

PROCEEDINGS OF AICCIP ANNUAL GROUP MEETING: 2010-11
PLANT PATHOLOGY PANEL

MPUAT, Udaipur

The Plant Pathology Panel meeting was held from 8th to 10th April, 2010 in Agronomy Seminar Hall, Maharana Pratap University of Agriculture and Technology, Udaipur, under the Chairmanship of Dr. Kusum Mathur, Head, Dept. of Plant Pathology, MPUAT and Convened by Dr. Dilip Monga, Principal Investigator, (Plant Pathology) and Head, CICR, Regional Station, Sirsa. Dr. S. N.Chantannavar, Principal Scientist, and Dr. B. Sree Lakshmi, Senior Scientist acted as rapporteurs. The following scientists from different AICCIP Centers attended the meeting and presented the result of 2009-10 trials. The technical programme for the year 2010-11 was finalized.

Dr. P.P.Shastry, Khandwa
Dr. P.S. Sekhon, PAU, Ludhiana
Dr. Daljeet Singh PAU, Faritkot
Dr. P.K. Dhoke, CRS, MAU, Nanded
Dr. P.V. Patil, MCRS, NAU, Surat
Dr. H.J. Kapadia, JAU, Junagadh
Dr. O.V. Ingole, PDKV, Akola
Dr. R.R. Perane, MPKV, Rahuri
Dr. S.P. Latake, College of Agriculture, Pune
Dr. S.N. Chattannavar, ARS., USA, Dharwad
Dr. B. Sree Lakshmi, RARS, ANGRAU, LAM, Guntur
Dr. A. Ramanathan, TNAU, Coimbatore
Dr. S.A. Astaputre, UAS, Dharwad
Dr. Y.S. Amaresh, MARS, Raichur
Dr. M.K. Meshram, CICR, Nagpur
Dr. R.B. Gour, ARS, Sriganaganagar
Mr N.N. Sharma, Rallis India Ltd., Chandigarh
Mr. B.K. Patel, Rallis India Ltd, Ahmedabad

Technical Programme (2010-11)

Path.1: Epidemiological studies on cotton disease-cont.....

Path 1(a): Observations on the occurrence of various diseases (in farmer's field and research farms)

Centers : 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 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 center will circulate the regression equations developed for *Alternaria* to the other centers (TNAU, Cmb., Nanded, Junagrah, Dharwad, and Faridkot) for validation. Each center will focus on most important disease on a susceptible variety/hybrid or Bt hybrid for correlation.

Path 1(c): Studies on the variability of cotton pathogens

1. *Myrothecium* leaf spot (Khandwa)
2. *Alternaria* leaf spot

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

Alternaria isolates from minimum of ten locations covering wider area should be collected for confirmation of species and further studies on variability with in species
(All centre except Pune)

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

Estimation of losses due to TSV and transmission to other hosts shall be taken up

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

The screening will be carried out under artificial epiphytotic conditions for different diseases at the 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 Sriganagar 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 2 (b) : 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 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.

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 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

Path 3(a): Management of fungal foliar disease through chemicals

Experiment: 1. (2nd year)

Fungicide: Tetraconazole 12.5% w/v(11.6%w/w) ME (ie Tetraconazole 125ME) against *Alternaria* leaf spot and grey mildew (M/s Isagro (Asia) Agrochemicals Pvt.Ltd,

Dose	:	same as 1 st year
Treatments	:	same as 1 st year
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

Observation 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. Observation on phytotoxicity will be recorded as per protocol.

Experiment: 2. (1st year)

Fungicide: Ergon 44.3% (Kresoxim methyl 500g/l) SC against grey mildew and leaf spots (M/s Rallis India Pvt. Ltd) and Phytotoxicity,

Dose	:	300, 400 and 500 ml/ha(Bio-efficacy)
Treatments	:	500, 1000 and 2000 ml/ha (Phytotoxicity)
Design	:	RBD
Plot size	:	60 plants / plot
Replications	:	4
Variety	:	Local susceptible Bt hybrid
Volume of water	:	500 L/ha
Centres	:	Faridkot, Hisar, Junagadh, Nanded Dharwad Guntur and Khandawa

Observation : Phytotoxicity symptom has to be observed before, 1st, 3rd, 7th, 10th and 15th days after spraying.

Experiment: 3. Testing of Insecticide + Fungicide premixture RIL-074/F1(Acephate 60%+Kresoxim methyl 15% WG) against sucking pests and the diseases (leaf spot, greymildew etc,)

The experiment will be conducted by Entomologist and the data on diseases will be recorded by the Plant pathologist. The trial will be conducted at following centres:

Sriganganagar, Hisar, Faridkot, Junagarh, Dharwad, Surat, Akola, Khandwa, Raichur, Guntur, and Srivelliputtur.

Path 3(b): Management of foliar diseases through SAR inducing chemicals.

- Seed treatment with *P. fluorescens* Pf-1 (TNAU) @ 10 g/kg seed plus foliar spray @ 0.4% on 60 and 90 DAS.
- Seed treatment with *p. Fluorescens* Pf-1 (CICR) @ 10 g/kg seed plus foliar spray @ 0.4% on 60 and 90 DAS.
- Spraying of propiconazole at 0.1% (for fungal foliar spots) @ 0.1% (for grey mildew only) 60 and 90 DAS
- SAR inducing chemical (two chemicals at 100 ppm) (Amino butric acid /Salicylic acid /Acibelzolar S- Methyl / iso nicotinic acid) 60 and 90 DAS.
- 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, Abhojar and Lam

Population density of *P.flourescens* strains in the rhizosphere of the treated and untreated plants to be recorded by dilution plating on KB medium at flowering stage of the crop.

Observations on foliar diseases including CLCuD (NZ) will be recorded.

Note: *P.flourescens* (TNAU) & *P. flourescens* (CICR) will be provided by respective scientist of that centre.

Path 4. Crop loss estimation:

Path 4 (a) : Grey Mildew: (Dharwad, Lam, and Nanded)-3rd 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.

1. Carbendazim (0.1%) spray at 35 DAS
2. Carbendazim (0.1%) spray at 35 and 50 DAS
3. Carbendazim (0.1%) spray at 35,50 and 65 DAS
4. Carbendazim (0.1%) spray at 35, 50, 65 and 80 DAS
5. Carbendazim (0.1%) spray at 35,50,65,80 and 95 DAS
6. Carbendazim (0.1%) spray at 50,65,80 and 95 DAS
7. Carbendazim (0.1%) spray at ,65,80 and 95 D
8. Carbendazim (0.1%) spray at 80 and 95 DAS
9. Carbendazim (0.1%) spray at 95 DAS
10. Water spray

Design: RBD with Three replications

Plot size: 60 plants / treatment

Variety: Local Popular grey mildew susceptible Bt Hybrid

Path 4 (c): Bacterial blight (to be carried out at Dharwad, Lam, Sural and Akola).
(Procedure similar to Grey mildew)

Variety : Local susceptible cultivar

Fungicide: Copper oxy chloride 0.3% + Streptomycin 100 ppm

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 in cotton leaf curl virus disease

Location: Hisar and Faridkot, Ganganagar, Abhor

Variety /hybrid : Local Popular Bt Hybrids

Treatment details and observations:

1 Research farms on local popular hybrid in half 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 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 (PDI) 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 set of observations (25 plants each totaling 100 plants) will be recorded in a field

Location: Hisar, Faridkot and Sriganganagar

Path 4(f): Rust (Dharwad and Lam) (Procedure similar to grey mildew)

Variety: Local susceptible cultivar (H x B)

Fungicide: Propiconazole @ 0.1%

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, for screening against Fusarium wilt.

Note: Seed will be provided by PC unit CICR, RS, Coimbatore.

Dr K R Kranthi, Director CICR, Nagpur, Dr N Gopalakrishnan, Project Coordinator AICCIP & Head CICR Regional Station Coimbatore and Dr P K Chakrabarty, Head Division of Crop Improvement, CICR, Nagpur also participated in deliberations of technical program and imparted valuable suggestions and guidance. Finally, Dr. Monga, Principal Investigator (Pathology, AICCIP) concluded the session with vote of thanks.
