



Influences of Covid-19 on sustainable Tea production in North-East region of India: Issues and future challenges

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ABSTRACT

The coronavirus disease (Covid-19) has devastated the whole world, and India has also taken the most hit. The World Health Organization (WHO) has defined it as a pandemic over the centuries due to the size of the spread. The global economy and epidemic constantly move in opposite directions. Tea cultivation as an agricultural export commodity has a long and rich history in the Indian state of Assam dating back nearly two centuries. The state of Assam produces 50 to 55% of the total production of tea on a national basis and one-sixth worldwide. Small tea producers in the state currently account for more than 45% of the state's overall production, after commencing with large-scale production by major farmers. The pandemic has an impact on small-scale farmers' inability to produce more income, despite tea having a greater return rate than other commercial crops and a pleasant environment for production. However, the farmers are trapped in a cycle of poverty due to the pandemic. The pandemic's consequences have raised labor expenses, management costs, and manufacturing costs. This paper aims to examine the farmer's issues with profits and productivity in the state of Assam to monitor the impact of Covid-19. It was discovered that this epidemic not only lowers productivity but also undermines the growers' morale. Additionally, it has been observed that the profit of the farmers is decreasing not just because of a drop in production but also because of the high use of fertilizer and delivery options.

1. Introduction

Coronavirus disease, often known as Covid-19, is the worst largest pandemic in recorded history after decades (Wu et al., 2021; Malik et al., 2023). It began in the Chinese province of Wuhuan in October and November, 2019, and spreads slowly to every country, devastating both their health and financial situations. Since, the virus often spreads through social interactions, all nations on earth proclaimed a complete lockdown for a set period to protect their citizens (Nathiya et al., 2020 et al., 2020; Phillipson et al., 2020; Shukla et al., 2021). This pandemic regulates the economy of India inversely. By June 2020, around 4,77,000 (10%) people have died in over 210 nations and territories. There was a total of 92,40,000 confirmed positive cases overall, in which including 46,10,000 (90%) were retrieved cases. The overall count of infected patients in India have increased to 4,56,183, with 183022 (95%) recovering, and 14476 (5%) dying. Without sufficient care, the Covid-19 tragedy is still ongoing. Nobody knows when this awful scenario will end.

Like any other producing sector, the global epidemic has had a detrimental impact on the northeast Indian tea business. India's northeast region of Assam is known as the tea hub capital. An enormous amount of tea is produced nationally from several districts of upper Assam i.e., Tinsukia, Dibrugarh, Sivasagar, Golaghat, Jorhat, and Dibrugarh. The district's and state's economies are both impacted by this pandemic condition. Mostly Dibrugarh district in Assam contributes a significant amount of tea to the country's produce (Gogoi, 2020). The global economy has been completely shut down by the pandemic coronavirus. Because of the pandemic, the tea industry and other industries all over the country were also closed for several months (Asopa, 2004; Gogoi, 2020). Small tea producers in the state currently account for more than 45% of the state's overall yield after beginning with large-scale production by major farmers. Between 1995 and 2005, small tea farmers had their highest increasing yield. There are maximum number of small tea producers in Assam around 68465, according to the

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government's Industry and Commerce Department's estimate. Only two districts in upper Assam—Tinsukia and Dibrugarh have more than 37055 (55%) smallholder tea farmers. The development of certain area, particularly Dhemaji, is accelerating when it comes to the development of tea. The number of small tea producers in the Dhemaji area is 516, according to statistics kept by the Tea Board of India. However, the small tea farmer organization of the Dhemaji region claims that the production rate is substantially higher (Dutta, 2021). Das (2014) focuses on local tea estates and their function in the tea industry. He also discusses the obligations of the modest tea industry's workforce, which dominates the whole process from the beginning to the manufacturing of produced tea.

Tea producers and the accompanying tea gardens were suffering significant financial damages as a result of the lockdown. All industry workers were also negatively impacted by Covid-19 pandemic (Borthakur, 2020; Phillipson et al., 2020). The North Eastern Tea Association (NETA) estimated that the shutdown has resulted in yield failure of around 80 million kg. Many people in Assam serve as independent contractors and rely on tea farms and related businesses for their livelihood. They rely heavily on commercial farms and factories to export raw leaves because small-scale farmers don't have their production plants (Paul and Mondal, 2019; Gogoi, 2020). They rely on it for their daily needs, a good standard of living, earnings, and so on, as well as the livelihood of the majority of the workers' families. A total of 466.67 hectares of land are being farmed by roughly 900 small tea producers, based on the records obtained from the Tea Board of India. Approximately 80,948 hectares of land are being farmed by 1,44,222 small tea producers in the northeast region of Assam, according to records kept by the All Assam Small Tea Growers Association. Due to its status as a commercial and industrial crop, its production has elevated both the region and the state of Dhemaji to a renowned profession. This tendency is currently continuing to rise (Borthakur, 2020; Dutta, 2021). Small growers in Dhemaji District are typically getting 23 Rs/kg of tea during a given crop period. Compared to the state, it is more expensive to purchase raw leaves because the district's small growers produce superior leaves compared to other district producers. Since tea is more profitable than other crops, many other families in the district choose to work on tea plantations as their primary livelihood. The aim of this study is to assess how the Covid-19 epidemic is affecting the North-East region's tea industries. Furthermore, the discussions on the development of the Assam state small tea industry and the Indian market. Therefore, it must be important to discuss the development of a strategic framework to mitigate the effects of the pandemic on farmers (Paul and Mondal 2019; Gogoi 2020).

2. Status of Tea Production in India

The primary agricultural export from India has been tea since it was first grown in 1833 by the East India Company. The quality of Indian tea is among the best in the world because of its strong topographical origins, significant financial commitment to tea production plants, rapid application development methodology, expanded product line, and calculated market growth. Assam, the first tea-producing state in India, has grown to be a significant tea producer (Sivanesan, 2013). One-sixth of the world's production of tea and around 50% of the nation's overall production have been produced by the state alone. In addition, the state surpassed China as the most significant tea-producing area (Sivanesan, 2013). The history of Assam tea has been extensive and rich for over two centuries. With more than 800 large tea estates, Assam contributes more than half of the nation's yearly tea supply. However, the sector, which employs more than 10 lakh people, has been in a critical crisis since 2014, as a result of growing operating costs, an increase in output, and a stagnating estate sale price. About 715 million kg of tea is produced annually in Assam. Tea cultivation as an agricultural production has elevated to a prominent occupation in the state, and the tendency is continually rising. In Assam, there are more than 3 lakh hectares of land planted with tea. Assam has the majority of tea estates; more than 500 tea estates are active plantations with industrial facilities, and there are few factories around without plantations.

The entire lockdown that began on the evening of March 24th 2019, according to the Tea Association of India (TAI), has had a significant negative impact on the tea business, with a severe currency crisis ranking first. Assam Tea Planters' Association (ATPA), NETA, and Bharatiya Cha Parishad (BCP), three indigenous tea growers' associations located in Assam, have given ₹19 lakhs to the Assam Arogya Nidhi fund to aid in the fight against the Covid-19 epidemic. In India, tea is grown on a total of 6.37 lakh, hectares of land as per the year 2018 assessment. In 2019, the average price per kilogram of tea from North India including Assam was 152.26 Rs/kg. Because of the shutdown, the Assam tea industry has reported a loss of around ₹1,218 crore in income. Assam produced 9.3% of its yearly harvest in May, 2019. In May, a 20 million kilogram crop loss is therefore anticipated. The tea production in India from the year 2017 to 2022 is presented in Figure 1.

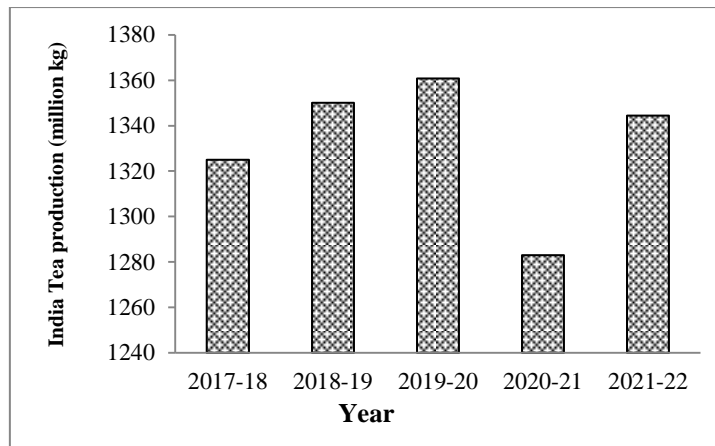


Figure 1. Tea production in India (Source: Tea Board of India).

The gardens had to be skiff to maintain a correct plucking table, said Raj Bansal, president of TAI, who also noted that activities had started in Assam on April 10th, 2019 with 50% of the workforce that causes losses in manufacturing tea resulting from this. Overgrown tea leaf harvesting was the major concern to skiffed on around 35% of plants due to the protracted lockdown. India consumes more tea than any other country in the world, with domestic customers accounting for 80% of the country's total tea production (Khan et al., 2021).

India increased its entire tea production to 1,283 million kg in the economic years 2020-21. India produced 127.11 million kg of tea in May 2022, up from 91.77 million kg in April 2022. From January through September 2022, India produced 984,67 million kg of tea. The overall production export from India is presented in Figure 2.

Figure 3 presents the production of made tea in millions of kg in different districts of Assam state in the northeast region of India.

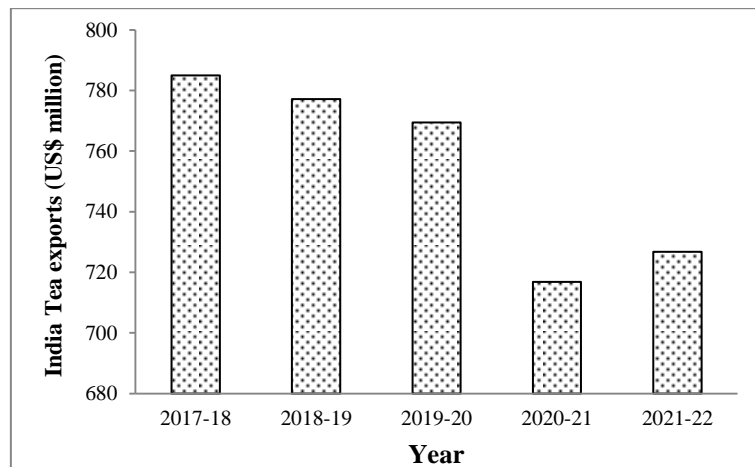


Figure 2. Tea exports from India (Source: Tea Board of India).

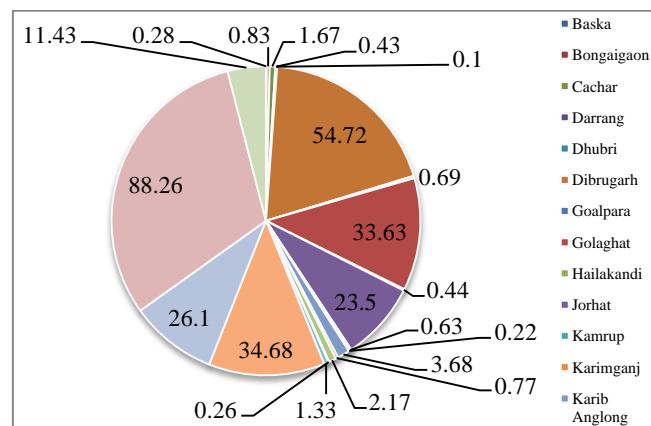


Figure 3. Production of made tea in millions of kg (Source: Tea Board of India) (Dutta, 2020).

According to estimates from the Tea Association of India, crop loss in north India during the Covid period up through mid-June was around 132 million kg (Dutta 2021). The organization reported a decrease in conventional productivity of roughly 12–14 million kg as a result. The tea sale would decrease by 59% as exports are predicted to fall by 10-15%. Local land producers in Assam are estimated to have suffered a total loss of 500 crores up to the middle of June, 2020 as a result of the Covid-19 lockout, according to estimates made by the organization of local land growers in Assam (2020). According to an article published in *The Hindu* (2020), 1.72 lakh local land producers lack the resources to compensate for the main tea estate retailers' week of dormancy caused by the Covid-19 epidemic. As a result of the working population being deployed at a lower level than usual, as well as the technical activities associated with maintaining such a framework, the industry faces significant challenges. However, they are unaware of the complex rules and regulations applicable to the tea business (Ahmed, 2012). The government's assistance program for the big estates' plantation employees is severely underutilized by the labor force. Impact of Covid-19, an emerging reaction to the tea supply chain, describes how tea production internationally is impacted by social isolation and national lockdown. Tea output is unclear as a result of export and import restrictions. A sentinel digital disc article describes how significant losses happened during the first stage of tea manufacturing. Thus, it is clear from the research at hand that covid-19 has a detrimental effect on tea output. Ganguli (2014) addresses the ideas, methods, and impact of tea growing on small tea producers. It was found that small tea producers are crucial to the development of novel tea varieties, their implementation, and their market tactics.

3. Impacts of Covid-19 on Tea Production

During the economic crisis that followed Covid-19, the tea industry was in a particularly vulnerable situation. Due to the pandemic and SOPs, there wasn't any activity going on in the tea plantations. This affected the daily wage laborers who plucked the leaves or those working in the factories the most (Baruah, 2011). Despite the numerous guidelines from state governments to not withhold staff members' salaries during a certain period of a pandemic, many farm workers did not even obtain their pay from the estates or industries for the period initial and after the lockdown. They were suffering a serious crisis that increased their risk of survival. The growers were in a vicious circle of poverty because of the pandemic, and they are still fighting to recover from it. Although the government and non-government organizations (NGOs) were trying their level on to help out the plantation workers who lost their livelihoods, the situation was not very encouraging. The factories had

stopped processing, which also put pressure on the factory owners and owners and big farmers to utilize their savings for sustaining the pandemic. "Lockdown 3.0" has as its main goal to begin resuming activities by permitting exemptions for particular industrial sectors. Immediately after state-wide closure was originally announced, the tea business began fighting for such a relaxation of the rules. In addition to attempting to survive a volatile economic period, the industry was also negatively affected by the lockdown because it began during the height of the harvest.

The rising demand in the domestic market due to the lockdown had to be met by the existing production and stock. Development and rate of production were interrupted during the lockdown period, and by June 2019, production in the northeast had decreased by 113 million kg tea from the previous year, putting market dynamics back into balance. In just 12 weeks, India went from having a surplus of tea of over 100 million kg to a deficiency. Since all farmers were only selling green leaves, there was no other way to use their products for making made tea as green tea or conventional tea. Revenue has been dropping noticeably, and this pattern has continued through the cultivation period. This happens because the price of chemicals, herbicides, insecticides, nutrients, and fertilizer has increased while their availability has decreased. Because of the restrictions and lockdown imposed on conveyance, the cost of travel has increased significantly. However, the farmers were unable to fully utilize their workforce when the industry was reopened subject to preserving social distance and well-defined time. As a result, it became hard to collect green leaves in time, and the quality of the leaves produced decreased (Baruah, 2011). As a result of the state's restrictive regulations, farmers may have to cover the cost of transferring workers away from their location. Bose (2011) described the worker-accessible transportation options, rewards, advancement opportunities, task clarity and relevance, and health and safety requirements. Because they have a substantial impact on job satisfaction, capacity usage traits like dedication and relationships with colleagues and managers are also examined by them. To prevent crowding in the workplace, farmers are unable to deliver their goods straight to the industrial tea estate due to government rules and regulations. As a result, a few union leaders were involved in the weight-cutting of the evergreen raw leaves using unethical methods. They have provided the intermediary with a price for the green leaves that is considerably less than the market price. These are the main reasons farmers lose their businesses (Ahmed, 2012). The effect imposed by Covid-19, was that the farmers were the biggest failures because they occasionally were unable to harvest promptly.

1. The tea market has suffered a great loss due to experiencing unprecedented shifts in the supply and

demand chain.

2. Covid had an impact on global supply chains, earnings, and output. Given the enormous demand from people all over the world, it had a significant influence on local growers, wholesalers, and shop workers.
3. Two-thirds of India's tea crop is cultivated in the northeast, which was hampered by the closure in early March.
4. In March, there was a complete closure for 21 days, making it impossible for workers to reach the tea plants for harvesting.
5. As the tea plants keep growing, the quality and yield were affected later.
6. Agricultural production and cultivation involve more than 80 million people globally, therefore the illness and the controls put in place have always going to have a significant impact on it. Like any labor-based industry, tea industries have suffered great losses based on timing alone.

The WHO pronouncement provoked a nationwide lockdown in India, which coincided with and devastated the first flush harvests of both Darjeeling and Assam, sending shockwaves across the tea-drinking community.

4. Pandemic Effects on the Society

During the pandemic, which occurred during harvest time, numerous industrial and commercial crops went bad in the field itself since it was unable to get them to market. The agricultural and rural economies have also suffered greatly as a result of this (Singh, 2020; Nathiya et al., 2020). Assam, a state in the northeast that is well-known for its biological diversity and scenic beauty, mainly depends on tourism for its economic well-being. Twenty million visitors travel to the state each year. The tourism industry has suffered significantly as a result of the shutdown. The pandemic also affected the mental health of society (Moreno et al., 2020; Wu et al., 2021; Malik et al., 2023). Several populations in Assam and other northeast regions have experienced high levels of stress and fear because of deaths, food crisis, money shortage, and other related results of the Covid-19 epidemic (Singh, 2020; Shukla et al., 2021). Peoples were becoming upset about being isolated, and most of them attempted to leave the isolation facility. There was a growing level of concern about the virus spreading among individuals. In Assam, the Assam State Disaster Management Authority recruited over 13,500 volunteers to assist those in need in managing their emotional stress throughout this crisis. The academic schedule must be followed despite the fact that all educational institutions were closed. In addition to adhering to the Indian government directives, northeast India took other measures to address the problem. Maximum schools, colleges, universities and educational platforms offer

the framework for all the classrooms and learning activities in the state to be accessible online for e-learning sessions. Because of anxiety and depression, young people were disproportionately affected by the online learning system. India's northern states were not only exempt from experiencing financial losses as a result of the lockdown. In addition, the motels, fast food joints, stores, café and several other markets were all inaccessible. Also, transportation activities were suspended after the initial two rounds of the lockdown. Around 12.2 Crore people lost their employment in India, along with the north eastern states, and 27 million young people between the ages of 20 and 30 ended up losing their jobs as a consequence of the lockdown in April, 2020. Many north-eastern Indian IT businesses are flourishing from the shutdown despite all the damages. The majority of individuals are obligated to rely on advanced technologies because working from home is widely encouraged the people and students also get a chance to learn from home. IT sectors or online business start-ups had a chance of increasing income. The quarantine also aided individuals in the northeast in their use of the internet or advanced technologies. The way individuals utilize technology has changed substantially as a result.

5. Management Criteria and Future Challenges

Due to the unavailability of manpower or workers, the loss of farmers cannot be made up. The main point of concern is using advanced technologies to decrease the amount of labour required, particularly in situations like the Covid crisis, where this sort of loss may be minimized. Although federal subsidies to invest in the construction and development of farms, harvesting raw leaves, fertilizer application, spraying, and manufacturing types of machinery may motivate farmers to use technology, it is not always beneficial to producers. It is important to note that rapid innovation seeks to reduce risk and expense. The main reasons why innovation is not adopted are its expensive installation costs and complex operating principles. Thus, subsidy programs combined with appropriate training increase technological familiarity. Hence, the adaptation of advanced technologies can be the solution for the farmers to reduce loss, and risk of damage, and increase profits. The following facts are discussed about the lockdown brought on by the worldwide coronavirus outbreak. The finding revealed that relatively small tea farmers generally try to keep enough money for emergencies. So they have learned to put some cash away to deal with unforeseen circumstances like lockdowns. The investigation also revealed that small tea growers make significant economic contributions to both the state and the federal economies. It affects our nation's GDP. Along with the tiny tea producers, it was discovered that a significant number of households were able to become

engaged without leaving the country. Even though they rely heavily on the tea industry in the northeast region, private-sector businesses were also negatively impacted by the lockdown since they were unable to sell any items connected to the industry. The results are also noteworthy because lockdown instructs all associated with the tea industry to maintain social isolation and hygiene. Care must be taken to ensure that chemicals, fertilizer, and medications are continuously supplied to the farmers. Any disruption in the production process for such commodities would undoubtedly affect the farmers in the near future. To preserve social distancing and wearing a mask, factories should be available for the inspection and testing of employees, employees, and distributors of raw leaves 24 hours a day (Moreno et al., 2020). Since there is no miracle cure for this problem, both the government and the stakeholders must be prepared for diminishing returns without interrupting the supply chain.

6. Conclusion

Assam's primary commercial tea industry suffered a significant financial loss during the lockdown, as is clear from the overall discussion. Assam where about 40% of the population makes their living depending on the industrial crop has both an economic crisis, crop failure, and food crisis. Economic development and pandemics have an inverse relation, and without proper precautions and maintenance, no one can really be protected from one. However, we may learn from the Covid-19 disaster, what lies ahead in terms of progress. Overall, it can be concluded that the pandemic has affected businesses in the entire northeast region. Other businesses or markets were also affected so the impact of the pandemic was not limited to the tea sector. This study also confirms that the tea farmers had various issues as a result of the shutdown. The economy of rural areas, which is directly linked to the tea industry and which has a negative impact on the economies of both the state and the country, experienced a downturn in industrial prosperity in the specific region.

7. Conflicts of Interest

The authors declare no conflicts of interest.

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