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ICAR - SBI News

ICAR - Sugarcane Breeding Institute
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ICAR- SBI uses drones for micronutrient foliar spraying!

Foliar iron nutrition through drone spraying for sugarcane in calcareous soils

Intensive cultivation has depleted the soil nutrients and led to a multi-nutrient deficiency in crops. Hence, nutrient management must focus more on sustaining the yield, particularly on soils with chemical constraints. Sugarcane is an important commercial crop that contributes significantly to the country's economy. Considering the future domestic sugar and ethanol requirements, there is a need to increase the average sugarcane productivity from 82 to 180 t ha^{-1}. As the scope of area expansion is little this becomes a great challenge for sugarcane stakeholders. Sugarcane being a high biomass producer, it is essential to supply balanced and adequate quantity of nutrients to sustain productivity in the long run.

Importance of micronutrients

The occurrence of micronutrient deficiencies is widespread, and the possible reason for this is due to continuous mono-cropping and cultivation of nutrient demanding high yield varieties, non-adoption of balanced use of nutrients and integrated nutrient management, and depletion of soil organic carbon. Iron is a critical nutrient among the micronutrients, especially in problem soils. The sugarcane uses, on average 3.4 kg of iron to produce 100 tonnes of cane. Iron availability to plants from soil is limited by soil pH and redox conditions. Plants grown in calcareous soils show iron deficiency resulting from low solubility of iron at high pH (>7.5) and abundant calcium carbonate content. In calcareous soils, the presence of $CaCO_3$ directly or indirectly affects the chemistry and availability of nutrients.

Calcareous soils

In India, calcareous soils occupy 69% of the total geographical area and cover major sugarcane growing States (Uttar Pradesh, Maharashtra, Karnataka, Bihar, Gujarat, Tamil Nadu, Haryana, Madhya Pradesh, Punjab and Andhra Pradesh). Sugarcane crop is also cultivated in calcareous soils where iron deficiency is the most common phenomenon. Foliar spray of iron has been recommended as the most suitable method for correcting iron deficiency. Foliar application of iron in calcareous soil improves chlorophyll content, yield contributing characters, cane yield and sucrose content due to faster recovery from iron chlorosis.

Fig. 1: Sugarcane at 70 days after ratooning with severe iron chlorosis

Constraints faced

Farmers are still unaware of the importance of micronutrients. Even though some farmers choose to apply micronutrients after the visual symptoms, the lack of timely labour availability for using a knapsack

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sprayer delays the foliar spraying. Hence, the farmers miss the critical stage for foliar application, which affects the crop yield. Manual spraying in tall crops like sugarcane is difficult after four months of crop age. The technological advancement in unmanned aerial vehicles has become handy for rescuing farmers by facilitating timely foliar sprays and making the operation easy at any stage of crop growth. The recommended dose of micronutrients for sugarcane through foliar spray ranges from 0.5 to 2.5% with a spray fluid volume of 500 litres ha^{-1}. The dosage depends on the age of the crop and the severity of the deficiency. However, ultralow volume spraying in drones requires standardization of the nutrient concentrations and the spray volume.

Using drones for micronutrient foliar spraying

A field survey was conducted to assess the feasibility of using a drone for micronutrient foliar spraying for sugarcane growing in calcareous soils in Annur Block, Coimbatore District, Tamil Nadu with the logistic support of Bannari Amman Sugars Ltd., Sathyamangalam, Erode. Fields with iron deficiency symptoms were surveyed, and tested for soil calcareousness using 1:1 HCl. The field with seventy days old ratoon sugarcane crop showing severe iron chlorosis (Fig. 1) was selected for the study and the soil showed very strong effervescence in the HCl test. Soil samples were analyzed for $CaCO_3$ content and other soil characteristics. The soil is of clay loam texture, with pH and EC of 8.46 and 0.23 dS m^{-1}. The calcium carbonate content in the soil was 5.87%. Four treatments of drone spraying (Fig. 2) were used (Two concentrations of $FeSO_4$:2.5 and5.0% and two spray volumes: 25 and 50 litres ha-1 by adjusting the drone speed to 5 and 2.5 m s^{-1}, respectively). Two concentrations (2.5 and 5.0%) of $FeSO_4$ were used for manual spraying using a knapsack sprayer with 500 litres ha^{-1} spray volume. Control with no spraying was kept for comparison. The identified field was divided into seven equal strips of 54 m in length and width of 4.8 m, with four crop rows for the above treatments. Randomization of treatments was carried out, and the treatments were imposed accordingly. Four centrifugal nozzles fitted drone sprayer with 10 litre tank capacity from Bannari Amman Institute of Technology, Sathyamangalam, Erode was used for the spraying. The drone spraying was carried out at the height of 2 m from the canopy in the morning hours to minimize the drifting effect. Ten Top Visual Dewlap (TVD) leaves were selected from each treatment in the middle two rows at 21 Days After Spraying (DAS), and Soil Pant Analysis Development (SPAD) value was recorded. The data were statistically analyzed with open-source statistical software.

Fig. 2: Spraying of $FeSO_4$ using drone

Encouraging results

The foliar application offers advantages like direct delivery of nutrients to the plant at critical stages of nutrient requirement and immediate recovery than soil application, especially in calcareous soils. Iron, a micronutrient with intermediate mobility within the plant system, needs optimum concentration for judicious use. In the present study, a visual evaluation was carried out on 21 DAS for recovery from iron deficiency and toxicity symptoms. The greenness of the leaves in all the iron sulphate foliar sprayed treatments (Fig. 3), while the control showed interveinal chlorosis and pale as it was observed before spray. However, the manual knapsack spray with 5% $FeSO_4$ showed localized necrotic lesions and leaf burning or scorching. The salt balling on the leaves was also observed in this treatment (Fig. 4). The occurrence of toxicity of foliar applied nutrients on the leaves is due to the high osmotic pressure difference created by the concentrated nutrient solution leading to cell rupture. Photosynthesis is the first process to fall prey to toxicity which may ultimately reduce the production. However, new leaves formed were free from toxicity symptoms.

SPAD values of TVD leave recorded at 21 DAS showed a significant increase in all the foliar treatments (38.35 - 41.56) over control (8.37). Among the iron treatments, no significant difference with respect SPAD values. Since, drone spraying of 5% $FeSO_4$ was on par with 2.5% $FeSO_4$ in correcting the iron deficiency symptom. The excess iron in 5% $FeSO_4$ will not reach the actively growing part since the mobility of iron within the plant is intermediate.

This provides the clue that drone spraying of 2.5% $FeSO_4$ in 25 litre ha^{-1} is required to correct the deficiency symptoms during tillering phase. If the deficiency symptom reoccurs, one more foliar spraying is recommended at 30 days intervals. Foliar spraying using drone sprayers effect timely spraying and reducing wastage. Comparative economic analysis also favours drone spraying over manual knapsack spraying by saving 20% cost of foliar spraying. This is a preliminary study which needs to be explored further to establish threshold concentration of $FeSO_4$ for foliar application using drones for plant and ratoon crops to sustain sugarcane productivity in calcareous soils.

Fig. 3: Sugarcane at 21 days after spraying of $FeSO_4$

Fig. 4: Iron toxicity symptoms in foliar spray of 5% $FeSO_4$ using knapsack sprayer

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ICAR – Sugarcane Breeding Institute organizes campaigns to emphasize the importance of millets, among the tribals of Sathyamangalam Tiger Reserve!

Scheduled Tribe Component Project

The importance of growing millets and including them in the daily diet was highlighted during the ICAR – Sugarcane Breeding Institute (ICAR-SBI), Coimbatore-organized 'Tribal nutrition awareness andtrainingcampaigns' among the school children and tribal women in Talamalai and Ramaranai villages in Sathyamangalam Tiger Reserve. The campaigns were conducted as part of the **'Development Action Plan for Scheduled Tribe Component (STC)'** project being implemented by the Institute, in collaboration with Sathyamangalam Tiger Reserve (STR).

World Forestry Day

Highlighting the importance of World Forestry Day , being celebrated every year on 21 March, Dr. G. Hemaprabha, Director, ICAR – Sugarcane Breeding Institute, in her address to the school children of Government Tribal Residential School, Talamalai, said that tribal children should aspire to become civil servants, scientists and policy makers and help in conservation and protection of forests to maintain ecological balance.

Campaign at Government Tribal Residential School

Earlier, Dr. D. Puthira Prathap, Principal Scientist and Nodal Officer of STC during his interaction with the children mentioned that the major objectives of the 'International Year of Millets', were to create awareness & increase the production & consumption of millets. Listing out the noteworthy efforts taken up by the tribals across the country such as Ms. Lahari bai of Madhya Pradesh, in reviving traditional varieties of millets, he elaborated on how the tribal children could also play a role in achieving those objectives.

Following this, the Director of ICAR-SBI gave away stationery, solar-powered torchlights, millet biscuits and *jamukkalams* to the students.

Tribal children of Government Tribal Residential School in Sathyamangalam Tiger Reserve

Campaign at Ramaranai tribal settlement

Later, during the campaign held at Ramaranai tribal settlement in Sathyamangalam Tiger Reserve, Dr. G. Hemaprabha, Director, ICAR – Sugarcane Breeding Institute, mentioned that as part of the campaign, as many as 35 items including household items such as radio sets & liquid jaggery and farm tools

were being distributed to all the tribal households in the settlement. Finger millet seeds, foxtail millet seeds, little millet seeds and nine types of vegetable seeds were also being distributed, she added. She urged the tribals to cultivate the millets and vegetables, and include them in their own diet.

Pledge against malnutrition

Following this, a 'pulverizer' was handed over to the villagers, and the importance of 'millet entrepreneurship' was highlighted. Later, Dr. D. Puthira Prathap, administered the 'pledge against malnutrition' and informed that a series of awareness campaigns are being conducted in the tribal settlements of STR by the Institute, for implementing nutrition-sensitive agriculture in the region. During the training session that followed, Dr. K. Mohanraj, Dr. P. Geetha and Dr. V. Sreenivasa trained the tribals on setting up nutrition gardens and on scientific millet cultivation. Dr. D. Balachandar from Tamil Nadu Agricultural University conducted a demonstration of liquid bio-fertilizer treatment for millet seeds. The STC team from ICAR-Sugarcane Breeding Institute, and officials from Tamil Nadu Forest department spoke during the event, besides Shri. Raman, the tribal-head.

DAPSTC campaign at Ramaranai tribal settlement

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Azadi ka amrit Mahotsav celebrations

Talk on 'Reviving water bodies'

As a part of *Azadi Ka Amrit Mahotsav* (AKAM) activity under the theme "Water", a lecture on "Reviving Water Bodies" was delivered by Thiru. R.Manikandan (Co-ordinator of *Kovai Kulangal Padhukaapu Amaippu*) on 26 May 2023. Mentioning that his organization has taken up several voluntary water conservation initiatives on Noyyal River water-shed and its lakes such as Perur Periyakulam, Sengulam, & Vellalore and several ponds in Coimbatore district of Tamil Nadu, Shri Manikandan added that a 200-year-old historic well in Sundakkamuthur village was manually de-silted , cleaned and handed over to the local temple management.

Dr G.Hemaprabha, Director of ICAR-Sugarcane Breeding Institute, in her Presidential address said that the Institute has been involved in conducting a series of outreach activities on water conservation, for the benefit of the sugarcane farmers.Dr. D.Puthira Prathap, Principal Scientist and Chairperson of '*Azadi ka amrit mahotsav*' (AKAM) events committee, mentioned that this talk is being organized at the Institute, under the theme "Water", which is one of the nine themes identified for AKAM celebrations, focusing on critical areas of cultural and social development, in line with the Prime Minister's Panch Pran (Five vows) to be observed by the citizens of the country. Dr. R. Gomathi, Head I/C, Crop Production, ICAR-SBI proposed a formal vote of thanks.

- "Run for Unity" under *Azadi ka Amrit Mahotsav*, was conducted on 13 June 2023, at ICAR-SBIRC, Kannur.

World Environment Day was observed on 05.06.2023. As a part of '*Azadi Ka Amrut Mahotsav*', 75 saplings were planted by staff members of Institute. Pledge taking ceremony was conducted. Dr.R.Thamizh Vendan, Registrar, TNAU delievered a talk on the theme 'LIFE' Lifestyle for Environment.

Outreach

Trainings

- Training programme on 'Protecting the sugarcane crop', that included measures to manage Pokkah boeng disease and Crown Mealy bug was conducted on June 30, 2023 for 55 farmers and 4 staff of MRK Co-operative Sugar Mills. Sethiathope. A technical bulletin on "Management of Crown Mealy bug and Pokkah boeng in sugarcane" was published.
- *Training on 'Improved Sugarcane Production Technologies' (ISPT)*: Conducted two funded-training programmes on 'Improved Sugarcane Production Technologies (ISPT)', for the cane staff of SNJ Sugars and Products Ltd., Andhra Pradesh during 5- 16 June 2023. The programme was conducted in two phases for 40 trainees @ 20 trainees per training of five days. The training was inaugurated by Dr R. Tamizh Vendan, Registrar of Tamil Nadu Agricultural University, had 17 technical sessions and an Industrial/field visit to Sakthi Sugars Ltd., Appakudal. A publication entitled 'Improved Sugarcane Production Technologies (ISPT)', was brought out.

Exhibitions

- ICAR-SBI participated in the exhibition organized as part of G-20 Agriculture Ministers Meeting held from 15-17 June 2023 at Hyderabad.
- ICAR-SBIRC, Karnal participated in the *Pashu Pardarshni evem Krishi Mela* organized by the Deptt. of Fisheries Animal Husbandry and Dairying at Muzaffarnagar (UP) on 6-7 April 2023.
- ICAR-SBIRC, Karnal participated in the National Dairy Mela at ICAR-NDRI, Karnal during 08-10 April 2023 and exhibited the technologies developed at the Institute.

Other Outreach activities

- Distributed ICAR-SBI pamphlets on Millets, Kitchen Garden and Apiculture in STC (Scheduled Tribe Component) villages in Sathyamangalam Tiger Reserve area.
- Radio programme on Tribal nutrition awareness campaign held in Bathripadugai tribal hamlet of Kadambur hills in SathyamangalamTiger Reserve was broadcast on 17 May 2023 through All India Radio, Coimbatore. The same was relayed by Chennai, Trichy, Madurai, Tirunelveli, Ooty, Dharmapuri, Pondicherry, Tuticorin and Nagercoil stations of All India Radio.
- 'Tribal Nutrition awareness campaign' was organized at Maavanatham hamlet of Sathyamangalam Tiger Reserve on 18 May 2023. A demonstration of liquid bio-fertilizer treatment for millet seeds was conducted and a pledge against malnutrition was administered to the tribals.
- A feature on Nutrition Awareness and training Campaign by ICAR-SBI in Mavanatham tribal hamlet in Sathyamangalam Tiger Researve as a part of Scheduled Tribe Componenet (STC) Project was broadcast through All India Radio, Coimbatore on 21st June 2023.

Education

The Ph.D *Viva voce* presentation of Shri. C. Naveen Prasanth (Guide : Dr. R. Viswanathan, Director, IISR, Lucknow) on his thesis work entitled "Deciphering the high evolutionary potential pathogenicity gene cluster in *Colletotrichum falcatum* infecting sugarcane – a NGS based pathogenome study" was held on 07 June 2023

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

- Dr. G. Hemaprabha, Director : FOCARS-112 meeting at ICAR-NAARM, Hyderabad ; 11 April 2023.
- Dr. G. Hemaprabha, Director: 90th Meeting of the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops on 02 May 2023, through video conferencing.
- The Director and all the scientists of the Institute attended a virtual meeting on "Aligning the Activities of Various Disciplines under Different Subject Matter Divisions" and "Certifying Products / Technologies / Process / Methodology/ Model/Protocol/Policy etc." chaired by Secretary (DARE) & DG (ICAR) on 03 May 2023.

- Dr. A. Anna Durai, PS, and Dr. K. Mohanraj, SS : "Annual Breeder Seed Review meeting and 38th AGM of AICRP on Seed (Crops)" ; Tamil Nadu Agricultural University, Coimbatore ; 9 – 10, May 2023.
- Dr. G. Hemaprabha, Director: Interaction meeting through online mode with all Incharges of AICRP(S) centres on 15 May 2023 held at ICAR- IISR, Lucknow.
- Dr. G. Hemaprabha, Director: Interaction Meeting of ISMA with the Director General, ICAR on 16 May 2023.
- The Director attended the Meeting of the Conveners of the Regional Chapters of NAAS on 3rd June 2023.
- Dr. G. Hemaprabha, Director, Dr. K. Hari, PS, Dr. C. Appunu, SS, and Dr. Ravinder Kumar, SS : G20 Exhibition during G20-Agricultural Ministerial Meeting ; 15-17 June 2023.

Trainings Attended

- Scientific and Technical staff of the Institute attended online courses titled as Y-Break Yoga at Workplace, Orientation Module on Mission LIFE and Stay Safe in Cyber Space in the iGOT Karmayogi Platform during June 2023.

Awards and Recognitions

- Dr. T. Ramasubramanian, PS and Dr. P.T. Prathima, SS were recognized as NABL Assessors for registering /managing NABL accredited laboratories.

Brainstorming on "Sugarcane scenario: Research and Industry perspective" held

A brainstorming session on "Sugarcane scenario: Research and Industry perspective" was held at ICAR-Sugarcane Breeding Institute, Coimbatore on 10.05.2023.

Dr. Bakshi Ram, Former Director of ICAR-Sugarcane breeding Institute, who received the *Padma shri* award recently, was felicitated during the event. Dr. T.R. Sharma, DDG (CS), Indian Council of Agricultural Research, delivered the inaugural address. Dr. R.K. Singh, ADG (CC), ICAR, Dr. D.K. Yadava, ADG (Seeds), ICAR, Dr. M. Manickam, Chairman and Managing Director of Sakthi Sugars and Dr. G. Hemaprabha, Director and Dr. R.Viswanathan, Director, ICAR-IISR participated ICAR- Indian Institute of Sugarcane Research, Lucknow spoke on the occasion.

Other Activities

VISITORS : During April-June 2023, a total of 1024 students of various colleges from Karnataka, Tamil Nadu, Kerala and Andhra Pradesh, 28 sugar factory personnel/farmers as well as 18 academicians visited the Institute and were exposed to Institute technologies and activities.

- World Intellectual day was celebrated on theme "Women and IP: Accelerating Innovation and Creativity" and two lectures by Mrs.Rajalakshmi (Advocate) on "IPR in law" and Dr.S.Alarmelu, Principal Scientist, on "Biodiversity and innovate conservation of sugarcane genetic resources" were delivered on 26 April 2023.
- Online programme on RINK Demo Day was organized jointly by SBIRC, Kannur and Kerala Start-Up Mission) on 26th April 2023 for online presentation of ten products and interaction with more than 70 entrepreneurs.
- Dr.Bakshi Ram, Former Director of ICAR-Sugarcane Breeding Institute delivered a lecture on "Varietal requirements to meet sugar and energy demands for Atmanirbhar Bharat" on 10 May 2023.
- The MoU signing ceremony between ICAR-SBI and ISMA on 'Identification of location specific

ICAR-SBI's Kannur centre organizes a One-day Exposure Visit and Entrepreneurship Meet!

One day exposure visit and Entrepreneurship meet was organised on June 1, 2023, at ICAR-Sugarcane Breeding Institute, Research Centre, Kannur in collaboration with Kerala Start up Mission. More than 70 entrepreneurs from all over Kerala attended the meet. The successful entrepreneurs who licensed the technologies from the Institute, Mr. C. Venugopal, Co-founder, Poompatta Global Pvt. Ltd, Pattuvam, Kannur, Mr. U.P. Sreedharaan, Managing Director, SS Food Products, Chittariparamba, Mr. Harikrishnan, C. M. Sadheeya consumables, Kollam were honoured . Dr. G. Hema Prabha, Director, ICAR-SBI, Coimbatore, Dr. K. Chandran, Principal Scientistand Dr. Deepu Krishnan, P. R (Translational Research), Kerala Start up Mission spoke. In the meeting various technologies such as processing of liquid jaggery, powder jaggery, preparation of cookies and cakes, Freeze preservation of sugarcane juice, ice cream, sugarcane wine preparation etc were explained to the participants besides a live demonstration on liquid jaggery processing and a field visit. Dr. R. Gopi, Dr. M. Nisha and Dr. B. Mahendran, ICAR-Sugarcane, Breeding Institute, Research Centre, Kannur coordinated the programme with the support of Mr. Gireesan, P.P, Ms. Nici Ashok, and Ms. P. Seema, SBIRC, Kannur.

R. Gopi, K. Chandran, M. Nisha and B. Mahendran
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and climate resilient varieties with high yield and quality potential for both tropical and sub-tropical regions of the country' was held at the Institute on 27 June 2023.

- 100th IMC - Institute Management Committee Meeting was held at the Institute on 28 June 2023.
- An MoU was signed for academic collaboration between ICAR-SBI and Tamil Nadu Agricultural University on 30 June 2023.
- IRC-Institute Research Committee Meeting was held at the institute during 19-23 June 2023.
- International Yoga Day was celebrated at the institute on 21 June 2023. Dr. K.P. Salin, PS delivered a talk on "Y Break @ Workplace".
- Hindi workshop was held at the Institute on 22 June 2023.
- Organized Lecture classes to project and Internship students on 09 & 30 June 2023 on Institute activities and major subjects involved.

Visit of Dignitaries

- Dr.T.R.Sharma DDG(CS), Dr.R.K.Singh, ADG (CC), Dr.D.K.Yadava ADG (Seed) visited the ICAR – Sugarcane Breeding Institute on 10 May 2023 and inaugurated the new administrative building and participated in the Brainstorming session on "Sugarcane Scenario: Research and Industry Perspective".

Meetings organized

- Assessment Committee meeting for considering promotion of Scientists held on 18.04.2023.
- Senior Officers Committee meeting held on 21.04.2023 & 29.05.2023.
- Departmental Promotion Committee meeting to consider promotion to the post of Technician held on 17.05.2023.
- Selection Committee meeting for Project Assistant held on 19.04.2023.
- Selection Committee meeting for Authorized Medical Attendant held on 12.05.2023.

- Selection Committee meeting for Young Professional II held on 31.05.2023.
- Grievance Committee meeting held on 11.04.2023, 09.05.2023 & 12.06.2023.
- Managing Committee meeting held on 11.04.2023 for considering incentives to meritorious wards of employees.

Appointment / Transfer

- Ms. Shweta Kumari, Scientist (Bioinformatics) joined on 11.04.2023 (FN) on Direct Recruitment.
- Sh. Vinayaka, Scientist (Agricultural Statistics) joined on 11.04.2023 (FN) on Direct Recruitment.
- Dr. Dhanya.V.G, Scientist transferred from Indian Institute of Seed Science, Mau and joined at ICAR-SBI, Coimbatore on 07.06.2023(FN).

Promotion

- Dr. M. Punithavalli, Senior Scientist promoted to Senior Scientist Level 13-A w.e.f 07.01.2022.
- Dr. P. Mahesh, Senior Scientist promoted to Senior Scientist Level 13-A w.e.f 28.04.2022.
- Dr. M. Nisha, Senior Scientist promoted to Senior Scientist Level 13-A w.e.f 01.09.2022.
- Dr. K. Elayaraja, Scientist promoted as Senior Scientist w.e.f 16.07.2021.
- Ms. Adhini.S.Pazhany, Scientist promoted to Scientist Level-12 w.e.f 27.04.2021.
- Sh. I. Saravanakumar, SSS promoted as Technician w.e.f 19.05.2023(F.N).

MACP (Modified Assured Career Progression Scheme) Promotions

- Mrs. Kratika Sharma, Assistant was granted 1st Financial upgradation to Level-7 of 7th CPC Pay Matrix w.e.f 09.04.2023.

Retirement

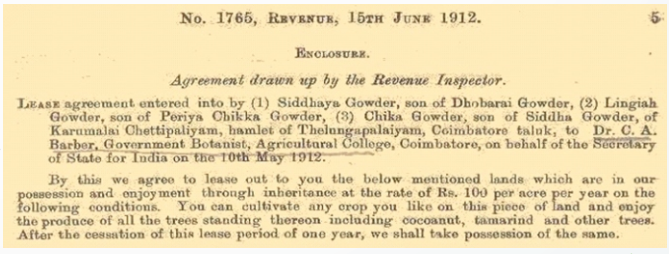
- Sh. V. Aravindhadoss, Skilled Support Staff retired on superannuation on 30.04.2023 (AN).
- Sh. C. Vinayakamoorthy, Senior Technical Officer retired on superannuation on 30.04.2023 (AN).
- Sh. T. Shanmuganathan, Assistant Chief Technical Officer retired on superannuation on 31.05.2023 (AN).
- Sh. G. Prasad Babu, Technical Officer retired on superannuation on 31.05.2023 (AN).
- Smt. M. Rukkumani, Skilled Support Staff retired on superannuation on 31.05.2023 (AN).
- Sh. M. Subramaniam, Skilled Support Staff retired on superannuation on 30.06.2023 (AN).
- Sh. P. Dhanaraj, Skilled Support Staff retired on superannuation on 30.06.2023 (AN).

In loving memory..

Sh.K.Chinnaswamy, SSS expired on 17.04.2023.

From the archives..

Copy of agreement between Dr. C.A. Barber, Founder Director of ICAR- Sugarcane Breeding Institute and others for transfer of 6.73 acres of land for establishing the Institute on 10 May 1912.



No. 1765, Revenue, 15th June 1912. 5

Enclosure.

Agreement drawn up by the Revenue Inspector.

Lease agreement entered into by (1) Siddhaya Gowder, son of Dhobarai Gowder, (2) Lingiah Gowder, son of Periya Chikka Gowder, (3) Chika Gowder, son of Siddha Gowder, of Karumalai Chettipaliyam, hamlet of Thelungapalaiyam, Coimbatore taluk, to Dr. C. A. Barber, Government Botanist, Agricultural College, Coimbatore, on behalf of the Secretary of State for India on the 10th May 1912.

By this we agree to lease out to you the below mentioned lands which are in our possession and enjoyment through inheritance at the rate of Rs. 100 per acre per year on the following conditions. You can cultivate any crop you like on this piece of land and enjoy the produce of all the trees standing thereon including cocoanut, tamarind and other trees. After the cessation of this lease period of one year, we shall take possession of the same.

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