

AICCIP ANNUAL GROUP MEETING: 2008-09, ANGRAU, Hyderabad
Proceedings of Plant Pathology Panel

The Plant Pathology Panel meeting was held from 6th to 8th April, 2009 in the University Auditorium, Acharya N. G. Ranga Agricultural University, Rajendranagar, Hyderabad under the chairmanship of Dr. P. Narayana Reddy, Professor, Dept. of Plant Pathology, ANGRAU, Hyderabad and Convened by Dr. Dilip Monga, Principal Investigator, (Plant Pathology) and Head, CICR, Regional Station, Sirsa. B. Sree Lakshmi and Dr. J. Beniwal acted as rapporteurs. The following scientists from different AICCIP Centres attended the meeting and presented the results of 2008-09 trials. The technical programme for the year 2009-10 was finalized.

1. Dr. P. S. Sekhon, PAU, Ludhiana
2. Dr. P.K.Chakrabarty, CICR, Nagpur
3. Dr. Jagadish Beniwal, HAU, Hisar
4. Dr. P. K. Dhoke, CRS, MAU, Nanded
5. Dr. P. V. Patil, MCRS, NAU, Surat
6. Dr. H. J. Kapadia, JAU, Junagadh
7. Dr. O. V. Ingole, PDKV, Akola
8. Dr. R. R. Perane, MPKV, Rahuri
9. Dr. P. D Mahajan, COA, MPKV, Pune
10. Dr. S. N. Chattannavar, ARS.,UAS, Dharwad
11. Dr. B. Sree Lakshmi, RARS, ANGRAU, Lam, Guntur
12. Dr. A. Chandrashekar, TNAU, Coimbatore
13. Dr. S. A. Astaputre, UAS, Dharwad
14. Mr D, M. Shitole, Rallis India Ltd., Bangalore
15. Dr. P. Mareeswari, TNAU, Coimbatore,

Technical Programme: 2009-10

Path. 1: Epidemiological studies on cotton diseases –cont...

**Path 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) diseases 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 the season as per the earlier finalized protocols.

**Path 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. Rahuri centre will circulate the regression equations developed for Alternaria to the other centres (TNAU, Cmb., Nanded, Junagarh, Dharwad and Faridkot) for validation. Each centre will focus on most important disease on a susceptible variety/hybrid or Bt hybrid for correlation.

Path 1c: Studies on the variability of *Myrothecium* leaf spot (Khandwa)

Samples of *Myrothecium* leaf spots will be sent to Dr. Shastry for variability studies by Punjab, Haryana, Gujrat and Maharashtra pathologists.

**Path 1d: Survey, monitoring, diagnosis, role of vectors, alternate hosts to TSV
(Lam in collaboration with NBPGR, Regional Station, Hyderabad and CICR, Nagpur).**

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

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

North Zone centres : Both National and Zonal entries*

Central and South zones centres : - do -

*Only national entries at CICR, RS, Sirsa

The artificial screening will be carried out for different diseases at following centers

Disease	Centre
CLCuD	Ludhiana - All entries, Sirsa- entries from Bt trials
Bacterial blight	Lam
Myrothecium	Khandwa
Alternaria	Rahuri
Grey Mildew	Dharwad
Root rot	Sirsa

For CLCuD screening, Hisar and Sriganaganagar centres will also develop screening nurseries.

In case of field screening, all centres will use local susceptible checks for diseases to ensure proper screening. Sprinklers may be provided for proper disease development to ensure effective screening.

Path.2b: Confirmation and maintenance of disease resistant lines

At all centres, 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 22a/b for *G. arborum*, Br 34b 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 conditions at below mentioned centres to have confirmed final reaction.

S. No.	Disease	Hot spot
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,

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

Path. 3: Management of Diseases

Path 3 a: Management of fungal foliar diseases through chemicals

Experiment I: (1st year)

Fungicide: Tetraconazole 3.8% w/w against Alternaria leaf spot and 11.6% w/w (12.5% w/v) against Seed and Soil borne diseases (M/s Isagro (Asia) Agrochemicals Pvt. Ltd,

Doses	: Will be decided later
Treatments	: -do-
Design	: RBD
Plot size	: 60 plants/plot
Replications	: 5
Variety	: Local susceptible cultivar
Volume of Water	: 500 L/ha
Centres	: TNAU Aruppukottai, Junagarh, Rahuri, Nanded

Observations to be taken: Against all fungal foliar diseases occurring in the respective centers. First spray will be given immediately after the appearance of disease. Subsequent sprays will be given depending on the incidence and progress of disease. Observations on the occurrence of other diseases may also be noted.

Path 3 b: Management of Grey mildew and Rust through SAR inducing chemicals.

- i) Seed treatment with *P. fluorescens* Pf-1 (TNAU) @ 10 g/kg seed plus foliar spray @ 0.4% on 60 and 90 DAS.
- ii) Seed treatment with *P. fluorescens* (CICR) @ 10 g/kg seed plus foliar spray @ 0.4% on 60 and 90 DAS.
- iii) Spraying of Carboxin / Oxycarboxin at 0.1% (for rust)/ Carbendazim 50 WP @ 0.1% (for grey mildew only) 60 and 90 DAS.
- iv) SAR inducing chemical (two chemicals at 100ppm) (Amino butyric acid / Salicylic acid / Acibelzolar S- Methyl / iso nicotinic acid) 60 and 90 DAS.
- v) Check (water spray)

Design : RBD
Plot size : 60 plants/plot
Replications : 3
Variety : Local susceptible cultivar. Dharwad centre will supply seed to CICR, Nagpur.
Centres :CICR, Nagpur, Dharwad

Same treatments may be implemented in pot culture and/or field.

Path 4. Crop loss estimation:

Path 4a: Grey Mildew: (Dharwad, Lam, and Nanded)- 2nd year

Spray inoculum of *Ramularia areola* extracted from infected leaves will be applied at 25-35 days after sowing. Epiphytotic conditions will be created through sprinkler system. The following will be the treatments.

- i) Carbendazim (0.1%) spray at 35 DAS
- ii) Carbendazim (0.1%) spray at 35 and 50DAS
- iii) Carbendazim (0.1%) spray at 35, 50 and 65 DAS
- iv) Carbendazim (0.1%) spray at 35, 50, 65 and 80 DAS
- v) Carbendazim (0.1%) spray at 35, 50, 65, 80 and 95 DAS
- vi) Carbendazim (0.1%) spray at 50, 65, 80 and 95 DAS
- vii) Carbendazim (0.1%) spray at 65, 80 and 95 DAS
- viii) Carbendazim (0.1%) spray at 80 and 95 DAS
- ix) Carbendazim (0.1%) spray at 95 DAS
- x) Water spray

Design: RBD with Three replications
Plot size: 60 plants /treatment
Variety: Local Popular grey mildew susceptible Bt Hybrid

Path 4c: Bacterial blight (to be carried out at Dharwad, Lam, Surat and Akola).
(Procedure similar to Grey mildew)
Variety : Local susceptible cultivar
Fungicide: Copper oxy chloride 0.3% + Streptocycline 100 ppm

Path 4d: Myrothecium leaf spot (Khandwa) : Contd.-3rd year
(Procedure similar to grey mildew)
Variety: Local susceptible cultivar
Fungicide: Propiconazole @ 0.1%.

Path 4e : 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 in cotton leaf curl virus disease

Locations : Hisar and Faridkot,Ganganagar, Abhor
Variety/Hybrid : Local Popular Bt Hybrids

Treatment details and observations:

1. At research farms one local popular hybrid will be sown in half an acre area and 10 sets each (50 plants/set) of diseased and healthy plants will be tagged and data on Disease Index, yield and quality parameters will be recorded and analyzed.
2. At farmers field at least one local popular hybrid will be selected at hot spots and data as stated above will be recorded.

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 50 locations each will be recorded during the cropping season for three popular hybrids. The locations will be evenly spread over the entire state. At each location, 4 sets of observations (25 plants each totaling 100 plants) will be recorded in a field.

Locations : Hisar, Faridkot and Sriganganagar

Path 4f : Rust (Dharwad and Lam)

(Procedure similar to Grey mildew, starting from 75 DAS @15 days interval upto 120 days)

Variety : Local susceptible cultivar (HxB)

Fungicide: Propiconazole @ 0.1%.

Path 5: Observations on the occurrence of the diseases on Bt cotton-cont...

- 1(a) For CLCuD, the details and layout of the trials will be as per protocol given by the Project Coordinator. The susceptible check (RS 921) and standard resistant check (LH 2076) will be included in the trial. (The seed of LH 2076 will be provided by Dr Sekhon to the Pathologists of north zone)
 - (b): Artificial screening for CLCuD in net house will be taken up with Bt cotton trial during current year. Ten plants of each entry will be raised in two pots and 20 (Twenty) viruliferous white flies will be used for each pot at 2-4 leaf stage (Sirsa and Ludhiana).
 - (c): In addition, the entries will also be screened in the screening nursery (Sirsa). For the above (1b) & (1c) screening trials, additional quantity of seeds of Bt entries may be supplied by the Project Coordinator.
2. Fortnightly observations on the incidence of other foliar diseases will be recorded at centers, wherever Bt cotton hybrid trials are being tested. For these trials also, a susceptible check should be raised along with the entries.
 3. Observation on various diseases in Bt cotton in farmers' field will also be recorded.

Path 6: 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 (25gm of each entry) of all desi cotton trials may be sent to Pune centre from CICR Regional station., Coimbatore while distributing seeds, for screening against Fusarium wilt.

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