Commentary

# GM tea: The need of the hour to reclaim India's leading position in the global tea market

**Debajit Borah**
is Assistant Professor at the Centre for Studies in Biotechnology, Dibrugarh University, India

**Amrita Kashyap Chaliha**
is Assistant Professor at the Centre for Studies in Biotechnology, Dibrugarh University, India

**Dhrubajyoti Gogoi**
is Research Associate, Centre for Studies in Biotechnology, Dibrugarh University, India

**RNS Yadav**
is Professor and Director in Charge, Centre for Studies in Biotechnology, Dibrugarh University, India

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## TO THE EDITOR

India had been the top tea producing nation for over a century, but relinquished that position to China in 2004. After domination of the global tea market for about 170 years, India now faces rising competition, which it has not been able to combat well and has thus slipped to fourth position.[1] There has been a particularly sharp decline in India's market share in the global tea export since the late 1980s as evidenced from the steady wane of 20.86% in 1986 to 12.34% in 2008. Also, there is an excess supply but not sufficient demand for Indian tea to boost profit percentage.[2,3] Countries which had been long-standing customers of Indian tea like USSR and UK have drastically reduced import of tea from India, while tea production in India grew by about 250% since 1947 (255 million kg) and in 2007 (950 million kg).[4] India's tea production increased at a 3-year annual average of 0.3 per cent to 988 million kg in 2011. The global oversupply of tea increased from 78,000 tonnes in 2010 to 111,000 tonnes in 2011 while the annual consumption of 4,300 million kg was predicted in 2012—this indicated an extremely small cushion against potential supply disruption.[5]

Correspondence: Amrita Kashyap Chaliha, Centre for Studies in Biotechnology, Dibrugarh University, India-786004. Email: kashyap.amrita@gmail.com

A global economic slump, weaker global growth outlook, rising tea prices, and a sharp decline in coffee prices coupled with a faster-growing coffee market which adversely affected tea consumption in Europe, resulted in marginal decline in India's tea exports, from 193 million kgs to 180 million kgs in 2012. Exports declined at a three-year compounded average growth rate (CAGR) of 1.7 per cent during 2009-11. India's exports to Iran, a major consumer of Indian tea, were also seen to decline in 2012 because of US and EU sanctions. Hence, growth in tea supply was expected to be globally low during 2012-13, following the marginal increase in surplus during 2011. Tea output in 2012 was predicted to decline in both India and Kenya, and increase only by 4-5 million kg in Sri Lanka. World tea consumption was also forecast to increase at a lower rate of 2.9 per cent in 2012 as par the IMaCs report. Though India's tea consumption increased 2.3 per cent in 2011, growth forecast was predicted to be marginally lower at 2.2 per cent in 2012 because of slowing economic growth and increase in prices of tea and milk.[5]

India's tea production came down 11.4 per cent in the first five months of 2012. Production experienced a downward trend from October 2011, with especially severe declines around March-April 2012. While production in North India declined to a 12.2 per cent, production in South India was down by 10.2 per cent. Overall, the domestic production was forecast to decline to around 950 million kg in 2012, according to the IMaCS report on Indian tea industry. Based on the forecast of lower increase in supply, the market surplus was

also expected to decline to around 70,000 tonnes in 2012. Although the market could return to higher surplus during 2013 in line with a slightly faster rise in production than in consumption, concerns about supply disruptions were still present.[6]

The decline in India's market share in the global tea market due to a decrease in tea production and also due to reduced quality is also seen to be affected by a few internal factors. Extensive use of hazardous fertilizers and pesticides, increase in cost of production due to climate change, soil fertility, poor agricultural practices are some of the major factors. In North India, production was affected adversely by prolonged winter in 2011-12. Similarly, in South India, a prolonged dry spell in Tamil Nadu and Kerala saw a marked decline in tea production. The unabated depletion of organic matter and nutrients also lead to significant decline of soil fertility and hence to a decrease in the production of tea. However, effective agricultural practices to combat this are scarce and practiced only among a few well-educated tea growers.[6]

The problems plaguing the Indian tea industry can be solved only through proper implementation of the latest biotechnological technologies which are already being well-researched in R&D laboratories across the nation. India boasts of a R&D network of nearly three hundred national laboratories and about an equal number of universities. The national laboratories operate under various departments or agencies of the Government of India, notably the Council of Scientific and Industrial Research (CSIR), the Indian Council of Agricultural Research (ICAR), the Indian Council of Medical Research (ICMR), the Department of Science and Technology (DST) and the Department of Biotechnology (DBT), among others. All of these institutions have state-of-the-art research facilities and stellar scientific research is performed under strict regulation and stringent quality control measures. However these research findings, though novel and significant enough to be published in high-impact journals are yet to find their implementation in practical agriculture. Genetic engineering technologies can be used for the production of genetically modified (GM) crops—in this case, tea plants, which would be drought-resistant, pesticide-resistant, insect-resistant, and have higher yield with reduced need of fertilizers. However, it is seen that adherence to age-old methods of tea growers and a skeptic attitude to adopt any new scientific technology are making it nearly impossible to combat the challenges that natural calamities or man-made situations present to the growth of the tea industry in India.

However, the Prime Minister has himself made a statement that the government should not succumb to "unscientific prejudices" against genetically modified (GM) crops. Anti-GM activists who oppose even

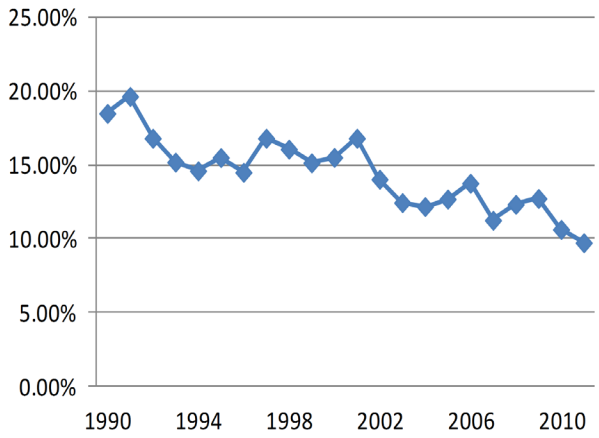


**Figure 1:** Indian share of global tea exports[2,3]

scientific field trials of genetically engineered crops have been met with a firm response by the Prime Minister with the declaration that his government remained committed "to promoting the use of these new technologies for agricultural development".[7] This public comment from the Prime Minister may signal a change in stance of both a reluctant government and skeptical tea growers in co-operating and benefiting from new age technology like genetic engineering.

In keeping with a dedicated approach to promoting even further R&D to tackle agricultural woes, the government has announced an extension of weighted deduction of 200 percent on expenditure on in-house R&D facilities for five years, starting 3st March 2012. There is also proposed weighted deduction of 150 per cent in agricultural extensions- so that Biotech companies in India are motivated strongly to invest in the agri-biotech segment to increase crop yields. Further, the government has sanctioned a research grant of Rs 350 crore (US$ 66 billion) for Agri-universities, of which Rs 100 crore (US$ 18.8 billion) has already been sanctioned for the Kerala agri-university. This funding is a move to aid 1,500 scientists across the country to work on various seed research programmes to simultaneously improve the productivity of crops while lowering the use of pesticides. Agriculture contributes to 14 per cent of the GDP, and is one of the most important contributors to the overall economy—not to mention one of the most necessary too. Hence, wise and effective investments to increase the agricultural output of the country will, without doubt, have a positive impact on the economy in the long term.[8]

Among the achievements of India in R&D till now is the success in decoding the genome information of rice chromosome 11 and the filing of six patents related to the mass production of bio-control agents/bio pesticides. Further, the total culture repository at the National

Centre for Cell Science has reached 1,161 samples after the addition of 34 new cell lines.[8]

The biotechnology sector in India is expected to generate revenue of US $11.6 billion by 2017, growing at a compound annual growth rate (CAGR) of 22 per cent, according to a recent report by Ernst & Young (E&Y). Revenue from biotech exports reached US$ 2.2 billion in FY13, accounting for more than half (51 per cent) of total industry revenues. During FY05 and FY13, revenue from exports increased at a CAGR of 25.1 per cent to US$ 2.2 billion from US$ 0.4 billion. The key growth drivers of the US $4.3 billion industry include strong domestic demand for Biotech products, growth in contract services, focus on R&D initiatives and strong government support for the sector.[8]

With a keen and helpful Government at the helm, dedicated and brilliant scientists at work and eager investors at hand, the use of advanced scientific technologies-specially genetic engineering to produce GM tea, will aid and ensure the return of Indian tea to the coveted leading position in the world tea market. All that is required of present tea-growers is less dependence on age-old methods of tea cultivation, and willing participation in trials of new-age technologies that are designed and conceived through dedicated R&D of tea production.

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