

ICAR-Central Institute for Cotton Research
Weekly Advisory for Cotton Cultivation from 11th to 17th June 2015
(30th Standard week)

"The advisory is based on inputs received from the State Agricultural Universities of the respective states"

WEATHER ADVISORY

State/districts	Rainfall in JUNE (in mm)							Advisory
Date	9	10	11	12	13	14	15	
PUNJAB								
Bathinda				3				Do not take up cotton sowing. Crop sown after 31st May will be highly prone to leaf curl virus. Avoid excessive nitrogen application to avoid sucking pest problems. Do not spray any insecticides.
Ferozepur				3				
Mukatsar								
Mansa								
HARYANA								
Sirsa								Do not take up cotton sowing. Crop sown after 31st May will be highly prone to leaf curl virus. Avoid excessive nitrogen application to avoid sucking pest problems. Do not spray any insecticides.
Hissar								
Fatehabad								
RAJASTHAN								
Hanumangarh								Do not take up cotton sowing. Crop sown after 31st May will be highly prone to leaf curl virus. Avoid excessive nitrogen application to avoid sucking pest problems. Do not spray any insecticides.
Sri Ganganagar								
Banswara								
ORISSA								
Koraput		5		10	74	9		Sowing can be taken up any time this week
Kalahandi		9		13	68	12		
Bolangir				8	41	18		
GUJARAT								
Amreli		26	15		4	12		Sowing can be taken up during the week -if irrigation is available
Bhavnagar		26	15		4	12		
Jamnagar		26	15		4	12		
Ahmedabad		2	2		8			Land should be kept ready for sowing in rain-fed farms. Stomp (Pendimethalin) can applied as pre-emergence weedicide
Surendranagar		2	2		8			
Vadodara		10	19		8			Stomp (Pendimethalin) can applied as pre-emergence. Sowing can be taken up if irrigation is assured.
Rajkot		12	10		8			
Bharuch		10	4		8			Stomp (Pendimethalin) can applied as pre-emergence weedicide
Patan								Land should be prepared
Sabarkantha								
Mehsana								
MADHYA PRADESH								
Khargaon								No sowing
Dhar		8		3	4			
Khandwa								

MAHARASHTRA							
Nagpur			3	3	8	5	Stomp (Pendimethalin) can applied as pre-emergence weedicide. Procure early maturing varieties / hybrids.
Wardha	4	2	3	3	12	5	
Chandrapur	4	2	4	5	15	2	
Yavatmal	6		2		15	1	
Amravati	10	2	10		12		
Akola	14				7		
Buldhana	16		3	3	12		
Parbhani	6	11		6	3		
Nanded	6	14		33	5		Sowing can be taken up during the week if irrigation is available
Beed	11	6	4				Stomp (Pendimethalin) can applied as pre-emergence weedicide
Washim	21		1		10		Sowing can be taken up in farms with irrigation facilities
Dhule	41	6	11	10	7		
Jalgaon	34	6	11	10	7		
Jalna	4	4		3			
Aurangabad	14	3	6	8	4		Stomp (Pendimethalin) can applied as pre-emergence weedicide
TELANGANA							
Adilabad		4	20	14	19	4	Stomp (Pendimethalin) can applied as pre-emergence weedicide
Warangal		25	30	12	6	5	Sowing can be taken up
Khammam		25	50	10	4	5	
Karimnagar		15	20	10	12	3	Stomp (Pendimethalin) can applied as pre-emergence weedicide
Nalgonda		15	20	8	6		Stomp (Pendimethalin) can applied as pre-emergence weedicide
ANDHRA PRADESH							
Guntur		12	50	10	6	5	Sowing can be taken up
Prakasam		10	15	12	5	12	Stomp (Pendimethalin) can applied as pre-emergence weedicide
TAMILNADU							
Perambalur		3					
Salem		5	2		4	3	
Tiruchi		2					
Virdunagar		1		4	4		
KARNATAKA							
Dharwad		2	2	7	5	3	Stomp (Pendimethalin) can be applied as pre-emergence herbicide
Haveri		2	2	5	5	6	
Mysore		3	3	5	4	6	

Legend					
Rainfall in mm	< 5	5-20	20-50	50-80	> 80

North India:

- The crop is in seedling stage.
- Early maturing Bt cotton hybrids or early maturing varieties that were resistant to CLCuD (cotton leaf curl virus disease) recommended by CICR and the State Agricultural Universities were recommended this season.
- *Desi* varieties are immune to the leaf curl virus and are strongly recommended for north India.
- Crop residue stubbles and ratoon cotton plants should be destroyed.
- Farmers are advised to manage *itsit* and other weeds.
- Thrips' attack may be observed at seedling stage but they rarely cause economic damage. Regular monitoring of crop for sucking pest (mainly thrips) infestation should be done.
- Avoid insecticide sprays.

Central and South India:

- This season sowing between 15 to 25 June is ideal for Gujarat, MP, Maharashtra and Orissa
- Sowing in South India should not be extended beyond 15th July
- Sowing on ridges in rainfed regions especially in high density planting systems is most preferred.
- In rain-fed fields, sowing should be taken up after receiving 8 to 10 cm rainfall.
- Early maturing Bt-cotton hybrids may be preferred
- Bt-cotton hybrids may be sown at 90 x 30 cm spacing in rainfed regions.
- Non-Bt varieties such as Suraj (CICR) NH 615 (VN-MAU, Parbhani), AKH 081 (Dr PDKV Akola), Phule Dhanwantari (MPKV Rahuri) are early maturing. If these varieties are sown before 15th June in high density planting at 60x10 cm (40x10cm for Phule Dhanwantari), the crop will escape drought stress and bollworms.
- Intercropping of high density cotton with non-Bt varieties can be taken up with soybean (seed treated with *Bradyrhizobium japonicum*), cowpea or blackgram in alternate rows at 45 cm row to row and 10 cm plant to plant.
- Intercropping of high density cotton with Bt hybrids can be taken up with soybean (seed treated with *Bradyrhizobium japonicum*), cowpea or blackgram as one row between two Bt-hybrid rows
- Border rows (2-3 rows) of pigeonpea around cotton fields will prevent infestation of mealy bugs and serve as refugia.
- Application of Pre-emergence weedicide Stomp 30EC or Basalin @45EC 2.5 lt/ha and harrow immediately to prevent degradation.
- Farm Yard Manure @ 5 to 10 t/ha or compost should be applied just after the first rain.
- Azatobacter and PSB @ 25 g each / kg seed should be used for nutrients fixation.
- Imidacloprid (8 g), Vitavax or Thiram (3 g) per kg seed will protect varieties against sucking pests and diseases.

MANAGEMENT STRATEGIES RECOMMENDED BY ICAR-CICR

INSECT PEST MANAGEMENT

General recommendations

DOs

1. Select sucking pest resistant varieties/hybrids. Sucking pest resistant Bt hybrids may require very few insecticide interventions.
2. Inter-crop with cowpea or sorghum or soybean or blackgram to encourage predators of sucking pests.
3. Seed treatment with Imidacloprid @7gms/Kg of seed.
4. Use nitrogenous fertilizers to the minimum especially for sucking pest susceptible varieties.
5. Maintain field sanitation (weed free) and remove and destroy mealy bug infested plants &.
6. **Stem application or soil application** (near the root zone) of Imidacloprid, Dimethoate or Acephate at 30-40 DAS and 50-60 DAS for effective eco-friendly control of thrips, mirid bugs, mealy bugs and other sucking pests.

DON'Ts

7. **If possible avoid chemical insecticides during the first two months of the crop** to conserve naturally occurring biological control. Ladybird grubs and beetles, *Chrysoperla* grubs and adults, Syrphid flies, *Geocoris* grubs and bugs, *Aenasius* spp., *Aphelinus* grubs and wasps, mirid bugs and Spiders are the most important naturally occurring predators and parasitoids that effectively control aphids, jassids, thrips, mirids, whiteflies and mealybugs.
8. **Do not spray against minor lepidopteran insects** such as the cotton leaf folder, *Sylepta derogata* and cotton semilooper, *Anomis flava*. The larvae cause negligible damage to cotton but serve as hosts for parasitoids such as *Trichogramma* spp., *Apanteles* spp and *Sysiropa formosa*, that attack *H. armigera* and other bollworms.
9. **Do not spray Bt-formulations on Bt cotton** to avoid further selection pressure.
10. **Avoid foliar application of neonicotinoid insecticides** such as Acetamiprid, Imidacloprid, Clothianidin and Thiomethoxam which are likely to aggravate insect resistance, since hybrid cotton seeds are treated with imidacloprid.
11. **Do not use WHO Class-I (Extremely Harzardous category) insecticides** such as Phosphamidon, Methyl parathion, Phorate, Monocrotophos, Dichlorvos, Carbofuran, Methomyl, Triazophos and Metasystox.
12. **Avoid Fipronil and Pyrethroids** to prevent whitefly outbreaks.

SUCKING PEST MANAGEMENT

Economic Threshold Level (ETL): If whitefly and/or leafhopper damage reaches economic threshold levels of grade-II damage of curling and crinkling of lower leaves and yellowing of margins in 25% plants or more, any one of the following pest control measures as suggested below can be used.

- a. Neem oil 1.0% + Neem Seed Kernel Extract 5.0% + 0.05-0.1% detergent
- b. *Verticillium lecanii* 10gms/lit of water, wherever good formulations are available from reliable manufacturers
- c. Diafenthiuron (50WP 800g /ha),
- d. Flonicamid 50 WG 200g a.i/ha or
- e. Buprofezin 25% SC 200 g a.i/ha.

Insecticides such as Dimethoate or Acephate or Ethion can also be used but may be considered as alternatives only, in view of factors that relate to ecological and environmental safety, efficacy and resistance.

If mirid bugs are observed to cause economic damage to squares, it is advised to spray Acephate 75 SP @ 1 g/lit or Dimethoate.

BOLLWORM MANAGEMENT

Bt cotton is effective in controlling bollworms.

The following strategies are being recommended for non-Bt cotton

At Economic Threshold Levels (ETLs) of 50% infested plants (plants having flared squares with entry hole) for *Helicoverpa armigera*.

1. **Use HaNPV on Bt-cotton** followed by the application of **5% NSKE** a week later or use **Phosalone** at ETL for the management of bollworms, *Spodoptera* or whitefly.
2. ***Trichogramma***, if available, can be used on non-Bt genotypes at 70-80 DAS. Avoid *Trichogramma* egg parasitoid releases on Bt-cotton since maximum neonates get killed on Bt-cotton and with *Trichogramma* application becoming superfluous.
3. **Insecticides effective on Bollworms**, especially *Helicoverpa armigera*.
 - a. Chlorantraniliprole (Coragen),
 - b. Flubendiamide (Fame),
 - c. Spinosad,
 - d. Emamectin benzoate and
 - e. Indoxacarb

These insecticides have a high selective toxicity towards the target pests while being less toxic to many beneficial insects in the cotton ecosystem. These insecticides are ideally suited in eco-sustainable insecticide resistance management programmes.
4. **Pink bollworm and Spotted bollworms:** ETL level of one live larva in 10 green bolls or 8 moths per night for three consecutive nights. Spray Quinalphos 25 EC Profenophos 50 EC @ 2 ml/lit of water / Spray of Thiodicarb 75 WP @ 20 g or any pyrethroid.
5. ***Spodoptera litura*:** Collection of egg masses or application of *SLNPV* (*Spodoptera litura* Nuclear Polyhedrosis Virus) @ 500 LE/ha or Spray 200 ml Rimon 10 EC or 250g Larvin 75WP in 250 litres of water per acre
6. To minimize **shoot weevil** damage, spray Profenofos @ 2 ml/lit
7. **Snail incidence in heavy rainfall areas:** baiting with 2% Metaldehyde (Snail kill) @ 12.5 kg/ha has to be taken up and it is to be applied at the hideouts of the snails, on the bunds and to the soil around the crop where the damage is seen

DISEASE MANAGEMENT

Parawilt or Sudden drying (New wilt) or Wilt / Root rot: Symptoms are noticed in some fields after drought followed by rains or irrigation. Spray cobalt chloride @10mg/litre (10ppm) on affected plants within few hours of onset of symptoms and/or Drench plants with a mixture of Copper-Oxy-Chloride 25g and 200g Urea in 10 ltr of water or Carbendazim 1g/L.

Boll Rot: Generally early formed lower bolls rot due to cloudy and drizzling conditions. Spray Mancozeb 75 WP + Chlorothalonil 70 WP each @ 2 g/lit of water. For better results, mix 10g Selvet 99 or 50 ml Triton in 100 litres of fungicide solution.

***Alternaria* blight:** spray Mancozeb@2.5 g per one litre of water.

Myrothecium leaf spot disease and/or Bacterial blight: Spray Streptomycin sulphate (15-20 g/ha) plus Copper oxychloride (1500-2000 g/ha) in 200-250 L of water.

WEED MANAGEMENT

Herbicides are most effective on younger weeds.

Post emergence herbicides (application rate 50 to 75 g ai /ha)

Grasses: Spray Quizalofop-ethyl or Fenoxaprop ethyl or Fluazifop butyl,

Sedges and grasses: Spray Propanil or Propanil

Broadleaf weeds: Spray Pyriproxyfen sodium

Wherever weeds have emerged, weedicides would provide effective and timely control. Weedicides are effective against younger (less than 10-15 days old) weeds, especially grasses. For grassy weeds, Quisqualop ethyl, Fenoxaprop ethyl, fluzafop butyl, can be used. For sedges and grasses, Propanil is effective and Pyriproxyfen sodium is effective on broad leaf weeds. Farmers may consult the technical experts of the Agricultural Universities for further details.

WATER LOGGING MANAGEMENT

Cotton is very sensitive to excess water. In many parts of Central and South India, water logging can be problematic due to excess rains. Cotton grown on deep black soils and ill drained conditions is worst affected due to water logging. Provide adequate drainage channels or water ways (particularly in heavy soils) along the slope of the land for draining excess water under heavy rainfall situations. For better soil moisture conservation, preferably in areas where rainfall is 700-900mm, the land can be reshaped into ridges and furrows with the help of a ridge plough or a bund former. This technique and sowing cotton on ridges would conserve rainwater and the furrows acts drainage channels whenever heavy rains are received particularly in heavy clays.

Drainage channels must be opened up along the field borders so that excess water is removed from the fields. If sowing hasn't yet been completed, it is strongly recommended that to take up sowing immediately on ridges and furrows by planting on top of ridges. Heavy rains will not affect the crop because the furrows will drain away excess water. Apply fertilizers if the crop becomes pale due to water logging. If heavy rains are forecast, fertilizer application may be postponed so as to prevent losses due to surface run-off.

Foliar spray with 0.5 to 1.0% DAP or 19:19:19 (soluble complex of Nitrogen) at weekly intervals will help the plants to recover from the effect of water logging.

GENERAL CROP HEALTH MANAGEMENT

1. **Optimize nutrient management** for macro and micronutrients. Foliar spray of MgSO₄, 2% Urea followed by 2% DAP, to ensure proper Cry1Ac expression and also to reduce problems of leaf reddening. Sprays of 1% cobalt chloride and soil drenching with Bavistin 1 % in the initial stage of wilt was found to help in the recovery of plants.
2. **Prevention of Leaf Reddening:** Spray 2 % urea, 0.5% Zinc Sulphate and 0.2 % Boron, twice at 15 days interval on 90 days old crop.
3. **Retention of squares and flowers:** Spray Planofix 4.5 SL (NAA) hormone @ 21 ppm (7 ml per 15 litres of water).

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