

PROCEEDINGS OF AICCIP ANNUAL GROUP MEETING: 2007-08

PLANT PATHOLOGY PANEL

The Plant Pathology Panel meeting was held on 9th and 10th April, 2008 in the Department of Forestry and natural resources, PAU, Ludhiana under the chairmanship of Dr. H. S. Rewal Head, Dept. of Plant Pathology PAU, Ludhiana and Co chaired by Dr. Dilip Monga, Principal Investigator, (Plant Pathology) and Head CICR, Regional Station, Sirsa. Dr. S. N. Chattannavar, ARS., UAS, Dharwad and Dr. Daljeet Singh, PAU, Faridkot acted as rapporteurs. The following scientists from different AICCIP Centres attended the meeting and presented the results of 2007-08 trials. The technical programme for the year 2008-09 was finalized.

1. Dr. P. S. Sekhon, PAU, Ludhiana
2. Dr. Daljeet Singh, PAU, Faridkot
3. Dr. Jagadish Beniwal, HAU, Hisar
4. Dr. B. D. Ajmera, ARS (RAU), Sriganaganagar
5. Dr. K. G. More, CRS, MAU, Nanded
6. Dr. P. V. Patil, MCRS, NAU, Surat
7. Dr. H. J. Kapadia, JAU, Junagadh
8. Dr. O. V. Ingole, PDKV, Akola
9. Dr. R. R. Perane, MPKV, Rahuri
10. Dr. P. D Mahajan, COA, MPKV, Pune
11. Dr. S. N. Chattannavar, ARS., UAS, Dharwad
12. Dr. B. ShreeLaxmi, RARS, ANGRAU, Lam, Guntur
13. Dr. P. P. Shastry, Khandwa
14. Dr. A. Chandrashekar, TNAU, Coimbatore
15. Dr. S. A. Astaputre, UAS, Dharwad
16. Dr. N. N. Sharma, Rallis India Ltd., Bangalore

Technical Programme

Path. 1: Epidemiological studies on cotton diseases

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.

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.

1(c): 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.2: Screening of AICCIP entries for disease reaction

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

North Zone centres : Both National and Zonal entries*

Central and South zones centres : Only zonal entries

*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
<i>Myrothecium</i>	Khandwa
<i>Alternaria</i>	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.

Path. 2(b) : Screening of breeding lines for CLCuD resistance

The pathologists of north zone centre have identified CLCuD resistant lines which will be further evaluated and maintained

Path. 3: Management of Diseases

3 (a): Management of fungal foliar diseases through chemicals

Experiment I:

Fungicide	:Taqat 75WP (M/s Rallis India Ltd.)
Doses:	Two i. 500 g/ha formulaion ii. 750 g/ha formulation
Treatments	: 4 T ₁ – Taqat 500g/ha T ₂ – Taqat 750g/ha T ₃ – Propiconazole 0.1% T ₄ – Check (water spray)
Design	: RBD
Plot size	: 60 plants/plot
Replications	: 5
Variety	: Local susceptible cultivar
Volume of Water:	500 L/ha
Centres	: TNAU Coimbatore, Junagarh, Faridkot, Lam and Dharwad.

Observations to be taken: Against all fungal foliar diseases occurring in the respective centers. Three sprays at fortnightly intervals will be given with first spray immediately after the appearance of disease. Observations on the occurrence of other diseases may also be noted.

Note: Any Phytotoxicity symptoms of Taqat will be recorded.

3 (b) Biological control of foliar diseases (excluding CLCuD)

Since spraying with bio-fungicide, *Pseudomonas fluorescens* Pf-1 has been found effective in the management of various foliar diseases (excluding CLCuD), it has been decided to formulate spray schedule for arriving at correct frequency of spraying the following treatments with different spray schedules are to be carried out.

- i) Seed treatment with *P. fluorescens* Pf-1 @ 10 g/kg seed plus foliar spray @ 0.2% on 30, 40, 50, 60, 70, 80 and 90 DAS.
 - ii) Seed treatment with *P. fluorescens* Pf-1 @ 10 g/kg seed plus foliar spray @ 0.2% on 30, 50, 70 and 90 DAS.
 - iii) Seed treatment with *P. fluorescens* Pf-1 @ 10 g/kg seed plus foliar spray @ 0.2% on 30, 60 and 90 DAS.
 - iv) Spraying of Copperoxychloride 0.3% + Streptocycline 100 ppm / Carbendazim 50 WP @ 0.1% (for grey mildew only) 30, 60 and 90 DAS.
 - v) Check (water spray)
- Replication : Four
- Centres :Hisar, Faridkot, Khandwa, Akola, Rahuri, Nanded, Surat, Junagadh, Dharwad, Lam, Coimbatore.

The cultures of *Pseudomonas fluorescens* Pf-1 will be supplied by Dr. A. Chandrashekar, TNAU, Coimbatore to concerned centres.

Path 4. Crop loss estimation:

4a. Grey Mildew: (Dharwad, Lam, Guntur and Nanded).

The earlier results of three years data of above centers will be sent to Dr. Chattannavar, UAS, Dharwad for compilation and pooled analysis for grey mildew loss estimation.

New Experiment: 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

4b. Alternaria Leaf spot (LAM, Dharwad and Rahuri) : Contd.

(Procedure similar to Grey mildew).

Variety: **LRA-5166**

Fungicide: **Propiconazole @ 0.1%**

Above trial will also be utilized for assessing the importance of Helminthosporium leaf spot at LAM.

4c. Bacterial blight (to be carried out at Dharwad). Contd.

(Procedure similar to Grey mildew)

Variety : **Local susceptible**

Fungicide : Copper oxychloride 0.3% + Streptocycline 100 ppm

4d. Myrothecium leaf spot (Khandwa) : Contd.

(Procedure similar to grey mildew)

Variety: Local susceptible

Fungicide: **Propiconazole @ 0.1%**.

Path.4e Crop Loss Estimation due to CLCuD and Distribution Pattern of CLCuD in north zone

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

Locations : Hisar and Faridkot

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 three local popular hybrids 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 Sriganagar

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

- 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. 7: *Fusarium* wilt of cotton (Pune Centre)

The Pune Center will screen all Desi cotton genotypes(*G arboreum* and *G herbaceum*) in combined *Fusarial* cultures at sick plot. Further it was suggested to sterilize the soil/any material before it goes out glass house in case of pot culture and experimental area in Pune. The Chairman and PI suggested the scientist to continue with present system of evaluation. He was also informed to look into the latest scale for *Fusarial* wilt categorization.

Suggestions made by the Chairman:

The Chairman suggested focusing on changing disease scenario with respect to Bt cotton. He was of the opinion that para wilt problem does not have any of the pathogenic associations, hence the problem be addressed by agronomists and plant physiologists.

As per the information provided by ARS Dharwad plant pathologist regarding the occurrence of *Verticillium* wilt in the state, the chairman suggested the scientist to ascertain the extant of problem, conduct isolations and check pathogenicity before planning further experiment.

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