

**Proceedings of the Varietal Identification Committee meeting for  
Bt Cotton Variety/ Hybrid held under the chairmanship of DDG (Crop Science), ICAR on  
09-04-2021 through Video Conferencing**

The Varietal Identification Committee meeting for Bt cotton Variety/ Hybrid was held under the Chairmanship of Dr. T.R. Sharma, Deputy Director General (Crop Science), ICAR, New Delhi on 9<sup>th</sup> April 2021 through Video Conferencing. The members of the Committee who attended the meeting were Dr. R.K. Singh, Assistant Director General (CC); Dr. D.K. Yadava, Assistant Director General (Seeds); Dr. Tarun Kumar Kathula, Scientist F, GEAC, GOI, New Delhi; Dr. V.K. Kharche, Director of Research, Dr PDKV, Akola; Dr A. Pattanayak, Director, IIAB, Ranchi, Dr. Y.G. Prasad, Director, ICAR-CICR, Nagpur; Dr. Sujata Saxena, Director, ICAR-CIRCOT, Mumbai; Shri R.K. Trivedi, Executive Director, NSAI (Representative of Private Seed Industry), Shri Dilip Zende, Director, Quality control & inputs, Govt. of Maharashtra and Shri M.L. Arora, Director (Commercial), NSC, New Delhi. Dr. G. Balasubramani, Principal Scientist (Biotechnology), ICAR-CICR, Nagpur. Dr. S. Manickam, PI (Breeding); Dr. K. Sankaranarayanan, PI (Agronomy); Dr. Rishi Kumar, PI (Entomology); Dr. Satish Sain, PI (Pathology) and Dr. Pradeep Mandhyan, PI (Fibre Quality) attended the meeting as Resource persons.

Dr. A.H. Prakash, Member Secretary, VIC for Bt Cotton variety/ hybrid welcomed the Chairman and the members. With the permission of the Chair, Dr. Prakash presented the “Terms of References” for consideration of Identification Proposals. He informed the house that 19 Bt cotton proposals have been received for Identification. He requested the Chairman to discuss on the TOR and fix benchmark for consideration of proposals. Chairman in his introductory remarks told about the importance of the committee recommendation on identification of lines as varieties or hybrids.

**Based on the discussion the Committee finalized the following criteria for the identification of Bt Cotton Variety/ Hybrid.**

(i) At least 5% superiority of yield over the zonal & Local checks (as per case) in yield and good quality of fibre (ii) qualifying above the bench marks for tolerance to diseases & insect-pests; (iii) gene expression level as per notification of DAC & FW with effective bioefficacy of test entries in respect to *Helicoverpa* bollworm and (iv) the boll damage at least on-par with local and zonal checks. Based on the above criteria proposals were considered for identification and followings recommendations were made:

- 1. PBH Bt 11: (Pedigree: PAU Bt 1 x RS 2013). The *G. hirsutum* Bt Cotton variety was sponsored by Punjab Agricultural University, Regional Research Station, Bathinda for identification in North zone under irrigated conditions. The seed cotton yield was superior to Zonal check Bt variety by 4.4%, but inferior to Zonal check non- Bt variety by 3.9%. **The entry was differed for want of clarification from the Breeder on the inferiority over the Local Non-Bt check.****

2. **MC 5403** (Pedigree: COCD 160102 Y X COCX 141373 B). The *G. hirsutum* hybrid was sponsored by M/s. Rallis India Limited for identification in Haryana State under irrigated conditions. The hybrid recorded more than 13% yield advantage over local check BG II hybrids, whereas, it was inferior to Zonal Check hybrid by -6.0%. The Cry protein level was above the benchmark with a bioefficacy of 98.7%. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the State of Harayana under irrigated conditions.
3. **SP 7674** (Pedigree: C 1004882ms x 15Q2E0066). The *G. hirsutum* hybrid was sponsored by M/s. Bayer Bioscience Pvt. Ltd. for identification in North zone under irrigated conditions. The hybrid recorded 8.8 % yield advantage over zonal check BG II Hybrid. The Cry protein level was above the benchmark with a bio- efficacy of 100 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the North zone states of Punjab, Haryana and Rajasthan under irrigated conditions.
4. **ZCH 1439 BG II** (Pedigree: Female 1439 X Male 1439). The *G. hirsutum* hybrid was sponsored by M/s. Panchaganga Seeds Pvt. Ltd for identification in Central zone under irrigated conditions. The hybrid recorded more than 14 % yield advantage over zonal check hybrid and 4.5 % over the local check hybrids. The Cry protein level was above the benchmark with a bioefficacy of 98.7 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the Central zone states of Madhya Pradesh, Maharashtra and Gujarat under irrigated conditions.
5. **JBG 3 BG II** (Pedigree: GJHV 503 X G. Cot. 10 BG II). The *G. hirsutum* hybrid was sponsored by M/s. Junagadh Agricultural University for identification in Central zone under irrigated conditions. The hybrid recorded more than 18 % yield advantage over zonal check hybrid and 6.8 % over local check hybrids. The Cry protein level was above the benchmark with a bioefficacy of 96.8 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the Central zone states of Madhya Pradesh, Maharashtra and Gujarat under irrigated conditions.
6. **Solar 108 BG II** (Pedigree: GMS 651 BG II X 8819 BG II). The *G. hirsutum* hybrid was sponsored by M/s. Solar Agrotech Pvt Ltd for identification in Central zone under irrigated conditions. The hybrid recorded more than 14 % yield advantage over zonal check hybrid and 3.7 % over the local check hybrids. The Cry protein level was above the benchmark with a bioefficacy of 96.4 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the Central zone states of Madhya Pradesh, Maharashtra and Gujarat under irrigated conditions.

7. **Solar 106 BG II** (Pedigree: GMS 651 BG II X 8856 BG II). The *G. hirsutum* hybrid was sponsored by M/s. Solar Agrotech Pvt Ltd for identification in Central zone under irrigated conditions. The hybrid recorded more than 10 % yield advantage over zonal check hybrid but inferior by 0.4% over the local check hybrid. The Cry protein level was above the benchmark with a bioefficacy of 96.6 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the Central zone states of Madhya Pradesh, Maharashtra and Gujarat under irrigated conditions.
8. **NC 369 Bt 2** (Pedigree: PC-P 3812 X Event Mon 15985). The *G. hirsutum* variety under BG II background was sponsored by M/s. Nuziveedu seeds Pvt Ltd. for identification in Central zone under rainfed conditions. The variety recorded more than 14 % yield advantage over zonal check variety and 3 % over the local check varieties. The Cry protein level was above the benchmark with a bioefficacy of 99 %. The variety was on par with zonal check variety for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the Central zone states of Madhya Pradesh, Maharashtra and Gujarat under rainfed conditions.
9. **NCS 2778 Bt 2** (Pedigree: MTC 3376 x MTC 3377). The *G. hirsutum* hybrid was sponsored by M/s. Nuziveedu seeds Pvt Ltd. for identification in Central zone under rainfed conditions. The hybrid recorded only 2 % yield advantage over zonal check and 5% over the local check. The Cry protein level was above the benchmark with a bioefficacy of 98 %. The hybrid was on par with zonal check hybrid for tolerance to insect pest and disease. Due to poor yield, the hybrid was **NOT IDENTIFIED** for the Central zone under rainfed conditions.
10. **MC 5401 BG II** (Pedigree: COCD 110425B X COCX 110188B). The *G. hirsutum* hybrid was sponsored by M/s. Rallis India Ltd for identification in Central zone under rainfed conditions. The hybrid recorded only 1.4 % yield advantage over zonal check hybrid and 3.8 % over the local check. The Cry protein level was above the benchmark with a bioefficacy of 99.75 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Due to poor yield, the hybrid was **NOT IDENTIFIED** for the Central zone under rainfed conditions.
11. **NBC 1811 GB II** (Pedigree: C 6009 X C 2358). The *G. hirsutum* hybrid was sponsored by M/s. Nath Biogenes (I) Ltd for identification in Central & South zone under rainfed conditions. The hybrid recorded only 4 % yield advantage over zonal check hybrids and 6 & 11 % over local check hybrids in Central & South zone, respectively. The Cry protein level was above the benchmark with a bioefficacy of 99.25% in Central zone and 75.8 % in South Zone. The hybrid was on par with zonal check for tolerance to insect pest and

disease. Due to poor yield, the hybrid was **NOT IDENTIFIED** for both the zones under rainfed conditions.

12. **ACH 909-2 BG II** (Pedigree: ACG 1301 BG II X ACG 14 BG II). The *G. hirsutum* hybrid was sponsored by M/s. Ajeet Seeds Pvt Ltd. The proposal has been re-submitted for identification in Central zone under zone under rainfed conditions. The hybrid recorded more than 11 % yield advantage over zonal check and 15.5% over local check. The Cry protein level was above the benchmark with a bioefficacy of 99.3%. However, the fibre was coarse and could be spun to only 20s count and inferior in tenacity. Due to poor fibre quality, the hybrid was **NOT IDENTIFIED** for the Central zone under rainfed conditions.
13. **Daftari 2244 BG II** (Pedigree: RII \* ANR (GMS) X R2 BG II). The *G. hirsutum* hybrid was sponsored by M/s. Daftari Seeds. for identification in Central zone under rainfed conditions. The hybrid was tested only for two years under AICRP trials and did not complete mandatory requirement of three years testing and hence **NOT IDENTIFIED**.
14. **NCS 2778 Bt 2** (Pedigree: NC 6134 Bt2 X NC 7027 Bt). The *G. hirsutum* hybrid was sponsored by M/s. Nuziveedu Seeds Pvt Ltd. for identification in South zone under irrigated conditions. The hybrid recorded more than 19 % yield advantage over zonal check hybrid and 17 % over the local check hybrids. The Cry protein level was above the benchmark with a bioefficacy of 95.6 %. The hybrid was on par with zonal check for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the South zone states of Telangana, Andhra Pradesh, Karnataka and Tamil Nadu under Irrigated conditions.
15. **ACH 171-2** (Pedigree: ACG 51 BG II X ACG 54 BG II). The *G. hirsutum* hybrid was sponsored by M/s. Ajeet Seeds Pvt Ltd. for identification in South zone under zone under irrigated conditions. The hybrid recorded only 1.2 % yield advantage over zonal check hybrid and inferior by 1.0% over local check hybrids. The Cry level was above the benchmark with a bioefficacy of 95.7. Due to poor yield, the hybrid was **NOT IDENTIFIED** for the South zone under irrigated conditions.
16. **CCH 333 BG II** (Pedigree: 6070 x 7111). The *G. hirsutum* hybrid was sponsored by M/s. Crystal Crop Protection Ltd. for identification in South zone under rainfed conditions. The hybrid recorded only 4.7 % yield advantage over zonal check hybrid and 8.3 % over local check hybrids. The Cry protein level was above the benchmark with a bioefficacy of 95.43%. The hybrid was on par with zonal check for tolerance to insect pest and disease. Due to poor yield, the hybrid was **NOT IDENTIFIED** for the South zone under rainfed conditions.

17. **BIOGHH 102 (BIO 6102 BG II)** (Pedigree: GH254BGII x GN116). The *G. hirsutum* hybrid was sponsored by M/s. Bioseed Research India for identification in South zone under rainfed conditions. The hybrid was inferior to zonal check hybrid by 1.0 %, while superior by 4.8 % over local check hybrids. The Cry protein level was above the benchmark with a bioefficacy of 55.4%. The hybrid was on par with zonal check for tolerance to insect pest and disease. The data on Leaf hopper was not provided. The fibre could be spun for 20s count. Due to poor yield and below par bioefficacy, the hybrid was **NOT IDENTIFIED** for the South zone under rainfed conditions.
18. ICAR-CICR Bt 21 (Pedigree: CNDTS 21 x BN Bt (Mon 531)). The *G. hirsutum* Bt variety was sponsored by M/s. ICAR-CICR, Nagpur for identification in Central zone under rainfed conditions. The variety recorded more than 5 % yield advantage over zonal check variety. The Cry protein level was above the benchmark with a bioefficacy of 99.1 %. The variety was on par with zonal check variety for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the Central zone states of Madhya Pradesh, Maharashtra and Gujarat under rainfed conditions.
19. ICAR-CICR Bt 25 (Pedigree: CNDTS 25 x BN Bt (Mon 531)). The *G. hirsutum* Bt variety was sponsored by ICAR-CICR, Nagpur for identification in South zone under rainfed conditions. The variety recorded more than 14 % yield advantage over zonal check variety. The Cry protein level was above the benchmark with a bioefficacy of 81.34 %. The variety was on par with zonal check variety for tolerance to insect pest and disease. Hence, it is **IDENTIFIED** for the South zone states of Telangana, Andhra Pradesh, Karnataka and Tamil Nadu under rainfed conditions.

**List of Participants attended the VIC meeting of Bt Varieties/ hybrids of cotton on 09/04/2021 through Video Conferencing:**

<b>Name and Designation</b>	<b>Status in the Committee</b>	<b>Present/ Absent</b>
<b>Dr. Tilak Raj Sharma</b> , Deputy Director General (CS), ICAR, New Delhi	<b>Chairman</b>	<b>Present</b>
Agricultural Commissioner (Department of Agriculture), GOI/ his nominee	Member	Absent
Joint Secretary (Seeds)/ his nominee	Member	Absent
Director & Member Secretary, GEAC, MoFECC, GoI, New Delhi or his/her <b>nominee- Dr. Tarun Kumar Kathula</b>	Member	Present
<b>Dr. Sandeep Saran</b> , Advisor, DBT, GoI, New Delhi or his nominee.	Member	Absent
<b>Dr. A Pattanayak</b> , Director, ICAR-IIAB, Ranchi	Member	Present
<b>Dr. N.K. Singh</b> , National Professor, ICAR-NIPB, New Delhi	Member	Present
<b>Dr. R.K. Singh</b> , Assistant Director General (Commercial Crops), ICAR, New Delhi	Member	Present
<b>Dr. D.K. Yadava</b> , Assistant Director General (Seeds), ICAR, New Delhi	Member	Present
<b>Dr. V.K. Kharche</b> , Director of Research, Dr. PDKV, Akola	Member	Present
<b>Dr Y. G. Prasad</b> , Director, ICAR-CICR, Nagpur	Member	Present
<b>Dr. Sujata Saxena</b> , Director, ICAR-CIRCOT, Mumbai	Member	Present
<b>Sh Dilip Zende</b> , Director, Quality control & inputs, Govt. of Maharashtra	Member	Present
<b>Sh R.K. Trivedi</b> , Executive Director, NSAI, New Delhi	Member	Present
<b>Sh. M.L. Arora</b> , Director (Commercial), NSC, New Delhi	Member	Present
<b>Dr. G. Balasubramanian</b> , Principal Scientist (Biotechnology), ICAR-CICR, Nagpur	Member	Present
<b>Dr. A. H. Prakash</b> , Project Coordinator (Cotton Improvement)	Member Secretary	Present
<b>Dr. S. Manickam</b> , Principal Investigator (Plant Breeding), AICRP on Cotton	Resource Person	Present
<b>Dr. K. Sankaranarayanan</b> , Principal Investigator (Agronomy), AICRP on Cotton	Resource Person	Present
<b>Dr. Rishikumar</b> , Principal Investigator (Entomology), AICRP on Cotton	Resource Person	Present
<b>Dr. S.K. Sain</b> , Principal Investigator (Pathology), AICRP on Cotton	Resource Person	Present
<b>Dr. P. K Mandhyan</b> , Principal Investigator (Fibre Technology) AICRP on Cotton	Resource Person	Present