AICCIP ANNUAL GROUP MEETING: 2013-14 MPUAT, Udaipur  
Proceedings of Agronomy, Physiology & Biochemistry Panel

The Agronomy Panel Meeting of AICCIP was held in the afternoon session on 08.04.2013 and on the following day (10.04.2013) for presentation of ANNUAL REPORT and finalization of the technical programme on Agronomy, Physiology and Biochemistry trials to be conducted during 2013-14. The session was chaired by Dr P.L.Maliwal Director of Research MPUAT, Udaipur and convened by Dr. P.L. Nehra, Professor and PI (Agronomy), ARS, Sriganganagar, Dr(Smt).S. Ratnakumari, Principal Scientist, (Phy), and Dr S.K.Sharma Prof. Agronomy and ADR DOR, Udaipur acted as rapporteurs for all the sessions under the panel. Research experiments have to be carried out in Agronomy, Physiology and Biochemistry on the coming season (2013-14) on the following important thematic areas:

- Agronomic requirements of promising pre-release/recently released hirsutum/ arboreum genotypes/ hybrids of cotton
- Developing suitable Agronomy for ruling Bt hybrids of the region.
- Weed management
- Improving use efficiency of inputs (water and nutrient)
- Technology for organic Cotton Production
- Physiological and biochemical aspects in cotton production

TECHNICAL PROGRAMME FOR 2013-14

AGRONOMY
Agronomy I: Agronomic requirements of promising pre-release/ recently released hirsutum /arboreum genotypes/ hybrids of Cotton  
Agronomy II: Developing suitable Agronomy for ruling Bt hybrids of the region  
Agronomy III: Weed Management in Cotton  
Agronomy IV: Improving use efficiency of inputs (water and nutrient)  
IVa: Drip irrigation in Bt cotton  
IVb : Moisture conservation technique for ET based drip irrigation in Bt cotton  
Agronomy V: Technology for organic cotton Production.

PHYSIOLOGY and BIOCHEMISTRY

1: Screening of Cotton genotypes for abiotic stress tolerance  
   1a: Screening genotypes for water stress tolerance  
   1b: Screening genotypes for salinity stress tolerance
2: Studies on defoliants in cotton  
3: Preparing for Climate Change: Effect of environment on crop phenology development, yield and fiber development  
4: Manipulation of source sink relationship through growth regulators for enhancing production in cotton  
5: Evaluation of cotton genotypes for seed oil, gossypol and protein.  
6: Testing of swell (CCPU) Forchlorfenuron bio-efficacy on cotton crop (Paid up trial)  
7: Evaluation of Double for Bio efficacy on Bt cotton (Paid up trial)
Details of Technical Programme for 2013-14

COTTON AGRONOMY
The details of Technical Programme formulated under Agronomy are presented as under:

Agronomy I: Agronomic requirements of promising pre-release/recently released hirsutum arboreum genotypes/hybrids of Cotton

Under this project, the pre-released varieties/hybrids developed and suggested by the breeding panel under irrigated/rainfed conditions shall be tested at respective centers in the zone for their response to optimum fertilizer levels and crop geometry requirements (applicable to both public & private sector varieties/hybrids). All the coordinating participating centers shall invariably conduct these trials incorporating the new genotypes/hybrids against the local check for determining the optimum spacing and fertilizer requirements. In addition, centers can take up agronomic requirements of any promising entry as per local requirements/needs after obtaining prior approval from the Project Coordinator, CICR, Coimbatore.

NORTH ZONE
- Hirsutum variety – F2228, MR 786, LH2152, MR 68, HS-288
- Intra-hirsutum Hybrid – FHH-200, LHH-1403
- G. arboreum variety LD 949

CENTRAL ZONE

Irrigated Trials
- Hirsutum variety – GSHV 159, RHC 0717,
- Hirsutum hybrids- GSHH 2729, RHH 0622,
- G. barbadance variety- DB-12, GSB 40, RHC b011

Rainfed Trials
- Hirsutum variety – NH 635, BS 30, PH 1060
- Intra-hirsutum Hybrid – NHH 250, NHH 324, GSHH 2729
- Arboreum variety – GAM 162, JLA 505
- Arboreum hybrid- Swadeshi 651, FMDH 23, NACH 18

SOUTH ZONE

Irrigated Trials
- Hirsutum variety – MR 786, SCS 793, TSH 0250, BS 37
- Hirsutum hybrid- MRC 7377, ARBH 1051
- Barbadance variety- GSB 40, GSB 41, RAB 8
- HxH- MCHB 7945, DHB 1071,

Rainfed Trials
- Hirsutum hybrid- MRC 7385, GSHH 2729, DHH 1062, BHH 16
- Arboreum variety- AKA 2005-3
- Arboreum hybrid- NACH 18, MRDC 235, AAH 32

<table>
<thead>
<tr>
<th>Zone/Centers</th>
<th>Hirsutum vars.</th>
<th>Hirsutum hybrids</th>
<th>Arbor. vars</th>
<th>Arbor. hybrids</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North Zone</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faridkot</td>
<td>F 2228, LH 2152</td>
<td>FHH 200 LHH 1403</td>
<td>LD 949</td>
<td></td>
</tr>
<tr>
<td>Bathinda</td>
<td>F 2228, LH 2152</td>
<td>FHH 200 LHH 1403</td>
<td>LD 949</td>
<td></td>
</tr>
<tr>
<td>Hisar/Sirsa (CCSHAU)</td>
<td>MR 786, MR 68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sriganganagar</td>
<td>MR 786, MR 68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Central Zone</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akola</td>
<td></td>
<td>NHH 250, NHH 324, GSH 2729</td>
<td>GAM 162, JLA 505</td>
<td>Swadeshi 651, FMDH 23, NACH 18</td>
</tr>
<tr>
<td>Nanded</td>
<td>NH 635, BS 30, PH 1060</td>
<td>NHH 250, NHH 324, GSH 2729</td>
<td>DB 12, GSB 40, RHC b011</td>
<td>Swadeshi 651, FMDH 23, NACH 18</td>
</tr>
<tr>
<td>Indore</td>
<td>GSHV 159, RHC 0717</td>
<td>GSHH 2729, RHH 0622</td>
<td>DB 12, GSB 40, RHC b011</td>
<td></td>
</tr>
<tr>
<td>Rahuri</td>
<td>GSHV 159, RHC 0717</td>
<td>GSHH 2729, RHH 622</td>
<td>DB 12, GSB 40, RHC b011</td>
<td>GAM 162, JLA 505 (un-irrigated)</td>
</tr>
<tr>
<td>Surat</td>
<td>GSHV 159, RHC 0717</td>
<td>GSHH 2729, RHH 622</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junagarh</td>
<td>GSHV 159, RHC 0717</td>
<td>GSHH 2729, RHH 622</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bhwanipatna</td>
<td>NH 635, BS 30, PH 1060</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Southern Zone

<table>
<thead>
<tr>
<th>Zone/Centers</th>
<th>Hirsutum vars.</th>
<th>Hirsutum hybrids</th>
<th>Barbedanse. Vars</th>
<th>Arbor. Var</th>
<th>Arbor. Hyb</th>
<th>HxB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nandyal</td>
<td>MRC 7385</td>
<td>GSHH 2729</td>
<td></td>
<td>AKA 2005-3</td>
<td>NACH 18</td>
<td>MRDC 235</td>
</tr>
<tr>
<td></td>
<td>GSHH 2729</td>
<td>DHH 1062</td>
<td></td>
<td></td>
<td>NACH 18</td>
<td>AAH 32</td>
</tr>
<tr>
<td>Dharwad</td>
<td>MRC 7385</td>
<td>GSHH 2729</td>
<td></td>
<td>AKA 2005-3</td>
<td>NACH 18</td>
<td>MRDC 235</td>
</tr>
<tr>
<td></td>
<td>GSHH 2729</td>
<td>DHH 1062</td>
<td></td>
<td></td>
<td>NACH 18</td>
<td>AAH 32</td>
</tr>
<tr>
<td>Coimbatore</td>
<td>MR 786</td>
<td>SCS 793</td>
<td></td>
<td>MRC 7377</td>
<td>GSB 40</td>
<td>MCHB 7945</td>
</tr>
<tr>
<td></td>
<td>SCS 793</td>
<td>TSH 0250</td>
<td></td>
<td>ARBH 1051</td>
<td>GSB 41</td>
<td>DHB 1071</td>
</tr>
<tr>
<td></td>
<td>BS 37</td>
<td>MRC 7377</td>
<td></td>
<td>RAB 8</td>
<td>MCHB 7945</td>
<td>DHB 1071</td>
</tr>
<tr>
<td>Lam</td>
<td>MR 786</td>
<td>SCS 793</td>
<td></td>
<td>GSB 40</td>
<td>MCHB 7945</td>
<td>DHB 1071</td>
</tr>
<tr>
<td></td>
<td>SCS 793</td>
<td>TSH 0250</td>
<td></td>
<td>GSB 41</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BS 37</td>
<td>ARBH 1051</td>
<td></td>
<td>RAB 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raichur</td>
<td></td>
<td></td>
<td></td>
<td>GSB 40</td>
<td>MCHB 7945</td>
<td>DHB 1071</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GSB 41</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RAB 8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All the breeders of the above varieties / hybrids are requested to submit 1.0 kg (variety)/0.5 kg (hybrid) of seeds directly to the concerned agronomists (and not to Project Coordinator) and to keep track with the agronomists for getting the data on agronomy trial and to submit the lint samples to CIRCOT from concerned location. The agronomists are requested to submit the 5 kg lint samples directly for micro-spinning to Director, CIRCOT, Mumbai. Further, agronomists are requested to send the agronomic trials data to the concerned breeder in addition to the Principal Investigator (Agronomy) in time to facilitate the breeder to submit the release proposals before due date.

**Action to be taken:**
1. These varieties/hybrids have been recommended by the Breeding panel after ascertaining their performance only.
2. Concerned Breeders shall send the required Seeds directly to the Agronomists of respective Centers without delay for taking up experiments.
3. One or two centers may send lint samples for full scale spinning.

Developing suitable Agronomy for ruling Bt hybrids of the region

**IIA: Optimization of nutrient requirement and plant geometry for Bt cotton**

**Treatments:** Main (3): Bt hybrids
1. Bt hybrid (three popular at farmer field)

**Sub:** Plant Geometry (2): Normal spacing for the location
Higher/Closer Spacing (25 %)

**Sub-sub:** Nutrient levels (3): RD-NPK, 125% RD-NPK and 150% RD-NPK

**Design:** Split-split

**Replication:** Three

**Observations:**
- Yield and yield traits
- Nutrient availability at planting and harvest
- Nutrient use efficiency, water use efficiency and water productivity

All AICCIP centers except Bhawanipatna
Kanpur will conduct the trial by using hirsutum varieties

**Agronomy III:** Weed Management in *Bt* Cotton

**Objectives:** To find out the suitable weed management strategies for *Bt* cotton.

**Treatments:**
- **T1:** Pendimethalin @ 0.75 to 1.0 kg a.i/ha as Pre emr or PPI + one hoeing
- **T2:** Quizalofopethyl 50 g a.i/ha, at 2-4 weed leaf stage + one hoeing.
- **T3:** Pendimethalin 1.0kg a.i/ha followed by PoE Quizalofopethyl 50g a.i/ha at 2-4 weed leaf stage + one hoeing
- **T4:** Pyrithiobac Sodium @ 62.5g a.i/ha 20-30 DAS + one hoeing
- **T5:** Pyrithiobac Sodium @ 62.5g a.i/ha + Quizalofopethyl 50g a.i/ha 20-30 DAS or 2-4 weed leaf stage + one hoeing
- **T6:** Glyphosate @ 1.0kg a.i/ha as directed spray at 45 DAS
- **T7:** Weed Free check
- **T8:** Weedy check

**Note:** one hoeing depending upon field situation at 40-60 DAS

**Design:** RBD

**Replication:** Three

**Observations:**
- Yield and yield traits
- Weed count species wise
- Weed dry weight
- Weed control efficiency

All AICCIP centers except Nandyal

**Bhavanipatna with Non Bt**

Agronomy IV: Improving use efficiency of inputs (water and nutrient)

**Drip irrigation in *Bt* cotton**

<table>
<thead>
<tr>
<th>Objectives</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>To find out the suitable drip irrigation regimes</td>
<td></td>
</tr>
<tr>
<td>To find out optimum Nitrogen dose for cotton.</td>
<td></td>
</tr>
<tr>
<td>To study the interaction effect between irrigation and Nitrogen.</td>
<td></td>
</tr>
</tbody>
</table>
Treatments:

Main plot - irrigation regimes

\[ I_1 = 0.6 \text{ ET} \]
\[ I_2 = 0.8 \text{ ET} \]
\[ I_3 = 1.0 \text{ ET} \]

Sub Plot: Nitrogen level

\[ F_1 = \text{RDN} \& \text{K} \]
\[ F_2 = 75\% \text{ RDN} \& \text{K} \]
\[ F_3 = 50\% \text{ RDN} \& \text{K} \]

Control: Surface method with RDN \& K

Observation:

- Yield and yield attributing characters
- Consumptive use
- Water use efficiency
- Nitrogen use efficiency
- N content and uptake
- Economics

<table>
<thead>
<tr>
<th>Crop and Variety: Bt. Cotton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design : SPD</td>
</tr>
<tr>
<td>Replication : three</td>
</tr>
<tr>
<td>Fertilizer : As per recommendation</td>
</tr>
<tr>
<td>Centers : Junagarh, Banswara, Rahuri, Dharwad and Indore</td>
</tr>
</tbody>
</table>

New Experiment

Moisture conservation techniques of ET based Drip Irrigation in Bt Cotton

T_1 : Control
T_2 : Polymulching
T_3 : 0.4 ETc drip
T_4 : 0.4 ETc drip + poly mulch
T_5 : 0.6 ETc drip
T_6 : 0.6 ETc drip + poly mulch
T_7 : 0.8 ETc drip
T_8 : 0.8 ETc drip + poly mulch

Design: RBD
Replication : 3 (Three)

Note: 30 micron thickness with silver colour top layer. For detailed protocol kindly contact Dr P. Nalayini, Principal Scientist (Agron), CICR (RS), Coimbatore- Email-nalayiniganesh@gmail.com
**Observation:**
- Yield and yield attributing characters
- Consumptive use
- Water use efficiency
- Economics

**Centers:** Junagarh, Banswara, Lam, Akola, Indore and Bathinda

**Agronomy V: Technology for organic cotton (Arboreum/ herbaceum varieties) Production**

- **T1:** 5 t/ha FYM /Compost + seed treatment with Azotobactor + PSB @25 g each /kg seed
- **T2:** 2.5 t/ha Vermicompost+ seed treatment with Azotobactor + PSB @25 g each /kg seed
- **T3:** 10t/ha FYM /Compost + seed treatment with Azotobactor + PSB @25 g each /kg seed
- **T4:** 5 t/ha Vermicompost+ seed treatment with Azotobactor + PSB @25 g each /kg seed
- **T5:** Insitu Green manuring of sesbania/sunhemp+ seed treatment with Azotobactor + PSB @25 g each /kg seed
- **T6:** Castor Cake @ 500 Kg/ha+ seed treatment with Azotobactor + PSB @25 g each /kg seed
- **T7:** RD of Nutrient through organic based on P equivalent basis+ green manuring with
  - sesbania/sunhemp 50kg seed /ha and it should be incorporated at 30 -45 DAS.
- **T8:** Control

**Note:** This project is to be conducted on the fixed site and during 1st year start with treatment no.7 only. Initial Soil Analysis of the field is essential. Plant protection by organic pesticides.

**Centers:** Central and South Zone centers and Kanpur

**Cotton Physiology and Biochemistry**

1: Screening of Cotton genotypes for abiotic stress tolerance
1a: Screening genotypes for water stress tolerance

- Centres: Surat, Akola, Khandwa, Nanded, Lam, Dharwad and Hisar
- Genotypes=18+NC (LRA 5166) +LC.
- Action: Data supply through monthly report -Centres
- Seed requirement: 100gX8 = 800g (delinted seeds)

**Observations:**
- Seed cotton yield and ancillary data
- Phenology
- RWC, Chlorophyll stability index, Proline content, SLW, nutrient uptake
- Stress indices (PHSI, DMSI, YSI and S etc.)
- Monitoring of Periodic soil moisture profile.

1b: Screening genotypes for salinity stress tolerance

- Centres: Lam and Dharwad (Pot/Microplot experiment)
- Genotypes: 8 + 1
- Action: Data supply through monthly report-Centres
- Seed requirement: 150X2 =300g (delinted seeds)

**Observations:**
- Seed cotton yield and ancillary data
• Phenology
• RWC, Chlorophyll stability index, Proline content, SLW, nutrient uptake
• Stress indices (PHSI, DMSI, YSI and S etc.)
• Monitoring of soil salinity at initial and final stages.
• Leaf Na and K content at peak flowering stage.
Action: Data supply through monthly report-Centres

2. Effect of defoliants on cotton
Treatments:
Thidiazuron + Diuron

Main treatments: Three genotypes
• F-1861
• MRC 7361/ MRC 7017
Sub: Three doses of Thiadiuron (36%SC+ Diuron 18% SC)
• Control
• 200 ml/ha
• 225 ml/ha
• Ethrel 2000 ppm

Sub sub: Time of application
• 140-145DAS
• 150-155DAS
Experimental design: Split- Split plot
Replication: 3

Observations:
• Opened and unopened bolls at harvest
• Percent defoliation at 5 and 10 days after spray (50 leaves in five plants, each will be marked before spray and monitored )
• Earliness index
Centres: CICR Sirsa, Faridkot, Ludhiana, Dharwad and Akola
Action: Data supply through monthly report-Centre

3. Preparing for Climate Change :Effect of environment on crop phenology development, yield and fiber development
Treatments:

Main Plots: Date of Sowing
Normal Sowing
Three weeks late
Sub Plots: Genotypes: Six
NCS-145, BGII, DHH 543, GCot Hy8 BG-II, GCOT Hy-12, ANKUR 3028BG-II, LHH-144
**Observations:**
- Crop Phenology with GDD and heat units
- Flowering pattern
- Biomass and its partitioning at 50,80,110 and 140 DAS
- Diseases and pest situations
- All yield and yield components
- Biochemical Observation (Dharwad and Surat)
- Fiber development starting at 7 Days After Pollination till 21 days and 10 days interval till boll open

Replication: Three
Centers: Lam, Dharwad, Surat, Nanded and Ludhiana

**4: Evaluation of cotton genotypes for seed oil, oil profile, gossypol and protein.**
Centre: Dharwad and Surat centres shall continue this experiment as per previous technical programme.
Promising genotypes will be taken up for this trial.
Action: Data supply through monthly report - Centre
Source of materials: Br02a for irrigated Centre (Surat, Hissar); Br02b for rainfed Centre: Dharwad

**New Experiment**

**5: Manipulation of source sink relationship through growth regulators for enhancing productivity in cotton**

Objectives: To study the effect of ethylene and maleic hydrazide on source sink relationship in cotton

Main treatments: 2 cotton entries (one Bt entry and the other is non Bt entry)

Sub Treatments: 9

- **T₁**: Control
- **T₂**: Ethrel @8.5μmoles (45 ppm) at square initiation(40 DAS)
- **T₃**: MH@500 ppm at 80DAS
- **T₄**: Ethrel @8.5μ moles at square initiation followed by MH@500 ppm at 80DAS
- **T₅**: Ethrel @8.5μ moles at square initiation followed by MH@500 ppm at 95DAS
- **T₆**: Ethrel @8.5μ moles at square initiation followed by MH@750 ppm at 80DAS
- **T₇**: Ethrel @8.5μ moles at square initiation followed by MH@750 ppm at 95DAS
- **T₈**: Ethrel @8.5μ moles at square initiation followed by MH@1000 ppm at 80DAS
- **T₉**: Ethrel @8.5μ moles at square initiation followed by MH@1000 ppm at 95DAS
Experimental Design: FRBD

Replications : 3
Genotype: Popular Bt Hybrid of the zone with the recommended POP
Duration : 2 years
Year of start : 2013-14

Observations :

- Plant height at 30 days interval from square initiation
- TDM at 30 days interval
- No. Of sympodia at 100 DAS and at Harvest
- LAI at 100 DAS
- Yield and yield components
- Fibre quality parameters

Centres : Surat, Ludhiana, Khandwa, Lam, Dharwad, Faridkot and Sriganganagar

Note: Protocol will be provided by Dr A.H. Prakash, PC & Head, CICR (RS), Coimbatore. Email ID- prakashcicr@gmail.com

6: Testing of swell (CCPU) Forchlorfenuron bio-efficacy on cotton Crop (Paid up trial)

Objective: To study the performance of swell (CCPU) increase in yield and better quality of cotton crop

Design: RBD
Replication: 3 (Three)
Genotypes: Popular Bt Hybrid of the zone with the recommended POP

Treatments:

T1: Swell 0.1% (1ml) at flowering
T2: Swell 0.1% (2ml) at flowering
T3: Swell 0.1% (3ml) at flowering
T4: Swell 0.1% (1ml) at flowering and boll development stage
T5: Swell 0.1% (2ml) at flowering and boll development stage
T6: Swell 0.1% (3ml) at flowering and boll development stage
T7: Planofix @10 ppm at flowering stage
T8: Planofix @10 ppm at flowering and boll development stage
T9: Nutrient consortia (CICR, Coimbatore) three spray at 15 days interval from flowering*
T10: Control

* Dr SESA Khader CICR, Coimbatore will provide the Nutrient Consortia and protocol. Email ID- sesakhader@yahoo.co.in
Centres: Lam, Dharwad, Rahuri, Surat, CICR-Sirsa, Faridkot and Sriganganagar

Information to M/S Omega Fine Chemicals W-231/D MIDC, Phase- II, Opp Sonapada Temple Stand, Dombivali(East) Dist Thane – 421 204 with a request to supply the chemical to all the physiologists of Lam, Dharwad, Rahuri, Surat, CICR-Sirsa, Faridkot and Sriganganagar.

7. Evaluation of Godrej Double for Bio-efficacy on Bt cotton (Paid up trial)

Objective: To evaluate Godrej Double, a Homobrassinolide (HBR) based plant growth regulator for bio-efficacy in Cotton

Product: Double developed by Godrej (Technical details enclosed)

Treatments:

T1: Control

T2: Double @ 100 ml per acre (in 200 lit. of water) at 45 – 55 days after sowing

T3: Double @ 150 ml per acre (in 200 lit. of water) at 45 – 55 days after sowing

T4: Double @ 200 ml per acre in two split doses: 1st Spray @ 100 ml per acre (in 200 lit. of water) at 45 – 55 days after sowing followed by 2nd Spray @ 100 ml per acre (in 200 lit. of water) 15 days after 1st spray

Replications: 5 (Five)

Design: RBD

Observations to be recorded:

Yield components (to be analyzed separately for 1st pick and rest of the pickings)

- No. of bolls per plant
- Average boll weight
- Seed weight per boll
- 100 seed weight
- Lint weight per boll
- Seed: Lint ratio
- Seed cotton yield/hectare
B. Quality parameters

Note: Seed cotton samples will be provided to the company for quality analysis

C. To work out the economics of these two treatments as per the technical programme.

Centres: Sriganganagar, Lam, Dharwad, Akola, Nanded, and Hissar

SCHEDULE OF OBSERVATIONS TO BE TAKEN UP

• Soil type (Depth of soil/soil texture)
• Irrigated/rainfed condition
• Soil fertility status (initial)
• Periodic determination of soil moisture profile (0-15, 15-30, 30-60 cm) up to harvest in drip irrigation experiment
• Dry matter production at 50 % boll bursting stage
• Nutrient uptake at 50 % boll bursting stage
• Water productivity (based on yield & consumptive use of water)
• Nutrient/Fertilizer use efficiency (based on total uptake and yield)
• Seed cotton yield, boll no., boll weight, plant population /ha, seed yield.
• Fiber quality
• Economics analysis

SUBMISSION OF DATA ON THE TRIALS

Zone Date of submission of report
North 31st January
Central 15th February
South 1st March

The following personnel of various coordinating centers participated in the deliberations and finalization of technical programme in the coming season (2013-14).

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name, Designation and Centre</th>
<th>Mobile No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr. P.L. Maliwal, Director, Directorate of Research, MPUAT, Udaipur</td>
<td>09414162568</td>
</tr>
<tr>
<td>2</td>
<td>Dr. P.L. Nehra, P.I., Agronomy, Sriganganagar</td>
<td>09413714828</td>
</tr>
<tr>
<td>3</td>
<td>DR. S.K. Sharma, ADR, DOR, MPUAT, Udaipur</td>
<td>09414430757</td>
</tr>
<tr>
<td>4</td>
<td>Dr. M.V. Venugopalan, Pr. Scientist, CICR, Nagpur</td>
<td>09970361057</td>
</tr>
<tr>
<td>5</td>
<td>Dr. R.S.S. Tomar, Cotton Agronomist, AICCIP, COA, Indore</td>
<td>09302123610</td>
</tr>
<tr>
<td>6</td>
<td>DR. C.K. Patel, Assoc. Res. Sci., AICCIP, Surat</td>
<td>09908983591</td>
</tr>
<tr>
<td>7</td>
<td>Dr. K.M. Patel, Assoc. Res. Sci., AICCIP, Surat</td>
<td>09898225083</td>
</tr>
<tr>
<td>8</td>
<td>Prof. Arvind D. Pandagale, Asstt. Agronomist, CRS, Nanded</td>
<td>07588581713</td>
</tr>
</tbody>
</table>
9. Dr. G.V. Ranga Rao, Trait Poformana land cotton, Mahyco Monsanto Biotech, Udaipur 09987022327
10. Dr. S. Bharathi, Sr. Scientist (Agro) RARS, Lam, ANGRAU 09490723412
11. Dr. S. Ratna Kumari, Pri. Scientist (Phy.) RARS, Lam, ANGRAU 09491610843
12. Dr. Sudeep Malik, Agronomist, PAU, RS, Bathinda 09417732999
13. Dr. B.C. Patil, Pri. Scientist (Phy.), ARS, UAS, Dharwad 09448680287
14. Dr. H.M. Vamoderaial, Pri. Scientist (Bio.) ARS, UAS, Dharwad 09449792098
15. Dr. R.S. Sarlach, Botanist, PAU, Ludhiana 09465866535
16. Dr. Shiwani, Asstt. Biochemist, HAU, Hissar 09466812467
17. Dr. K. Rajendran, Prof., TNAU, Coimbatore 09865260307
18. Dr. R. Veeraputhiram, Asstt. Prof. (Agro.), CRS,TNAU, 09003520822
19. Dr. Y.R. Aladakatti, Sr. Sci. (Agro.), ARS, Dharwad 09448861040
21. Dr. A.R. Reddy, Sr. Sci., CICR, Nagpur 09423075116
22. Dr. Kulvir Singh, Agron., PAU, RS, Faridkot 09417783052
23. Dr. R.A. Meena, Pri. Sci., CICR, Sirsas 09416033672
24. Dr. Satyanarayan, Sr. Sci., MAPS, Raichur 09480696320
25. Dr. Ajayakumar M.Y., Asstt. Agron. ARS, Sriguppa 09880398690
27. Dr. M.S. Bhattoo, Sr. Agron., CRS, HAU, Sirsas 09416193867
28. Dr. Jagdish Kumar, Kanpur 09450131189
29. Dr. S.K. Kamble, Cotton Agron., Rahuri 09423587943
30. Dr. A. Paslawar, Cotton Agron., Akola 09822220272
31. Dr. B.S. Nayak, Asstt. Agron., AICCIP, Bhawaipatra 09437321675
32. Mr. Prafulla Naphade, Mahjco, Jalna 09764275755
33. Dr. Ravinder, Joshi, Monsanto 08003160160
34. Dr. Y. Bhanukiran, Technical Manager Cotton and chemistry 09004082235
35. Dr. N.P. Chaudhari, Ankur Seeds Pvt. Ltd., Nagpur 09922956476
36. Dr. P.M. Bharadwaj, J.K. Agri. Genetics, Hyderabad 08875012431
37. Dr. Harphool Meena, Asstt. Agron., ARS, Banswara 09460246043

Recommendations

- Plant Geometry of 67.5×90 cm. with fertilizer level of 150:40:20 found to be optimum for Bt cotton hybrid MRC 7017 at Sriganganagar (Rajasthan)

- Bt. Cotton hybrid MRC-6301 at 60x60 cm spacing alongwith a dose of 150% RDF (225:113:90 kg NPK/ha) was found quite promising by providing the highest Bt. yield and recommended for commercial cultivation in Western M.P.

- Under rainfed condition, plant geometry 90x45 cm is recommended for Bt. Cotton hybrid Ankur 651 whereas plant geometry 90x60 cm is recommended for Bt. Cotton hybrids MRC 7301 and Bunny for Nanded
• The *Bt.* hybrids with fertilizer level of 150-75-75 NPK kg/ha was found to be optimum with a spacing of 90 × 45 cm under rainfed condition in vertisols.

• Planting geometry of 90 cm x 45 cm with fertilizer levels of 120:60:60 NPK kg/ha found to be optimum for HxH Bt. Cotton hybrid Mallika at Dharwad (Karnataka).

• Thiadiuron 36% SC + Diuron 18% SC @ 200 ml/ha at 140 days after sowing is recommended for 100 % defoliation and 15-20% earliness without effecting the seed cotton yield in vertisol under rainfed condition.

• Thiadiuron 36% SC + Diuron 18% SC @ 200 ml/ha at 140 DAS is recommended for getting higher seed cotton yield in Dharwad (Karnataka)