Central Institute for Cotton Research, Nagpur

Eleventh Weekly Advisory for Cotton Cultivation 11th – 17th August 2013

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

Weed management: 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, Quizalofop ethyl, Fenoxaprop ethyl, fluazifop butyl, can be used. For sedges and grasses, Propaquizafop ethyl is effective and Pyrithiobac sodium is effective on broad leaf weeds. Farmers may consult the technical experts of the Agricultural Universities for further details.

Water logging: 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.

Net Cotton Area sown as on 1-8-2013

State	Lakh hectares
Punjab	5.5
Haryana	5.19
Rajasthan	3.27
Uttar Pradesh	0.28
Gujarat	23.49
Madhya Pradesh	6.37
Maharashtra	39.07
Andhra Pradesh	16.34
Karnataka	3.09
Orissa	0.94
Tamil Nadu	0.1
TOTAL	103.64

Source: DOCD, Mumbai

Weather forecast for 11th to 15th Aug. 2013

Weather parameter	11/08	12/08	13/08	14/08	15/08
Temperature	Minimum temperatures are between 20 to 25°C at most places over east Rajasthan, Madhya Pradesh, interior Odisha, interior Maharashtra, interior Andhra Pradesh, Karnataka, and interior Tamil Nadu. They are above 25°C at many places over northwest India and Gujarat,				
Rainfall	Light to moderate rain or thundershowers may be at few places in the State during next 48 hours in Punjab and Haryana. Rain/thundershowers would occur at many places over south Andhra Pradesh and Tamil Nadu during next 48 hours and decrease thereafter.				

STRATEGIES FOR MANAGEMENT OF PESTS, DISEASES & WEEDS

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-cropp 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., *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.
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.

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 Fipronil or 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 Fipronil 5 SC @ 1.0 ml/lit of water

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 50% bollworm infested plants (plants having flared squares with entry hole) or for the management of *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 *S*lNPV (*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. In case of 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

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

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).

COTTON CROP SITUATION

Based on inputs received from the State Agricultural Universities of the respective States

NORTH INDIA

Haryana: Cotton crop is in peak vegetative to square formation phase. In general, the crop is healthy. Weeding, interculture and fertilizer application must be done during rain free period. If heavy rains occur, proper drainage is required. Excessive use of nitrogenous fertilizers to be avoided. Farmers are advised to monitor their crop for insect pests and diseases regularly.

Uttar Pradesh: Crop is in flowering to boll formation stage. Farmers are advised to control bollworm attack.

CENTRAL INDIA

Gujarat : At Junagadh, germination was quite good but due to continuous rains, growth of cotton crop is not satisfactory. However, necessary gap filling was done to maintain proper plant stand. Initial crop condition was very good and satisfactory due to timely rainfall. At Surat, continuous rainfall interrupted the interculture and other field operations hampering the growth of crop. Farmers are advised to carryout hand weeding and intercultural operations, gap filling of germinated crop whenever it is rain free. Split dose of nitrogen is to be applied after weeding and excess water to be drained regularly from field.

Maharashtra: At Akola, second dose of NPK should be applied immediately after weeding. If water stagnation is there, it should be removed from field. Proper care to be taken for sucking pest attack. At Rahuri, farmers are advised to keep the field free from weeds by hand weeding or spraying of recommended weedicide. Top dressing of nitrogen @ 1 bag urea/acre may be given where sufficient moisture is available. Management of sucking pests and leaf spot diseases should be taken care of.

Odisha: Sowing of cotton has been completed in an area of about 1,20,000 ha in Odisha. The cotton crop is at vegetative to square formation stage(42-52 days). Excess water is to be drained from the field. Weeding should be done manually or with the application of the herbicide as protected spray. Plant hormone is to be sprayed to check drop of fruiting bodies. Regular monitoring should be done for sucking and other pests like Spodoptera and Semiloopers etc.

SOUTH INDIA

Andhra Pradesh: In Telangana districts of Andhra Pradesh, the crop is around 35 to 75 days old. Continuous heavy rains received during past 10 to 15 days resulted in water logging or over moisture conditions in the low lying areas in some parts of the districts like Adilabad, Karimnagar and Khammam. Farmers are advised to drain the water from the fields immediately. Foliar application of 2% Urea or 2% DAP or 1-2% KNO_3 along with 1% $MgSO_4$ is recommended to mitigate the stress conditions. In Guntur, Krishna and Prakasam districts, the crop is 10 to 60 days old. In some of the areas of these districts, sowing is under progress. Wherever the cotton crop is severely affected (irrecoverable) due to continuous floods in some of the Telangana districts of the Andhra Pradesh, farmers are advised to go for the alternate crops.

Karnataka: At Raichur, there has been normal rainfall in almost all areas. At Dharwad, early sown crop is at boll formation stage wherein appropriate fertilisers and foliar nutrients are to be applied alternatively at an interval of 15 days to manage leaf reddening effectively. These foliar nutrients may be simultaneously sprayed along with pesticide sprays. Top dressing with 25 kg N/ha (i.e. 50 kg Urea/ha) and 12 kg K (20 kg MOP/ha) to be taken up in 50 days old crop. In the early sown crop in southern districts where the crop is 90-100 days old, it is suggested to monitor the incidence of pink boll worm. Appropriate weedicides are to be sprayed at 30 days and 60 days old standing crop to control monocot and dicot weeds respectively. Shoot weevil and sucking pests attack are to be controlled. Spodoptera incidence is reported in some parts of northern districts in 40-45 days old crop. Light irrigation is advisable in black soils during the dry spell where ever the crop is under protective irrigation.

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