

## CURRICULUM VITAE OF G. BYJU



1. Name and Address : **Dr. G. BYJU**  
Principal Scientist  
ICAR-Central Tuber Crops Research Institute  
(Under Indian Council of Agricultural Research (ICAR))  
Sreekariyam, Thiruvananthapuram 695 017  
Kerala, India  
Phone : (0091) 0471 - 2598551 to 2598554 (Lab)  
(0091) 0471 - 2441067 (Home)  
- +91 9447740552 (Mobile)  
- +91 85474 41067 (Mobile)  
Fax : (0091) 0471 - 2590063  
E mail : [byju\\_g@yahoo.com](mailto:byju_g@yahoo.com)  
Website : <http://www.ctcri.org/byju.htm>
2. Permanent Address : MUNDAKAKULANJIYIL, TC 6/2197(3)  
Aithady Road, Thuruvikkal P.O.,  
Thiruvananthapuram, Kerala, India 695 031
3. Nationality : Indian
4. Date of Birth : 27 May, 1965

### 5. Academic Qualifications

Sl. No.	Examination Passed	Year	Subject	Total Marks / Grade Points	Marks / Grade Points Obtained	% of Marks
1	SSLC	1980	General Science, Mathematics & Social Studies	600	505	84.20
2	Pre-degree	1982	Physics, Chemistry & Biology	900	696	95.60
3	B. Sc. (Ag.)	1986	Agriculture	4.00	3.80	84.20

4	M. Sc. (Ag.)	1989	Soil Science & Agricultural Chemistry	4.00	3.91	87.00
5	DPR & J	1990	Public Relations & Journalism	700	362	51.70
6	Ph. D.	2000	Soil Science & Agricultural Chemistry	4.00	3.92	88.00

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**6. Professional Experience : 30 years (since 1989)**

*A. Research and Extension : 28 years (since 1992)*

- i) **PRINCIPAL SCIENTIST** at ICAR-Central Tuber Crops Research Institute (ICAR-CTCRI), Thiruvananthapuram, Kerala, India since 1<sup>st</sup> January 2009. The duties involve research on site specific nutrient management of tropical tuber crops (cassava, yams, elephant foot yam and sweet potato); development of nutrient decision support systems for tuber crops; studies on fertilizer best management practices for tuber crops; development of nutrient management zones and customized fertilizers for tropical tuber crops and climate change studies in tuber crops using geoinformatics tools.
- ii) **SENIOR SCIENTIST** at ICAR-Central Tuber Crops Research Institute (ICAR-CTCRI), Thiruvananthapuram, Kerala, India since 2<sup>nd</sup> May, 2002. The duties involved research on chemistry and fertility aspects of tropical soils growing tuber crops. The research programmes were envisaged at national level, addressing the problems faced by farmers in different parts of the country. The soil fertility problems in the major tuber crops growing areas like Kerala, Tamil Nadu, Andhra Pradesh and eastern and north eastern India were studied by the various research programmes and solutions were developed. Site Specific Nutrient Management (SSNM) technology, a component of Precision Farming, has been developed for large scale industrial cassava cultivation. A nutrient decision support system (NuDSS) software, CASSNUM,

has been developed. A very simple, farmer friendly and cost effective management practice has been developed to control tuber rot of cassava, a major problem in cassava cultivation. Leaf Colour Chart (LCC) and chlorophyll meter (SPAD-502) based real time nitrogen management technology was also developed for cassava.

- iii) **SENIOR SCIENTIST** (21.01.01 to 01.05.02) and **SCIENTIST (SENIOR SCALE)** (22.08.99 to 20.01.01) for a period of 2 years and 8 months at Regional Centre of ICAR-CTCRI, Bhubaneswar, Orissa, India. The duties involved research on soil fertility aspects of the important tuber crops grown in eastern and north-eastern India. Based on very detailed survey and analysis of soil and plant samples, important nutritional problems (major and micro nutrients) for tuber crops cultivation in those areas were identified and specific recommendations were developed based on different research programmes. Actively involved in the super cyclone rehabilitation programme in Orissa during 1990 and sweet potato has been recommended as a crop which thrives best in the cyclone hit areas.
- iv) **SCIENTIST (SENIOR SCALE)** (27.07.98 to 21.08.99) and **SCIENTIST** (07.01.93 to 26.07.98) at ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala for a period of 5 years. Duties involved conducting research programmes on tropical tuber crops and evolving specific recommendations.
- v) **SCIENTIST** at ICAR-Central Research Institute for Dry land Agriculture (ICAR-CRIDA), Hyderabad during 02.07.92 to 06.01.93. Received advanced training on Soil Science.
- vi) **SCIENTIST** at ICAR-National Academy of Agricultural Research and Management (ICAR-NAARM), Hyderabad during 21.01.92 to 01.07.92. Received advanced training on agricultural research and project management.

*B. Extension*

: 2 years (1990-1992)

**AGRICULTURAL OFFICER** in Kerala State Department of Agriculture, India for 2 years 5 months (August 1989 to January 1992).

## 7. Honours, Awards and Recognition

**Resource person for the International Cassava Training Course**, 6-18 October 2010, at Thailand organized by CIAT, Cali, Colombia.

**Dhiru Morarji Memorial Award 2012** of Fertilizer Association of India for the best research paper published in Indian Journal of Fertilizers during the year 2011.

**Best Poster Award** for the paper, 'Impact of 2030 climate on suitability of yams in major growing environments of India' (K. R. Remya Remesh, G. Byju, T. Radhakrishnan) presented at the International Conference on Tropical Root and Tuber Crops, ICTRT 2013 during 09-12 July 2013 organised at Thiruvananthapuram, India.

**National Merit Scholarship during 1980-81.**

**ICAR Junior Research Fellowship in Soil Science during 1987-1989.**

## 8. Selection to Agricultural Research Service (ARS) of India : 1990

### 9. Membership in Scientific Societies:

- i) Member, Soil Science Society of America
- ii) Member, American Society of Agronomy
- iii) Member, Crop Science Society of America
- iv) Life member, Indian Society of Remote Sensing
- v) Life member, Indian Society for Root Crops
- vi) Life member, Agri-Horticultural Society, Pathanamthitta, Kerala, India

### 10. Reviewer for Journals

Scientific Reports-Nature, Agronomy Journal, Field Crops Research, Plant and Soil, Agriculture, Ecosystems and Environment, Journal of Plant Nutrition and Soil Science, Communications in Soil Science and Plant Analysis, Scientia Horticulturae, Current Science, Journal of Environmental Biology, Journal of Root Crops, Potato Journal, Journal of Plantation Crops, Journal of Research, AN-GRAU; Journal of Spices and Aromatic Plants; African Journal of Food Science; African Journal of Agricultural Research; Journal of Agricultural Extension and Rural Development etc.

### 11. Special Assignments, Skills displayed as a research manager/expert etc.

- i) Scientist-in-charge, Priority Setting, Monitoring and Evaluation (PME) Cell, ICAR-CTCRI since 01.02.2016.
- ii) Guest faculty, IITMK, M. Sc. Geoinformatics programme and took the course 'Geoinformatics applications in agriculture' during 2012 to 2014.

- iii) Member (External Expert), Executive Committee, National Institute of Plant Science Technology, Mahatma Gandhi University, Kottayam, Kerala
- iv) Scientist-in-charge, Farm, ICAR-CTCRI for a period of 3 years and 6 months from 25.09.2010 to 14.03.2014.
- v) Member, Academic Council, Kerala Agricultural University from 2012-2014.
- vi) Secretary, Indian Society for Root Crops for three years from July 2011-September 2014.
- vii) Secretary, Staff Research Council (SRC) / Institute Research Council (IRC), ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram for six years from 2003 to 2008. Organised six annual meetings to review research projects of different scientists of the Institute.
- viii) Member, Editorial Board, Journal of Root Crops during 2004 - 2007.
- ix) Technical Member, State Level Governing Committee, Central Soil Plant Health Centre, Central Soil Testing Laboratory, Department of Agriculture, Government of Kerala, India
- x) Member, Technical Committee, Soil Analytical Laboratories, Soil Survey Organisation, Government of Kerala, India.
- xi) Established a Soil Analysis Laboratory, Soil Room and Soil Library at Regional Centre of CTCRI, Bhubaneswar during 1999-2002 to conduct research on soils of eastern and north-eastern India.
- xii) Expert and delivered lecture at farmers mela, research-extension interface, technical committee etc.
- xiii) Technical Adviser for establishing Soil Testing Laboratories at Mitraniketan KVK, Vellanad, Thiruvananthapuram and CARD-KVK, Pathanamthitta.
- xiv) Subject Expert to review and evaluate the online module on Soil Analysis and Fertiliser Recommendation of the interactive web portal [www.kissankerala.net](http://www.kissankerala.net) of KISSAN-Kerala Project, Technopark, Thiruvananthapuram.
- xv) Nodal Officer, PERMISNET, a personnel management information system network of ICAR, Govt. of India. Created the online module of the CTCRI site of the web portal [www.iasri.res.in/permisnet](http://www.iasri.res.in/permisnet) and is being maintained and updated.
- xii) Approved Research Guide, Environmental Science, Applied Science Faculty, Kerala University, India (Notification No. Election/3/SY/101(1)2005 dated 13.1.2006).
- xiii) External Examiner for M.Sc., M.Sc. (Ag) and Ph. D. students of Kerala University, Mahatma Gandhi University, UAS, Bengaluru and Kerala Agricultural University.
- xiv) Editor, ICAR-CTCRI News, the quarterly newsletter of CTCRI from Volume 24 (2) issue, July – September 2007 to 2009.
- xv) Resource Person, International Cassava Training Course, 6-18 October 2008 in Thailand organized by CIAT, Cali, Colombia.

## 12. Professional Leadership Activities

- i) Organising Secretary, 'International conference on tropical roots and tubers for sustainable livelihood under changing agro-climate', 09-12 July 2013, Thiruvananthapuram, Kerala, India. Organised by Indian Society for Root Crops and Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, India. About 400 delegates from all over the world attended.
- ii) Organising Secretary, 8<sup>th</sup> National Seminar on 'Strategies for improved farming and ecological security of coastal region', 21-24 December 2005. Organised by Indian Society of Coastal Agricultural Research (ISCAR) at CTCRI, Thiruvananthapuram. About 200 delegates from all over the country attended the National Seminar.
- iii) Course Co-ordinator of a six day training programme on 'Soil and Plant Analysis' organized at CTCRI during 12-17 December, 2005 for scientists and officials of Agricultural Universities, State Departments etc.

## 13. Countries visited : 12

Nepal, Thailand (2), Belgium, The Netherlands, Lao PDR, Malaysia, UAE (Abu Dhabi, Dubai, Sharjah & Ajman), China, Hong Kong, Uganda, Italy, Indonesia

## 14. Hands-on Experience on Laboratory Instruments/Equipments/Software

### *A. Instruments / Equipments*

- i) Graphite furnace atomic absorption spectrophotometer
- ii) Automatic nitrogen digestion and distillation system
- iii) Autoanalyser
- iv) Flame photometer
- v) uv-visible Spectrophotometer
- vi) Portable photosynthetic system
- vii) pH Meter
- viii) Conductivity-TDS meter
- ix) Petrological microscope
- x) Muffle furnace
- xi) BOD incubator
- xii) Microwave digestion system
- xiii) Pressure plate apparatus
- xiv) International pipette assembly
- xv) Penetrologger
- xvi) Pressure plate apparatus
- xvii) Automated soil CO<sub>2</sub> flux system
- xviii) Total Station
- xix)

**B. Softwares**

- i) ARCGIS 10.0
- ii) IDRISI Selva
- iii) Cartalinx
- iv) Arcpad 7.1
- v) Surfer 11
- vi) Open Source GIS softwares such as QGIS, ILWIS, GVSIG etc.
- vii) DSSAT 4.5
- vii) QUEFTS
- viii) ECOCROP

**15. Research Projects Implemented****15. Research Projects****A. Major Institute Projects : 19**

- Fertilizer best management practices by SSNM for sustainable tuber crops production and soil health.
- Development of a nutrient decision support system for precision farming of cassava.
- Soil fertility management for cassava in Tamil Nadu and Andhra Pradesh.
- Effect of biofertilisers (*Azospirillum*) in sweet potato for increasing nitrogen use efficiency.
- Boron nutrition of sweet potato.
- Dynamics and transformation of potassium under sweet potato cultivation.
- Pedological and management aspects of hardening and softening of laterites under different land use systems.
- Soil resource inventory of laterite soils under tuber crops in southern Kerala.
- Validation of a sweet potato growth simulation model for field application.
- Development of an interactive information management for tuber crops user system.
- Drip fertigation studies in *Amorphophallus*.
- Impact of *Eucalyptus* and *Acacia* plantations on soil properties in different pedogenic environments of Kerala.
- Management practices against tuber rot of cassava.
- Standardisation of agronomic requirements for advanced breeding lines of cassava.
- Low input technology for cassava.
- Cropping systems involving *Dioscorea*.
- Tuber crops based cropping system.
- Organic farming of orange fleshed sweet potato.
- Development of bioformulation for sustainable production and management of soil borne diseases of tuber crops.

**C. Mentor of Women Scientist (WOS-A), DST : 1**

- I.i. Potential impact of climate change on tropical tuber crops yield in the major growing areas of India (Woman Scientist: R. Raji)

**D. Ph.D. Students Projects : 7**

- i. Chemistry of carbon and nitrogen mineralization in laterite soils under cassava (Haripriya Anand M.).
- ii. Soil phosphorus management for sustainable cassava production and environmental health in Ultisols (Suchithra C.S.).
- iii. Site specific nutrient management on cassava yield, soil quality and environmental health (Hridya A.C.)
- iv. GIS based nutrient decision support system for sustainable cassava production in Thiruvananthapuram district, Kerala (Sabitha Soman).
- v. Development of efficient, site specific and environment friendly fertilization programmes for yams (Remya Remesh K.R.)
- vi. Climate smart natural resource management of cassava (*Manihot esculenta* Crantz) using geoinformatics tools (Shiny R.)
- vii. Site specific nutrient management of taro (*Colocasia esculenta* (L.) Schott) (Jinimol R. Raju)

**E. M. Tech. Student Project : 1**

- i. Specific crop identification using kernel based fuzzy approach from temporal data (Ridhika Agarwal)

**F. M. Sc. Students projects : 11**

- i. Soil quality parameters under four different land use systems in a typic plinthosols (Neethu K.V., 2012)
- ii. Biochemical, mineral and proximate composition of sweet potato varieties Revathi A., 2017)
- iii. Biochemical, mineral and proximate composition of yams, aroids and minor tuber crops (Thanusha Thajudeen, 2017)
- iv. Biochemical, mineral and proximate composition of cassava varieties Geethu Mohan, 2018)
- v. Nutrient enrichment of biochar and its effect on nutrient mobilization in an ultisol (Muhammed Faiz M., 2018)
- vi. Site specific nutrient management of elephant foot yam on soil biochemistry and soil quality (Altaf F.S., 2018)
- vii. Translocation efficiencies and allocation of nitrogen, phosphorus and potassium in cassava as affected by site specific nutrient management.
- viii. Translocation efficiencies and allocation of calcium, magnesium and sulfur in cassava as affected by site specific nutrient management.
- ix. Translocation efficiencies and allocation of iron, manganese, zinc and copper in cassava as affected by site specific nutrient management.
- x. Translocation efficiencies and allocation of nitrogen, phosphorus and potassium in elephant foot yam as affected by site specific nutrient management.
- xi. Translocation efficiencies and allocation of iron, manganese, zinc and copper in elephant foot yam as affected by site specific nutrient management.



### ***G. B. Sc. Students projects : 10***

- i. Biochemical, mineral and proximate composition of recent varieties of tropical tuber crops (Anupa S., Malavika M., Pallavi R., Revathy R.P. Sruthy Jayan S. and Aleesha T.N.; 2018)
- ii. Physico-chemical and biochemical characterization of selected soils of Kerala (Bhavana, Shabna, Shifana Salim and Bindhya; 2019)

### **H. Grants received : USD 1.95 million (12 projects)**

- Potential impact of climate change on tropical tuber crops yield in the major growing areas of India (**Funded by Dept. of Science & Technology, Govt of India; USD 39400**).
- Popularization of climate resilient and nutritionally rich varieties of tuber crops for economic development and nutritional security of farmers of Odisha (**Funded by RKVY, Govt. of India; USD 728000**).
- Popularization of climate resilient improved varieties of tuber crops for food, nutrition and doubling income with emphasis on wellness of tribal and marginal farmers in Kerala (**Funded by RKVY, Govt. of India; USD 576000**).
- Tuber crops development scheme (**Funded by Govt. of Kerala, India; USD 240000**).
- Increasing production and productivity of life support crop species and allied enterprises of tribal, backward and hilly areas (**World Bank funded NATP Project; USD 120000**).
- Higher productivity and profitability from coconut gardens through soil health management in tuber crops (**Funded by Coconut Development Board; USD 40000.00**).
- Nutrient decision support system for precision farming of cassava (**Funded by DST, Govt. of India; USD 35200.00**).
- Climate smart natural resource management of cassava (*Manihot esculenta* Crantz) using geoinformatics tools (**Funded by KSCSTE, Govt. of Kerala; USD 30400.00**).
- Network project on organic farming (NPOF) (**Funded by ICAR; USD 45000**).
- Popularisation of cassava biopesticide against pseudostem weevil, *Odoiporous longicollis* Olivier (Coleoptera:Curculionidae) in three districts of Kerala (**Funded by RKVY, Govt. of India; USD 80000.00**).
- Real time nitrogen management in cassava based on leaf colour chart and chlorophyll meter (**Funded by KSCSTE, Govt. of Kerala; USD 11200.00**).
- Development of multinutrient natural rock mineral fertilizers (**Contract Research Project; USD 3200.00**).

## **16. Technologies developed**

- **Site specific nutrient management (SSNM) technology using QUEFTS model** for cassava, sweet potato, elephant foot yam, yams and taro. Seventy on-farm validation experiments were conducted during the past 14 years across major growing areas

- in India under four institute, one AICRP (Tuber Crops) and two externally funded research projects as PI and the technology is perfected and adopted by farmers.
- **Secondary and micronutrient-inclusive customised fertilizers** for different nutrient management zones of cassava, sweet potato, elephant foot yam and yams in India. Forty on-farm experiments were conducted and validated.
  - **Nutrient zonation maps** were developed for fertilizer best management practice (FBMP) for cassava, sweet potato, elephant foot yam and yams using geoinformatics tools.
  - **Nutrient decision support system for SSNM of cassava (CASSNUM)** as an on-line tool has been developed and is hosted at ICAR-CTCRI website (<http://ctcri.in>) which gets more than 2000 hits a month. The decision support system helps cassava farmers to know all information about site specific nutrient management (SSNM) of cassava to determine the amount of fertilizers required for specific yield targets and to understand and rectify nutrient disorders of cassava. A newer version **CASSNUM version 1.1** has been released in a CD.
  - **Five liquid foliar micronutrient formulations** for cassava (acid soils), cassava (alkali soils), sweet potato, elephant foot yam and yams were developed and commercialized.
  - **Sree Poshini**, a mobile app for site specific nutrient management of tropical tuber crops available at Google Playstore.
  - **Real time N management technology using leaf colour chart (LCC) and SPAD-502** was developed for cassava.
  - **Methodology developed for mapping the spatial variability of soil available nutrients at farm level using geostatistics** to give field level nutrient recommendation and an online tool, Fertcalc\_CTCRI has been developed and hosted at ICAR-CTCRI website (<http://ctcri.in>). Complete information about the soil physical and chemical characteristics of the 130 locations of the ICAR\_CTCRI farm have been generated and the data were used to generate kriged maps of the various parameters using geospatial analyst tool of ArcGIS 10.
  - **Calibrated ECOCROP model of FAO for climate change studies of tropical tuber crops:** Calibrated ECOCROP model for cassava, sweet potato, elephant foot yam and yams under Indian conditions and developed methodology to study their suitability for current and future climate scenarios in India using geoinformatics tools.
  - **Remote sensing technology** has been developed to estimate cassava area using kernel based fuzzy classification approach. The study used temporal Landsat 8 data and was done in collaboration with Indian Institute of Remote Sensing (IIRS), Dehradun.
  - A very successful **management practice to control tuber rot of cassava** has been developed by conducting an on-farm experiment in Salem, Tamil Nadu.
  - A **fertilizer recommendation of 125:75:125 kg ha<sup>-1</sup> N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O** was developed for the cassava mosaic resistant variety, Sree Padmanabha based on 3 years experiment.
  - **Sustainable intercropping systems** involving greater yam-maize, elephant foot yam based cropping systems (green gram and black gram), cassava (Sree Jaya and

- H-165) in coconut plantations and sweet potato (Samrat) in coconut plantations were developed.
- **Organic farming technology** for the production of orange fleshed sweet potato was developed.
  - Sweet potato growth simulation model, **Madhuram** has been developed and validated.
  - Online tools, **Variety identifier** and **Tuber information café** were developed and were hosted at ICAR-CTCRI website (<http://ctcri.org>) which gets more than 2000 hits a month.
  - Two online decision support systems, **NRPUP** (Nutrient Recommendation for Potato Production in UP) and **NRPPP** (Nutrient Recommendation for Potato Production in Punjab) available at <https://cpri.icar.gov.in>.
  - **FERTCALC**, an online fertilizer calculator for site specific nutrient management of ICAR-CTCRI farm available at [www.ctcri.in](http://www.ctcri.in).

### 17. Advanced Trainings Attended : 25

<i>Sl. No.</i>	<i>From</i>	<i>To</i>	<i>Subject</i>	<i>Organiser</i>
1	25.07.86	26.07.86	Fertiliser Orientation Course	FAI & KAU
2	24.04.90	25.04.90	Fertiliser Management	Dept. of Agriculture, Govt. of Kerala
3	24.07.90	26.07.90	Weed Management	Do
4	16.08.90	18.08.90	Mushroom Cultivation	Do
5	26.10.90	27.10.90	Pulses & Oilseeds production	Do
6	27.05.91	29.05.91	Rice Production Technology	Do
7	21.01.92	20.06.92	Agricultural Research Project Management	NAARM, Hyderabad, ICAR (GOI)

8	01.07.92	29.12.92	Subject matter training – Soil Science	CRIDA, Hyderabad ICAR (GOI)
9	09.02.94	28.02.94	Use of Computer Softwares	IMG, Govt. of Kerala
10	06.06.94	30.09.94	Unix & C programming	Do
11	27.01.98	07.02.98	Soil Resource Assessment and Development Planning for the New Millennium	TNAU, Coimbatore and USDA
12	21.09.00	28.09.00	International Training Course on “Integrated Production and Processing Technologies for Sweet Potato”.	CTCRI and CIP, Peru
13	23.10.00	23.11.00	MS Office and Internet Applications	ET&T Corporation Ltd, Bhubaneswar
14	20.03.01	09.04.01	Modelling Growth and Yield of Crops	IARI, New Delhi
15	28.09.01	28.09.01	Use of Potassium in Orissa Agriculture	PPIC – India Programme, New Delhi
16	07.08.03	09.09.03	Atomic Absorption Spectrometry	Perkin Elmer Instruments, Mumbai
17	25.03.04	14.04.04	Precision Farming	TNAU, Coimbatore

18	10.02.06	05.06.06	Computational Geosciences	IITMK, Technopark, Kerala
19	30.08.07	31.08.07	Intelligent Reporting System	NAARM, Hyderabad, AP.
20	06.10.08	18.10.08	Regional Cassava Training Course organized by CIAT, Cali, Colombia	FCRC and TTDI, Thailand
21	31.01.11	05.02.11	GIS and Remote Sensing Techniques for Water Resources Assessment	IIT, Madras
22	05.12.11	09.12.11	Short Course on 'Cropping System Models – Applications in Land Resource Management'.	ICRISAT, Hyderabad
23	17.06.14	20.06.14	Remote sensing for decision makers	IIRS, Dehradun
24	17.09.14	30.09.14	Microwave remote sensing applications	NRSC, Hyderabad
25	17.12.18	22.12.18	Management Development Programme (MDP) on Priority Setting, Monitoring and Evaluation (PME) of Agricultural Research Projects	NAARM, Hyderabad

**18. Seminars / Symposia etc. attended : 36**

**A. Abroad : 9**

1. International Conference on Agriculture and Environment, 29-31 October 1998, Kathmandu, Nepal.
2. International Conference on Land Degradation, 25-29 January, 1999, Khon Kaen, Thailand
3. Global Cassava Partnership: First scientific meeting GCP-1. Cassava-meeting the challenges of the new millennium, 20-25, July 2008, Ghent, Belgium
4. Eighth Triennial Regional Cassava Workshop, 20-24 October 2008, Vientiane, Lao PDR.

5. International Conference on Balanced Fertilizer Application in Tropical Agriculture, 12-16 April 2010, Kuantan, Pahang, Malaysia.
6. International Conference on Soil Classification and Reclamation of Degraded Lands in Arid Environments, 17-19 May 2010, Abu Dhabi, UAE.
7. Ninth Triennial Regional Cassava Workshop on 'Sustainable Cassava Production in Asia for Multiple Uses for Multiple Markets', 27 November - 3 December 2011, Guangxi, China.
8. Global Cassava Partnership: second scientific conference, 'Cassava: overcoming challenges of global climatic change', June 18-22, 2012, Kampala, Uganda.
9. International Conference on Root and Tuber Crops for Food Sustainability, 10-11 October 2017, University of Brawijaya, Malang, Indonesia.

**B. India : 27**

1. First Kerala Science Congress, February 1989, Kochi, Kerala
2. Second Kerala Science Congress, February 1990, Trivandrum, Kerala
3. Third Kerala Science Congress, February-March 1991, Kozhikkode, Kerala
4. 57th Annual Convention of the Indian Society of Soil Science, November 1992, Hyderabad, Andhra Pradesh
5. International Symposium on Tropical Tuber Crops, 6-9 November 1993, Trivandrum, Kerala
6. Soil Mapping for Resource Planning, 3 January 1994, Trivandrum, Kerala
7. Advances in Soil taxonomy, 8 February 1994, Trivandrum, Kerala
8. International Meet on Tropical Tuber Crops, 9-12 December 1996, Trivandrum, Kerala
9. 19th Indian Geography Congress, 29-31 December 1997, Trivandrum, Kerala
10. International Symposium on Tropical Tuber Crops, 19-22 January 2000, Trivandrum, Kerala
11. Seminar on "Use of potassium in Orissa Agriculture", 28.09.2001, OUAT, Bhubaneswar. Organised by PPIC-India, New Delhi and OUAT, Bhubaneswar.
12. International Symposium on 'Importance of Potassium in Nutrient Management for Sustainable Crop Production in India', 3-5 December 2001, New Delhi, Organised by International Potash Institute, Switzerland.
13. National Conference on Coastal Agricultural Research, 6-7 April, 2002, Goa, Organised by ICAR Research Complex for Goa.
14. 67th Annual Convention of the Indian Society of Soil Science, November 11-15, 2002, JNKVV, Jabalpur.
15. XII Swadeshi Science Congress, November 5-7, 2002, CTCRI, Thiruvananthapuram.

16. National Workshop on soil resource management, 22-24 December 2004, Thiruvananthapuram, Proceedings, Soil Survey Organisation, Dept. of Agriculture, Govt. of Kerala.
17. 8th National seminar on “Strategies for improved farming and ecological security of coastal region”. 21-24 December 2005. Organised by Indian Society of Coastal Agricultural Research (ISCAR) at CTCRI, Thiruvananthapuram.
18. Biodiversity Awareness Workshop, 10-11 January, 2005. Organised by National Biodiversity Authority, Government of India at CTCRI, Thiruvananthapuram.
19. 14th triennial symposium of the International Society for Tropical Root Crops, 20-26 November, 2006 Mascot Hotel, Thiruvananthapuram, Kerala, India.
20. National Brainstorming Workshop on ‘Soil management’ organized as part of Understanding Planet Earth by NCSTE, Department of Science and Technology, Government of India during 11-12 August 2007 at Indian Institute of Science, Bangalore.
21. National Workshop on ‘Fertility evaluation for soil health enhancement’, 11-13 September, 2007, Organised by Soil Survey Department, Government of Kerala at Kanakakkunnu Palace, Thiruvananthapuram, Kerala.
22. Workshop on ‘Quality improvement in research’, 28-29 September, 2007, Organised by Kerala University at University Buildings, Thiruvananthapuram, Kerala.
23. Workshop on ‘Information technology applications in horticultural research’, 24-25 August 2009, CPRI, Shimla, Himachal Pradesh.
24. International conference on tropical roots and tubers for sustainable livelihood under changing agro-climate, 09-12 July 2013, Thiruvananthapuram, Kerala. Organised by Indian Society for root Crops and Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
25. International conference on climate change and implications for water resources and nutrition security, 15-16 November 2013, Bangalore, India. Organised by International Life Sciences Institute (ILSI\_India) and CIM-SANS, USA.
26. National seminar on plant science technology for sustainable world, 25-26 February 2016, National Institute of Plant Science Technology (NIIPST), School of Biosciences, MG University, Kottayam, Kerala, India.
27. National Conference on Tropical Tuber Crops for the Sustenance of Tribal Communities (NCTTC-2016), 20-22 October 2016, CTCRI, Thiruvananthapuram, Kerala, India. Conference Document. pp. 106.

## 19. Publications

1.	Books authored	: 3
2.	Books edited	: 1
3.	Chapters in multiauthored books	: 11
4.	Refereed journal articles	: 84
5.	Presentations in conference etc.	: 85

6.	Technical bulletin	: 8
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### 2. Books edited : 1

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