

AICCIP ANNUAL GROUP MEETING: 2011-12 ANGRAU, Hyderabad
Proceedings of the Plant Pathology Panel Session 09:04:2012
TECHNICAL PROGRAMME FOR 2012-13.

The following discussion points were raised by Dr T P Rajendran, ADG (PP) the Chairman of joint plant protection session for taking up in research programs:

1. Validation of label claims of pesticides
2. University Package of Practices (POPs) v/s Good Agricultural Practices (GAP)
3. Generation of pesticide residue data for new molecular testings in oil and cake
4. Effect of cotton pesticide sprays on other crops
5. E-Pest surveillance strengthening
6. Conduct of joint ORPs for insecticide/fungicide/weedicide testing

Based on his suggestions, the following Action plan for the Year 2012-13 has been formulated.

The Plant Pathology Panel meeting was held from 9th to 11th April, 2012 in the Acharya NG Ranga Agricultural University, RajendraNagar, Hyderabad, under the Chairmanship of Dr.D. Raja Ram Reddy, Professor (Plant Pathology), Former (DSA, ANGRAU, Hyderabad), Dr. V.Krishna Rao as Co-Chairman, Professor and Head, Department of Plant Pathology, College of Agriculture, Rajendra Nagar , Hyderabad, and convened by Dr. Dilip Monga, Principal Investigator, (Plant Pathology) and Head, CICR, Regional Station, Sirsa. B. Sree Lakshmi, Senior Scientist (Plant Pathology) ANGRAU and Dr.S.Nakkeeran, Associate Professor (Plant Pathology), TNAU, Coimbatore served as rapporteurs. The following scientists from different AICCIP Centres attended the meeting and presented the results of 2011-12 trials. The technical programme for the year 2012-13 was finalized.

1. Dr. B. Sree Lakshmi, RARS, ANGRAU, LAM, Guntur
2. Dr. S. Nakkeeran, TNAU, Coimbatore
3. Dr. P. S. Sekhon, PAU, Ludhiana
4. Dr. N. K. Yadav, CRS, SIRSA
5. Dr. Jagadish Beniwal, HAU, Hisar
6. Dr. M. S. L. Rao, Senior Scientist, ARS, Dharwad Farm, Dharwad
7. Dr. K. B. Pawn, Junior Pathologist, AICCIP, Pune
8. Dr. O. V. Ingole, PDKV, Akola
9. Dr. Niranjana Chinara, Bhawanipatnam, OUAT
10. Dr. P. K. Dhoke, CRS, MAU, Nanded
11. Dr. R. R. Perane, MPKV, Rahuri
12. Dr. H. J. Kapadia, JAU, Junagadh

Technical Programme: 2012-13

Path.1: Epidemiological studies on cotton diseases-(cont.....)

1(a): Observations on the occurrence of the diseases (in farmer's field and research farms) - (At all centers except Pune and CICR Sirsa).

All Information regarding major / minor / new (e.g. Tobacco streak virus disease, *Helminthosporium* Leaf spot, *Phoma* leaf spot etc) disease have to be reported. The participating centers were informed to record the data in per cent disease index in 10 locations in farmer field and research farm during early, middle and late in the season as per the earlier finalized AICCIP standardized protocols.

1(b): Disease progress in relation to weather factors (All centers except Pune)

The experiment will continue as per the earlier procedure suggested during 2007-08. The regression equations developed for *Alternaria* by Rahuri center will be validated by other centers (TNAU, CBE., Nanded, Junagrah, Dharwad, and Faridkot). Similarly the equations developed for CLCuD and other diseases will be validated by other centres where the diseases are prevalent. Each center will focus on most important disease on a susceptible variety/hybrid or Bt hybrid for correlation.

North Zone will pool the existing data on CLCUV and prediction models has to be developed. Central Zone will develop prediction models for Grey Mildew and validate the data on *Alternaria* leaf spot (All Centres). In addition Nanded will develop data on grey mildew. South Zone: All the Centres have to validate the data for ALS. In addition Dharwad has to validate the existing data for Grey.Mildew. Further LAM and Dharwad centre will initiate data collection for the rust disease. The hybrid RCHII BGII may be used for recording data on above mentioned diseases.

1(c): Studies on the variability of *Myrothecium* leaf spot (Khandwa) and *Alternaria* leaf spot (other centres). 1. *Myrothecium* leaf spot. 2. *Alternaria* leaf spot.

- The generated data on *Myrothecium* leaf spots has to be compiled and pooled and concluded by Khandwa Centre.
- Association of *Alternaria dianthi* and *A. chlamydospora* needs to be confirmed by conducting pathogenicity studies (Dharwad Centre). Studies on symptomatology in different genotypes has to be documented and reported. Besides morphological and physiological variations has to be studied. Similarly, TNAU, Coimbatore may also conduct studies on symptomatology and morphological characters of *Alternaria* spp., infecting cotton genotypes.
- Seed- borne nature of *Alternaria* spp., has to be studied using blotter technique and component plating method (Dharwad and Coimbatore).

1(d) Survey and Epidemiology of TSV (Lam in collaboration with NBPGR, Regional Station, Hyderabad and CICR, Nagpur and TNAU, Coimbatore).

- Survey for occurrence of TSV from major cotton growing tracts of different districts in the state will be carried out.
- Occurrence of TSV will be confirmed through Sero diagnosis, PCR, and through local lesion hosts assay. Besides yield loss assessment may be carried out.

Path.2: Screening of AICCIP entries for disease reaction - cont.....

Path.2: (a) Screening of breeding lines for disease reaction (all centers)

North Zone Centers : Both National and Zonal entries*

Central and South zones centres : - do -

*Only National entries at CICR,RS,Sirsa

Susceptible check for each important disease (Common or individual) should be maintained in each screening trial at all the centres.

Path.2 (b) Confirmation and maintenance of disease resistant lines

- At all centre's, scientists will keep the resistant entries (few bolls of selfed seed) from the initial evaluation trials (National trials) like Br02a or b for *G. hirsutum* Varieties, Br 22 a/b for *G. arborum*, Br 34 b for *G. herbaceum* and Br 14a for *G. barbadense* after screening against important diseases.
- A maximum of 2-3 important diseases prevailing in the area will be considered.
- A maximum of five entries will be kept from each trial.
- Seed cotton yield and quality aspects will also be recorded keeping resistance as first priority. Those lines will be evaluated again for one more year i.e. tested at hot spot for that particular disease under nursery/ artificial inoculation condition at below mentioned centres to have confirmed final reaction.

Artificial Screening Centres:

- 1 Cotton leaf curl virus PAU, Abohar / Ludhiana
- 2 Bacterial leaf blight PDKV, Akola
- 3 Alternaria leaf spot MPKV,Rahuri
- 4 Myrothecium leaf spot Khandwa
- 5 Grey mildew Dharwad
- 6 Root rot CICR,RS,Sirsa
- 7 Fusarial wilt PAU/Pune

The process will be continuous one and within 5-6 years each centre will have their collection of resistant entries for use in developing resistant varieties / hybrid by that centre.

Path.3: Management of Disease (All Centres except Pune)

Path 3(a.1): Validation of seed dressing chemicals against seed and soil borne diseases of cotton. Susceptible varieties in the respective regions will be used. Each centres has to record the pathogen associated with the seedling mortality through isolation and confirmation.

Thiram 75 WS – Seed Treatment @ 20g, 30g, 40g/ha
Carboxin 75% WP – Seed Treatment @ 1g, 2g, 3g/Kg of seed
Carboxin 37.5% + Thiram37.5% DS - Seed Treatment @ 2.5g, 3.5g and 4.5g/Kg of seed.
Untreated control.

Replication -3; Design RBD.

Observation: The incidence of seedling rot, anthracnose, BLB and Root rot will be recorded up to 1 month. Final yield parameters will be also recorded.

Path 3 (a.2): Testing of botanical product EZEE Cotton (Kraft Foundation) against viral and fungal diseases.(Faridkot, Junagadh and Guntur)

Treatments:

T1 – 0.5ml/Litre
T2- 1ml/Litre
T3 – 2ml/Litre
T4 – Control (Acephate 2g/Litre)
T5 – Control (Propiconazole 0.1%)
T6 – Untreated control.

Replications – 4

Design – RBD

Observations:

- The fungal foliar spots and CLCUD, TSV, Whitefly and Thrips. Additional observations on leaf reddening, yield and quality parameters may be recorded.
- Three sprays has to be given. First spray has to be given during disease appearance followed by two sprays at 15 days interval.

3(b) Management of foliar pathogens through SAR inducing chemicals.

1. Seed treatment with *P. fluorescens* Pf-1 (TNAU) @ 10 g/kg seed plus foliar spray @ 0.4% on 60 and 90 DAS.
2. Seed treatment with *P. fluorescens* Pf-1 (CICR) @ 10 g/kg seed plus foliar spray @ 0.4% on 60 and 90 DAS.
3. Spraying of propiconazole at 0.1% (for rust)/ Carbendazim 50 WP @ 0.1% (for grey mildew only) on 60 and 90 DAS
4. Foliar application of COC (0.3%)+ Streptocycline (0.01%) at 60 and 90 DAS
5. SAR inducing chemical, at 100 ppm) (Salicylic acid) on 60 and 90 DAS.
6. SAR inducing chemical,at 100 ppm (iso nicotinic acid) on 60 and 90 DAS.
7. Untreated control (Water Spray)

Based on the need an additional spray may be taken after 120 DAS.

Design : RBD

Plot size : 60 Plants / plot

Replications : 3

Variety : Local susceptible cultivar. Dharwad centre will supply seed to CICR,Nagpur

The Centres : Dharwad, Guntur, TNAU, Coimbatore.

Pf-1(TNAU) will be supplied by TNAU and Pf-1(CICR) NAGPUR will supply the respective formulations to other centres.

Population dynamics of Pseudomonads in the rhizosphere of the treated and untreated plants has to be analyzed at flowering phase. Depending on the facilities available with different centres the phylloplane microflora will be assayed.

Path 3 (c): Developing IDM modules for the management of cotton diseases

Treatment details:

1. Bt Hybrid 1 + Module 1
2. Bt Hybrid 1 + Module 2
3. Bt Hybrid 1 + Module 3
4. Bt Hybrid 2 + Module 1
5. Bt Hybrid 2 + Module 2
6. Bt Hybrid 2 + Module 3
7. Farmers Practice with Bt Hybrid1
8. Farmer Pracctice with Bt Hybrid2

Bt cotton hybrids will be selected based on tolerance to one or the other disease. Modules may be prepared depending upon the severity of the diseases occurring indifferent zones.

Design: RBD

Replications: 3

Plot size: 50sq.m

Centres: Guntur, Rahuri and TNAU, Coimbatore

Module 1	Module 2	Module 3
Seed Treatment - PF TNAU1 @ 10g/Kg of seed	Seed Treatment - PF TNAU1 @ 10g/Kg of seed	Seed Treatment - PF TNAU1 @ 10g/Kg of seed
Soil Application - <i>Pseudomonas fluorescens</i> – PF TNAU1 @ 2.5 Kg/ha in 250 KG of Compost or FYM.	-	Soil Application of <i>Trichoderma viride</i> @ 2.5 KG/ha TV- TNAU1 in 250 KG of Compost or FYM.
Foliar Spray with <i>Pseudomonas fluorescens</i> - 1% PF TNAU1 60,90 and 120 DAS	FS with propiconazole 0.1% for foliar ddiseases and COC (0.3%) + Streptocycline (0.01%) for BLB or Carbendazim 0.1% for grey mildew on need basis	Foliar spray with Ergon @ 1ml/Litre @ 60 DAS and Taqat @ 1.5g/Litre @ 90 and 120 DAS for fungal diseases or COC (0.3%) + Streptocycline (0.01%) for BLB

** - Need based application may be given based on the disease severity observed in the respective places. Formulations of *Trichoderma viride* and *Pseudomonas fluorescens* will be supplied by TNAU, Coimbatore Centre.

- The interventions within a module can be modified based on location needs.

Observation:

Germination %, Plant Height, Root Length, Date of First Flowering and Yield Parameters.

Path 3 (d): Management of cotton leaf curl virus through its vector (New) – Hisar, Faridkot and Sriganagar

Module	30 DAS	45 DAS*	60DAS	75 DAS	90 DAS
1	Nimbecidene	Acephate 75 SP	Nimbecidene	<i>V. lecanii</i>	Triazophos 40%EC
2	Nimbecidene	Acephate 75 SP	Nimbecidene	<i>V. lecanii</i>	Buprofezin 25%SC
3	Nimbecidene	Clothianidin	Nimbecidene	<i>V. lecanii</i>	Triazophos 40%EC
4	Nimbecidene	Clothianidin	Nimbecidene	<i>V. lecanii</i>	Acephate 95 SG
5	Nimbecidene	Admire	Nimbecidene	<i>V. lecanii</i>	Triazophos 40%EC
6	Nimbecidene	Admire	Nimbecidene	<i>V. lecanii</i>	Acephate 95 SG
7	Nimbecidene	Nimbecidene	Nimbecidene	<i>V. lecanii</i>	Triazophos 40%EC
8	Nimbecidene	Nimbecidene	-	<i>V.lecanii</i>	-
9	Nimbecidene	Confidor	Nimbecidene	<i>V.lecanii</i>	-
10	-	Confidor	-	Aceta	Triazophos 40%EC
11	Check				

CLCuD susceptible Hybrid RCH-134 BG II, Design-RBD, Replications-3

Observations on CLCuD and white fly population will be recorded by pathologists and entomologists respectively.

Path 4: Crop Loss Estimation

4 (c) Bacterial blight (to be carried out at Dharwad, Lam, Surat and Akola).

Cost benefit ratio for the pooled data will be worked out and reported.

Path.4 (e) Crop loss estimation due to CLCuD and distribution pattern of CLCuD in north zone-2nd year

Experiment 1: To work out relationship between Disease index and yield reduction due to cotton leaf curl virus disease

Location: Hisar (Sirsa - Sub Centre), Faridkot, Ganganagar

Variety /hybrid : Local Popular Bt Hybrids

Treatment details and observations:

1 Research farms on 4 local popular hybrid will be sown in half and acre area and 10 sets each (50 plants/set) of diseased and healthy plants will be tagged and data on

Disease Index, yield loss and quality parameters will be recorded and analyzed.

Experiment 2: Study on distribution pattern of cotton leaf curl virus disease on local popular Bt hybrid at farmer's field.

Observations of CLCuD occurrence (DI) on two villages in each block (district wise) will be recorded during the cropping season for four popular hybrids. The locations will be evenly spread over the entire state. At each location, 4 set of observations (25 plants each totaling 100 plants) will be recorded in a field.

The data recording should be uniform at all the centres.

Location: Hisar, (Sirsa – Voluntary Centre), Faridkot and Sriganaganagar

4.(f) Rust (Dharwad and Lam)

Cost benefit ratio for the pooled data will be worked out and reported.

Path. 7 Fusarium wilt of cotton (Pune Centre) - cont.....

The Pune Center will screen all Desi cotton genotypes (*G arboreum* and *G herbaceum*) in combined Fusarial cultures at sick plot. The seeds (25 gm of each entry) of all desi cotton trials may be sent to Pune centre from CICR Regional station, Coimbatore while distributing seeds, for screening Fusarium wilt (Action: Project Coordinator). For confirmation and verification of resistance, the resistant materials has to be sent to the Plant Pathologist, PAU, Ludhiana.

The centre will also conduct the following studies

1. The seed borne nature of Indian isolates
2. The effect of available isolates on *G.hirsutum* and *G. barbadense*
3. Confirmation of available races in India by using race specific primers

The disease occurrence in organic cotton and high density planting trials conducted at different centres will be recorded and reported by the concerned Pathologists.

Finally, Dr. Monga concluded the session with vote of thanks.