

Banded sclerotial disease occurrence in sugarcane germplasm at Kannur, Kerala

Sugarcane suffers from many diseases such as red rot, wilt and smut, rust, leaf scald, grassy shoot,



Disease affected plants (a), symptoms on infected leaves (b), sclerotial bodies on infected leaf

ratoon stunt, yellow leaf disease (YLD), and so forth, leading to the loss of many elite varieties. In addition, many minor diseases affecting leaf and inflorescence, such as leaf spot, smut, ergot and false floral smut, have also been reported that may turn out to be a major disease when environmental factors are very conducive for the pathogen. Among the minor diseases, banded sclerotial disease caused by *Rhizoctonia solani* is the one which affects both leaf and sheath, giving a blighted appearance to the plant. The pathogen has a wide host range and infects plants from over 32 families in 188 genera. *R. solani* is a major production constraint for the crops like rice, maize etc.

Banded sclerotial disease

During routine survey and monitoring the field of ICAR-SBIRC, Kannur, this disease was recorded in 2019, and a total of six clones such as NG 77-145 of *Saccharum robustum*, Agaul, Baroukha, Chin and Dark Pindaria of *S. barberi*, IS 76 168 of *S. officinarum* were affected (Gopi et al. 2020). Later the disease was recorded in 2022 in 28 clones belonging to *S. officinarum*(15), *S. robustum*(5) and *S. barberi*(3). Other germplasm clones were not affected. Clones such as Branchue, IJ 76 474 of *S. officinarum*, Pararia, KuswarOttur of *S. barberi*, recorded above 60 % Per cent disease index

(PDI). The disease appeared in six-month-old plants. The disease first appeared in July at grand growth phase stage. In the affected clones, the disease incidence ranged from 5.26 to 91%. The pathogen was identified by morphological and molecular methods.

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R. solani is a soil-borne pathogen that survives in the soil and on infected crop debris such as sclerotia or mycelium. Sclerotia are known to survive for several years in the soil. It is a fast-growing fungus and initially formed silky white colonies on PDA medium at $28\pm 1^\circ\text{C}$; later, the colony changed to a dull colour. The mycelium was colourless when young but assumed brown colour at maturity. Microscopic examination of hyphae revealed it as multinucleate, septate and branching at right angles. Hyphae are septate and typically constricted at the point of branching. Sclerotia were produced abundantly in culture. The size of the sclerotia ranged from 2×1 to 11×4 mm, spherical to irregular in shape, with dark brown to black colour.

The disease is primarily confined to older leaves. The infection started as small brown spots. Later the size of the spots increased with a grey center and dark brown margin. Lesions appear in irregular patches and spread more rapidly, covering greater areas with alternating dark bands. The disease frequently occurs as a series of broad bands across the leaf, hence called banded sclerotial disease (See Figure). A sort of wave pattern of disease advancement can be seen on leaves and sheaths. Later as the infection becomes older numerous sclerotial bodies are also seen (1c). The disease occurs by the contact of leaf with the soil or infected weed host. The disease is very common during the period of high humidity.

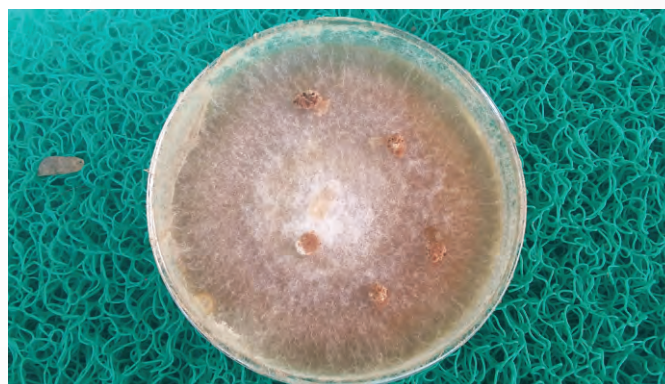
Disease spread

The fungus is spread through water (flooding), irrigation, movement of contaminated soil, and plant debris. In response to favourable humidity and temperatures, fungal growth is attracted to freshly planted host crops by chemical stimulants released by growing plant cells at the onset of the growing season. The fungi infect plants, leading to characteristic symptoms on sheaths, and leaves. The fungi overcome the winter as sclerotia or in infected crop debris. The primary sources of inoculum are sclerotia in the soil

and grass hosts that grow near the sugarcane crop. The secondary spread of disease is by contact of infected leaves with parts of adjoining healthy plants. The conditions of relative humidity, moisture in the soil and temperature exist in during monsoon season, when the crop is in a vulnerable growth stage and becomes susceptible to this disease.

Managing Banded sclerotial disease

Removing the affected leaves and applying carbendazim at 0.1% effectively controlled the disease. Apart from sugarcane, some volunteer rice plants were also affected, indicating the same pathogen also attacks rice. So, while going for the Paddy crop after sugarcane, caution should be taken and rotation with other non-host crops should be preferred to avoid perpetuation of *R. solani*. Similarly, the weed hosts should be identified that harbours the pathogen. Timely weeding is required because weeds provide shelter to the pathogen and increase the favourable microclimate for the pathogen. Though the disease is of less economic importance, severe occurrence in some germplasm clones warrants continuous monitoring and integrated management to protect germplasm clones from banded sclerotial disease.



Colony of *R. Solani*

R. Gopi, K. Chandran, M. Nisha, B. Mahendran, B. Sony Jayaraman, Gireesan PP and Nici Ashok
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Outreach

Trainings

F **Refresher Course for State Public Sector/Co-op Sugar mills:** Conducted six 'Refresher Training on Sugarcane Varieties and Technologies (RTSVT)' for the field staff of the Co-operative and Public

sector sugar mills of Tamil Nadu (Amaravathi Co-op Sugar Mills, Salem Co-op Sugar Mills, Perambalur Sugars, Kallakurichi -1 Co-op Sugar Mills, K2 Co-op Sugar Mills & Madhuranthakam Co-op Sugar Mills, Vellore Co-op Sugar Mills, Tirupattur Co-op Sugar Mills & Tiruttani Co-op

Impact assessment of implementation of 'Scheduled Tribe Component' [STC] project conducted in tribal settlements of Anamalai Tiger Reserve!

Impact is a measure of the changes made and impact assessment seeks to establish a causal connection between inputs and the changes that happened due to implementation of a development project. A nutrition awareness campaign was conducted in two tribal hamlets of Anamalai Tiger Reserve (ATR), Pollachi. Follow-up visits were conducted by the STC team at Paalakkinaru and Koomatti, remote tribal settlements in ATR, to get feedback on distribution of seeds, farm tools and other household items as well as on the STC awareness campaigns conducted during 2021-22. Millet biscuits were distributed and the virtues of including millets for a balanced diet were also explained to them. ITKs being practised in these two villages were documented. All India Radio, Coimbatore had accompanied the STC team during these visits.

Shri Sudevan who is the tribal head (Mooppan) is showing the *Boswellia serrata* tree (Kungiliyam, Sambrani) whose gum is used in manufacture of incense sticks and has anti-fungal & anti-bacterial properties.



The STC team did a 3-hour trek through dense forests to reach Paalakkinaru a remote tribal settlement in the Anamalai Tiger Reserve



Inaugural session of RTSVT

Sugar Mills, Dharmapuri / Subramaniya Siva, Arignar Anna, National, Chengalrayan, MRK. and Cheyyar Co-op Sugar Mills) on 10th, 11th, 12th, 21st, 24th & 25th July 2023. About 385 cane staff got trained. The training had seven technical sessions in all and was inaugurated by Shri C. Vijayarajkumar IAS., Principal Secretary / Commissioner of Sugar, Govt. of Tamil Nadu.



Training for 'trainers' of SOLIDARIDAD, New Delhi

Padmashri Dr Bakshi Ram, Former Director of ICAR-SBI delivered the Inaugural address online. A publication entitled 'Technologies for sustainable sugarcane production' was brought out.

F Organized a funded-training programme on "Technologies for Sustainable Sugarcane Production – TSSP" for the trainers of Solidaridad, New Delhi during 27-28, July 2023.

F A one-day training / awareness programme was organised at ICAR-SBI on 31st July 2023 with an objective to create awareness among farmers and other stakeholders about the provisions of the PPV&FRA Act 2001



PPV&FRA act programme at ICAR-SBI

- F A one-day training programme on "Seed health improvement: A success key for healthy crop, better recovery and profitable sugarcane farming" was organized for the farmers and sugar mill officials from Bihar, Haryana, Punjab, Uttarakhand and Uttar Pradesh on August 08, 2023 at ICAR-SBIRC, Karnal



Seed health training programme at Karnal

- F Imparted training on "Production of healthy seed of Co varieties to cane Development officials" at Saraswati Sugar Mills, Yamunanagr, Haryana on 04 Sept 2023.
- F Imparted training on "Identification and management of Insect & Disease pests" to the staff of Narayangarh Sugar Mills, Narayangarh, Haryana on 05 Sept, 2023
- F Imparted training to the farmers and sugar mill officials on "Importance of healthy seed production of Sugarcane" organized by Rana Sugars Ltd. Buttaer Seviaan at village Algokhoti Distt. Tarantaran (Punjab) on 27 September 2023. Dr. M. L. Chhabra and Dr. Ravinder Kumar served as resource persons in which about 300 farmers were benefitted

Exhibitions

- F The Director, ICAR-SBI, participated in the Foundation cum Technology Day of ICAR at

NAAS Complex New Delhi during July 16-18, 2023 and the technologies of the Institute were exhibited.

- F Participated in Agri-Intex 2023 trade fair held at CODISSIA Trade fair complex during 14-17, July 2023 by installing a stall.



Registrar of Tamil Nadu Agricultural University at ICAR-SBI's stall

- F Participated in "Velaan Sangamam 2023" - State-level Agricultural Exhibition – 2023 organized by Department of Agriculture, Govt. of Tamil Nadu during 26-28th July, 2023 at CARE college of Engineering, Tiruchirapalli.



ICAR-SBI stall at State-level Agricultural Exhibition of Tamil Nadu

- F Participated in the Agri-Horti exhibition organized as part of the 30th ICAR-NRC Banana's Foundation Day / "Farmers' Day" at Tiruchirappalli on 21 August 2023.



ICAR-SBI's Soil Moisture Indicator being tested by dignitaries at ICAR-SBI stall at ICAR-NRCB, Tiruchirapalli

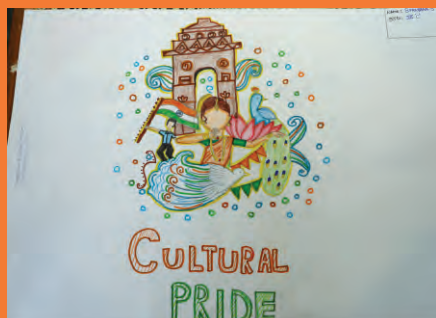
Azadi Ka Amrit Mahotsav activities

- F As part of 'Azadi Ka Amrit Mahotsav' celebrations, a drawing competition was held for the children of ICAR SBI's staff, on the theme, "Cultural Pride" on 10 August 2023.

SENIOR CATEGORY WINNERS



Joy Evangeline, VI std.

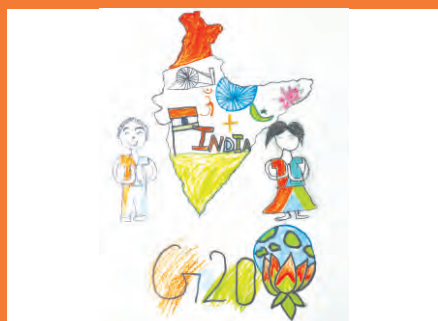


Spandana S, VII std.



Arpitha M Medegar, XII std.

JUNIOR CATEGORY WINNERS



Thaksika K, VI std



Roja Narumugai, V std.



Deep Mayur, V-std.

- F As part of 'Azadi Ka Amrit Mahotsav' celebrations, an Essay competition was held for the students of Shah Fulchand Virchand Govt. Higher Secondary School, Seeranaickenpalayam, on the theme 'Culture Pride' on 11 August 2023.

- F As a part of DAPSTC (Development Action Plan for Scheduled Tribe Component) and AKAM activity, an Awareness and Training campaign was organized at ICAR-SBIRC, Agali on 19th July 2023 for the tribal women belonging to Attappady hills. Smt. D.V. Irene Priyadarshini, Asst. Director of Agriculture – Seed Certification (Seed Analyst), Govt. of Tamil Nadu delivered a talk on 'Getting organic certification for farm produce' and demonstrated the Panchakavya preparation and application procedures to tribal women folk for sustainable organic farming.



Talk on 'Getting organic certification for farm produce' at Agali

Participation in International / National Workshop / Seminar / Meeting / Symposium

- F Dr. C. Sankaranarayanan and Dr. B. Singaravelu : 24th Group Meeting on All India Network Project on white grubs and other Soil arthropod pests at Rajasthan during 13-14, July 2023.
- F Dr. G. Hemaprabha, Director : Online Meeting on "ICAR-CSR Guidelines" chaired by Secy. DARE on 01 August 2023

- F Dr. S. Alarmelu, Dr. R. Karuppaiyan and Dr. V. Sreenivasa : DUS Review at TNAU, Coimbatore on 5th August 2023.
- F Dr. G.S. Suresha : National webinar on 'Techno economic analysis on selected Green technologies for the production of value-added products from Agro Industrial materials on 16th August 2023 organized by CSIR-NIIST.
- F Dr. G. Hemaprabha, Director, Dr. S. Alarmelu, Dr. R. Gomathi, Dr. A. Vennila, & Dr. C. Appunu, : 81st STAI Annual Convention and International Sugar Expo 2023 held in Thiruvananthapuram during 06-08, September 2023
- F Dr. A. Ramesh Sundar, Dr. P. Malathi, Dr. K. Nithya, Dr. R. Gopi, Dr. K. Kaverinathan, STA and Shri. J. Vishnu Vardhan, Ph.D., Scholar, : National Symposium on "Plant Health Management: Current Trends and Novel Mitigation Strategies" on 11th September 2023, organized by ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram and Indian Phytopathological Society (Southern Zone).
- F Dr. G. Hemaprabha, Director, delivered the 7th Memorial Lecture of Sri Goli Narasimha Rao on 16th September 2023 on "Sugarcane cultivation for product diversification and changing climate" at RARS, Anakapalle, Andhra Pradesh.

Dr. P. Geetha, SS attended the same through online mode.

- F Dr. K. Mohanraj attended and presented a paper in the 6th Rencontres de Quy Nhon: International Biology Conference 2023 at the International Centre for Interdisciplinary Science and Education (ICISE), Quy Nhon, Vietnam from 20-22, September 2023
- F Dr. G. Hemaprabha, Director, : India Sugar & Bioenergy Conference 2023 held at New Delhi during 21-22 September 2023.
- F Dr C Palaniswami : "Strengthening Capacities of the Government of Andhra Pradesh to support Farmers to adopt sustainable agri-food systems"- Policy Dialogue Workshops from 25-27 September, 2023 at Vijayawada, Andhra Pradesh through online mode
- F Dr. P. Malathi and Dr. P. Murali : 3rd Edition of Conference on Technologies held in Chennai on 28 September, organized by CTO Forum of Tamil Nadu Technology Development & Promotion Centres.
- F Dr. G. Hemaprabha, Director, Dr. A. Anna Durai, Dr. V.P. Sobhakumari, and Dr. P. Malathi : 52nd Annual Convention of SISSTA held on 29th September 2023 at Chennai.

Training Attended

- F Dr. V. Kasthuri Thilagam, and Dr. B. Mahendran, : ICAR-NAARM training programme on 'Analysis of Experimental Data using R' held in Hyderabad ; 21-25 August 2023.
- F Dr. G.S. Suresha and Dr. P. Murali : Sensitization workshop on IPTM/Agri Business Incubators held at Pusa, New Delhi ; 21-22 September 2023.

Awards and Recognitions

- F Dr. K. Mohanraj, SS received the First Prize in Oral presentation in the 6th Rencontres de Quy Nhon: International Biology Conference 2023 held at Vietnam during 20-22, September 2023
- F Dr. C. Appunu et al received Noel Deerr Gold Medal Award 2023 in 81st Annual Convention of The Sugar Technologists Association of India (STAI) and International Expo 2023, (06-08 September 2023) at Thiruvananthapuram, Kerala.



Andhra Jyothi daily, 17 Sept. 2023

- F Dr. A. Suganya, and Dr. T. Arumuganathan : 2nd International Conference on Prospects and Challenges of Environment and Biological Sciences in Food production system for livelihood security of Farmers (ICFPLS 2023) on physical mode organized by ICAR-CIARI, held during 18-20 September 2023, in Port Blair, Andaman and Nicobar Islands, India, while

Other Activities

Media efforts

- F A feature on Nutrition and Millet Entrepreneurship Awareness and Training Campaign organized in Bejalatti tribal hamlet, Sathyamangalam Tiger Reserve as part of Scheduled Tribe Component Project (DAPSTC) was broadcast through All India Radio Coimbatore MW 300.3 and streamed live on Newsonair app on 5 July 2023.
- F A feature on Nutrition and Millet Entrepreneurship Awareness and Training Campaign in Ittarai and Thadasalatti tribal hamlets in Sathyamangalam Tiger Reserve as part of Scheduled Tribe Component Project (DAPSTC) was broadcast through All India Radio - Coimbatore FM 103 and MW 300.3 on 25 July 2023.
- F An awareness programme on the importance of millet cultivation and establishing nutrition gardens was organized in Ittarai and Thadasalatti STC villages of Sathyamangalam Tiger Reserve on 07 July 2023 as part of Scheduled Tribe Component Project (DAPSTC)
- F ICAR-SBI contributed as Knowledge Partner at AGRI-UDAAN 6.0 Food and Agribusiness Accelerator Roadshow held at Tamil Nadu Agricultural University, Coimbatore on 28 July 2023. Dr.G.Hemaprabha, Director and Dr. P. Murali, SS, participated in this event.
- F An Inter-school Quiz competition was organized for students from eight schools in Kannur District on 7th August 2023.
- F "Parthenium awareness week (16-22 Aug 2023)" was observed with various activities at ICAR-Sugarcane Breeding Institute (SBI), Coimbatore, to create awareness among the staff, farm workers and general public on health hazards caused by this weed on human and animals as well as measures to manage this weed.
- F National Seminar on "Research Imperatives for sustaining sugarcane, Sugar and Ethanol production" – *Sugar Sem-2023* was – held at ICAR-Sugarcane Breeding Institute, jointly organized with SSRD (Society for Sugarcane

Research and Development), on 25 August 2023 on the eve of celebrating 25th Anniversary of SSRP (Society for Sugarcane Research and Promotion).

- F Various in-house activities were carried out under Hindi *Pakhwara* at the Institute and centres during 14-29 Sept. 2023 and Hindi Day was celebrated on 26th September 2023

Distinguished Visitors

- F Dr. Nandkumar Kunchge, Director, K.J. Somaiya Institute of Applied Agricultural Research, Karnataka visited the Institute during 10-11 August 2023.
- F Prof. Fredy Altpeter, University of Florida, visited the Institute on 21 August 2023 and delivered a lecture on "Embracing the challenge: Editing the highly polyploid sugarcane genome"
- F Former MP of Rajya Sabha Mr.T.K.Rangarajan, visited the Institute on 04th September 2023

Meetings

- F Departmental Promotion Committee for considering promotion to the post of Technician : 27.07.2023
- F Departmental Promotion Committee meeting for probation clearance of Skilled Support Staff : 31.08.2023.
- F Senior Officers Committee meeting : 04.07.2023, 03.08.2023 & 11.09.2023.
- F Institute Joint Staff Council meeting : 12.07.2023
- F Selection Committee meeting for Junior Research Fellow held on 18.07.2023 & 25.07.2023.
- F Selection Committee meeting for Senior Research Fellow held on 19.07.2023, 26.07.2023 & 20.09.2023
- F Grievance Committee meeting : 18.07.2023, 16.08.2023 & 11.09.2023.
- F Independence Day was celebrated on 15.08.2023.
- F *Har Ghar Tiranga* Programme was observed from 13th to 15th August 2023.

- F Meri Maati Mera Desh campaign ; 15.08.2023.
- F Special Campaign 3.0 for institutionalizing Swachhata and minimizing pendency in Government offices planning phase ;15.09.2023 to 30.09.2023.
- F Swachhata hi sewa Abhiyan ; 29.09.2023.

Appointment / Transfer

F Dr. A. Ramesh Sundar, Principal Scientist, ICAR-SBI, Coimbatore, appointed as Head, Crop Protection, ICAR-SBI, Coimbatore on 21.06.23(AN).



F Dr. K. Kannan, Principal Scientist, ICAR-Indian Institute of Soil & Water Conservation, Research Center, Udthagamandalam, appointed as Head, Crop Production, ICAR-SBI, Coimbatore on 19.07.2023 (FN).



- F Sh. S. Manoharan, Chief Technical Officer joined ICAR-SBI, Coimbatore on 06.09.2023 (FN) on Inter Institutional transfer from ICAR-CIFRI, Research Centre, Kochi.
- F Dr. Dhanya .V.G, Scientist transferred to ICAR -SBI, RC, Kannur w.e.f 11.09.2023 (AN).

Promotion

F Sh. R. Monikandan, SSS promoted as Technician w.e.f 02.08.2023(F.N).

MACP (Modified Assured Career Progression Scheme) Promotion

F Sh. C. Shanmugaraj, Skilled Support Staff was granted 1st MACP in Level 2 of 7th CPC Pay Matrix w.e.f 08.08.2023.

Retirement

F Dr. S.K. Pandey, Principal Scientist, ICAR-SBI, Regional Centre, Karnal retired on superannuation on 31.08.2023(AN).

Coimbatore City Corporation honours former Director of ICAR-Sugarcane Breeding Institute!

The portrait of Dr J Thuljaram Rao, who had served as the Director of ICAR-SBI during 1961-70 and 1976-1979 now adorns an information board at Diwan Bahadur Road in R.S.Puram, Coimbatore. The Coimbatore City Corporation has installed his portrait to recognize his contribution to the city's development.



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