ICAR-Central Institute for Cotton Research

Weekly Advisory for Cotton Cultivation from 18th to 24th June 2015

(31th Standard week)

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

WEATHER ADVISORY

	Rainfall JUNE						ADVISORY
Date	19	20	21	22	23	24	
PUNJAB							Light showers may be expected by end of June and first week of July. Application of DAP should be preferred, instead of Urea, so as to prevent sucking pest outbreaks. Early sown crop (Mid April to first week of May) will benefit from the mild showers that are expected during last week of June to first week of July. Neem based preparations should be preferred for sucking pest management. Strictly avoid chemical insecticides to prevent sucking pest outbreaks due to ecological disruptions.
Bathinda						11	
Ferozepur						11	
Mukatsar						12	
Mansa						13	
HARYANA							
Sirsa						3	
Hissar				4		1	
Fatehabad						5	
RAJASTHAN							
Hanumangarh				3		11	
Sri Ganganagar						10	
Banswara	4			68		2	Rains are likely to continue up to 1st week of July. Sowing must be completed before the end of June
ORISSA							Good rains are expected all through until 2nd week of July. Crop sown in June will benefit the most. Do not take up any insecticide sprays. Application of basal dose of fertilizers will boost the crop.
Koraput	23	24	26	4	0	1	
Kalahandi	18	48	27	4	0	1	
Bolangir	12	34	22	3	0	0	
GUJARAT							Heavy continuous rains are expected all across Gujarat during the week 27th June to 2nd July. Sowing should be completed in this week all over the state for best results.
Amreli	20	8	13	12	34	2	Moderate rainfall is predicted from 3 - 16th July in these districts. Sowing in this week will be good for the crop especially in rainfed tracts.
Bhavnagar	11	5	13	7	9	6	
Jamnagar	16	8	3	6	15	6	
Ahmedabad	20	8	13	12	29	0	
Surendranagar	11	4	4	6	8	2	
Vadodara			3		38	3	
Rajkot	20	8	6	12	34	6	
Bharuch						5	Immediate sowing during this week is strongly recommended in the rain-fed tracts of these districts in view of the prediction of a dry period during 3-16th July. Crop sown in July in rainfed tracts is likey to face severe moisture stress.
Patan			5		16	2	
Sabarkantha	4			48		9	
Mehsana				3		3	
MP							
Khargaon	7	3	3	12	5	13	Sowing can be taken up now. Early sowing is crucial in Dhar and Khandwa in view of the slightly less intensity rains predicted in July in the districts.
Dhar				27	3	5	
Khandwa	3	11		40	4	0	

MAHARASHTRA							
Jalgaon	21	12	10	30	13	1	Immediate sowing during this week is strongly recommended in the rain-fed tracts of these districts in view of the prediction of a dry period during 3-16th July. Crop sown in July in rainfed tracts is likey to face severe moisture stress.
Yavatmal	16	30	23	12	10	10	
Nanded	22	95	17	7	6	0	
Amravati	5	18	6	29	13	1	
Buldhana	6	39	5	9	4	0	
Aurangabad	18	24	6	23	22	9	
Jalna	8	39	4	8	4	9	Rainfall in these districts is adequate for sowing. It is important to choose early maturing varieties or Bt-hybrids for immediate sowing in this week. Sowing in July is likely to expose young seedlings to possible rainfall deficits that are predicted in the second-third week of July. In view of the predicted rainfall patterns this year, Bt-cotton hybrids may be sown at 90 x 30 cm spacing in rainfed regions. High density planting of non-Bt varieties should be done not later than 25th July at a spacing of 45 x 10 cm or 60 x 10 in light soils and 75 x 10 and 90 x 10 in medium or heavy or irrigated soils.
Parbhani	13	32	7	5	3	3	
Akola	3	22	6	7	5	5	
Beed	10	25	17	7	4	29	
Wardha	9	18	12	13	11	7	
Dhule	21	7	10	30	13	6	
Washim	9	30	16	7	7	3	
Nagpur	5	7	16	29	16	4	
Chandrapur	16	10	11	17	15	6	
TELANGANA							
Adilabad	87	117	29	7	6	4	Sowing must be taken up now immediately in the week. Though rainfall is predicted on and off in the ensuing weeks of July, it is likely to be sporadic and distributed less evenly across the districts in the state. Early sowing is most crucial for Adilabad.
Warangal	143	72	29	14		2	
Khammam	124	25	10	15	5	1	
Karimnagar	143	117	19	14	6	5	
Nalgonda	162	36	11	14		3	
AP							
Guntur	19	6				2	Sowing can be slightly delayed in rainfed regions
Prakasam	73	11					
KARNATAKA							
Dharwad	76	87	72	46	35	13	Sowing should be taken up immediately in this week itself rainfed tracts. In irrigated farms Bt-cotton hybrids may be sown as early as possible to harness the predicted rains of July.
Haveri	72	81	49	47	34	10	
Mysore	55	32	44	49	42	3	
TAMILNADU							
Perambalur						0	Summer irrigated cotton in boll development stage.There should not be any moisture stress since the crop is in boll development stage. Foliar application of TNAU cotton plus @ 6.25 kg/ha dissolved in 500 litre of water with wetting agent is recommended to increase the seed cotton yield, increase drought tolerance and reduce flower shedding
Salem	6	14	14	16	11	0	
Tiruchi		5	3	3		1	
Virdunagar	22	21	12	15	40		

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

MANAGEMENT STRATEGIES RECOMMENDED BY CICR

The strategies recommended in this brief note are based on results of experiments conducted by CICR and developed in consonance with various ecologically compatible guidelines issued by various National and Global agencies.

GENERAL CROP HEALTH MANAGEMENT PRACTICES

1. **Early maturing varieties or Bt-cotton hybrids** may be preferred in rain-fed regions.
2. **Early sowing** is preferred in rain-fed regions immediately after receiving the first showers of 80 mm rainfall.
3. **Sowing on ridges in rain-fed regions** especially in high density planting systems is most preferred.
4. **Bt-cotton hybrids** may be sown at 90 x 30 cm in rain-fed regions and at wider spacing under irrigation
5. **Non-Bt varieties** Suraj such as (CICR) NH 615 (VN-MAU, Parbhani), AKH 081 (Dr PDKV Akola), Phule Dhanwantari (MPKV Rahuri) and Anjali (LRK 516) 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.
6. **Intercropping in high density non-Bt cotton 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.
7. **Intercropping in Bt hybrids** can be taken up with soybean (seed treated with *Bradyrhizobium japonicum*), cowpea or blackgram as one row between two Bt-hybrid rows
8. **Border rows (2-3 rows) of pigeonpea** around cotton fields will prevent infestation of mealy bugs and serve as refugia.
9. **Farm Yard Manure** @ 5 to 10 t/ha or compost should be applied just after the first rain.
10. **Azatobacter and PSB** @ 25 g each / kg seed should be used for nutrients fixation.
11. **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.
12. **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.
13. **Retention of squares and flowers:** Spray Planofix 4.5 SL (NAA) hormone @ 21 ppm (7 ml per 15 litres of water).

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. **Imidacloprid** (8 g), **Vitavax** or **Thiram** (3 g) per kg seed will protect varieties against sucking pests and diseases.
4. **Use nitrogenous fertilizers to the minimum** especially for sucking pest susceptible varieties.
5. **Maintain field sanitation** (weed free)
6. **Remove and destroy mealy bug infested plants.**
7. **Use Neem preparations and biological control options** for least disruptive pest management.
8. **Pheromone traps** are efficient for pest monitoring of Pink bollworm.
9. **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

10. **Avoid late sowing beyond 15th May in North India** to prevent aggravation of cotton leaf curl virus.
11. **As far as 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., *Aphilinus* 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.
12. **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.
13. **Do not spray Bt-formulations on Bt cotton** to avoid further selection pressure.
14. **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.
15. **Do not use WHO Class-I (Extremely Harzardous category) insecticides** such as Phosphamidon, Methyl parathion, Phorate, Monocrotophos, Dichlorvos, Carbofuran, Methomyl, Triazophos and Metasystox.
16. **Avoid Fipronil and Pyrethroids** to prevent whitefly outbreaks.
17. **Avoid insecticide mixtures.** Mixtures severely disrupt eco-systems thereby leading to pest 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 *Ha*NPV** (*Helicoverpa armigera* Nuclear Polyhedrosis Virus) on Bt-cotton followed by the application of **5% Neem Seed Kernel Extract (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,
   b. Flubendiamide,
   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.

OTHER PESTS

1. ***Spodoptera litura*:** Collection of egg masses or application of *Sl*NPV (*Spodoptera litura* Nuclear Polyhedrosis Virus) @ 500 LE/ha or Spray 200 ml Novaluron 10 EC or 250g Thiodicarb 75WP in 250 litres of water per acre
2. To minimize **shoot weevil** damage, spray Profenofos @ 2 ml/lit
3. **Snail incidence in heavy rainfall areas**: baiting with 2% Metaldehide (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

Application of Pre-emergence weedicide Stomp 30EC or Basalin @45EC 2.5 lt/ha and harrow immediately to prevent degradation.

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 Propaquizafop ethyl
Broadleaf weeds: Spray Pyrithiobac sodium

Post-emergence weedicides would provide effective and timely control especially when interculture operations or manual weeding becomes difficult in wet soils. Weedicides are effective against younger (less than 10-15 days old) weeds, especially grasses. For grassy weeds, Quizalofop ethyl, Fenoxaprop ethyl, fluazifop butyl, can be used. For sedges and grasses, Propaquizafop ethyl is effective. Pyrithiobac 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.

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