

**AICCIP ANNUAL GROUP MEETING: 2008-09, ANGRAU, Hyderabad**  
**Proceedings of Entomology Panel**

The Entomology panel meetings were held on the 6<sup>th</sup> and 7<sup>th</sup>, April 2009 under the chairmanship of Dr. K. R. Kranthi, Director CICR, Nagpur, it was co-chaired by Dr. T. Ramesh Babu, Professor and Head, Department of Entomology, College of Agriculture, ANGRAU, Hyderabad and Dr. T. Surulivelu, Principal Investigator (Entomology), CICR, Coimbatore, was the convenor and Dr A.M. Narula, Principal Scientist ( ICAR) joined the session as a special invitee. Dr. Rishi kumar, Senior Scientist, CICR, Sirsa and Dr. N V.V.S. Durga Prasad were the rapporteurs for the sessions. A total number of 29 participants ( list attached ) comprising of entomologists and representatives from the pesticide and seed industry actively participated in the deliberations to discuss the results and formulation of technical programme for the year 2009-10.

Dr.Kranthi stressed the importance of susceptible or resistant checks that should be strictly followed in screening trials.. He stressed the need of testing some potential ecofriendly strategies for the management of mealy bug. Dr.Narula, Principal scientist.ICAR emphasized the need of outcome of some recommendation from AICCIP and subsequently their validation through FLD programme. The chemical trials on sucking pests should be conducted on some susceptible variety or hybrid of the region was suggested by Dr.Kranthi and Dr.A.M.Narula.. Dr Kranthi mentioned that the mealybug population reported is homozygous and is an introduced pest .

Dr.T.Ramesh Babu, and Dr T.Surulivellu suggested to investigate the mechanism of resistance in entries found resistant against the sucking pests in addition to field screening.

The following suggestion was made by the PI Entomology, for improvement of the reporting system.

- The observations from all the centers should be uniform for easy in compilation and reporting the susceptible check should be included in the screening trials.
- Annual report from the centres should reach the PI by the 1<sup>st</sup> February (North Zone), 15<sup>th</sup> February (Central and South zone).
- The soft (CD-ROM) as well as hard copy of the report by post in addition to the email copy should be submitted.

**Salient findings from the entomological experiments conducted during 2008 -09.**

- Cultures tolerant to Jassid (**TCH1707, H1316, GISV218,L798,ADB28, CSH3114,LH2111,LH2076,LH2108,SHH421,ARBH813,H1300 and CPD814**) and bollworms (**H1316,H1300,HD123,LD937, FDK118,CISA9R FDK124 and LD694**) were identified from the genotypes of breeding trials of the three cotton growing zones of India
- North Zone: In Bt cotton, the infestation of Jassid was at higher level (6.6 to 9.2 / 3 leaves) in Ludhiana, Thrips population was at higher level (30.5 to 40.4 / 3 leaves) in Sriganaganagar, whitefly also at higher level (30 to 34/3 leaves) in Sriganaganagar and mealy bug infestation ranged from 28 to 96 per cent in Faridkot. In other centres the sucking pests were below threshold level. Almost similar trend was observed with non Bt cotton also.

- In Bt cotton, moderate level of Pink bollworm (2.1 to 2.3 / 20 green bolls) was recorded in Sriganaganagar. In non Bt cotton moderate level of *Earias* bollworm was recorded in Ludhiana and Sriganaganagar. Faridkot recorded very high level of Pink bollworm (13 larvae) in non Bt cotton (F 1861).
- Central Zone: In Bt cotton, aphid and Jassid population were higher in Junagadh while Jassid alone was higher at Surat, Banswara, Akola and Nanded. More or less similar trend was observed in non Bt cotton also
- In Bt cotton, Pink bollworm was low level, 0.3 to 1.0 larvae / 20 green bolls in Junagadh and higher level in Banswara (2.0 to 5.0) and Akola (5.0 to 27.0). Moderate level incidence of *S. litura* observed in Junagadh (2.3 to 7.5 larvae / 5 plants).
- In non Bt cotton, moderate level incidence of *H. armigera* observed in Khandwa (1.3 to 5.6 larvae / 5 plants), Bhawanipatna (0.8 to 3.2), Rahuri (1.0 to 3.0) and Surat (1.0 to 1.7). *Earias* bollworm at moderate level (0.1 to 4.0 / 5 plants) in Rahuri, Akola, Surat and Khandwa. It was at higher level in Bhawanipatna (up to 8.4). Very high population of Pink bollworm (2 to 44 larvae/ 20 green bolls) observed in Akola and moderate level in Bhawanipatna, Rahuri, Surat, Junagadh and Khandwa (0.5 to 12). *Spodoptera litura* at moderate level recorded in Khandwa, Rahuri, Bhawanipatna and Surat (1.0 to 8 larvae / 5 plants) and at higher level in Junagadh (3.0 to 11.5 larvae / 5 plants).
- South Zone: In Bt cotton, Jassid was above threshold level (6.2 to 18.2 / 3 leaves) in LAM and Dharwad. Thrips were at higher level (31 – 50/ 3 leaves) in Dharwad, while mirid bug infestation was at higher level in Dharwad (8.2 to 22/ 25 squares) and Raichur (4.4 to 8.1). Mealy bug infestation at moderate level in Raichur and Coimbatore (1.2 to 3.41 and 1 to 2 grade respectively).
- In non Bt cotton (DHB 105, Bunny and Narasimha) Jassid population was at higher level (6.1 to 21.1 / 3 leaves) in LAM and Dharwad (6.1 to 19.0) while aphid population was higher at Coimbatore. Dharwad recorded higher population of thrips also (32.2 to 51.4 / 3 leaves). Mirid bug population was at moderate level in Dharwad (7.2 to 21.3 / 25 squares) and Raichur (2 to 9).
- In Bt cotton Pink bollworm was at higher level in Dharwad (2 to 6 larvae per 20 green bolls) and Moderate level in LAM farm (0.2 to 2.9) while it was absent in Raichur and Coimbatore. In non Bt cotton *Heliothis* bollworm at higher level (3.5 to 9.9/ 5 plants) in Dharwad and at moderate level in Raichur (1.7 to 5.9), while it was absent in LAM and Coimbatore. Higher level of *Earias* bollworm (1.3 to 2.2 larvae / 5 plants) was recorded in Dharwad and Raichur. Pink bollworm was also at higher level (4 to 11 larvae / 20 green bolls) in Dharwad, LAM (2.4 to 8.0) and Raichur (2.5 to 7.8).
- Spirotetramat @ 90 g a.i. / ha was effective against mealy bug in Faridkot and Hisar centres. It recorded higher yield (30.5 q/ha) over control (29.04 q/ha) in Faridkot.
- Profenophos @750 gm followed by Chlorpyrifos (500 & 1000 gm) and Buprofezin 312.5 g were effective against mealy bug in Faridkot Sriganaganagar and Raichur and recorded higher yield, 35.62, 32.90 and 32.54 q/ha respectively as compared to 30.32 q/ha in control.

- Fipronil @ 40 g a.i. / ha was effective against Jassid, thrips, aphids and whitefly almost in all locations (Ludhiana, Sriganaganagar, Akola, Nanded, LAM, Dharwad and Srivilliputtur) and recorded significantly higher yield over control.
- In on farm trial at Srivilliputtur, Chlorpyrifos was the most effective treatment for mealy bug control while stem drenching with Chlorpyrifos 2.5 ml/ lit + Carbendazim 1 g/lit was the most effective treatment for the control of stem weevil infestation.

### **Technical Programme for 2009-10**

#### **Ent 1a. Screening of breeding material for resistance to insect pests : 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. K.R. 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)  
RCH 134*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 NB*t* (bollworm susceptible)  
(Action: Seeds supply – Sr cotton breeders of their respective centres)

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

### Ent 1b. Advanced screening of promising entries:

The promising lines should be screened under artificial bombardment conditions in the concerned centres to investigate the mechanism of resistance/tolerance with specific reference to antixenosis and antibiosis.

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, Sri 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 for North India and for sucking pests on DCH32 ( untreated ) and for bollworm on DCH32 ( untreated ) on which sucking pests are controlled in Central and South India.

Sr.No.	Zone	Bt		Conditions
		Variety/hybrid		
		Sucking pest	Bollworm	
1.	North Zone	Ganganagar Ageti	HS6	Irrigated
2	Central Zone	DCH32	DCH32	Irrigated & Rainfed
3	South Zone	DCH32	DCH32	Irrigated & Rainfed

Dr. Vichitar Singh will supplying the seed of Ganganagar Ageti to all the concerned centres  
Dr. Dilip Shraff (Research Associate HAU,HISAR will arrange for the seed of HS-6  
Dr. S.B.Patil, Dharwad will supply the untreated seed of DCH32 to all the concerned centres.

In central and south India at least 2000sq. metre per 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 use neonicotinoid (imidacloprid /acetamiprid /thiomethoxam /clothiadinin) in the another half of 1000 sq metre for spray after 30,45,60&75 day after sowing 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 jassid, whitefly, thrip(3 leaves/ plant), mealybug, ABW, SBW, PBW & **Natural enemies** starting from after one **month of sowing** .

**Ent 3a. Chemical control of Sucking pest through foliar application  
( Testing of New Chemical )**

Treatment No.	Chemical	Dose/ha
1.	BYI02960 *	200g ai/ha
2.	BYI02960 *	250g ai/ha
3.	Acephate 95% SG(RIL-059/F95%SG)	500g ai/ha
4.	Acephate 95% SG(RIL-059/F95%SG)	562.5g ai/ha
5.	Acephate 75SP	500g ai/ha
6.	Acephate 75SP	562.5g ai/ha
7.	Imidacloprid 200SL	40g ai/ha
8.	Acetamiprid 20 SP	20g ai/ha
9.	Thiomethoxam	25g ai/ha
10.	Dimethoate	250g ai/ha
11.	Triazophos 40 SC	600g ai/ha
12.	Fipronil 5%SC	40g ai/ha
13.	Control	-

**Centres: 10**

North zone: Sri Ganganagar, Faridkot, CICR, Sirsa

South zone: Dharwad, Raichur, Coimbatore(CICR), lam(Guntur)

Central zone: Akola, Junagarh, Bhavanipatna,

**Observations**-Record observation before and 7days after spray

Ganganagar Ageti for **North Zone** (spray at 45,60,75 days after sowing along with additional spray if required)

RCH-2Bt hybrid for **South & Central Zone** (spray 25-30, 40-45, 55-60 days after sowing)

**Replications**-3 (50 plants per plot)

\* *The conduct of experiment is subjected to the supply of chemical structure and name of the test insecticide by Bayer Crop Science by 1<sup>st</sup> May,2009.*

**Ent 3b: Evaluation of buprofezin (IGR) and biopesticides against mealy bug in cotton**

Sl.No.	Treatments	Dosage(ml/ha)	Centres
1	Buprofezin 25% SC (Applaud 25%SC) 250g ai/ha	1000ml	Sriganganagar, Hisar, Akola, Raichur
2	Buprofezin 25% SC (Applaud 25%SC) 312.5g ai/ha	1250ml	
3	Chloropyriphos 50EC @ 500g ai/ha	1000ml	
4	Chloropyriphos 50EC @ 1000g ai/ha	2000ml	
5	V.lecani	10g/ltr	North Zone-(Sri Ganganagar, Faridkot, CICR,
6	Metarhizium anisopliae	10g/ltr	
7	Mealy quit	10ml/ltr	

8	Beauveria bassiana	10g/ltr	Sirsa) Central Zone - (Akola, Junagarh, Bhavanipatna) South Zone - (Dharwad, Raichur, Coimbatore(TNAU), lam(Guntur))
9*	Biopesticide-6	--	
10*	Biopesticide-7	--	
11	Profenophos 50 EC @ 750g ai/ha	1500ml	
12	Control	-	-

Hybrid RCH-134 Bt for North Zone and RCH-2 Bt hybrid for Central & South Zone.

Record observations for mealybug grade (0-IV) and population from 5 cm of central shoot before and 7<sup>th</sup> day after the spray on tagged plant. Beneficial fauna viz. predators and parasitism must be observed.

Start spray after 1<sup>st</sup> early boll bursting or at moderate level of infestation.

The centers Sri Ganganagar, Hisar, Akola and Raichur will conduct the experiment with 12 treatments ( Sr No 1-12) whereas remaining centres Sirsa (CICR), Coimbatore ( TNAU), Dharwad, Lam ( Guntur ), Junagarh, and Bhavanipatna will conduct with only 8 treatments (S. No 5-12) into 4 replications

**\* -The name of biopesticide alongwith the formulation will be conveyed with in 10 days by CICR Nagpur /Sirsa**

**LIST OF PRIVATE INDUSTRY PARTICIPANTS**

<b>S.No</b>	<b>Name of the Company</b>	<b>Name of the Person &amp; Address</b>
1.	RALLIS INDIA LTD	GANESH BHAT,4 RALLIS INDIA LTD V8, K.S.C.M.F.BUILDING, III BLOCK, II FLOOR, Cunningham Road, Bangalore- 560052.
2.	Bayer Crop Science	D.Kubendran, Coimbatore, TN Dr.Rajeev Pant – Mumbai Bayer House, Central Evenue, Hiranandini Gardens, pevani, Mumbai – 400076
3.	Nirmal seeds , PA LTD	PNF.S.G.Rajput, Sr.Scientist, Nirmal Seeds PA LTD, Pachora, Dist Jalgaon , (Maharashtra)
4.	DOW AGROSCIENCE	Prasanna Kumar, Bangalore 09963552968
5.	Seed Works India Pvt.Ltd.	Dr. Srikanth,Hyderabad
6.	Mahyco Monsanto biotech Ltd.	Murali Mohan, Mumbai 09970157401
7.	E.I.DUPONT INDIA PVT LTD.	G.L. Nageshwarrao, Warangal 09701914361
8.	BAYER CROP SCIENCE	Dr. P.D. Sharma, Hisar 09416941325

**LIST OF AICCIP ENTOMOLOGY SCIENTISTS**

<b>S.No</b>	<b>Name of the AICCIP Centre</b>	<b>Name of the Scientist &amp; Designation</b>
1.	Cotton Res. Station J.A.U., Junagadh(Guj.)-362001	Dr.B.V.Sureja Asso.Res.Scientist(Ento)
2.	CRS, Nanded(M.S)	Dr.P.R.Zanwar Asst.Entomologist
3.	Cotton Improvement Project, MPKV;Rahuri(M.S)	S.T.Aghav Scientist
4.	Main Cotton Res. Station Navsari Agil.University,Surut,Gujarat	Dr.H.R.Desai Assistant Res. Scnt(Ento)
5.	Cotton Improvement Project Regional Agril.Res.Station,Khandiva(M.P), Khandwa	S.K.Parsai Senior Scientist
6.	AICCIP, OUAT Centre Bhawanipatna	Dr. S.M.A. Mandal Entomologist
7.	TNAU, Coimbatore 641003	Dr. s. Mohan Professor(Ento.)
8.	NCIPM, New Delhi	Dr. P. Jeya Kumar Sr. Scientist
9.	RARS, lam	Dr.G.M.V.Prasada Rao Sr.Scientist(Ento.)
10.	ARS, Dharwad	Dr.S.B.Patil Scientist
11.	RARS, lam	Dr. N.V.V.S. Durga Prasad Scientist(Ento.)
12.	CCS Haryana Agricultural University	Dr. Dalip Kumar Research Associate
13.	PAU, RS, Faridkot, Punjab	Dr. Suneet Pandher Assistant Entomologist
14.	PAU, Regional Station, Faridkot, Punjab	Dr. Satnam Singh Assistant Entomologist
15.	AICCIP, Cotton Research station, Srivilliputtur-626129	Dr. N. Murugesan Professor (Entomology)
16.	AICCIP, Cotton Research Station,TNAU Sri Ganganagar(Raj.)	Dr. Vichiter Singh Entomologist
17.	Regional Agril. Res. Station UAS, Raichur	Dr. M. Bheemanna Sr. Entomologist(cot)
18.	Regional Station Central Institute for Cotton Research, SIRSA	Dr. Reshi.kr Sr. Scientist
19.	Agril. Res. Station, Dharwad- 580007, Karnataka.	Dr. Udikeri S.S Scientist(Ento.)
20.	Agril.Research Station- Banswara MPUAT- Udaipur	R.K.Kalyan Asst.Entomologist
21.	AICCIP, Cotton Research Unit Dr.PDKV, Akola	Vinod sonalkur Assistant Entomologist