167 g/L + Pyraclostrobin 333 g/L SC @ 0.6% to manage boll rot disease complex. At Faridkot, farmers are advised to drain out excessive water in the event of heavy rainfall as cotton is very sensitive to stagnating water. Spray Potassium nitrate (13:0:45) @ 2% to improve boll setting and reduce flower drop in timely sown crop. Spray 500 ml of Glufosinate ammonium 13.5 SL in 100 litres of water as a directed spray to control weeds between the crop rows by using a protective hood. Alternatively, spray 500 ml/acre of Pyrithiobac sodium 6% + Quizalofop ethyl 4% by dissolving in 150 litres of water after irrigation, in moist soil, to control annual grass and broadleaf weeds. After heavy rains or irrigation, some plants might show wilting due to parawilt. Check them by spraying Cobalt chloride @ 10 mg/ litre of water on the affected plants at the initial stage of wilt. In case of jassid incidence above ETL, spray Flonicamid 50 WG @ 80 g/acre or Dinotefuran 20 SG @ 60 g/acre. Check for squares and flowers for the infestation of pink bollworm. Spray Profenofos 50 EC @ 600 ml/acre or Emamectin benzoate 5 SG @ 100 g/acre or Indoxacarb 14.5 SC/15.8 EC @ 200 ml/acre, if incidence crosses ETL. Install pheromone traps @ 5 traps/ha to monitor pink bollworm and replace the lure as per validity indicated. Give foliar spray of Carbendazim 50 WP@0.04% or Carbendazim 12%+Mancozeb 63% WP@0.3% or Kresoxim methyl 44.3 SC @ 0.1% or Propineb 70 WP @ 0.25 % or Propiconazole 25 EC @ 0.1% or Metiram 55% +Pyraclostrobin 5% WG @ 0.2% or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @ 0.1% or Fluxapyroxad167 g/L + Pyraclostrobin 333 g/L SC @ 0.6% to manage boll rot disease complex.
HARYANA											
Hisar	0	0	0	0	0	3	5	4	0	0	At Hisar, the crop is 77 to 120 days old at flowering to boll development stage. Hoeing and insecticide sprays were done. Weeds like *motha*, *santhi, makra, hiranhuri, kelapatta* and *doob* were observed in some of the fields after rainfall. Manual hoeing was done as per the feasibility. Population of thrips declined after rainfall but it is below ETL in majority of the fields. Jassid and whitefly populations are building up above ETL in several fields. Infestation of pink bollworm was observed above ETL in flowers and green bolls in several cotton fields. Cotton leaf curl viral disease, boll rot and *Myrothecium* /fungal leaf spot were recorded in almost all the fields in Hisar and Jind districts. At Sirsa, the crop is 85 to 105 days old at squaring, flowering and boll formation stage. Overall the crop is in good condition. Intercultural operations by tractor and hand hoeing, weeding and irrigation, fertilizer application and need based nutrients and insecticidal
Jind	0	0	0	0	0	8	5	6	0	0	
Sirsa	0	0	0	0	0	3	4	5	0	0	
Rohtak	0	0	0	0	0	8	5	5	0	0	

											sprays are in progress. Whitefly and jassid populations crossed ETL at most of the locations while thrips populations have come down drastically. Damage due to rosette flower has decreased but green boll damage has increased beyond ETL. The incidence of pink bollworm has crossed ETL at few locations based on green boll damage. Root rot and boll rot incidence were noticed in the cotton fields. **Advisory:** At Hisar, farmers are advised to drain out stagnated water after heavy rains from the cotton fields by making trenches. Manage weeds after irrigation/rainfall as per the feasibility in the crop. Apply second split dose of Urea @ 1 bag (45kg)/acre in 10 to 12 weeks old crop. Give foliar spray of 13:00:45 @ 1% during peak flowering and boll formation stage to obtain higher yield. Spray the crop grown in light soils with Urea @ 2.5% and Zinc sulphate 21% @ 0.5% to overcome Zinc deficiency. In cotton crop where flowering and boll formation has initiated, remain vigilant for pink bollworm attack in flowers and bolls and install pheromone traps @ 5/ha for monitoring purpose. Adult catch of 6-8 adults/trap for consecutive 3 days till mid-August requires insecticide intervention for its management. In case the infestation of pink bollworm crosses ETL of 5-10% rosette flowers or 5-10% infested green bolls, spray Profenofos 50 EC @ 600 ml/acre or Quinalphos 20 AF @ 400 ml/acre 10 days after the first, if required. Control jassid and whitefly incidence by spraying Flonicamid @ 80 g/ acre. In case of severe infestation of whitefly, spray Pyriproxyfen 10 EC @ 500 ml or Spiromesifen 22.9 SC @ 200 ml/acre. In case of foliar diseases like *Myrothecium* leaf spot, *Corynespora, Alternaria* leaf spot and wet weather blight, foliar spray of Carbendazim 12%+ Mancozeb 63% WP@0.3% or Propiconazole 25 EC @10 ml or Carbendazim 50 WP@ 4 g or Fluxapyroxad 167g/litre + Pyraclostrobin 333g/litre SC @ 6 g or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @10 ml or Metiram 55%+Pyraclostrobin 5% WG @20 g per 10 litres of water. Manage boll rot by applying Carbendazim 12%+ Mancozeb 63% WP@30 g or Propiconazole 25 EC @10 ml or Carbendazim 50 WP@ 4 g or Fluxapyroxad 167 g/litre + Pyraclostrobin 333 g/litre SC @ 6 g or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @10 ml or Metiram 55%+Pyraclostrobin 5% WG @20 g per 10 litres of water. Monitor the fields regularly at least at weekly intervals and necessarily after the rainfall. At Sirsa, farmers are requested to continue intercultural operations. Regularly monitor the insect-pest incidence. Henceforth, monitor PBW either through trap catches or 20 green boll/acre destructive sampling as advised. Apply second split of Nitrogen (Urea 40 kg/ha) wherever crop age is 70 to 80 days old at fruiting stage and first split has already been given. Start foliar application of N:P:K (13:0:45) @ 2.0 kg /150 litres of water and repeat 2-3 times at 10 days iintervals. Give two sprays of 1kg Magnesium sulphate in 100 lit of

											water/acre at 15 days interval during full bloom and boll development stages for high yield and management of leaf reddening in *Bt* cotton. Spray Pyrithiobac sodium 6% + Quizalofop ethyl 4% @1250 ml/ha to control annual grass and broadleaf weeds or spray Glufosinate ammonium @2250 ml/ha as a directed spray (using a protective hood) to control weeds in between the crop rows. Use 200 litres of water per acre for spray. Manage whitefly adult population by applying Diafenthiuron 50% WP @ 200 g or Afidopyropen 50DC @ 400 ml or Dinotefuran 20SG @ 60g or Flonicamid 50WG @ 80 g/acre in 150 litres of water. If nymphal populations observed higher ETL, apply Pyriproxyfen 10EC @ 500ml or Buprofezin 25SC @ 400 ml or Spiromesifen 22.9 SC @ 200 ml /acre in 150 litres of water/acre. To control thrips incidence if any, spray either Spinetoram 11.7 SC @170 ml or Emamectin benzoate 5 SG @100 g/acre or Profenofos 50 WP @ 600 ml/acre in 150 litres of water which help in PBW management also. To control jassid, spray Dinotefuran 20 SG @ 60 g or Flonicamid 50 WG @ 80 g per acre, effective against whitefly also. In case PBW crosses ETL, based on rosette flower damage/trap catches/green boll damage, spray Emamectin benzoate 5 SG @ 100 g/acre or Spinetoram 11.7 SC @ 170 ml/acre or Profenofos 50WP @ 600 ml /acre or Chlorpyrifos 20 % EC @ 500 ml or Indoxacarb 14.5 SC 200 ml/acre. Do not repeat same insecticide and rotate insecticide whenever required. Drench the root rot affected plants and surrounding healthy plants with Carbendazim 50 WP @ 12 g/ 10 litres of water or *Trichoderma harzianum* or *T. viride* WP formulation@ 5-6 g/litre of water. To manage boll rot, spray Carbendazim 12%+ Mancozeb 63% WP@30 g or Propiconazole 25 EC @10 ml or Carbendazim 50 WP@ 4 g or Fluxapyroxad 167 g/litre + Pyraclostrobin 333 g/litre SC @ 6 g Or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @10 ml or Metiram 55%+Pyraclostrobin 5% WG @20 g per 10 litres of water. Drench the parawilt affected plants with Carbendazim 50 WP @0.4 g or Copper oxychloride 50 WP/WG @2.5 g+20 g Urea/litre of water or spray Cobalt chloride @10 mg/litre immediately after the appearance of wilting symptoms on the affected plants. Manage fungal foliar leaf spots by spraying Carbendazim 12%+ Mancozeb 63% WP@3 g/litre or Kresoxim-methyl 44.3% SC@ 1 ml/litre or Propiconazole 25 EC@ 1 ml/litre or Azoxystrobin 18.2% + Difenoconazole 11.4% SC@ 1 ml/litre or Pyraclostrobin 20% WG @1 ml/litre or Fluxapyroxad 167 g/lit + Pyraclostrobin 333 g/lit SC @ 0.6 g/litre of water.
RAJASTHAN											
Ajmer	0	65	0	0	0	0	0	1	2	1	In Southern Rajasthan (Banswara, Bhilwara, Chittorgarh, Dungarpur, Pratapgarh, Rajsamand and Udaipur), the crop is 42 to 88 days old at vegetative to flowering stage. Intercultural operations could not be carried out due to continuous rains. Both the weeds, grassy and broad leaves, have spread in the fields. No Incidence of pests and diseases except jassid but below ETL. In Sriganganagar and Hanumangarh, the crop is 70 to 125 days old at vegetative,
Jodhpur	0	0	0	0	0	1	0	0	0	0	
Nagaur	0	0	0	0	0	1	0	1	1	0	
Pali	0	0	0	0	0	2	0	1	1	1	
Sri Ganganagar	0	0	0	0	0	0	0	2	1	0	

											branching, square formation and flower initiation stages. Weeds like Itsit (*Trianthema* spp.), Tandla (*Digera arvensis*), Motha (*Cyperus rotundus*) have infested the crop. Post sowing irrigation has been given, intercultural operations have been taken up in early and timely sown cotton. Manual hoeing and weeding has been done to remove the weeds from row spaces. Incidences of sucking pests below ETL and CLCuD symptoms have started appearing in the cotton fields. **Advisory:** In Southern Rajasthan (Banswara, Bhilwara, Chittorgargh, Dungarpur, Pratapgarh, Rajsamand and Udaipur), farmers are advised to apply either first or second split of recommended dose of N fertilizers according to crop stage. Monitor infestation of sucking pests and spray 5% neem seed kernel extract (NSKE) or *Azadirachtin* 1500 ppm (0.15% EC) @ 5 ml/ litre of water or Buprofezin 25 SC @ 1.25 litre/ha or Diafenthiuron 50 WP @ 625 g/ha or Acetamiprid 20 EC @100 ml/ha or Flonicamid 50 WG @200 g/ha to control them if it goes beyond ETL. Install yellow sticky traps 8/acre to monitor whitefly and jassid and pheromone traps @ 2/acre to monitor pink bollworm. In case of wet soil condition, where manual weeding is not possible, go for application of post-emergence herbicides at 25 -30 days after sowing like Quizalofop ethyl 5% EC @ 2 ml/litre of water, if the field is infested with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad-leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml/litre of water to control both grassy and broad-leaved weeds. Do not repeat same insecticides as well same group of insecticides. Avoid tank mixture of two or more insecticides. In Sriganganagar and Hanumangarh, farmers are advised to apply recommended dose of nitrogenous fertilizers after first and second irrigation for maximum fertilizer use efficiency. Avoid N application through broadcast just before irrigation as this leads to leaching of fertilizers and in turn, contamination of groundwater. Apply the second and third dose of Urea 27.5 kg/split with second dose first at irrigation, third on square formation/ second irrigation depending upon soil type and moisture conditions. Give foliar application of KNO_3 @ 2% where the crop is above 65 days. Remove weeds near and around the cotton fields. Monitor the crop for insect pests and diseases regularly. Spray neem-based insecticides @ 5 ml/litre at early stage of crop or in case of mild attack of sucking pests and pink bollworm. To control jassid, spray Dinotefuran 20 SG @ 60 g or Flonicamid 50 WG @ 80 g per acre, effective against whitefly also. In case of thrips infestation, use Spinetoram 11.7 SC @ 0.8 ml/litre or Profenofos 50 EC @ 3 ml/ litre of water. Install pheromone traps @ 5/ha to monitor bollworms. Regularly, monitor bollworm occurrence and destroy the affected flower along with larvae. Wherever pink bollworm population crosses ETL, i.e. flower or bolls

											infestations is more than 5%, spray Profenofos 50 EC @ 30 ml or Emamectin benzoate 5 SG @ 5 g per 10 liter of water.
ODISHA											
Koraput	18	6.6	19.6	0	0	10	5	7	5	5	At Odisha, the crop is 38 to 48 days old at vegetative to square formation stage. The crop is in good condition without any severe pests and disease incidence. Intercultural operations, weeding and earthing up, application of second dose of fertilizer, spraying of neem pesticides to suppress sucking pests like aphids and other foliar feeders like *Spodoptera* and semi loopers, application of alpha Naphthyl Acetic Acid 4.5 SL @3.5 ml/15 litres of water to prevent square and flower drop were the operations taken up. Weeds of all types i.e. broad leaf, grasses and sedges were noticed in most of the fields. Manual weeding and earthing up are in progress. Minor incidences of aphids, jassid, *Spodoptera*, semi-loopers and leaf miners were noticed. Wilting reported from some regions of Kalahandi, Bolangir and Nuapada districts. **Advisory**: Due to continuous and expected rains in the forthcoming days due to low pressure, farmers are advised to take utmost care and drain excess water from the fields. Complete weeding, intercultural and earthing up operations at the earliest. Apply second dose of fertilizer @ 120:60:60 kg/ha for hybrids and 90:45:45 kg/ha for varieties (2nd dose- 50% N and 50% K). Micronutrients, if not applied, give as basal dose @ $ZnSO_4$ (25 kg/ha) and Boron (5 kg Borax/ha) at the time of earthing up. In case of wet soil condition where manual weeding is not possible, go for application of post emergence herbicides (at 25 -30 days after sowing) like Quizalofop ethyl 5% EC @ 2 ml/litre of water if the field is infested predominantly with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds. Regularly monitor the crop to know about incidence of any pest and disease. Spray Buprofezin 25 SC @ 20 ml/10 litres of water when aphid population is above ETL (≥2 affected plants out of 20 plants counted randomly (10% plants infested) showing symptoms cupping / crumpling of few leaves on the upper portion of plant. If para wilt or sudden wilt occur due to heavy rains and water logging after dry spell, apply Cobalt chloride @10 mg/litre (10 ppm) on affected plants within few hours of onset of symptoms and/or drench plants with a mixture of Copper-Oxy-Chloride 50 WP@25 g and 200 g Urea mixed in 10 litres of water or Carbendazim 50 WP@ 12 g/10 litres of water. Install pheromone traps @ 5 /ha to monitor *Spodoptera* attack. To reduce leaf reddening if any, spray 100 g Magnesium sulphate mixed with 100 g Urea in 10 litres of water in water logged areas.
Kalahandi	2.4	0	6.8	0	0.6	10	5	3	3	5	
Balangir	0	0.1	0	8.2	0.3	5	3	2	2	5	
GUJARAT											
Amreli	1.2	0	0	0	0	4	3	0	0	0	At Surat, the sown crop is 42 to 49 days duration crop at vegetative stage. Manual weeding, intercultural operations and second split of Nitrogen application are in progress. Weeds like
Bhavnagar	0	0	0	0	0.8	3	3	0	0	0	
Jamnagar	1	0	0	0	0	0	0	0	0	0	

Rajkot	0.2	0.6	0	0	0	5	5	0	0	0
Junagadh	0	0	0	0	0	5	4	4	4	4
Sabarkantha						3	4	3	3	4
Surendranagar	0	0	0	0	0	0	0	0	0	0
Ahmedabad	0	2	0	0	0	5	5	0	0	0
Baroda	0	4.4	2.2	0	0	0	0	0	0	0
Patan	0	2.5	0	0	0	0	0	0	0	0
Mehesana						5	5	0	0	0

Chido (*Cyprus rotundus*), Satodi (*Trianthema monogyna*), Dhamdo (*Amaranthus viridis*) and others have infested the fields. Thrips have crossed ETL and jassid population noticed below ETL. Low incidence of *Ascochyta* Blight (Wet blight) was also noticed in the fields.

At Junagadh, the sown crop is 49 days old at vegetative stage. Intercultural operations, weeding, fertilizer application and pesticides spray have been carried out. Weeds like Sambo, sedge, amaranth and horse purslane have spread in the fields. Aphid infestation has crossed ETL at few places. Shoot weevil (*Alcidodes affaber*) infestation has started appearing in some isolated places.

Advisory:

At Surat, farmers are advised to keep the fields free from debris. In case of heavy rains, farmers are advised to drain out excess rain water from the cotton fields. On receiving sufficient rains, apply second installment of split dose of Nitrogenous fertilizer at 50 to 60 DAS. Spray neem-based insecticides, Azadirachtin 1500 ppm @ 50 ml or *Beauveria bassiana* @ 50 g in 10 litres of water safer to natural enemies to manage sucking pests in case, they cross ETL. Install pheromone traps (5 traps/ha) to monitor pink bollworm. If para wilting is noticed in fields, drench with carbendazim 50 WP @12 g or copper oxychloride 50 WP @25 g+ Urea (2%) in 10 litres of water near root zone of plant and nearby plants by manually making 3 to 4 holes for proper aeration and recovery of the plant. Further, foliar spray of Carbendazim 12%+ Mancozeb 63% WP@30 g or carbendazim 50 WP @4 g or Kresoxim methyl 44.3 SC@10 ml or Propineb 70 WP@ 25 g or Propiconazole 25 EC@ 10 ml or Metiram 55% +Pyraclostrobin5% WG @20 g or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @10 ml or Fluxapyroxad 167g/l + Pyraclostrobin 333 g/l SC @ 6 g mixed in 10 litres of water to manage fungal leaf spots, boll rots, *Ascochyta* blight and other blight diseases.

At Junagadh, farmers are advised to apply Ammonium sulphate @10 kg/acre or Nitrogen (Urea 15 kg/acre). Take up timely operations of weeding and intercultural operations. In case of wet soil condition, where manual weeding is not possible, go for application of post-emergence herbicides at 25 -30 days after sowing like Quizalofop ethyl 5% EC @ 2 ml/litre of water, if the field is infested with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml/litre of water to control both grassy and broad-leaved weeds. Do earthing up along with application of fertilizers (25 kg MOP+ 25 kg Urea/acre in irrigated condition) to the soil. If aphids or thrips infestation crosses threshold level, spray Flonicamid 50 WG (200 g/ha) or *Beuaveria bassiana* 60 g/10liters or Fipronil 5 SC @10 ml/10 litres of water. Give a spray of Fluxapyroxad 167 g/l + Pyraclostrobin 333 g/l SC @ 0.6 g/litre or Metiram 55%+ Pyraclostrobin 5% WG @2 g/litre or Carbendazim 12%+ Mancozeb 63%

											WP@3 g or Propiconazole 25 EC @1 ml or Carbendazim 50 WP@ 0.4 g or Azoxystrobin 18.2% w/w + Difenoconazole 11.4% w/w SC @1 ml per litre of water to manage boll rot disease complex and fungal foliar diseases. Manage shoot weevil infestation by spraying Chlorpyriphos 20 EC @ 2.5 ml/litre of water.
MP											
Khargaon											At Khandwa, the crop is 42 to 91 days at vegetative, pre flowering, flowering and boll formation stages. Weeding, intercultural operations, fertilizer and pesticide application has been carried out as per the stages of the crop. Weeds like *Phylanthus niruri*, *Cammelina sessilis, Digera arvensis, Cynadon dactylon, Cyperus rotundus, Digitaria sanguinalis, Echinocloa* spp. and *Euphorbia* spp. have infested the fields. Incidence of jassids and Bacterial blight have been observed in some fields. **Advisory** Farmers are advised to apply second dose of chemical fertilizer @ 150:75:40 kg/ha, respectively with 25% of N and 50% of P and K at 60 DAS and 25% N at 90 DAS. Split doses of these nutrients should be applied by column method at the depth of 10 to 15 cm. Take up weeding with bullock drawn *Kolpa* in those areas where crop is at 35 DAS if the field condition is probable. In case of wet soil condition, where manual weeding is not possible, go for application of post-emergence herbicides at 25 -30 days after sowing like Quizalofop ethyl 5% EC @ 2 ml/litre of water, if the field is infested with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml/litre of water to control both grassy and broad-leaved weeds. Spray neem-based insecticides @ 1 litre per acre at 45-60 days of crop age to check the sucking pests and prevent egg laying by pink bollworm. Install Pheromone traps @ 5 /ha to monitor pink bollworm moth activity. Observe for the presence of rosette flowers and collect them and destroy immediately.
Dhar	0.5	4.8	0.5	0.2	0	45	15	16	3	2	
Khandwa											
MAHARASHTRA											
Dhule	1	1.5	2.5	0	0	5	5	7	7	6	At Akola, the sown crop is of 35 to 40 days old at vegetative growth stage. Hoeing, weeding and top dressing of fertilizer is in progress. Weed infestation is more in late sown cotton. Some grassy weeds particularly *Cyperus rotundus* is prominent in the fields with broad leaf weeds in few fields. Some cotton fields are heavily infested with *Commelina* weed species. No incidence of pests and diseases except sucking pests but below ETL observed in late sown cotton. At Nanded, the sown crops in irrigated areas are 28 to 52 days old at vegetative to square formation stage. Weeds like *Cynadon dactylon, Cyperus rotundous, Digeria arvensis, Meremia emerginata, Xanthium strumarium, Casia tora, Acalypha indica, Achyranthes*
Nandurbar						9	10	7	7	6	
Jalgaon	3	0	12	4	0	4	9	10	5	3	
Ahmednagar	0	0.8	1.6	0	0	6	6	7	5	6	
Aurangabad	1	2	1.5	0.7	0	2	2	8	2	2	
Jalna						1	2	9	6	2	
Beed	0	0	1	0	0	4	2	4	1	3	
Nanded	0	0	0	0	0	0	2	10	8	7	
Parbhani	0	0	0	0	0	1	1	8	1	1	
Hingoli	0	0	0	0	0	3	2	7	4	1	
Buldhana	0	0	15	3	0	2.9	0.6	8.5	9.3	2	
Akola	3.2	0.5	0.2	1.8	0	5.4	2.3	8	8.7	3	

Washim	0	0	3	0	0	2.8	2.3	4.4	6.9	5
Amravati	4.6	1.2	9.4	0	0.4	6.6	1.7	8.7	9.3	4
Yavatmal	2.4	0.3	0	1	0	4.2	1.8	3.8	8.7	3
Wardha	9.8	0	19.9	0	0	2.4	0.5	1.6	4.3	3
Nagpur	9.4	3.5	2.2	2.1	0.9	0.6	0	3.2	4.2	2
Chandrapur	2.6	9.8	0	0	0	2.4	5	0	4.6	2

aspera, Alternanthera sessilis, Eclipta alba, Parthenium hysterophorus, Phyllanthus niruri, Digitaria sanguinalis, Dinebra retroflexa, Setaria viridis etc. have dominated the cotton fields. No incidence of pests and diseases except jassids and aphids attack but below ETL.

At Rahuri, the crop is 41 to 66 days old at vegetative to flowering stage. Sucking pests were noticed above ETL. Weeds like *Haryali*, *Parthenium* etc., have infested the fields. One to two per cent cotton plants damaged due to *Myllocerus* weevil.

Advisory:

At Akola, farmers are advised to open the furrow in cotton field at regular intervals for moisture conservation purpose at 45 to 50 DAS by tying rope to tyne of the hoe. Drain the excess water from the field wherever heavy rains have occurred. Spray post-emergence herbicide Pyrithiobac Sodium 10 % EC @12.5 to 15 ml/10 lit of water at 25 - 30 days after sowing for broad leaf weeds and Quizalofop ethyl 5 % EC @20 ml/10 lit of water to manage grassy weeds in cotton or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 20-25 ml/10 lit of water for broad spectrum weed control. Carry out the intercultural operations like hoeing and weeding in cotton after draining the excess water from the fields. Apply first split of 40 kg N (90Kg Urea/ha) for irrigated hybrid cotton and 30 kg N (65 Kg urea/ha) for rainfed hybrid/hirsutum cotton as top-dressing dose of chemical fertilizer. Spray 2 % urea at flowering stage of cotton with first spray at 45 DAS. Give a spray of Acetamiprid 20 SP @ 15g/ha based on ETL to manage sucking pests. Install pheromone traps @ 5/ha for monitoring of pink bollworm and undertake spray neem-based insecticides @ 1 lit/acre. Observe 14 to 20 plants as a representative of cotton field for pest incidence. Parawilt symptoms were observed in few cotton fields. Drench the early symptomatic plants with a mixture of Copper-Oxychloride 50 WP@25 g+150-200 g Urea mixed in 10 litres of water or Carbendazim 50 WP @12 g/10 litres of water.

At Nanded, farmers are advised to provide drainage to cotton crop to drain out excess rain water by opening trenches in low lying area. Intercultural operations should be done in rainfed and irrigated cotton for weed management. Apply basal dose of fertilizer @ 48:60:60 NPK kg/ha to crop with 20-25 DAS rainfed cotton if not applied at the time of sowing cotton. Give top dressing of 36 kg N per ha at 30 DAS for rainfed cotton. In case of wet soil conditions, where manual weeding is not possible, go for application of post emergence herbicides at 25-30 DAS like Quizalofop ethyl 5% EC @ 2 ml/litre of water, if the field is infested predominantly with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml /litre of water to control both grassy and broad-leaved weeds.

											Spray Buprofenzin 25 SC @ 20 ml or Thiamethaxam 25 WG @ 2 g/10 litre of water to manage sucking pests considering rainfall conditions. Intermittent wet and dry spell may cause infection of *Macrophomina phaseolina* (*R. bataticola*) to roots, stem and leaves and this stress causes reddening of stems, stunted growth and dry root rot in seedlings in some areas. Drench with Carbendazim 50 WP @12 g mixed per 10 litres of water to recover early symptomatic affected plants. Install pheromone traps @ 5/ha for monitoring of pink bollworm. At Rahuri, farmers are advised to carry out intercultural operations on time. In case of wet soil condition, where manual weeding is not possible, go for application of post-emergence herbicides at 25 -30 days after sowing like Quizalofop ethyl 5% EC @ 2 ml/litre of water, if the field is infested with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml/litre of water to control both grassy and broad-leaved weeds. Install yellow sticky traps @ 8 to 10 traps/acre and blue sticky traps @ 8-10/acre to control thrips population. Spray NSKE 5% or Neem oil @ 1 litre/acre to check sucking pests and avoid pink bollworm egg laying in cotton. Install pheromone traps @ 5 traps/ha to monitor pink bollworm moth activity. Collect and destroy the rosette flowers. Spray Flonicamid 50 WG @ 4 g or Buprofezin 25 SC @ 20 ml or Diafenthiuron 50 WP @ 12 g / 10 litres of water if sucking pests crosses ETL.
TELANGANA											
Adilabad	0	0	0	0	0	2	2	10	10	8	At Warangal, the sown crop is 45 to 52 days old at vegetative stage. Post emergence weedicide application, foliar application of nutrients, inter-cultivation with cattle pair and basal application of fertilizers were done. Heavy weed growth was noticed. Stunted growth with light yellowing/reddening of leaves was also noticed. At Adilabad, the sown crop is 48 to 55 days old at vegetative stage. Post emergence herbicide was applied. Sprayed foliar nutrients like 19:19:19/13:0:45 @ 10 g/litre of water to boost crop growth. Insecticide spraying has also been completed. Root rot was noticed in few fields. Overall, crop growth is stunted. **Advisory** At Warangal, farmers are recommended to spray 19-19-19 @ 10 g or 2% DAP (20 g/litre) twice in one-week interval to avoid stunted growth. Spray post emergence herbicides like Quizalofop ethyl 5% EC @ 2 ml/litre or Propaquizafop @ 1.25 ml/litre of water to control grassy weeds, Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml /litre of water to control both grassy and broad-leaved weeds. Take up inter cultivation with cattle pair for effective
Warangal	0	0	0	0	0	0	0	1	3	1	
Khammam	3	0	0	0	0	2	3	10	8	6	
Karimnagar	1.3	2.8	0	3	0	0	1	0	0	0	
Mahabubnagar	0	0	0	0	0	1	1	2	0	0	

											weed control and plant growth. After weed control, give basal application of Urea @ 25 kg and MOP @10 kg/acre. If aphid incidence is noticed above ETL, spray Acetamiprid 20 SP @ 0.2 g or Dimethoate 30 EC @2 ml or Fipronil 5 SC @ 2 ml per liter. If parawilt noticed, drench with Copper oxychloride 50 WP@ 25-30 g/10 litres of water or Carbendazim 50 WP @12 g + Urea 100-150 g/10 litres of water at the base of the plants twice in one-week interval. Give foliar application of 19-19-19 @ 10 g/litre of water twice in one-week interval to correct yellowing/ reddening of leaves. To manage root rot disease, drench the affected plants with Carbendazim 50 WP @12 g mixed per 10 litres of water to recover early symptomatic affected plants. At Adilabad, farmers are advised to apply post emergence herbicides, Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml /litre of water or Fluaziopof-p-butyl @ 2 ml/litre to control both grassy and broad-leaved weeds. Spray foliar nutrients like19:19:19/13:0:45/28:28:0 @ 10 g/litre + Formula 4 or Formula 6 @ 5 g/litre for proper growth of the crop**.** Apply first dose of Urea @25 kg + Potash @12 kg/acre. Spray Acetamiprid 20 SP @ 0.2 g/litre or Thiomethaxam 25 WG @ 0.2 g or Dinetoferon 20 SG @ 0.3 g/litre of water to control jassid. Drench the root rot affected plants and nearby surrounding healthy plants with Carbendazim 50 WP @1.2 g/litre or Tebuconazole + Trifluoxystrobin @ 0.75 g/litre of water. To manage root rot disease, drench the affected plants with Carbendazim 50 WP @12 g mixed per 10 litres of water to recover early symptomatic affected plants.
AP											
Guntur	0	0.1	6.6	0.2	0	0	0	0	0	0	At Guntur, part of sowing is still pending due to non-receipt of rains. The sown crop is at germination to 15 days old crop. Pre emergence herbicide application with Pendimethalin @ 1.3 litre/acre was done. Jassids were found above ETL in few isolated fields. At Nandyal, the sown cotton is 10 to 30 days old at vegetative stage. Gap filling was done. As there is no rainfall since last 10 days coupled with high day temperatures, cotton seedlings were subjected to dry spell due to lack of moisture and so 13-0-45 @ 3 g /litre of water or Urea@ 20 g/litre of water was sprayed once in a week to tide over dry spell. **Advisory:** At Guntur, if not treated before sowing, treat the seeds with Carboxin 37.5% + Thiram 37.5% DS @3.5 g per kg of seeds (root rot and bacterial diseases) or Fluxapyroxad (333 g/L FS) @1.5 ml per kg seed or Tetraconazole 11.6% W/W (12.5% w/v) SL @1.5 ml per kg of seeds to manage seed borne diseases (for root rot disease). . In case of wet soil condition, where manual weeding is not possible, go for application of post-emergence herbicides at 25 -30 days after sowing like Quizalofop ethyl 5% EC @ 2 ml/litre of water, if
Prakasam	0	0	0	0	0	0	0	0	0	0	

											the field is infested with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml/litre of water to control both grassy and broad-leaved weeds. At Nandyal, farmers are advised to provide sprinkler irrigation from nearby water source, if available, as there is no rainfall since last 10 days coupled with high day temperatures. Give a spray of 13-0-45 @ 3 g /litre of water or Urea@ 20 g/litre of water once in a week to tide over dry spell. To manage root rot disease, drench the affected plants with Carbendazim 50 WP @12 g mixed per 10 litres of water to recover early symptomatic affected plants.
KARNATAKA											
Dharwad	0.6	0.8	0	1	0.6	1	1	1	1	1	At Dharwad, sporadic rainfall was received in cotton growing areas of all districts. The sown cotton is 25 to 30 days old at initial vegetative stage. Manual weeding and intercultivation were taken up. Grassy weeds like *Cyanodon dactylon* and the sedge, *Cyperus rotundus,* have dominated the fields. Shoot weevil was noticed. As such, no incidence of pests and diseases. At Raichur, the sown cotton is 20 to 65 days old at different stages of the crop. Most of the farmers' fields have received excess rainfall. Due to this, growth of cotton crop was not up to the mark. Top dressing of fertilizers with Urea and Murate of potash, intercultural operations and weeding were taken up in weed infested fields. Thrips and jassid were noticed in some farmer's fields around ETL and sprayed with recommended dose. At Chamarajanagar, the crop is 95 to 100 days old at flowering to boll formation stage. Fertilizer application, insecticidal spray and intercultural operations were taken up and are in progress. Incidences of aphids (35-40/3 leaves), jassid (4-5/3 leaves) and mirid bug (4-5/25 squares) were recorded. **Advisory:** At Dharwad, farmers are advised to sow Okra for every 20 rows of cotton for shoot weevil pest management. Spray neem-based insecticide @ 5.0 ml/litre of water for 15-25 days crop to manage sucking pests and deter egg laying by pink bollworm. Manual collect the shoot weevil from Okra as a trap crop. At Raichur, in most of the farmers' fields, excess rainfall was received. Farmers are advised to drain out the excess rain water from their fields and take up weeding and intercultural operations on priority basis. In case of wet soil conditions, where manual weeding is not possible, go for application of post emergence herbicides at 25-30 DAS like Quizalofop
Haveri	0	0	0	0	0	1	1	1	1	1	
Mysore	0	0	0	0	0	1	1	1	1	1	

											ethyl 5% EC @2 ml/litre of water, if the field is infested predominantly with grassy weeds and Pyrithiobac sodium 10 % EC @ 1.25 ml/litre of water for broad leaved weeds or Pyrithiobac sodium 6% EC + Quizalofop Ethyl 4% EC @ 2-2.5 ml /litre of water to control both grassy and broad-leaved weeds. Give top dressing with Urea and MOP to both early sown and late sown cotton as per the recommended dose. Spray Thiomethaxam 25% WG @ 2 g/10 L (100 g/ha) or Flonicamid 50 WG @ 4 g/10 L (200 g/ha) or Dinotefuran 20 SG @ 3g/10 L (150 g/ha) recommended against sucking pests. Drench early parawilt symptomatic affected plants with Carbendazim 50 WP @12 g or Copper oxychloride 50 WP@ 25 to 30 g+ Urea 100 g/10 litres of water. At Chamarajanagar, farmers are advised to spray Flonicamid 50 WG @ 80 g/acre or Dinotefuran 20 SG @ 60 g/acre Thiomethaxam 25 WG @ 40 g/acre if sucking pest incidence observed above ETL. Check for squares and flowers for the infestation of pink bollworm and spray Profenofos 50 EC @ 600 ml/acre or Emamectin benzoate 5 SG @ 100 g/acre or Indoxacarb 14.5 SC/15.8 EC @ 200 ml/acre, if incidence crosses ETL.
TAMIL NADU											
Perambalur	0	0	0	0	0	0	1	4	0	0	At Coimbatore and surrounding areas, sowing is in progress. The sown cotton is 15 to 21 days at seedling stage. Thinning was done. Broad leaved weeds ad *Cyperus* spp. have emerged in the fields. Incidence of jassid and collar rot disease were noticed. At Srivilliputhur in and around fields, sowing is yet to commence after onset of monsoon rains. Land preparation has been completed. **Advisory:** At Coimbatore, farmers are advised to do thinning to 15 DAS crop. Provide irrigation and drainage channel to avoid stagnation of water. Monitor the crop regularly for incidence of collar rot and *Cercospora* leaf spot disease. If collar rot incidence is noticed, do spot drenching with Carbendazim 50 WP@12 g/10 litres of water to early affected and surrounding healthy plants. At Srivilliputhur in and around fields, before sowing, farmers are advised to treat the seeds with Carboxin 37.5% + Thiram 37.5% DS @3.5 g per kg of seeds (root rot and bacterial diseases) or Fluxapyroxad (333 g/L FS) @1.5 ml per kg seed or Tetraconazole 11.6% W/W (12.5% w/v) SL @1.5 ml per kg of seeds to manage seed borne diseases (for root rot disease), if not treated. Remove and destroy previous cotton crop stubbles to avoid stem weevil and root rot infestation. Take up bund trimming and bring the field in good tilth condition by using rotavator. Form ridges and furrows at 75 cm and 45 cm spacing for irrigated and rainfed cotton, respectively. Follow crop rotation wherever heavy infestation of
Salem	0	0	0	0	0	3	8	3	0	3	
Trichy						0	1	3	1	0	
Virudhunagar	0	0	0	0	0	2	2	3	0	0	

											stem weevil and boll worm complex are prevalent. Apply neem cake @250 kg/ha during last ploughing to prevent stem weevil infestation.

Post-season and pre-sowing package of practices

1. Clean up fields of residual stalks and partially opened bolls from previous crop season. Do not stack the uprooted cotton stalks on field bunds. At the end of crop season, the pink bollworm larvae of last generation enter the hibernation in crop residues like infested bolls, stalks or in soil. Therefore, such infested residues should be promptly destroyed in order to break the life cycle of pink bollworm. Residue destruction will also help to reduce the inoculums and infection of new season's cotton crop by diseases like bacterial leaf blight, root rot and fungal leaf spots.
2. Install at least 10 pheromone traps each at 20 m distance in the premises of market yards and ginning mills to trap post season moths or suicidal emergence if any. Change the lures in pheromone traps timely. Also kill the larvae that come out of damaged seeds. This will help to check the spread of infestation of pink bollworm from ginning or market yard premises to nearby fields.
3. Avoid pre-monsoon sowing of cotton crop. Early sown crop bears the reproductive structures like squares and flowers early. The pink bollworm moths emerging from dormant population of previous season lay eggs on these squares and flowers thus early sown crop supports completion of new season's first generation of pink bollworm. If not controlled timely, next generations of this population further spreads onto the timely sown cotton crop with onset of squares, flowers and bolls.
4. Deep summer ploughing helps to expose and kill the dormant larvae and pupae hidden in the soil due to scorching heat of sun in April-May. Also, the birds following ploughed fields predate on these life stages of insect. This helps in minimising the incidence of insects like pink bollworm, leaf eating caterpillars, and soil borne diseases like wilt, root rot and nematodes on coming season's cotton crop.
5. Crop rotation to be followed in the fields that were heavily infested with pink bollworm during last season to break the life cycle of pink bollworm. Cotton is the only host of pink bollworm, therefore crop rotation helps to break the life cycle of this pest. Crop rotation is very effective in checking the infection of soil borne diseases and nematodes in disease prone fields.
6. Grow sucking pest and disease tolerant, short duration and early maturing varieties/hybrids/cultivars of cotton. This helps in avoiding unwanted spraying of pesticides to control sucking pests and diseases during early crop growth stage. Pink bollworm infestation starts from mid-season and increases steadily towards the late season. Therefore, short duration and early maturing varieties helps to escape pink bollworm infestation in late season.
7. Sowing of cotton crop should be done in the month of June, only after receipt of 80-100 mm of monsoon rainfall. For ensuring proper germination and crop stand, withstand the prolonged dry periods during early seedling stage, there should be optimum soil moisture. This also helps to avoid re-sowing due to prolonged dry spell of rainfall. Timely sowing in June helps to avoid early infestations of pink bollworm.
8. Increased awareness should be created among the cotton farmers regarding implementation of integrated pest management (IPM) strategy for management of pink bollworm. The shopkeepers may also be advised to inform the famers not to adopt pre-monsoon sowing. This will help to spread the right message to farmers more effectively.

The detailed information regarding cotton production technology, e.g. selection of soil, varieties, fertilizer application, sowing methods, irrigation systems, management of weeds, insect pests and diseases, etc. can be availed from an android based **CICR Cotton App** developed by ICAR-CICR, Nagpur. The app can be downloaded free of cost from Google play store. Additionally, the crop growth stage specific and weather based weekly advisory are uploaded on the website of ICAR-CICR also to be consulted for the benefit of farmers

Rainfall (mm) Legend colour

<5	5-20	21-50	51-80	>80

0.0 mm rainfall (no rainfall)
Blank space express data not available.
Source:
www.imdagrimet.gov.in
www.agromet.imd.gov.in