

PROCEEDINGS OF AICCIP ANNUAL GROUP MEETING: 2011-12

ENTOMOLOGY PANEL: TECHNICAL PROGRAMME FOR 2011-12

The entomology panel met under the chairmanship of Dr (Mrs.) Sucheta Singh Khokhar, Dean College of Agriculture, CCSHAU, Hisar; Co-Chairman Dr. K.R. Kranthi, Director, CICR, Nagpur; Dr. T. Surulivelu, Project Coordinator, AICCIP, Coimbatore and Dr. R.K. Saini, HOD, Entomology, CCSHAU, Hisar and Dr G.N. Mishra, Principal Scientist (CC) as a special invitee from ICAR. Dr. B. Dharajothi, Sr.Scientist (Agril Entomology), CICR, RS, Coimbatore and Dr. Rishi Kumar, Senior Scientist, CICR, Sirsa were the Rapporteurs of the sessions. A total of 27 participants (list attached) comprising of the entomologists and representatives from the pesticide and seed industry actively participated in the deliberations to discuss the results of 2010-11 and formulation of technical programme for the year 2011-12.

The following issues were discussed and the technical programme was finalized.

- Resistance of insecticides against sucking pests.
- Resistance in bollworms to Cry toxins.
- Citation of common name and scientific name of insects.
- Use of bio-pesticides in integrated management of sucking pests.

Technical Programme for 2011-12

Ent 1a. Screening of breeding material for resistance to insect pests (Zonal Trials Only): All centres

The screening of all the breeding materials of the respective centre should be carried out under unprotected condition as per the established standard protocol of AICCIP.

- The seeds of consistently tolerant entry of the respective centre should be collected from the respective Senior Cotton Breeder.
- Include **check entries without seed treatment** as that of coded entries
- Find out resistant/tolerant entries (reference to varieties)
- Collect seeds,
- Grow second season
- Short list resistant/tolerant entries –observe mechanism of resistance/tolerance
- Send one set of seeds to Dr. Sandhya Kranthi, CICR, Nagpur for cage studies with artificial bombardment. The second set of seeds should be carried forward for Ent 1b advanced screening trial.

Check entries for the different zones.

North zone: RS2013 (resistant to jassid & whitefly); GA (susceptible)
MRC6304 Bt (bollworm resistant); HS6 (bollworm susceptible)
(Action: Dr. Vichiter Singh, Sri Ganganagar, to provide seeds to all concerned)

Central zone: DHY286 (jassid resistant); DCH32 (susceptible)
 Bunny Bt (bollworm resistant); RCH 2 NBt (bollworm susceptible)
 (Action: Seeds supply – Sr Cotton breeders of their respective centres)

South zone: Bunny (Jassid tolerant); DCH32 (susceptible)
 Bunny Bt (bollworm resistant); DCH 32 (bollworm susceptible)
 (Action: Dr. S.B. Patil, Dharwad to provide seeds to all concerned)

Ent 1b. Advanced screening of promising entries:

The promising lines should be screened under artificial bombardment in controlled conditions in the concerned centres to investigate the mechanism of resistance/tolerance with specific reference to antixenosis and antibiosis. Some biochemical studies can also be done in the respective universities or send to CICR Nagpur. This material also may be given to breeder for developing improved varieties/hybrids.

The centres and the respective pests are:

Pests	North zone	Central zone	South zone
Jassid	-	Khandwa, Surat, Nanded, Banswara	Lam, Coimbatore, Dharwad, Raichur
Whitefly	Faridkot, Ganganagar	-	-
Spotted bollworm	Faridkot,	Akola	Dharwad
Pink bollworm	Sri Ganganagar	Akola	Dharwad, Lam
Stem weevil			Srivilliputtur
Miridbug	-	-	Coimbatore; Dharwad, Raichur

Ent 2. Population dynamics to develop suitable forecasting model:

Data should be taken for both sucking pests and bollworms from Ganganagar Ageti and HS-6, respectively for North India and DCH32 (untreated) for Central and South India.

S. No.	State	Bt Variety/hybrid		Conditions	Centres
		Sucking pest	Bollworm		
1	Rajasthan	Ganganagar Ageti	HS6*	Irrigated	Sri Ganganagar
2	Punjab	Ganganagar Ageti	HS6*	Irrigated	Faridkot, Ludhiana
3	Haryana	Ganganagar Ageti	HS6*	Irrigated	Hisar
4	Gujarat	DCH32	DCH 32*	Irrigated & rainfed	Surat (I), Junagadh Bharuch
5	MP	DCH32	DCH 32*	Irrigated	Khandwa
6	Maharashtra	DCH32	DCH 32*	Irrigated & rainfed	Nanded, Akola, Rahuri
7	Karnataka	DCH32	DCH 32*	Irrigated & rainfed	Dharwad Raichur
8	AP	DCH32	DCH 32*	rainfed	Guntur, Nandyal, Raichur
9	Tamil Nadu	DCH32	DCH 32*	Irrigated	Coimbatore, Srivilliputhur

* The bollworm infestation data on any of the popular BG-I and BG-II hybrids shall also be collected from farmer's field at fortnightly interval and the information regarding the spray applied may also be recorded. Any unusual survival and higher levels of infestation must be notified to Dr Surulivelu and Dr Kranthi immediately by mail and phone. The surviving Bollworms (*Helicoverpa armigera* and *Pectinophora gossypiella*) larvae both from Bt and conventional cotton will be brought to the laboratory. From North Zone the larvae shall be sent to Dr Rishi, Sirsa, Central Zone to Dr Sandhya Kranthi, Nagpur and for South Zone to Dr B. Dharajothi for carrying out resistance monitoring bioassays.

Dr. Vichhitar Singh will supply the seed of Ganganagar Ageti to all the concerned centres. Dr. K.K. Dahiya, Professor, Entomology, HAU, HISAR will arrange for the seed of HS-6. Dr. S.B. Patil, Dharwad will supply the untreated seed of DCH32 to the entire concerned centres directly. At least 2000 Sq. meter plot has to be sown for population dynamic study. Divide the plot into half of 1000 sq mt each. Keep one half untreated (for sucking pests) and apply minimum two sprays of neonicotinoid (imidacloprid/ acetamiprid/ thiamethoxam/ clothiadinin) in the another half of 1000 sq m as per requirement to keep the population of jassid under control so that the observations for the bollworm can be taken.

Observations to be recorded:

Weekly observations for aphid, jassid, whitefly, thrips (3 leaves/plant), mealy bug, ABW, SBW, PBW & Natural enemies after one **month of sowing**(Natural enemies species wise to be recorded).

Ent 3a: Evaluation of IGR, insecticides and fungicides mixture against major pests and diseases of cotton

Target pests: Sucking pests and Bollworms.

Target diseases: Alternaria leaf spot, Myrothecium leaf spot and Grey mildew.

Treatment No.	Chemical	Dose g a.i./ha
1.	Buprofezin 20% + Acephate 50% WP	250 + 625
2.	Buprofezin 20%	250
3.	Acephate 50% WP	625
4.	Acephate 60% WP + Kresoxim methyl 15% WG	750 + 187.5
5.	Acephate 60% WP	750
6.	Kresoxim methyl 15% WG	187.5
7.	Spinetoram 12% SC	36
8.	Spinetoram 12% SC	48
9.	Sulfoxaflor 24% SC	75
10.	Sulfoxaflor 24% SC	90
11.	Flupyradifurone 20SL	200
12.	Flupyradifurone 20SL	250
13.	Imidacloprid 200SL(Standard Check)	40
14.	Acephate 75SP	562.5
15.	Bt Cotton Check(North: RCH-134 Bt, RCH2 Bt for South and Central Zone)	
16.	Untreated Control	-

Centres: 9 **Replications:** 3
 North zone: Sriganganagar, Faridkot
 Central zone: Akola, Junagarh, Surat, Khandwa
 South zone: Dharwad, Lam (Guntur), Srivilliputtur

Observations – Record observations pre-treatment and 7 days after spray. Record natural enemies (predator/parasitoids) population individually pre and 7 day after application of treatment).

Ganganagar Ageti for North Zone (spray initiation at 60 to 75 DAS followed by 2-3 subsequent sprays if required and 4-6 sprays for bollworms.

RCH-2 non-Bt hybrid for South & Central Zone (spray initiation after 30-35,45-50,60-65 DAS for sucking pests and 4-6 sprays for bollworms)

Precaution: The drifting of insecticides while spraying may strictly be avoided.

* For ClCuV early intervention (45-50 DAS) spray can be given at Faridkot and Sriganganagar centre, if required and data on whitefly incidence will be recorded

Ent 3b. Insecticidal selectivity towards sucking pests and their natural enemies in Bt cotton

Treatments: 10

Replications: 3

S. No.	Treatments	Dose (g a.i./ha)
1.	Acephate 75 SP	750
2.	Quinalphos 25 EC	500
3.	Chlorpyrifos 20 EC	1000
4.	Profenophos 50 EC	750
5.	Thiodicarb 75% WP	750
6.	Buprofezin (IGR) 25% SC	312.5
7.	NSKE 5%	50 ml/lit
8.	Endosulfan 35 EC (Std)	700
9.	Phosalone 35 EC (Std)	700
10.	Control	-

All Centres

Field observations to be supplemented with laboratory observations.

Hybrid: Popular Bt cotton hybrid of the region.

- a. **Field study:** Record the incidence of all the sucking pests and their natural enemies (predators and parasites) before and one week after application of insecticides which will be done at the moderate level of incidence noticed. The natural enemies population will be recorded individually.
- b. Bring the parasitized sucking pests to the laboratory and observe for the emergence of parasitoid and its extent of parasitization.

**LIST OF SCIENTISTS AND PRIVATE COMPANY REPRESENTATIVE ATTENDED
ENTOMOLOGY SESSION 2011-12**

1. Dr. K.R. Kranthi, Director, Central Institute for Cotton Research, Nagpur
2. Dr. T. Surulivelu, Project Coordinator, CICR, RS, Coimbatore.
3. Dr. G.N. Mishra, Principal Scientist (CC), ICAR
4. Dr. R.K. Saini, HOD, CCSHAU, Hisar.

NORTH ZONE

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3.	Dr. Vichiter Singh	SKRAU, Sri Ganganagar	ksingh_scane@rediffmail.com	
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7.	Dr. H.R. Desai	Assoc. Res. Scientist Main Cotton Res.Station NAU, Ashwa Farm, Surat- 395009.	cottonist@rediffmail.com	09825808694
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