

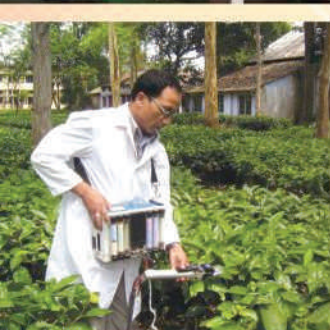


# Tea Research Association



*TRA Tocklai: Ensuring sustainability through research since 1911*





## BACKGROUND

The beginning of a new era in tea research in India was marked by the establishment of the scientific department of Indian Tea Association (ITA) in the year 1900. This was consolidated with the creation of the Tocklai Experimental Station in 1911 at Jorhat, Assam. ITA ran Tocklai for more than 50 years until it faced fund problems for R&D activities. With Govt of India agreeing to fund part of the R&D budget of tea, Tea Research Association (TRA) was formed in 1964, with Tocklai as the research headquarters and registered office at Kolkata.

Today, research on all aspects of tea cultivation and processing is carried out at Tocklai Experimental Station now known as Tocklai Tea

Research Institute and at North Bengal Regional R&D Centre, Nagrakata, West Bengal. The advisory offices of TRA covers 9 eastern Indian states located at Darjeeling, Terai, Nagrakata, Tezpur, Dibrugarh, Silchar, Agartala, Arunachal Pradesh and Meghalaya covering 1076 member tea estates occupying 3,41,049 ha of land areas which employs more than 1 million workers. TRA also provides technical guidance & support to more than 2,00,000 small tea holders in Eastern India.

TRA is the oldest and the largest tea research facility in the world responsible for 1000 million Kgs.

## R&D OVERVIEW

TRA looks after the R&D needs of more than 75% of the Indian tea production through its 2 research institutes and 8 branches. In more than 10 decades of its existence, the scientists of TRA Tocklai have been able to contribute to the industry by increasing crop yield from 524 Kgs/ hectare (1911) to 2190 Kgs/ Hectare (2017). During the course of the 1st and 2nd World War, Tocklai scientists, when called for duty in forward areas have conducted experiments through their spouses/ family members.

The sole aim of TRA is to sustain the industry in the art of making good tea by complementing it with the use of modern scientific R&D work. Our activities range from breeding improved strains of crop using biotechnology to setting up laboratories to control quality, offer good agricultural and manufacturing practices, control pest and diseases and predict weather through satellite imagery and a host of functions which offer a helping hand to the tea planter/ grower. Our scientists constantly upgrade their knowledge and skills to protect the industry from emerging issues.

TRA Tocklai's R&D work is held in high esteem internationally/ nationally as most of the working groups in FAO and ISO is chaired by our scientists as well in bodies such as FSSAI, BIS. Today TRA is preparing the industry to meet the challenges of the current century.

## MISSION

- Ensure sustainability and commercial viability of the tea industry
- Improve overall productivity of the industry
- Reduce input cost on tea production
- Maintain inherent character of Assam, Dooars & Darjeeling tea and improve quality
- Advise members on cost effective energy efficient methods of tea manufacture
- Disseminate information on latest research through advisory & new tools such as mobile apps
- Ensure proper R&D back up for commercial benefit to promote tea consumption in domestic and international markets.

## ALLIED SERVICES AND FUNCTIONS

- Soil, water, agro chemical, manure testing by NABL / FAPAS, UK accredited Labs of TRA
- Tests carried out on ISO & BIS parameters by NABL / FAPAS, UK accredited Labs of TRA
- Residue analysis of tea by NABL / FAPAS, UK accredited Labs of TRA
- Biochemical assessment of tea quality by senior experienced biochemists
- Tea Manufacturing / Tea Tasting / Agriculture Courses
- Web based / Mobile App based online courses on various aspects of tea
- TMAS: Tea Manufacturing Advisory Services
- TCAT: Tea Climate Advisory Services & Decision Support System.



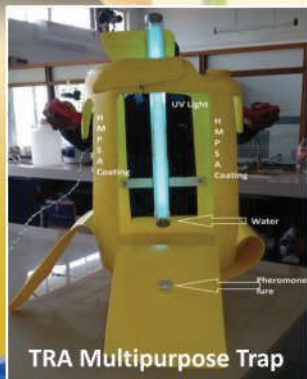


Dr A P J Abdul Kalam at Tocklai



Duke of Edinburgh at Tocklai

Dr V Ramakrishnan, Nobel Laureate at Tocklai



TRA Multipurpose Trap



Tocklai Tea Cola



Tocklai Tea Tablets

TRA FLC App



Tocklai JNK Iron Filing Extractor

## CORE ACTIVITIES

- TRA advisory scientists visit all its 1076 estates twice a year. The advisory scientists identify problems affecting the tea industry through these routine visits and also through its periodic area scientific seminars/ workshops
- The researchable issues are then taken up as studies/ projects at Tocklai and Nagrakata for a set duration
- Studies / Projects are reviewed by the Director and various committees to check the applicability of the research work to the industry
- The research findings of the studies / projects once completed are disseminated to all member gardens through the advisory services who offer hands-on demonstrations of the solutions through workshops/ seminars
- Research on long term trials on climate change, plant breeding, clonal development, soil health, plant protection, irrigation & water management are done on a continuous basis.

## CURRENT FOCUS AREA

- Climate change and adaptation** are one of the major focus areas. It has authored a book on adaptation measures vetted by FAO in the year 2016 for the Indian tea industry
- Mechanisation of leaf plucking** and labour oriented work is being done. Work on newer ride on harvesters being tried out
- On new technologies**, use of artificial intelligence, robotics, IOT, drones, data analytics and bio informatics being used for marrying agriculture with new technology
- On organic agriculture**, it is working to make organic tea plantations more commercially viable.
- Water management & irrigation** is major thrust area. Effective solutions are being provided on rain water harvesting and optimizing ground water
- In the area of production**, integrated approach to nutrient management of soils, fertilizer application, regional variations of potash and sulphur, fertigation, bio fertilizers
- On quality**, selection of clones for quality planting for the future, changes in liquor colour and flavour due to long storage, volatile flavour constituents of Darjeeling tea, strengthening the characteristics of Assam tea
- On plant improvement**, Assam type tea plant clones for quality production, clones for quality and drought resistance, hybridization of high yielding plants, seed propagation of ideal shade trees, efficient seed germination, cloning of genes responsible for production of catechins, caffeine, carotenoids, monoterpenes, polyphenols etc
- On plant protection**, non chemical approach to pest management, alternative greener molecule pesticides and bio-control agents, evaluation of plant species containing insecticidal property, effective bio formulations
- Tea as nutraceuticals** and value added products such as tea polyphenols, fortified water, soft drinks being done
- Energy efficient manufacturing** in tea factories through use of new machinery.



NBRDC, Nagrakata





## COLLABORATIVE RESEARCH PROJECTS

TRA has major collaborations with a host of organizations. With UC Davis, USA on tea germplasm, climate change and tea quality, with University of Southampton UK on the impacts of climate change on tea production and livelihoods in North-East India, with UK Tea & Infusions Association on Anthraquinone, with Tea & Herbal Infusions, Europe and Braunschweig University of Germany on Nicotine, with Kyoto University, Japan, for studies in Molecular Mechanism of Darjeeling flavour, with ITC, Netherlands, for image mining, with North West University of South Africa on metals in soil, with Kunming Institute of Botany, Yunnan China on smart agriculture, with Ochiai Tea Cutlery Co. & Kawasaki Kikoof Shizuoka, Japan on mechanical harvesting, with Ethical Tea Partnership, UK on small grower training and climate change studies, with Unilever & CABI UK on non chemical approach to pest management, with Hindustan Unilever on Trusteaa, with Solidaridad & ITA on STG training, with Dept of Biotechnology & with Dept of Science & Technology, Govt of India, with Agnext Technologies, with Global Entrade, Varsha Bio Science Hyderabad, SciGenome Kochi and with Tea Board of India.

### Use of Cutting Edge Technology:

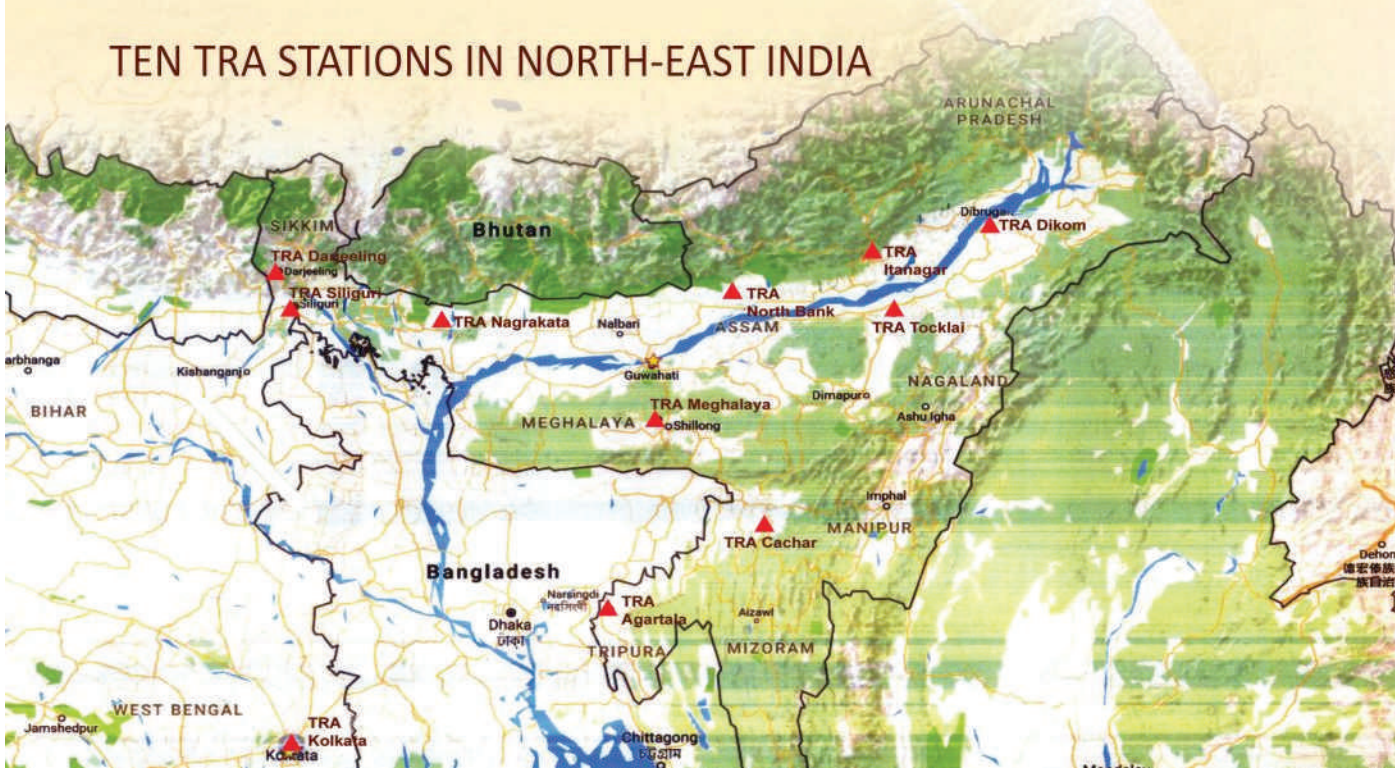
TRA is using artificial intelligence, IOT, drones, data analytics and bio informatics to find efficient ways and means to solve the problems of it's members. It has tied up with new age companies to work together on finding solutions.

All activities of the association are online. From research and experimental data, to publications and documents are digitized and stored in high-end servers.

All previous and rare publications of our library have been digitized and is being made available through Chatbots. The TRA website [www.tocklai.org](http://www.tocklai.org) is updated daily and has online store for publications/ services with online paymet facility. The mobile application named TRA Tocklaiwas launched in 2012 to provide instant information to all members and non members on their queries. TRA is present on all social media platforms like Facebook, Twitter since 2010.



## TEN TRA STATIONS IN NORTH-EAST INDIA







## EXPANSION OF WORK AREAS FOR TRA

The small tea growers in India produce around 50% of India's tea production. To train and empower the small tea growers in Assam, The Government of Assam have awarded a grant of Rs 1700 million to TRA to set up a dedicated R&D centre for small tea growers with modern labs, classrooms and on and off site training facilities.

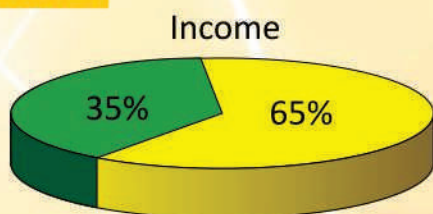


The other areas of work which TRA will be engaged is tea tourism hub at Tocklai, manufacturing of high quality teas, bio formulations, overseas consultancy to tea growing countries.

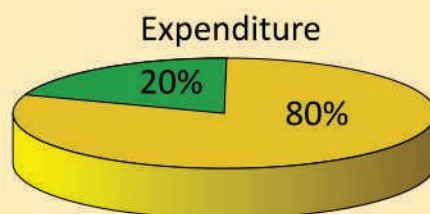
## MANAGEMENT

TRA is an autonomous registered society promoted & funded by the tea industry. The Govt of India has been funding TRA on a set formula. The Chairman, Vice Chairman & Council of Management is elected from the industry every three years to run the affairs of the Association with additional nominated members from Govt/ Tea Board. TRA is one of the oldest public private partnership institutions of India since 1964. The Director & Secretary are the principal officers of the Association, who along with scientific officers and staff are on pay roll.

## FINANCIALS



■ Industry Contribution & Self Generation 65%  
■ Government 35%



■ Salary & Other revenue Exp 80%  
■ Non revenue and R & D Exp 20%





## Tea Research Association

*For more information please contact:*

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