



SBI News

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DDG (CS) VISITS ICAR-SUGARCANE BREEDING INSTITUTE

Dr. T.R. Sharma, Deputy Director General (Crop Science), ICAR, New Delhi and Dr. R.K. Singh, Assistant Director General (Commercial Crops), ICAR, New Delhi visited the Institute on 06 April 2022. Dr. Sharma inaugurated the renovated Entomology Glass House in the Institute and also laid the foundation stone and unveiled the plaque for the Conference Hall of the Institute. They also visited the Institute Museum, Sugarcane based farming system unit, Sett treatment chamber, Micropropagation unit and other laboratories. Later, after releasing 'CaneJam', a value added product from sugarcane juice, they had addressed the scientists of the Institute (Fig. 1).



Fig. 1. Visit of DDG (CS) and ADG (CC)
on 06 April 2022

POTENTIAL GENETIC STOCKS FOR DEVELOPING CLIMATE RESILIENT SUGARCANE VARIETIES

Sugarcane cultivars currently under cultivation have a narrow genetic base tracing back to less than 20 *S. officinarum*, two *S. spontaneum* and a couple of *S. sinense* and *S. barberi* clones which is a serious limitation in improving sugarcane productivity under growing problems imposed by less availability water and climate change. Of late, considerable attention has been given to utilize *Erianthus* spp which is a related genus in the *Saccharum* complex with tall and thick canes, has a number of traits like growth vigor, wide adaptation, excellent ratooning ability, relatively high stalk numbers, very high biomass and disease resistance. Intergeneric hybrids enabled sugarcane breeders to impart various highly important traits from one genus to *Saccharum* progenies and these may serve as a foundation stocks for future breeding works in sugarcane especially developing climate resilient sugarcane varieties.

At ICAR-SBI, Coimbatore, introgression of *Erianthus* spp is in progress since 1980s and many intergeneric hybrids had been produced. A separate research program was started to diversify the cytoplasm using *Erianthus*

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Table 1. Details of germplasm registered with NBPGR, New Delhi

National identity	Donor identity	INGR No.	Year	Pedigree	Novel unique features
IC635054	CYM08-922	INGR20071	2020	CYM 07-971 x CoC 671	Potential pre-bred material for drought tolerance. Higher relative water content and lower malondialdehyde content under drought. Second Backcross progeny of the cross involving <i>Erianthus arundinaceus</i> and <i>S. spontaneum</i> having the cytoplasm of <i>E. arundinaceus</i>
IC636676	GU 07-2276	INGR21067	2021	GU 04 (50) RE-9 X CoH 70	High cane yield (89.66 t/ha) under drought condition. Lowest reduction for single cane weight under drought. High nitrogen (77.92 kg of dry biomass/kg of nitrogen)

species and designated as CYM clones. Two clones with *Erianthus* base viz., CYM 08-922 and GU 07-2276 developed under this program were registered with NBPGR, New Delhi as genetic stocks with drought tolerance (Table 1).

CYM 08-922 is a BC₂ progeny of a novel intergeneric hybrid between *E. arundinaceus* 'IK 76-62' and *Saccharum spontaneum* 'Iritty-2' (Fig. 2). In the experimental trials conducted during 2015-17, CYM 08-922 recorded the highest cane yield of 113.59 t/ha under drought condition and also recorded the highest Stress Tolerance Index (STI) of 1.256. It also recorded the highest relative water content (68.40%) and significantly lower malondialdehyde (MDA) content (97.34 µg/g) than the drought tolerant commercial varieties Co 86032 (158.78 µg/g) and CoM 0265 (134.23 µg/g) under severe water stress condition. Under glass house condition also, CYM 08-922 recorded significantly higher proline content and SOD activity. Among gas exchange parameters, photosynthetic rate and stomatal conductance were significantly higher in CYM 08-922. The clone was characterized morphologically, cytologically and using Genomic *in situ* hybridization (GISH) technique. It had a somatic chromosome number of 2n=108 and 12 chromosomes were from *E. arundinaceus* and 96 chromosomes were from *Saccharum*.

Genetic stock GU 07-2276 was developed utilizing two wild species *S. robustum* 'PIR 00-1188' (2n=100) and *E. arundinaceus* 'IK 76-91' (2n=60) (Fig. 3). Trials were conducted in a set of 27 distant hybrids at four Sugarcane Research Stations under AICRP (Sugarcane) viz., Karnal

(Haryana), Faridkot (Punjab), Anakapalle (Andhra Pradesh), Padegaon (Maharashtra) during 2016-17. Stress was initiated by withholding irrigation at formative phase, 60-150 days after planting. Results showed that GU 07-2276 recorded the lowest reduction of -8.71% with a mean cane yield of 89.66 t/ha under drought. It also maintained higher relative water content and had shown only -2.27% reduction under drought compared to control. It also recorded the least reduction (-10.80%) for single cane weight compared to other entries under drought.

The genetic stocks CYM 08-922 and GU 07-2276 could be the potential sources for developing climate resilient sugarcane varieties with *Erianthus* base.



Fig. 2. CYM 08-922



Fig. 3. GU 07-2276

(K. Mohanraj, G. Hemaprabha, S. Vasantha, A. Suganya, V.P. Sobhakumari, C. Appunu, S.P. Adhini, P. Govindaraj, A.J. Prabakaran and Bakshi Ram)

HOPE SPRINGS TO EASE TRANSPORT FOR TRIBAL CHILDREN

The tribal villages Kandhavayal and Uliyur of Sirumugai range in Coimbatore district situated around five kilometres from Lingapuram check post is beset with a multitude of problems. The villages are in the proximity of Bhavani dam's back water catchment area, quite remote and well into the forest area with limited access to main land through a cause way over the river. There are 60 Irula tribal families in these two tribal villages and were selected as beneficiary villages under the Tribal Sub Plan implemented by the Institute during 2019-20. Focus group discussions were held with the Tribal Head and other tribal people in the respective villages. Transect analysis in Kanthavayal helped us to get first-hand information about the local resources, ongoing agriculture and related activities, livelihood pattern and their felt needs.

During an informal chat with the school going children on a Saturday afternoon, they had expressed their concern on transport facility to schools. There is a residential primary school in the village wherein they study till class five and the children have to go to the mainland for furthering their studies. Over 24 children, aged 11 to 16 years from these villages go to nearby schools. The only transport facility is a mini bus once in two hours which carries them to the Lingapuram checkpost and from there they go by public transport facilities. The school children of these areas are left marooned every time they miss the mini bus and it becomes a holiday for them as they have no other means to reach the mainland and be in school on time. The other



Fig. 4. Tribal children with the bicycle supplied by the Institute

means of transport is on feet, walking ten kilometres a day up and down.

Realizing their plight, it was decided to procure bicycles and in a Tribal Farmers Meet conducted on 28 October 2020, 24 bicycles were handed over to them. As schools were closed or held online for over a year, by 2022 they had started using the bicycles given by Sugarcane Breeding Institute (Fig. 4). As Karthika of Kanthavayal studying in class eight says, 'It's a real gift that I got this bicycle from the Institute which otherwise I would have never imagined to own as my parents cannot afford to. Each day I get the pleasure of going to school in my own bicycle and I reach school well ahead of the time. Also, I can reach home soon after the school closes and help my mother in her household chores and sit to study early'. Prabha, a class six student of the same village also has the same opinion and it's a matter of pride and satisfaction that the intervention has eased the life of tribal children.

(T. Rajula Shanthi, C. Jayabose, Malakappa B. Medegar, R. Kannaiyan)

OUTREACH ACTIVITIES

Sugarcane Research and Development Workers' Workshop

- The 52nd Sugarcane R&D Workshop of Tamil Nadu and Puducherry was held in Chennai during 12-13 May 2022 (Fig. 5). The workshop was hosted by Madurantakam Co-operative Sugar Mills Ltd., Padalam. Shri M.R.K. Panneerselvam, Hon'ble



Fig. 5. Sugarcane R&D Workshop

Minister for Agriculture and Farmers' Welfare, Govt. of Tamil Nadu and Shri. T.M. Anbarasan, Hon'ble Minister for Rural Industries, Govt. of Tamil Nadu attended the workshop. About 300 delegates comprising scientists from ICAR-SBI, Coimbatore and TNAU, Coimbatore, cane development personnel from various sugar factories, officers from the Department of Agriculture, Directorate of Sugar and other cane development organizations in Tamil Nadu & Puducherry participated in the workshop. The following topics were discussed: Review of action taken on the recommendations of the previous workshop, mechanization of sugarcane production, status of wild boar management initiatives in the region, current varietal position and performance of new sugarcane varieties, AICRP(S), Coordinated agronomic experiments/Adaptive Research Trial and SBI-SISMA/SBI-TNCSF Varietal trials and sugarcane seed nursery program.

Short term training programs

Two short term training programs on Sustainable Sugarcane Initiative of two-days were organized (Fig. 6):

- For 40 farmers and one staff from Madathukulam, Tirupur district, Tamil Nadu during 26-27 May 2022.
- For 41 farmers from Thirukovilur, Kallakurichi district, Tamil Nadu during 16-17 June 2022.



Fig. 6. Participant farmers of short term training programs



Fig. 7. One-day training programs

Exposure Visits

The following 28 exposure visits were organized (Fig. 8):

- For 62 students and two staff from College of Agriculture, UAS, Dharwad, Karnataka on 01 April 2022.
- For 60 students and two staff from College of Agriculture, UAS, Dharwad, Karnataka on 03 April 2022.
- For 87 students and four staff from College of Agriculture, Padannakkad, KAU, Kerala on 04 April 2022.
- For 62 students and two staff from College of Agriculture, UAS, Dharwad, Karnataka on 05 April 2022.
- For 71 students and two staff from College of Agriculture, UAS, Dharwad, Karnataka on 07 April 2022.
- For 48 students and three staff from College of Agriculture, UAS, Dharwad, Karnataka on 08 April 2022.
- For 57 students and two staff from College of Agriculture, UAS, Dharwad, Karnataka on 11 April 2022.
- For 46 students and two staff from Agricultural College and Research Institute, Madurai on 12 April 2022.
- For 68 students and two staff from College of Agriculture, UAS, Dharwad, Karnataka on 13 April 2022.

One-day training programs

Organized eight one-day training programs (Fig. 7):

- One-day training on Viral and phytoplasma diseases and their management to seed cane growers and farmers on 7 May 2022.
- For 45 farmers from Bhavanisagar block, Tamil Nadu on 02 June 2022.
- For 10 cane staff from Tirupathur cooperative sugar mill, Tirupathur, Tamil Nadu on 09 June 2022.
- For 40 farmers and one staff from Kallakurichi district, Tamil Nadu on 16 June 2022.
- For 13 cane staff from SNJ Sugars, Andhra Pradesh on 20 June 2022.
- For 48 farmers and four staff from Vellore Coop sugar mills on 21 June 2022.
- For 40 farmers and two staff from Kallakurichi district, Tamil Nadu on 25 June 2022.
- For 40 farmers and one staff from Jayamkondan block, Ariyalur district, Tamil Nadu on 29 June 2022.
- For 50 farmers and two staff from Vasudevanallur block, Tenkasi district, Tamil Nadu on 29 June 2022.



Fig. 8. Exposure Visits

- For 65 students and two staff from College of Agriculture, GKVK, UAS, Bengaluru, Karnataka on 16 April 2022.
- For 84 students and four staff from Best Innovation University, Andhra Pradesh on 28 April 2022.
- For 72 students and three staff from UAS, Raichur, Karnataka on 28 April 2022.
- For 70 students and three staff from College of Agriculture, UAS, Raichur, Karnataka on 29 April 2022.
- For 100 students and four staff from Annamalai University, Chidambaram, Tamil Nadu on 05 May 2022.
- For 111 students and five staff from Thangapazham Agricultural College, Tenkasi, Tamil Nadu on 05 May 2022.
- For 99 students and four staff from Annamalai University, Chidambaram, Tamil Nadu on 05 May 2022.
- For 53 students and two staff from Kalaignar Agricultural College, Tamil Nadu on 06 May 2022.
- For 71 students and three staff from UAS, Raichur, Karnataka on 06 May 2022.
- For 77 students and two staff from MITCAT, Musiri, Trichy, Tamil Nadu on 13 May 2022.
- For 103 students and five staff from Palar Agricultural College, Vellore, Tamil Nadu on 17 May 2022.
- For 58 students and two staff from College of Agriculture, Hassan, UAS, Bengaluru, Karnataka on 30 May 2022.
- For 20 students and one staff from TNAU, Coimbatore on 02 June 2022.
- For 92 students and four staff from The Indian Agricultural College, Radhapuram on 03 June 2022.
- For 62 students and two staff from College of Horticulture, Sirsi, Karnataka on 15 June 2022.
- For 25 students and two staff from University College, Thiruvananthapuram, Kerala on 29 June 2022.
- For 107 students and four staff from Thangapazham Agricultural College, Tenkasi district, Tamil Nadu on 29 June 2022.
- For 29 students and two staff from Delhi Public School, Coimbatore on 30 June 2022.
- For eight students from College of Agriculture, Pune on 30 June 2022.

Other trainings organised

- Dr. S.K. Pandey and Dr. Ravinder Kumar visited Seohara Sugar Mill, Seohara, Uttar Pradesh and inspected insect pest incidence in sugarcane and imparted staff training on 15 April 2022.
- Dr. S.K. Pandey and Dr. Ravinder Kumar visited IPL Sugar Mill Titavi, Uttar Pradesh on 16 April 2022. The cane staff and farmers were educated on the integrated management of insect pests and special care needed for variety Co 15023 in the Kishan Gosthi arranged by the mill.
- An online training programme on sugarcane based agripreneurship in collaboration with MANAGE during 4-6 May 2022.
- Training on Micropropagation techniques for production of disease free quality planting material in sugarcane was imparted to one Manager, M/s. Shamnur AgroTech Pvt Ltd., Karnataka for three days during 5-7 May 2022.
- Farmers' awareness Campaign on 'Efficient and balanced use of fertilizers (including nano fertilizers)' to the farmers of Vellore district on 21 June 2022.

- Online collaborative programme on Sugarcane based agripreneurship in collaboration with MANAGE during 22-24 June 2022.

Campaign on organic farming

- A campaign on 'Organic sugarcane farming' was organized under 'Annadata Devo Bhava' on 23 April 2022 (Fig. 9). The meeting was presided by Dr. G. Hemaprabha, Director (A) of the Institute. Shri G.K. Nagaraj, Director, Managing Board of Agri-Innovate, Shri R. Varadarajan, Whole Time Director, Rajshree Sugars and Chemicals Ltd., Shri S. Raja, Vice President, CRI Pumps Group were the

guests of honour. Dr. G. Ranganathan, Tamizhaga Vivasiyigal Sangam and 23 organic farmers from the districts of Coimbatore, Salem, Tirupur and Erode participated. 'Best Organic Sugarcane Farmer' award was given to Shri R. Ramasamy, wherein demonstration on Co 11015 variety under organic farming was conducted by us. Later, discussions were conducted with the participant farmers about the reasons for many farmers in Tamil Nadu leaving sugarcane cultivation and the major reasons reported were delayed / denied payment, labour unavailability and high cost of labour besides water scarcity.



Fig. 9. Campaign on Organic Farming

OTHER ACTIVITIES

QRT meeting

- The first meeting Quinquennial Review Team of the Institute for the period 2015-16 to 2019-20 was held under the chairmanship of Dr. K.P. Viswanatha, Former Vice Chancellor, MPKV, Rahuri,

Maharashtra during 19-21 April 2022 at ICAR -Sugarcane Breeding Institute, Coimbatore (Fig. 10). In continuation, the second phase of QRT meetings were held to review the research work during 26-27 May 2022 followed by the concluding meeting on 29 June 2022.



Fig. 10. QRT meeting

Yoga Day

- The 8th International Day of Yoga was celebrated at ICAR-Sugarcane Breeding Institute on 21 June 2022. Shri Jaladeran Nair, yoga expert delivered a lecture on current year theme 'Yoga for humanity' followed by demonstration on few yoga postures (Fig. 11).



Fig. 11. Yoga Day celebration

Activities under 'Azadi Ka Amrut Mahotsav'

- One-day training program cum 'Krishi Gosthi' on Sugarcane top borer management for over 300 participants, farmers and cane development officials of all the cooperative sugar mills of Haryana on 18 April 2022 at ICAR-SBI, RC Karnal.
- The National Academy of Agricultural Sciences (NAAS), Coimbatore chapter organized a Quiz competition on 'Plant Biology' for students undergoing exposure training and project work at ICAR-SBI on 8 June 2022.
- ICAR-SBI, Coimbatore with the support of NAAS -Coimbatore chapter had organized a demonstration for the turmeric farmers of Kuppanur village, Thondamuthur Block, Coimbatore district, Tamil Nadu to deliver *Trichoderma* in turmeric rhizomes through the Institute-developed mechanized sett treatment device on 13 June 2022.
- A workshop on the benefits of EPF and RSI to the farm labourers was held at the ICAR-SBI Farm on 13 June 2022.

Other meetings

- Assessment Committee meeting for considering promotion cases of technical staff held on 04 April 2022 and 19 April 2022.
- Selection Committee meeting for Junior Research Fellow held on 12 April 2022.
- Senior Officers Committee meeting held on 23 April 2022, 21 May 2022 & 18 June 2022.
- Grievance Committee meeting held on 07 April 2022, 11 May 2022 & 10 June 2022.
- Anti-Terrorism Day was observed on 21 May 2022.
- General Body meeting to reconstitute the Staff Recreation Club was held on 31 May 2022.
- Women Cell meeting held on 14 June 2022.
- 99th Institute Management Committee meeting held on 29 June 2022.

Scientific participation

- Dr. S.K. Pandey: RKVY meeting at Haryana Bhawan, Chandigarh on 01 April 2022.
- All scientists: Interactive meeting with DDG (CS) and ADG (CC), ICAR on 6 April 2022 at the institute.
- Dr. G. Hemaprabha: Vice Chancellor's conference at New Delhi during 12-13 June 2022.

- Dr. G. Hemaprabha : Meeting of ICAR-Regional Committee (online) on 22 April 2022.
- All scientists: Campaign on Organic Farming organized at the Institute on 23 April 2022.
- Dr. K. Gopalareddy: Regional conference on Prioritizing crop-specific technologies for sustainable profitability: The Uttar Pradesh chapter' on 30 April 2022.
- Dr. T. Arumuganathan: National Conference on Promotion of kisan drones: Issues, challenges and way forward at NASC Complex, New Delhi on 2 May 2022.
- Dr. T. Rajula Shanthi: NABARD sponsored International Workshop on the 'Climate proofing of watershed projects with special reference to soil and water conservation technologies' organized by ICAR-IISWC, Research Center, Udhagamandalam during 02-03 May 2022.
- Dr. R. Viswanathan: Attended and delivered a talk on 'Case study on a research article solving critical issues' in the workshop on Scientific writing and publication on virtual mode and on 2 May 2022.
- Dr. G. Hemaprabha: Online meeting on AI and IOT: Enabling sustainable digital agriculture on 11 May 2022.
- Drs. G. Hemaprabha, C. Palaniswami, R. Viswanathan, D. PuthiraPrathap, S. Karthigeyan, T. Arumuganathan and C. Appunu: 52nd Meeting of R&D workshop during 12-13 May at Chennai.
- Drs. R.M. Shanthi, K. Mohanraj, C. Appunu and H.K. Mahadevaswamy: Seminar on Promising sugarcane varieties for Southern Karnataka organized by S.Nijalingappa Sugar Institute at Mysuru on 17 May 2022.
- Drs. G. Hemaprabha, R. Viswanathan and K. Hari: Meeting organized by SISSTA at Chennai during 20 -21 May 2022.
- Drs. R. Viswanathan, A. RameshSundar and P. Malathi: Brainstorming Session on Status of red rot disease of sugarcane in India and its management in hybrid mode organized by ICAR-IISR, Lucknow during 22-24 May 2022.
- All scientists: Online National Symposium on Indian Agriculture after Independence on 24 May 2022.
- Dr. P. Murali: National Conference on Agri Startups-Prospects, challenges, technologies and strategies for North Eastern Region at Gangtok during 25-27 May 2022.

- Drs. V.P. Sobhakumari and K. Lakshmi: Sixth Group Monitoring workshop of SERB at IIT Campus. Guwahati, Assam during 2-3 June 2022.
- Dr. G. Hemaprabha: Online meeting for discussion on budget tables for preparation of revised EFC/SFC 2021-26 on 09 June 2022.
- Dr. R.T. Maruti: International Conference in hybrid mode on Innovative and current advances in agriculture and allied sciences during 12-14 June 2022.
- Dr. G. Hemaprabha: Meeting of Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops through Video Conferencing on 17 June 2022.
- Drs. G. Hemaprabha, S.K. Pandey, M.L. Chhabra, Ravinder Kumar, M.R. Meena and Pooja: ISPP North zonal seminar 2022 at ICAR-SBIRC, Karnal on 25 June 2022.
- The Director, Heads of Division and Sections: I, II and III phase QRT Meeting held during 19-21 April, 26-27 May and 29 June 2022, respectively held at ICAR-SBI, Coimbatore.
- Drs. G. Hemaprabha and C. Palaniswamy: II phase QRT Meeting held at ICAR-SBIRC Karnal Centre on 23 May 2022.
- Drs. G. Hemaprabha and C. Palaniswamy: Visited ICAR-SBIRC Kannur Centre, to conduct Quinquennial Review Meeting on 25 May 2022.
- Dr. K. Hari: Rural India Business Conclave (RIBC) and made a presentation on ICAR-SBI commercialized technologies held at Kasaragod, Kerala on 11 June 2022.

Trainings attended

- Dr. V. Kasthuri Thilagam: Online training programme on Community based climate risk management through watershed development organized by ICAR-Indian Institute of Soil and Water Conservation, Research Centre, Ooty on 2 May 2022.

- Dr. V. Kasthuri Thilagam: 21 days summer school on Geospatial science and technology (Level 2) organized by Department of Remote Sensing & GIS, TNAU during 11-31 May 2022.
- Dr. P. Murali: Online training programme on Workshop on Public private partnership (WPPP-17) during 17-18 May 2022.

Awards and Recognitions

- ICAR-SBI, Regional Centre, Karnal has received Rajbhasha award (3rd position among research Institute category) of TOLIC, ICAR-NDRI-Karnal on 07 June 2022.

Promotions

- Shri T. Shanmuganathan promoted as Assistant Chief Technical Officer (Library Assistant) w.e.f. 23 May 2020.
- Smt. S. Maheshwari promoted as Assistant Chief Technical Officer (Hindi Translator) w.e.f. 29 December 2020.

Retirements

- Smt. N. Lakshmi, Technician retired on superannuation on 30 April 2022.
- Dr. J. Srikanth, Principal Scientist retired on superannuation on 31 May 2022.
- Shri M. Karuppuswamy, Skilled Support Staff retired on superannuation on 31 May 2022.
- Shri T. Duraisamy, Skilled Support Staff retired on superannuation on 31 May 2022.
- Smt. K. Usha, AAO retired on superannuation on 30 June 2022.
- Shri P. Manian, Skilled Support Staff retired on superannuation on 30 June 2022.

Distinguished Visitors

- Dr. T. R. Sharma, DDG(CS) and Dr. R.K. Singh, ADG(CC) visited the Institute on 07 April 2022.

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