

ICAR - SUGARCANE BREEDING INSTITUTE, COIMBATORE
List of Projects – 2018

DIVISION OF CROP IMPROVEMENT

HEAD (I/C) - Dr. G. HEMAPRABHA

P1-15/1-1 Breeding superior sugarcane varieties of different maturity with improved cane yield, quality and resistance to biotic and abiotic stresses.

PL G. Hemaprabha

(i) Breeding sugarcane varieties for tropical region

(Start : April 1926 End : March 2025)

- a) Hybridisation, seedling and clonal evaluation
G. Hemaprabha, R.M. Shanthi, S. Alarmelu, P. Govindaraj, A. Anna Durai, K. Mohanraj, C. Appunu, Adhini S. Pazhany, S. Karthigeyan, R. Karupaiyan, A.J. Prabakaran, C. Mahadevaiah, Sheela Mary, T. Lakshmi Pathy, H.K. Mahadevaswamy, V. Vinu, V. Sreenivasa, K. Elayaraja
- b) Pre Zonal Varietal Trial
 - i) Cane yield and quality – S. Karthigeyan, C. Mahadevaiah, S. Alarmelu, A. Anna Durai
 - ii) Screening for diseases
Red rot - P. Malathi
Smut – A. Ramesh Sundar
 - iii) Fibre – I. Rajendran
- c) Botanical characterisation and DNA Finger printing of elite selections and varieties
G. Hemaprabha, H.K. Mahadevaswamy
- d) Identification and testing of short duration sugarcane clones – R. Karupaiyan, G. Hemaprabha
- e) Evaluation of elite clones for identifying promising location specific sugarcane varieties
 - i. Maharashtra – C. Mahadevaiah, V. Sreenivasa
 - ii. Andhra Pradesh – K Mohanraj, T. Lakshmi Pathy
 - iii. Karnataka – V. Sreenivasa, H.K. Mahadevaswamy

(ii) Breeding special varieties for high biomass and total sugars for cogeneration and ethanol production

(Start: Nov. 2009 End: Oct. 2021)

P. Govindaraj, M.R. Meena

(iii) Identification of superior sugarcane varieties suitable for different agro-eco climatic regions of Tamil Nadu (CAE trials in collaboration with TNAU)

(Start: June 2013 End: March 2020)

A. Anna Durai, C. Mahadevaiah

(vii) Breeding elite clones suitable for North West Zone

(Start: Feb. 1998 End: Jan. 2020)

- (a) Hybridization, progeny evaluation and selection
Ravinder Kumar, M. R. Meena, N. Kulshreshtha, M.L. Chhabra
- (b) Pre-Zonal Varietal Trial
Ravinder Kumar, M. R. Meena, N. Kulshreshtha, B. Parameswari
- (c) Evaluation at sugar factory locations in subtropical India
M.R. Meena, Ravinder Kumar, M.L. Chhabra, N. Kulshreshtha

(viii) Breeding varieties resistant to waterlogging (Kannur)

(Start: 1984 End: 2025)

M. Nisha, K. Chandran, V. Krishnapriya

P1-15/1-2 Enhancement of sugarcane germplasm and development of pre-breeding material

PL P. Govindaraj

(ii) Cytological behaviour in the interspecific hybrids derived with different cytotypes of *S. spontaneum*

(Start: Oct. 2014 End: Dec. 2019)

A. Suganya, R. Karuppaiyan

(iii) Development of Multiparent Advanced Generation Inter-Cross (MAGIC) population for drought tolerance in sugarcane

(Start: Nov. 2014 End: Oct. 2020)

K. Mohanraj, G. Hemaprabha, S. Vasantha

(iv) Collection, Maintenance, Evaluation and Cataloguing of Sugarcane Germplasm at Coimbatore

(Start: April 1980 End: Dec. 2025)

- (a) Collection - P. Govindaraj, H.K. Mahadevaswamy
- (b) Maintenance at Coimbatore and Wellington -
S. Karthigeyan, Adhini S. Pazhany, Sheela Mary, M. Sivaswamy
(Head, ICAR-IARI Regional Station, Wellington)
- (c) Maintenance of commercial hybrids and genetic stocks
V. Sreenivasa, V. Vinu
- (d) National active germplasm maintenance - C. Jayabose,
S. Alarmelu
- (e) Characterisation, Evaluation and Cataloguing - C. Jayabose,
Adhini S. Pazhany, S. Karthigeyan
- (f) Cytological studies in *Saccharum* and allied genera -
S. spontaneum - V.P. Sobhakumari
- (g) Floral biological and cytological characterization of *E.*
arundinaceus - A. Suganya
- (h) Evaluation of sugarcane germplasm for biotic and abiotic
stresses at Coimbatore
V. Vinu, T. Lakshmi Pathy, H.K. Mahadevaswamy,
R. Valarmathi, R. `Kumar

- (vi) Evaluation of sugarcane germplasm under sub-tropical conditions** (Start: 1998 Continuous)
- (a) Evaluation of sugarcane germplasm
Ravinder Kumar, M. R. Meena, S.K. Pandey, M. L. Chhabra, Pooja
- (b) Evaluation of interspecific and intergeneric hybrid clones
N. Kulshreshtha, M. R. Meena, Ravinder Kumar, S. K. Pandey,
B. Parameswari, Pooja
- (vii) Characterization and mining genetic variability in sugarcane germplasm against abiotic stress (Salinity / alkalinity and low temperature) under subtropical India (Karnal)**
(Start: March 2015 End: March 2019)
Ravinder Kumar, M.R. Meena, N. Kulshreshtha, A. Selvi,
Aswani Kumar (CSSRI, Karnal), Pooja, K. Rajasekar
- (viii) Utilisation of germplasm resources for developing new genetic stocks (Kannur)**
(Start: April 1973 End: 2025)
K. Chandran, M. Nisha, B. Mahendran
- (ix) Maintenance of world collection of sugarcane germplasm (Kannur)**
(Start: 1973 End: 2025)
- (a) Maintenance and evaluation of germplasm
K. Chandran, M. Nisha
- (b) Monitoring of diseases, pests and quarantine
R. Gopi, B. Mahendran
- (c) *In vitro* conservation of germplasm
K. Chandran, M. Nisha
- (d) DNA finger printing of *Saccharum officinarum* clones
M. Nisha, K. Chandran
- (x) Germplasm maintenance, hybridisation and offseason nursery (Agali)**
(Start: April 1999 End: March 2020)
- (a) Maintenance of core germplasm of sugarcane
R.Karuppaiyan, K. Elayaraja
- (b) Sugarcane distant hybridisation
R. Karuppaiyan, A. Anna Durai, K. Elayaraja
- (c) Off season nursery
R. Karuppaiyan, K. Elayaraja
- (xi) Molecular cytogenetic characterization of interspecific and intergeneric hybrids of *Saccharum***
(Start: July 2017 End: July 2020)
V. P. Sobhakumari, K. Mohanraj

(xii) Developing trait specific genetic stocks with biotic and abiotic stress tolerance, quality and yield traits in sugarcane through pre-breeding (Start: Aug 2018 End: Mar 2024)

PL K. Mohanraj

(a) Identifying multi trait genetic stocks with improved *Saccharum* genetic base

S. Alarmelu, S. Sheela Mary, S. Vasantha

(b) Developing trait specific genetic stocks for biotic and abiotic stress tolerance utilizing novel *Saccharum* germplasm

A. Anna Durai, A.J. Prabakaran, V. Sreenivasa, H.K. Mahadevaswamy, C. Mahadevaiah, K. Mohanraj, R. Viswanathan, K. Chandran

(c) Developing trait specific genetic stocks with *Erianthus* genetic base

K. Mohanraj, H.K. Mahadevaswamy, A. Suganya

P1-15/1-3

Sugarcane genomics and molecular markers

PL A. Selvi

(iii) Oxidative stress tolerance in light of climate change: Gene discovery and regulation by micro RNAs in *Erianthus* sp. and *Saccharum spontaneum*

(Start: Oct. 2014 End: Sept. 2019)

R. Manimekalai, A. Selvi, R. Gomathi

(iv) Precise genome editing system in sugarcane CRISPR-Cas: altering the flowering behavior of sugarcane (Start: May 2016 End: May 2021)

R. Manimekalai, A. Selvi, S. Vasantha, K. Mohanraj, B. Deva Kumar

(v) Transcriptome guided mining and validation of genes, miRNAs and their potential targets for water deficit stress

(Start: July 2018 End: June 2021)

A. Selvi, R. Manimekalai, P.T. Prathima, R. Gomathi

(vi) Sucrose regulating genes in sugarcane – analysis of transcript diversity and identification of isoforms / transcript variants

(Start: July 2018 End: June 2021)

P.T. Prathima, T. Lakshmi Pathy, Avinash Singode (Indian Institute of Millets Research, Hyderabad)

(vii) Isolation and characterization of genes associated with high Water Use Efficiency (WUE) in sugarcane cultivars

(Start: July 2018 End: June 2021)

K. Deva Kumar, P.T. Prathima

P1-15/1-4

Gene discovery and genetic transformation in sugarcane

PL C. Appunu

(iii) Isolation, cloning and characterisation of novel stem specific promoter from *Erianthus arundinaceus* (Start: June 2016 End: June 2019)

C. Appunu, H.K. Mahadevaswamy

- (v) **Differential Gene Expression Studies on *Saccharum spontaneum* in Response to Salinity Stress Tolerance**
(Start: June 2017 End: March 2020)
K. Lakshmi, S. Vasantha
- (vi) **Cloning and characterization of lignin genes in an *E. coli* expression vector** (Start: June 2017 End: Dec 2018)
K. Lakshmi

**DIVISION OF CROP PRODUCTION
HEAD: Dr. C. PALANISWAMI**

P1-15/2-1

Development of Cropping Systems and Improved Agronomic Practices to Enhance Sugarcane Productivity
PL K. Hari

- (v) **Characterization of rhizosphere of selected sugarcane genotypes**
(Start: Nov. 2014 End: March 2019)
K. Hari, S. Vasantha, A. Anna Durai, G.S. Suresha
- (vi) **Development and promotion of tools and machinery for sugarcane mechanization** (Start: April 2014 End: March 2019)
T. Arumuganathan, C. Palaniswami, V. Venkatasubramanian
- (vii) **Development of improved planting material of sugarcane by priming with plant growth promoting bacteria and other substances** (Start: October 2017 End: March 2022)
K. Hari, P. Geetha, P. Malathi, D. Neelamathi, G.S. Suresha, N. Rajendra Prasad
- (viii) **Weed management in sugarcane under wide row planting** (Start: March 2017 End: January 2020)
S. Anusha, P. Geetha
- (ix) **Inter institutional collaborative research project on testing and evaluation of IISR sugarcane machineries under tropical condition**
(Start: Feb 2019 End: Jan 2022)
A.K. Singh (Indian Institute of Sugarcane Research, Lucknow), T. Arumuganathan

P1-15/2-2

Enhancing physiological efficiency of sugarcane
PL S. Vasantha

- (iii) **Evaluation of physiological efficiency of commercial hybrids and species clones of *Saccharum* for water use under water limited conditions**
(Start: May 2016 End: March 2021)
S. Vasantha, A.S. Tayade, R. Arun Kumar, S. Anusha, G. Hemaprabha
- (iv) **Genotypic behavior of sugarcane under moisture stress in subtropical India** (Start: May 2016 End: Oct 2019)
Pooja, N. Kulshreshtha, Ravinder Kumar

(v) Comparative physiological analysis of tropical and subtropical varieties of sugarcane

(Start: Jan 2018 End: March 2021)

R. Gomathi, R. Arun Kumar, Pooja, N. Kulshreshtha, K. Elayaraja, V. Krishnapriya

(vi) Radiation use efficiency of sugarcane genotypes as influenced by water levels and crop geometry

(Start: Jun 2017 End: Jun 2020)

R. Arun Kumar, P. Geetha

(vii) Deciphering the physiological basis of nutrient use efficiency in sugarcane

(Start: July 2018 End: June 2022)

V. Krishnapriya, S. Vasantha, R. Arun Kumar, S. Anusha, V. Vinu

P1-15/2-3

Natural Resource Management for Enhancing Productivity and Sustainable Sugarcane Production

PL C. Palaniswami

(ii) Development of a Decision Support System for Sugarcane Soil Management

(Start : Oct. 2014 End: Sept. 2019)

A. Vennila, C. Palaniswami

(iii) Assessment of carbon sequestration in sugarcane growing soils with reference to substrate dynamics

(Start: June 2016 End: May 2021)

C. Palaniswami, A. Vennila

(iv) Development of soil inference system for the management of sugarcane soils using Pedotransfer Function Approach (Start: May 2016 End: Dec 2019)

A. Vennila, C. Palaniswami

(v) Effect of sulphur and micronutrients (zinc, iron and boron) application on yield and quality of sugarcane (variety Co 0238) under sub-tropical condition

(Start: April 2018 End: Mar 2021)

K. Rajasekar, N. Kulshreshtha, Ravinder Kumar, Pooja

DIVISION OF CROP PROTECTION

HEAD - Dr. R. VISWANATHAN

P1-15/3-1

Host resistance, interactomics, pathogen variability, diagnosis and disease management in sugarcane

PL R. Viswanathan

(i) Screening of sugarcane progenies & germplasm for disease resistance, disease survey & surveillance and impact of climate changes on sugarcane pathogens

(Start : Jan. 1990 End : Continuous)

- (a) Screening for red rot resistance
R. Viswanathan, P. Malathi, A. Ramesh Sundar, R. Selvakumar, V. Jayakumar, K. Nithya
 - (b) Climate changes issues in sugarcane agriculture: assessing potential impact on pathogen virulence and host resistance
R. Viswanathan, R. Selvakumar, P. Malathi and A. Ramesh Sundar
 - (c) Yellow leaf disease
R. Viswanathan, K. Nithya
- (ii) Characterisation of red rot pathotypes** (Start: Dec. 1990
End : Continuous) R. Viswanathan, R. Selvakumar
- (vi) Identification of anti-fungal genes and identifying sugarcane phytoalexins as marker for red rot resistance**
(Start : April 2012 End : March 2019)
R. Viswanathan, P. Malathi, A. Ramesh Sundar
- (viii) Developing chitosan based nano-delivery systems for disease management and enhancing nutrient use efficiency in sugarcane**
(Start : Oct. 2014 End : Mar 2019)
- (a) Inducer nano-particles as smart delivery system for harnessing red rot resistance in sugarcane
V. Jayakumar, A. Ramesh Sundar, R. Viswanathan,
 - (b) Nanofertilizers to enhance nutrient use efficiency
C. Palaniswami, V. Jayakumar
- (ix) Characterization of rust resistance in sugarcane and dynamics of rust pathogens under changing climate in India** (Start: May 2016 End: May 2021)
R. Selvakumar, T. Lakshmi Pathy
- (x) Molecular characterization of phytoplasmas associated with sugarcane diseases**
(Start: May 2016 End: May 2019)
K. Nithya, R. Viswanathan
- (xi) Assessing the impact of non-fungal diseases in popular sugarcane varieties in subtropical region and their management** (Start: May 2016 End: May 2019)
B. Parameswari, M.L. Chhabra, R. Viswanathan
- (xii) Mechanized means of sett treatment to deliver different agro-inputs for the management of biotic and abiotic stress in sugarcane** (Start: May 2016 End: June 2019)
P. Malathi, R. Viswanathan, A. Ramesh Sundar, T. Ramasubramanian, R. Selvakumar, A. Vennila, N. Rajendra Prasad, M.L. Chhabra, B. Parameswari
- (xiii) Epidemiology and management of *Fusarium* diseases in sugarcane** (Start: May 2017 End: Jun 2020)
R. Viswanathan, R. Selvakumar, P. Malathi, A. Ramesh Sundar, M.L. Chhabra, B. Parameswari, R. Gopi, R. Arun Kumar

(xiv) Harnessing antagonistic microbes for the management of wilt and rot diseases in sugarcane

(Start: July 2017 End: July 2022)

R. Gopi, K. Nithya

P1-15/3-2

Studies on Sugarcane Pests and Their Management

PL K.P. Salin

(i) Host plant factors influencing genotypic reaction to shoot borer *Chilo infuscatellus*

(Start : April 2013 End: March 2019)

M. Punithavalli, K.P. Salin

(v) Screening of indigenous isolates of *Bacillus thuringiensis* isolated from sugarcane ecosystem for various crystal toxin genes

(Start : Sept. 2014 End: Sept. 2019)

B. Singaravelu, J. Srikanth, C. Sankaranarayanan, P. Mahesh

C. Appunu, G.S. Suresha

(viii) Development of DNA barcodes and species-specific markers for insects in sugarcane ecosystem

(Start : Nov. 2013 End : Nov 2019)

T. Ramasubramanian, K. Ramaraju (TNAU), S.K. Pandey

(ix) Studies on the prospects of *Telenomus* sp. as a candidate biocontrol agent of internode borer

(Start : May 2016 End: March 2019)

J. Srikanth, P. Mahesh, K.P. Salin, L. Saravanan

(x) Bio intensive management of white grub in sugarcane

(Start: May 2016 End: April 2019)

N. Geetha, K.P. Salin, M. Punithavalli, C. Sankaranarayanan

(xi) Standardization of mass production of scarabaeid specific *Bacillus thuringiensis* using agro-Industrial by products for white grub management (Start: Sep 2017 End: Sep 2021)

P. Mahesh, B. Singaravelu, J. Srikanth, K. Hari

(xii) Temperature driven phenology modelling to assess the impact of climate change on population dynamics of internode borer, *Chilo sacchariphagus indicus* in sugarcane

(Start: July 2018 End: June 2021)

L. Saravanan, T. Ramasubramanian

(xiii) Evaluation of seasonal dynamics and biological control of sugarcane pyrilla, *Pyrilla perpusilla*, in crop island scenario

(Start: July 2018 End: June 2021)

B. Mahendran, R. Gopi, P. Mahesh

P1-15/3-3

Basic and applied studies of sugarcane phytonematodes and entomopathogenic nematodes

PL C. Sankaranarayanan

(i) Studies on insecticidal molecules of symbiotic bacteria associated with entomopathogenic nematodes

(Start : March 2013 End: Jun 2019)

C. Sankaranarayanan, K. P. Salin, K. Hari, B. Singaravelu

(ii) Isolation and evaluation of entomopathogenic nematodes (EPN) from white grub endemic areas of subtropical sugarcane ecosystem

(Start: May 2016 End: May 2019)

C. Sankaranarayanan, S.K. Pandey, B. Singaravelu

STATISTICS & ECONOMICS SECTION

P1-15/4-1

Economic and statistical studies in sugarcane and sugar production system

PL P. Murali

(i) An economic analysis on sugar recovery in different states in India (Start: April 2016 End: March 2021)

P. Murali, D. Puthira Prathap, V. Venkatasubramanian

(ii) A feasibility study of recommended sugarcane production and protection technologies for promoting rural entrepreneurship

(Start: Apr 2017 End: Mar 2020)

V. Venkatasubramanian, P. Murali, D. Puthira Prathap, T. Arumuganathan

(iii) Socio-economic impact of ICAR-SBI varieties and production technologies in different agro-climatic zones of India (Start: Jun 2017 End: May 2020)

P. Murali, V. Venkatasubramanian, Ravinder Kumar, K. Elayaraja

(iv) Economic impact and climate smartness of variety Co 0238 in sub-tropical India

(Start: July 2018 End: June 2022)

P. Murali, V. Venkatasubramanian, D. Puthira Prathap, Ravinder Kumar

EXTENSION SECTION

HEAD – Dr. T. RAJULA SHANTHY

P1-15/5-1

Transfer of sugarcane technologies

PL T. Rajula Shanthy

(i) Utilisation of extension methods and media for effective transfer of sugarcane technologies

(Start: Dec. 1986 End: Continuous)

T. Rajula Shanthy, D. Puthira Prathap, V. Venkatasubramanian

MULTI-DISCIPLINARY PROJECTS

P1-15/12-1

Standardization of true seed production technique through developing homozygous parental lines and apomixes
(Start : 2015 End : Continuous)

PL Bakshi Ram, Co PL G. Hemaprabha

(a) Inbreeding – G. Hemaprabha, A. Annadurai, K. Chandran, T. Lakshmi Pathy

(c) Chromosome elimination - V. P. Sobhakumari, K. Lakshmi

(d) Wide hybridization- K. Mohanraj, R. Karuppaiyan, A. Suganya

- (e) Apomixis - Adhini S. Pazhany, C. Appunu
- (f) Evaluation of hybrids
 - i. Tropical (Coimbatore) - R.M. Shanthi, S. Alarmelu, R. Karupaiyan, V. Vinu
 - ii. Subtropical (Karnal) - Ravinder Kumar, N. Kulshreshtha, M.L. Chhabra
- (g) Evaluation for diseases- V. Jayakumar, K. Nithya
- (h) Agronomic practices for seedlings / settlings - A.S.Tayade, P. Geetha, S. Anusha
- (i) Drip irrigation and fertigation - A. Vennila
- (j) Seed processing, packaging and storage - N. Rajendra Prasad

P2-15/12-2 All India Coordinated Research Project (Sugarcane)

(Start: 2015 End: Continuous)

PL Bakshi Ram CoPL P. Govindaraj

(I) Peninsular Zone

i. Breeding

- (a) IVT - R. Karupaiyan, T. Lakshmi Pathy
Multiplication & Exchange - S. Alarmelu, C. Mahadevaiah
- (b) AVT-I Plant - K. Mohanraj, V. Sreenivasa
AVT-II Plant - Sheela Mary, V. Vinu
AVT - Ratoon - R.M. Shanthi, K. Elayaraja
- (c) Physiological parameters
Salinity - S. Vasantha, R. Arun Kumar, V. Krishnapriya
Drought - R. Gomathi, R. Arun Kumar, V. Krishnapriya
- (d) Jaggery characters - I. Rajendran
- (e) Fibre, nutrient uptake and nutrient use efficiency, fodder value
I. Rajendran, G. Suresha
- (f) Ethanol production - I. Rajendran
- (g) Evaluation and identification of Climate resilient ISH and IGH genetic stocks
P. Govindaraj, H.K. Mahadevaswamy

ii. Fluff Supply / National Hybridization Programme

(Start : 1971 End : 2025)

A. Anna Durai, Adhini S. Pazhany, V. Sreenivasa,
N. Rajendra Prasad

iii. Agronomy

- (a) Agronomic performance of elite sugarcane genotypes
(Start: March 2001 End: Continuous)
A.S. Tayade, P. Govindaraj, C. Palaniswami, S. Anusha

iv. Pathology (Continuous)

- (a) Identification of pathotypes / races of red rot pathogen
V. Jayakumar, R. Selvakumar
- (b) Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties
R. Viswanathan, A. Ramesh Sundar, P. Malathi, R. Selvakumar,
V. Jayakumar, K. Nithya

(c) Evaluation of IET / Zonal varieties for resistance to red rot, smut & YLD

R. Viswanathan, A. Ramesh Sundar, K. Nithya

(d) Assessment of elite ISH clones for resistance to red rot

R. Viswanathan

v. Entomology (Start: March 2015 End: Continuous)

(a) Evaluation of zonal varieties/genotypes for their reaction against major insect pests

K.P. Salin, J. Srikanth, P. Mahesh, M. Punithavalli, L. Saravanan

(b) Survey and surveillance of sugarcane insect pests

K.P. Salin, J. Srikanth, P. Mahesh, N. Geetha, B. Singaravelu, T. Ramsubramanian, M. Punithavalli, L. Saravanan

(c) Monitoring of insect pests and bio-agents in sugarcane agro-ecosystem

J. Srikanth, K.P. Salin, P. Mahesh, N. Geetha, B. Singaravelu, M. Punithavalli

(d) Standardization of simple and cost effective techniques for mass multiplication of sugarcane bio-agents

J. Srikanth, N. Geetha, T. Ramsubramanian, P. Mahesh, L. Saravanan

(II) Subtropical Zone

i. Breeding

(a) Zonal Varietal Trial (North Western Zone)

N. Kulshreshtha, Ravinder Kumar, M. R. Meena

(b) Evaluation and identification of climate resilient ISH and IGH genetic stocks against drought

N. Kulshreshtha, Ravinder Kumar, M. R. Meena, Pooja, K. Rajasekar

ii. Pathology (Start: Jan. 1998 End: continuous)

(a) Identification of pathotypes / races of red rot pathogen

B. Parameswari, M.L. Chhabra

(b) Survey of sugarcane diseases naturally occurring in the area on important sugarcane varieties

M. L. Chhabra, B. Parameswari

(c) Evaluation of IET / Zonal varieties for resistance to red rot

M. L. Chhabra, B. Parameswari

(d) Assessment of elite ISH clones for resistance to red rot

M. L. Chhabra, B. Parameswari

(e) Yellow leaf disease

B. Parameswari, M.L. Chhabra

iii. Entomology (Start: 2008 End: Continuous)

- (a) Evaluation of zonal varieties/genotypes for their reaction against major insect pests
S.K. Pandey
- (b) Survey and surveillance of sugarcane insect pests
S.K. Pandey
- (c) Monitoring of insect pests and bio agents in sugarcane agro-ecosystem
S.K. Pandey

EXTERNALLY FUNDED PROJECTS

C1-02/1-1-6 Identification, characterisation and verification of new sugarcane varieties for DUS testing at Coimbatore

(Start: Feb. 2002 End: 2020)

Nodal officer - R. Karupaiyan

PL S. Alarmelu

C. Jayabose

C1-06/1-1-10 ICAR Seed Project: Seed production in agricultural crops and fisheries – sugarcane

(Start: April 2007 End: March 2017)

PL A.J. Prabakaran

- (i) Breeder seed production – A.J. Prabakaran, N. Rajendra Prasad, S. Karthigeyan
- (ii) Production of tissue culture plants – D. Neelamathi, R. Valarmathi, C. Jayabose

C1-16/1-1-11 Enhancing Sugar Productivity in Tamil Nadu through Institute-Industry Participatory Approach (SISMA funded)

(Start: Oct. 2016 End: Dec 2021)

PL BAKSHI RAM CoPL C. APPUNU

- (a) To conduct varietal evaluation trials for identification of location specific varieties

G. Hemaprabha, A.J. Prabakaran, R.M. Shanthi, S. Alarmelu, P. Govindaraj, D. Neelamathi, S. Karthigeyan, A. Anna Durai, R. Karupaiyyan, K. Mohanraj, C. Mahadevaiah, V. Sreenivasa, Adhini S. Pazhani, S. Sheela Mary, H.K. Mahadevaswamy, T. Lakshmi Pathy, V. Vinu, K. Elayaraja

- (b) To undertake survey and surveillance of insect pests and diseases in sugarcane

R. Viswanathan, A. Ramesh Sundar, P. Malathi, C. Sankaranarayanan, R. Selvakumar, V. Jayakumar, K. Nithya, R. Gopi, K.P. Salin, J. Srikanth, N. Geetha, B. Singaravelu, T. Ramasubramanian, M. Punithavalli, P. Mahesh

- C1-18/1-1-12 Identification of location specific sugarcane varieties suitable for different agro-climatic zones of Tamil Nadu (Cooperative sugar factories)**
(Start: June 2018 End: Dec 2021)
PL Bakshi Ram CoPL G. Hemaprabha
S. Alarmelu, S. Karthigeyan, A. Anna Durai, R. Karuppaiyyan, K. Mohanraj, C. Appunu, C. Mahadevaiah, V. Sreenivasa, S. Sheela Mary, H.K. Mahadevaswamy, T. Lakshmi Pathy, K. Elayaraja
- C1-14/1-2-41 Genetic control and genomic selection for important traits in sugarcane, and comparison of elite Indian and Australian germplasm.** (Start: March 2016 End: March 2019)
PL R. Manimekalai
G. Hemaprabha, R. Viswanathan, A. Selvi, K. Mohanraj, S. Vasantha
- C1-17/1-2-42 Identification of new genetic resources for drought tolerance from *Erianthus*, A related wild genus of sugarcane through GWAS (DST funded under Early Career Research Award)** (Start: March 2017 End: March 2020)
PL R.Valarmathi
H.K. Mahadevaswamy
- C1-17/1-2-43 Sub-cellular targeting of invertase inhibitory proteins: a novel approach to enhance sucrose yield in sugarcane (DST funded under Early Career Research Award)**
(Start: Mar 2018 End: Mar 2021)
PL G.S. Suresha
- C1-17/1-2-44 Identification of salt responsive genes and micro RNA targets from salt tolerant *Erianthus arundinaceus* through transcriptome analysis**
(Start: Mar 2018 End: Mar 2021)
PL C. Mahadevaiah
- C1-17/1-2-45 Isolation, functional characterization and evaluation of water deficit stress tolerance responsive genes from high drought tolerant *Erianthus arundinaceus* by comparative drought transcriptome analysis.**
(Start: June 2017 End: June 2020)
PL C. Appunu
G. Hemaprabha, G.S. Suresha
- C1-17/1-2-46 Network Project of Transgenics in Crops - Transgenic Development in Sugarcane**
Date of start: Jan 2018; End: March 2020
PL C. Appunu
R. Valarmathi
- C1-17/2-2-23 Physiological approaches for winter ratooning management in sugarcane under subtropical conditions**
(Start: Jun 2017 End: Jun 2020)
PL Pooja
N. Kulshreshtha, Ravinder Kumar

- C1-17/2-2-24** **Characterisation of root system traits in sugarcane germplasm (DST funded under Early Career Research Award)**
(Start: Mar 2018 End: May 2021)
PL V. Krishnapriya
- C1-17/3-1-20** **A whole genome based reduced representation approach for identification of resistance against sugarcane yellow leaf virus in Indian sugarcane.**
(Start: 2018 End: 2021)
PL B. Parameswari
- C1-17/3-1-22** **ICAR-CRP on Development and application of diagnostics to viruses and phytoplasmas infecting Sugarcane**
(Start: Nov 2017 End: March 2020)
PL R. Viswanathan
B. Parameswari, D. Neelamathi and K. Nithya
- C1-17/3-1-23** **Dissecting the molecular interface between the biotrophic pathogen *Sporisorium scitamineum* and its host - Sugarcane (DBT project)** (Date of start: Jan 2018 End: Dec 2020)
PL A. RameshSundar
R. Viswanathan, P. Malathi, P.T. Prathima
- C1-18/3-1-24** **Deciphering *in planta* secretome of *Sporisorium scitamineum* x sugarcane interaction (DST-SERB)**
(Date of start: July 2018 End: June 2021)
PL A. Ramesh Sundar
R. Viswanathan and G. S. Suresha
- C1-16/5-1-21** **Digital inclusion of rural youth for sustainable development: a comparative assessment**
(Start: October 2016; End: August 2018)
PL D. Puthira Prathap
P. Murali, V.Venkatasubramanian
- C1-07/6-1-20** **Identification, characterization and verification of new sugarcane varieties for DUS testing** (Start:2007 End:2020)
PL M. R. Meena
Ravinder Kumar, N. Kulshreshtha
- C1-07/6-1-21** **ICAR Seed project – Seed production in agricultural crops and fisheries – sugarcane**
(Start: 2007 End: March 2019)
PL Ravinder Kumar
- C1-18/6-1-22** **Healthy seed production and mechanization of sugarcane agriculture - A farmers participatory initiative (RKVY Haryana)**
(Start: 2018 End: 2022)
PL Ravinder Kumar
N. Kulshreshtha, M.R. Meena, M.L. Chhabra, K. Rajasekar,
S.K. Pandey, B. Parameswari, Pooja
- C1-18/6-1-23** **Sugarcane Breeder Seed production and demonstration of intercropping (NFSM-CC)**
(Start:2014 End:2019)
N. Kulshreshtha, Ravinder Kumar, M.R. Meena

C1-07/11-1-2 **DUS testing of sugarcane**
(Start: Feb. 2007 End: March 2019)
PL R. Karuppaiyan
K. Elayaraja

CONTRACT RESEARCH PROJECTS

C1-17/3-3-8 **Evaluation of molecule PII 8007 20% SC against early shoot borer, top borer & termite in sugarcane**
(Start: 2017 End: 2019)
PL S. K. Pandey

CRP-18/3-2-1 **Efficacy of chlorantraniliprole 18.5% SC against early shoot borer, top borer and termites**
(Start: May 2018 End: May 2019)
PL S. K. Pandey

LIST OF NEW INSTITUTE SUB-PROJECTS

P1-15/1-2 **(xii) Developing trait specific genetic stocks with biotic and abiotic stress tolerance, quality and yield traits in sugarcane through pre-breeding** (Start: Aug 2018 End: Mar 2024)
PL K. Mohanraj

- (a) Identifying multi trait genetic stocks with improved *Saccharum* genetic base
S. Alarmelu, S. Sheela Mary, S. Vasantha
- (b) Developing trait specific genetic stocks for biotic and abiotic stress tolerance utilizing novel *Saccharum* germplasm
A. Anna Durai, A.J. Prabakaran, V. Sreenivasa, H.K. Mahadevaswamy, C. Mahadevaiah, K. Mohanraj, R. Viswanathan
- (c) Developing trait specific genetic stocks with *Erianthus* genetic base
K. Mohanraj, H.K. Mahadevaswamy, A. Suganya

P1-15/1-3 **(v) Transcriptome guided mining and validation of genes, miRNAs and their potential targets for water deficit stress**
(Start: July 2018 End: June 2021)
A. Selvi, R. Manimekalai, P.T. Prathima, R. Gomathi

(vi) Sucrose regulating genes in sugarcane – analysis of transcript diversity and identification of isoforms / transcript variants
(Start: July 2018 End: June 2021)
P.T. Prathima, T. Lakshmi Pathy, Avinash Singode (Indian Institute of Millets Research, Hyderabad)

- (vii) Isolation and characterization of genes associated with high Water Use Efficiency (WUE) in sugarcane cultivars**
(Start: July 2018 End: June 2021)
K. Deva Kumar, P.T. Prathima
- P1-15/2-1 (ix) Inter institutional collaborative research project on testing and evaluation of IISR sugarcane machineries under tropical condition**
(Start: Feb 2019 End: Jan 2022)
A.K. Singh (Indian Institute of Sugarcane Research, Lucknow),
T. Arumuganathan
- P1-15/2-2 (vii) Deciphering the physiological basis of nutrient use efficiency in sugarcane**
(Start: July 2018 End: June 2022)
V. Krishnapriya, S. Vasantha, R. Arun Kumar, S. Anusha, V. Vinu
- P1-15/2-3 (v) Effect of sulphur and micronutrients (zinc, iron and boron) application on yield and quality of sugarcane (variety Co 0238) under sub-tropical condition**
(Start: April 2018 End: Mar 2021)
K. Rajasekar, N. Kulshreshtha, Ravinder Kumar, Pooja
- P1-15/3-2 (xii) Temperature driven phenology modelling to assess the impact of climate change on population dynamics of internode borer, *Chilo sacchariphagus indicus* in sugarcane**
(Start: July 2018 End: June 2021)
L. Saravanan, T. Ramasubramanian
- (xiii) Evaluation of seasonal dynamics and biological control of sugarcane pyrilla, *Pyrilla perpusilla*, in crop island scenario**
(Start: July 2018 End: June 2021)
B. Mahendran, R. Gopi, P. Mahesh
- P1-15/4-1 (iv) Economic impact and climate smartness of variety Co 0238 in sub-tropical India**
(Start: July 2018 End: June 2022)
P. Murali, V. Venkatasubramanian, D. Puthira Prathap, Ravinder Kumar

LIST OF CLOSED INSTITUTE SUB-PROJECTS AND/OR ACTIVITIES

- P1-15/1-1 (iv) Development of commercial sugarcane varieties with *Saccharum spontaneum* and *Erianthus arundinaceus* cytoplasm** (Start: Jan. 2009 End: March 2018)
Adhini S. Pazhany
- (v) Evaluation of *in vitro* methodology for production of disease free biotized tissue culture plants through direct regeneration in sugarcane**
(Start : 2014 End : 2018)
D. Neelamathi, A. Selvi, S. Vasantha

- P1-15/1-2** **(i) Study on the mechanism of chromosome elimination and allelic variation in centromeric region in sugarcane**
(Start: January 2013 End: Feb. 2018)
V.P. Sobhakumari, K. Lakshmi
- (v) Utilisation of sugarcane germplasm resources for broadening the genetic base** (Start: June 1995 End: March 2018)
- (b) Exploitation of *Saccharum* spp. (improved *officinatum*, improved *robustum*, *S. robustum* and *S. barberi*) for broadening the genetic base
S. Alarmelu, C. Jayabose, Adhini S. Pazhany
- P1-15/1-3** **(i) Development of transcript SSR markers for sucrose synthesis and WRKY transcription factors among the elite sugarcane clones used as parents in breeding programmes**
(Start : April 2014 End: Dec. 2017)
R. M. Shanthi, G. Hemaprabha
- (ii) Functional genomics for water deficit stress in sugarcane**
(Start: Oct. 2014 End: Sept. 2018)
A. Selvi, R. Manimekalai, R. Gomathi
- P1-15/2-1** **(iv) Sugarcane biomass based biochar as a source of organic manure/amendment** (Start: Jan. 2015 End: Dec. 2017)
A. Bhaskaran, T. Arumuganathan, K. Hari
- P1-15/3-1** **(iii) Mapping pathogenic and molecular variability of sugarcane smut in India** (Start: April 2008 End: March 2018)
A. Ramesh Sundar, R. Viswanathan, P. Malathi
- (v) Identification and characterization of genes / proteins related to *Colletotrichum falcatum* pathogenicity**
(Start: April 2012 End: March 2018)
P. Malathi, R. Viswanathan, A. Ramesh Sundar
- P1-15/3-2** **(iv) Prospective determinants of virulence and rhizosphere competency in *Metarhizium anisopliae*** (Start: April 2013 End: March 2018)
N. Geetha, M. Punithavalli, L. Saravanan, K.P. Salin
- (vii) Pesticide dynamics in sugarcane and its ecosystem**
(Start : Nov 2013 End: March 2018)
T. Ramasubramanian
- P1-15/5-1** **(iii) ICT diffusion and use: a feasibility analysis in the disadvantageous regions** (End: Nov 2017)
D. Puthira Prathap, P. Murali, T. Rajula Shanthi, V. Venkatasubramanian
- (iv) Extent of adoption of recommended production cum protection technologies of sugarcane in Tamil Nadu and constraint analysis** (Start: Nov.2013 End: Nov.2017)
D. Puthira Prathap, K. Sivaraman, T. Ramasubramanian, T. Rajula Shanthi, P. Murali, V. Venkatasubramanian and K. Mohanraj

LIST OF CLOSED MULTI-DISCIPLINARY SUB-PROJECTS AND/OR ACTIVITIES

P2-15/12-2

(I) Peninsular Zone

iii. Agronomy

(b) Impact of integrated application of organics and inorganics in improving soil health and sugarcane productivity

(Start : Dec. 2014 End : March 2018)

A.S. Tayade, A. Bhaskaran, S. Anusha

LIST OF CLOSED EXTERNALLY FUNDED PROJECTS

C1-15/2-2-22

Climate resilience in sugarcane agriculture: metabolic and molecular response to high temperature

(Start: April 2016 End: April 2018)

PL R. Gomathi

C1-16/2-5-2

Application of Drone with Satellite Data for Precision Agriculture Monitoring and Yield Prediction with Drone Assisted Surveillance and Diagnosis for Biotic and Abiotic Stresses in Sugarcane (Start: February 2016 End: January 2018)

PL T. Arumuganathan

A. Bhaskaran, P. Malathi, C. Palaniswami

C1-14/3-1-19

Characterization of virus suppressor proteins in RNA viruses infecting sugarcane and developing transgenic sugarcane lines resistance to SCSMV and SCYLV through RNAi approach

(Start : 2014 End : August 2017)

PL R. Viswanathan

P. Malathi, K. Lakshmi, B. Parameswari

C1-14/3-3-7

Identification and characterization of proteinase inhibitors influencing resistance against shoot borer, *Chilo infuscatellus* (Snellen) and internode borer, *Chilo sacchariphagus indicus* (Kapur) (Lepidoptera: Crambidae) in sugarcane (Start: April 2016 End: April 2018)

PL M. Punithavalli

C1-16/5-1- 19

Farmer support programme for sustainable sugarcane production (Start: Oct 2015 End: March 2018)

PL T. Rajula Shanthi

LIST OF CLOSED CONTRACT RESEARCH PROJECTS

- C1-15/2-2-20** **Evaluation of MIDAS on Yield and quality of Sugarcane**
 (Start: March 2016 End: March 2018)
 PL S. Vasantha
 D. Puthira Prathap
- C1-15/2-2-21** **Evaluating the effect of Sea6- Biostimulant formulations on the quality and yield of sugarcane**
 (Start: Jan 2016 End: April 2018)
 PL R. Gomathi

INSTITUTE - PROJECT SUMMARY		
S. No.	Division/Section	No. of Projects
1.	Division of Crop Improvement	4
2.	Division of Crop Production	3
3.	Division of Crop Protection	3
4.	Statistics & Economics Section	1
5.	Extension Section	1
6.	Multidisciplinary projects	2
	TOTAL	14