

# FACE-TO-FACE



*“We (Tea Research Association) foresee an industry (tea) that’s more mechanized, digitally connected, and responsive to consumer health and wellness trends.*

*There will be a rise in specialty and functional teas, and greater integration of circular economy principles.”*

**Mr. Joydeep Phukon**

*Principal Officer & Secretary*

*Tea Research Association of India*

*Focal Point for FAO IGG on Tea for India*

## HOW TRA IS SHAPING THE FUTURE OF THE INDIAN TEA INDUSTRY

*Swarup Upadhyaya recently had a conversation with Mr. Joydeep Phukon on pressing issues of the tea industry in India. The excerpts from the interview are here.*

**From a student of history at the prestigious Cotton College to now serving as secretary of the Tea Research Association (TRA), how has your professional journey been so far?**

It has been a fulfilling and diverse journey. From my early days studying history at Cotton College, I’ve always been passionate about tea and communities. My professional path led me through finance, banking, and eventually into tea—an industry deeply embedded in the culture and economy of Assam.



**TRA, Tocklai**

While finance helped me understand infrastructure development and supply chain requirements, the tea industry brought me closer to my roots. I was drawn by its socio-economic impact and the opportunity to contribute meaningfully to research, innovation, and livelihoods in rural India. The industry also offers immense scope for development through technology and sustainability—areas where I believed I could make a difference. TRA (Box 1) has given me the unique opportunity to apply my managerial and policy insights to a sector where research, technology, and community welfare intersect.

#### **Box 1: TRA – A Brief History**

The Tea Research Association (TRA) was established at Tocklai, Jorhat (Assam), in 1964 and is one of the oldest and largest tea research stations in the world. Tea research in India began with the establishment of the Scientific Department of the Indian Tea Association (ITA) in 1900. This initiative was further strengthened with the creation of the Tocklai Experimental Station in 1911. The formation of TRA in 1964 marked a significant expansion of tea research, extending its focus to cover all of Northeast India.

TRA conducts comprehensive research on all aspects of tea cultivation and processing at its Tocklai centre. It also ensures the transfer of technology to its member estates through a robust advisory network that serves 1,076 tea estates spread over 341,049 hectares (1,317 sq. mi) across regions such as the South Bank, North Bank, Upper Assam, Cachar, Tripura, Dooars, Darjeeling, and Terai. TRA also operates a regional R&D Centre at Nagrakata, West Bengal.

The organization undertakes both basic and applied research, with Tocklai serving as the main hub, while area-specific research for the Dooars region is carried out at the NBRDC, Nagrakata. Additionally, research into the pharmacological properties of black tea is conducted in collaboration with institutes in Kolkata and other parts of India. The outcomes of R&D activities are disseminated through a wide network of advisory personnel who conduct hands-on demonstrations and workshops for member gardens.

#### **As the Focal Point for the FAO Intergovernmental Group (IGG) on Tea for India, what roles do you perform in the IGG on Tea?**

Yes, as the focal point, I represent India in global tea policy discussions under the FAO Intergovernmental Group on Tea. This includes coordinating India's participation in meetings, facilitating data sharing and collaboration, and working on global initiatives related to sustainability, trade, climate change, and smallholder support. It's also a platform to showcase India's best practices and concerns on the international stage.



**International Tea Day: 21 May**



**What was the thought process behind your proposal in FAO to celebrate a special day for tea? Has International Tea Day (21 May) observance brought anything beyond celebration?**

It is an honour and a matter of pride to see the proposal I moved at the FAO in 2015 in Milan to observe International Tea Day approved by the UN General Assembly in 2019. The idea stemmed from the realization that despite tea's global popularity, there wasn't a day to celebrate its cultural, economic, and social importance. Through coordinated efforts with the Government of India and FAO member countries, we succeeded in getting it passed at the UN. Today, it is a proud moment to see tea stakeholders worldwide unite to celebrate this day annually.

Yes, beyond celebration, the day also brings attention to challenges faced by tea workers and small growers, climate resilience, fair trade, and gender equality. It's a platform for dialogue, awareness, and collective action toward a more sustainable and equitable tea industry.

**TRA has a rich history. Can you tell us more about the evolution of the organization?**

Established in 1911 as the Tocklai Experimental Station, the Tea Research Association—popularly known as TRA Tocklai—is the oldest and largest tea R&D organization in the world. It's a unique example of a Public-Private Partnership (PPP) that has stood the test of time. TRA has evolved from being a conventional research institute to one that now incorporates climate science, genomics, mechanization, and digital tools into its research agenda. TRA has 11 departments dealing with advisory; agronomy; biochemistry; biotechnology; entomology; plant physiology and breeding; soils; mycology and microbiology; tea processing and manufacturing; analytical services; and library and publications. Most black tea technology and research over the last 115 years has come from TRA.

**What are TRA's current methodologies for technology transfer and commercialization?**

We use demonstration plots, mobile labs, on-site training, and digital apps like the '[TRA Tocklai](#)' to transfer technology. We also collaborate with agri-tech startups and machinery manufacturers to commercialize innovations. Our upcoming plans include setting up an innovation and incubation centre to fast-track the deployment of tea technologies. We're developing a state-of-the-art mobile application to provide advisory services to all members.



**Field demonstrations organised by TRA Nagrakata**

### **How is TRA funded?**

TRA is funded through industry contributions, research grants, consultancy services, and government support. Rising input costs, stagnant auction prices, and global oversupply have strained the industry's finances. Moreover, with research often seen as a long-term investment, immediate funding becomes difficult. We are now actively exploring innovative financing models, including endowment funds and commercialization of research outputs. We are also working to diversify funding through sponsored research, government grants, CSR partnerships, and monetization of our intellectual and physical assets.

### **Do you think TRA faces a disconnect with the tea industry? What are the association's strategies for reconnecting?**

There has been a perceived disconnect, especially after government subsidies—linked to TRA membership—were stopped. However, much of our work benefits the larger industry. To address this, we are reorienting our research to be more industry-driven, increasing direct field-level engagement, launching joint problem-solving initiatives, and enhancing technology transfer mechanisms. Our vision is to be a knowledge hub serving all stakeholders—from planters to small growers.

### **Is your research benefitting other related sectors beyond tea?**

Yes. Our work on bio-fertilizers, soil health, water management, and climate-resilient crop strategies has applications beyond tea. We are also exploring collaborations in horticulture and medicinal plants. Additionally, we are developing tea bioactives and extracts that should greatly benefit the nutraceutical and cosmetics industries.

### **Do you think that the younger generation is moving away from tea and choosing other beverages?**

There's been a perceptual shift due to the rise of alternative beverages. TRA is promoting tea through youth-focused campaigns, digital content, and collaborations with cafes and brands. Our "Tech Brew Hackathon" is one such initiative that invites young minds to innovate for the tea industry. We're also developing decaffeinated black teas and ready-to-drink teas.

As convenience and variety are key for today's young consumers, we are working with industry partners to improve the quality and appeal of tea premixes and ready-to-drink options, including functional and wellness teas.

### **What are the key recent research areas of TRA?**

Some highlights include the development of drought-tolerant clones, bio-control solutions for pests, automated harvesting technologies, and a decision-support system using remote sensing for plantation management. We've also done extensive work on pest management, climate change adaptation, and compliance with safety norms. In the coming days, we are launching research on carbon sequestration in tea soils, AI-powered crop monitoring systems, mechanized harvesting tools, and genomic mapping of high-yielding tea cultivars.

### **What strategies does TRA propose to help the tea sector adapt to climate change?**

Our adaptive strategies include drought-tolerant clones, micro-irrigation techniques, shade tree management, and weather-based advisory systems to help gardens manage erratic climate patterns. Our efforts also focus on mitigation, and we are trying to understand how the tea industry is sequestering carbon and how it can benefit from carbon markets. TRA is currently studying the carbon footprint of tea and exploring methodologies to register plantations under carbon credit schemes through a Unilever project. We are also developing a net-zero framework for FAO for the global tea sector.



### How is TRA supporting small tea growers?

TRA supports small growers through training, disease management, clone selection, and soil health programs. While they don't directly contribute financially, our outreach programs are funded through government support and industry partnerships.



**Workshop on Technical Issues and Supervisory Skills organised by TRA**

### How do you view the issue of imported teas being blended and sold as Geographical Indication (GI)-tagged Indian teas? Are there reliable methods for identifying adulterated teas?

It's a serious concern that undermines the integrity of our GI tags. We advocate for stricter enforcement and transparency in blending practices. We also promote traceability systems to protect consumer trust and farmer interests. Regarding identifying adulterated teas, TRA suggests using chemical fingerprinting, isotope analysis, and advanced chromatography techniques to detect adulteration at the industry level. We are also working on portable testing kits to simplify field-level testing.

### What are the most significant hurdles the Indian tea industry must navigate? How is TRA responding to these challenges?

The key challenges include climate change, stagnant prices, rising input costs, labour shortages, and changing consumer preferences. Regulatory burdens and inconsistent policy support also add to the difficulties. We are aligning our research to offer sustainable and cost-effective solutions, engaging in policy advocacy, and working closely with stakeholders to strengthen the innovation ecosystem.

### Can you brief about the publications of TRA? Are you considering affordable options for students and researchers?

TRA's knowledge base on tea is reflected in the sheer amount of tea literature that it has produced over the years. The biannual journal *Two and a Bud* is a major publication. TRA's newsletter regularly publishes notes and articles that are of practical importance to planters. Advisory bulletins, advisory leaflets, special bulletins, and occasional scientific papers are also published by TRA on a regular and topical basis. The Annual Scientific Reports give a detailed account of the research and advisory work carried out by the Association.

Several books on different aspects of tea science, including those on tea manufacturing and tea tasting, have also been published. Publications like the *Tea Encyclopaedia* and *Science & Practice in Tea Culture* have acquired cult status in the industry. Some of TRA's best-selling publications were recently converted into eBooks for easy accessibility. To make our knowledge more accessible to students and emerging researchers, we are working on a tiered pricing model and exploring digital publication formats.

### How do you envision the future of the tea industry?

The future will be shaped by sustainability, technology, and innovation. We foresee an industry that's more mechanized, digitally connected, and responsive to consumer health and wellness trends. There will be a rise in specialty and functional teas and greater integration of circular economy principles.



*Swarup Upadhyaya grew up in a small tea grower's family in Tinsukia, Assam. He completed his BSc (Agriculture) in 2023 from the Assam Agricultural University with an elective in Tea Husbandry and Technology. Currently, he is pursuing an MBA (Agribusiness) from the ICAR-Indian Veterinary Research Institute (IVRI), Bareilly, Uttar Pradesh, India. ([swarup.mba.ivri@gmail.com](mailto:swarup.mba.ivri@gmail.com))*

**AESA Secretariat: Centre for Research on Innovation and Science Policy (CRISP)**

**Road No 10, Banjara Hills, Hyderabad 500034, India**

**[www.aesanetwork.org](http://www.aesanetwork.org)**

**Email: [aesanetwork@gmail.com](mailto:aesanetwork@gmail.com)**