Abysmal Hike in Global Cocoa Price and its Implications on Cocoa Plantations in Tamil Nadu– A Critical Analysis

ABSTRACT

Cocoa belonging to the family Sterculiaceae has its origin in South America and later it had spread to Europe, Africa and Asia. In Tamil Nadu, cocoa is accommodated as an intercrop in arecanut and coconut plantations especially in South India. But over the past few years, the acreage under cocoa showed a steady decline and the area currently hovers around 5,000 ha especially concentrated in Coimbatore, Theni and Kanyakumari districts of the state. Price volatility is the key player in culminating cocoa plantations in the state. But the recent global shortage of cocoa associated with climatic vagaries and biotic stress in the leading cocoa producers of the world has prompted a positive note in the price of cocoa beans in India. A record high of ten fold increase in price was observed during the last quarter of 2023 and first quarter of 2024. This has invited the farmers to rejuvenate the abandoned cocoa plantations and bring new area under cultivation. Abysmal hike in global cocoa price has brought a ray of hope for the expanding acreage of cocoa in the state of Tamil Nadu.

Key words : Cocoa, Climate change, Price hike, Swollen shoot virus, Supply deficit,

INTRODUCTION

Cocoa (*Theobroma cacao* L.), eulogized as 'Food of Gods' belonging to the Family Sterculiaceae has beentraced back 5000 years ago in the Upper Amazon regionof South America by the Mayan tribes and later it hadpenetrateddeep intoEurope, Africa and Asia. The plant was considered as a 'Symbol of Wealth' and the beans were used as currency by the early tribal populations of Europe [7-10]. In Tamil Nadu, cocoa had been an important intercrop of coconut plantationsduring the early 2000s with an acreage of nearly 25,000 ha across the state (DCCD, 2022). But over the past five years starting with 2018, there has been a steady decline in cocoa farming in the state and presently the acreage hovers only around 5000 ha, mainly concentrated in Coimbatore, Theni and Kanyakumari districts [11-16]. Price volatility is the key player behind the culminating cocoa plantations in the state [17-20].

GEOGRAPHICAL SPREAD OF COCOA

Cocoa is a crop of warm, humid tropical zone within 20°N and 20°Sof the Equator where favourable conditions exists for its establishment. Cocoa had a gentle spread 3000 years ago from the tropical rainforests of Amazon, its place of origin to other parts of the world by the Maya, Toltec and Aztec tribes who successfully domesticated the crop and celebrated cocoa bean beverage as a ceremonial drink.Africa is the leading producer of cocoa in the world followed by South America and Asia (FAO, 2022) (**Fig. 1.)**.

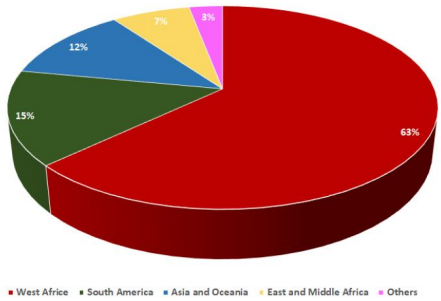
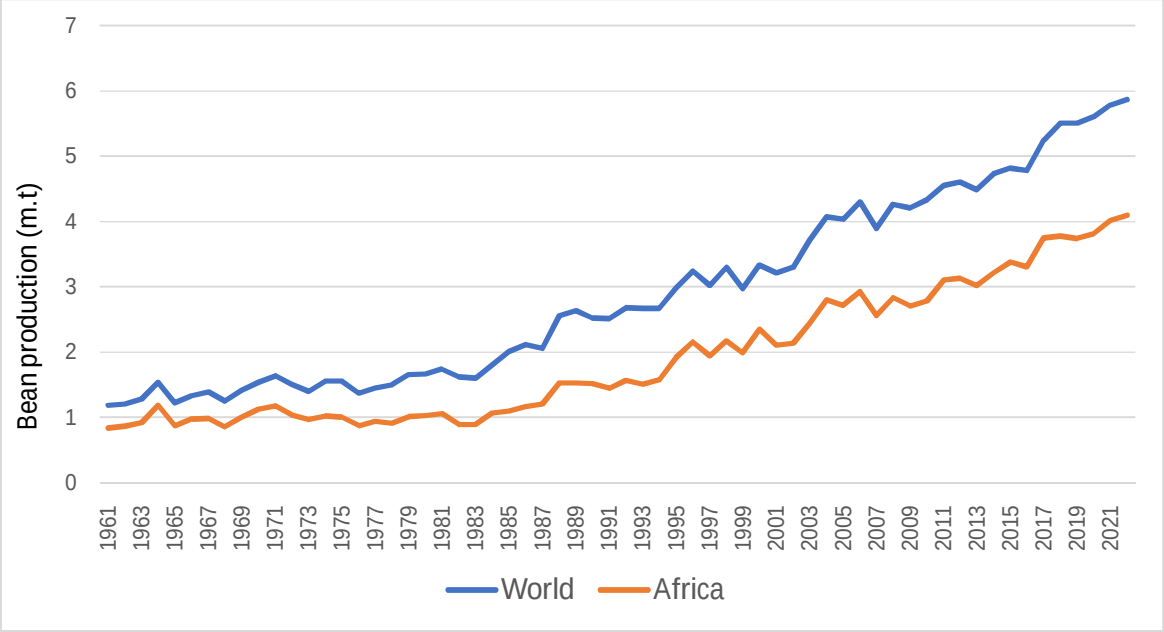


Fig. 1. Global continental share (%) of cocoa production

Statistics reveal that three out of four beans come from the four West African countries *viz.*, Ivory Coast, Ghana, Nigeria and Cameroon. Cocoa bean production during the period 1961 – 2022 is depicted in **Fig. 2.**

Fig 2 : Cocoa bean production during the period 1961 – 2022



(**Source :** FAO, 2023)

South American countries *viz.*, Brazil, Peru, Colombia, Ecuador and Dominican Republic contribute substantially to global cocoa bean production. Major spots of cocoa

production in Asia include Indonesia, India, Philippines, Vietnam and Malaysia.Share of different countries to global cocoa production is represented in **Fig. 3.**

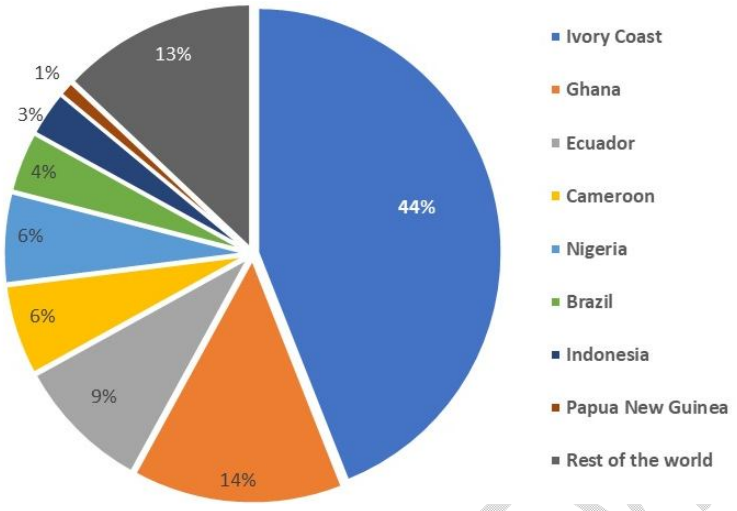


Fig. 3. Global continental share (%) of cocoa production

(**Source :** ICCO bulletin, 2022)

In India, cocoa bean production begun only after 1977 and the production during 2021 was 28,000 tonnes as against 300 tonnes during 1977. Andhra Pradesh contributes 40 % of the national cocoa production followed by Kerala with 35% of the total production. The states Karnataka, Tamil Nadu and Telengana contribute about 25 % of the national share of bean production.

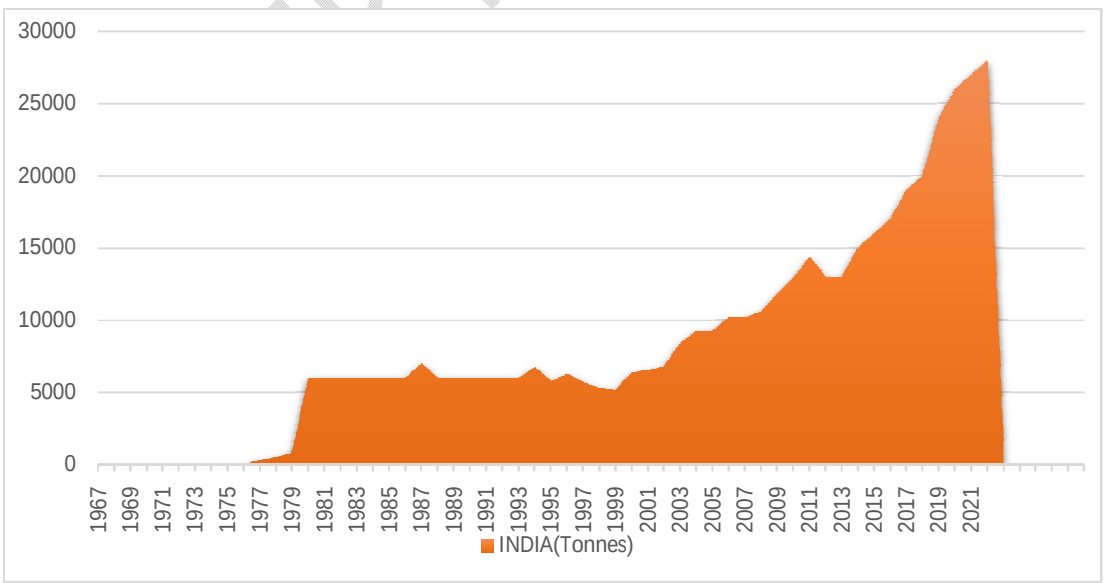


Fig. 4. Cocoa bean production (1961 – 2021)

(**Source :** FAO, 2023)

SUPPLY DEFICIT OF COCOA

Reports reveal that the world is witnessing acuteshortfall in cocoa supply since the last 30 years of 2024 which has laid the foundation stone for the all-time high in the price of cocoa beans. According to the International Cocoa Organization, global cocoa supply will decline by almost 11% over the 2023/2024 season. Supply deficit of cocoa is represented in **Fig. 3.**

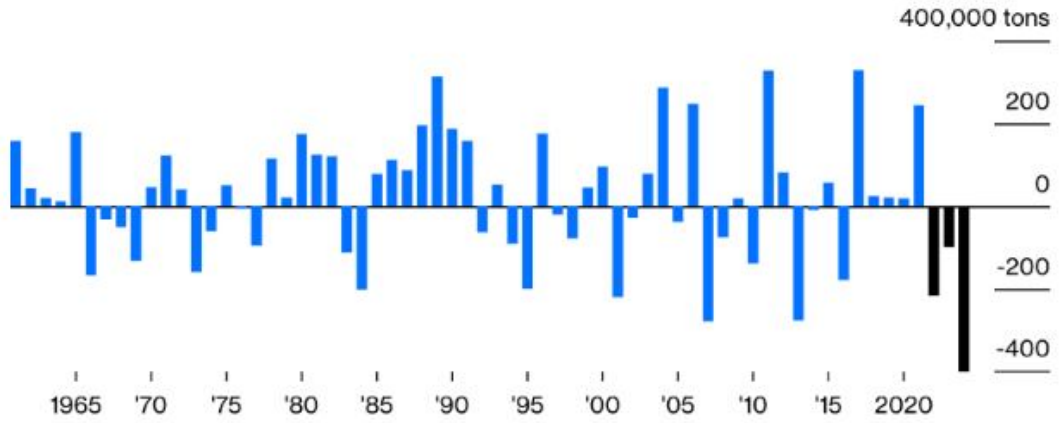


Fig. 5. Supply deficit of cocoa beans

(Source : Bloomberg and International Cocoa Organization)

CLIMATE CHANGE ON COCOA CRISIS

Climate change has ravaged crops in West Africa, which contributes around 80% of the world's cocoa output of 6 million tonnes of beans. Intense heat waves and drought of El Nino Southern Oscillation Cycle (ENSO cycle) seeded 'swollen shoot virus' in cocoa, the most devastating disease transmitted by the mealy bugs, pulling down the productivity by 15-50 % of the total harvest (Agusto *et al.*, 2024). As per the estimates of Ghana's cocoa marketing board 'Cocobod' 1.45 million acres of the total 3.41 millon acres of cocoa in Ghana was infected with the virus leaving a large dent in cocoa production during 2023. Extreme wet conditions in Ghana resulted in the outbreak of 'Black pod disease' caused by the fungus *Phytophothorapalmivora*which dictated terms in cocoa harvest during 2023.

Cocoa crop yield is significantly influenced by weather parameters. Both maximum and minimum temperature showed significantly negative effect whereas the detrimental effect of maximum temperature was observed to be more over the minimum temperature. The atmosphericwater demand indicator negatively correlated with the cocoa yield. Evapotranspiration had the positive impact on cocoa. Climatic conditions, such

as decrease in rainfall, increase in temperature and increase in potential evapo transpiration would significantly reduce the bean yield (Selvakumar *et al.*,2022).

UNDERINVESTMENT IN COCOA AND NEGLIGENCE FARMING

The ageing trees that yield less cocoa is yet another reason for declining productivity No major planting has been undertaken by cocoa farmers in Africa since the early 2000s, as their earnings from selling cocoa haven't generated enough income to help rehabilitate farms. In Ghana gold mines have took over the place of cocoa plants because of assured high returns from the gold mines which has resulted in concomitant reduction in cocoa acreage. In the state of Tamil Nadu because of the reduced profitability from cocoa plantations, farmers have abandoned cocoa crop in the state. Labour intensive nature of the crop and the residues harbouring reptiles are also due points of focus which led to a steady decline in the plantations in Tamil Nadu.

GOVERNMENT POLICIES

Cocoa remains the major player for deforestation in Africa. In Africa, tropical rainforests were destroyed for undertaking cocoa plantation. In Ivory Coast, the world's top cocoa producer, about 80 percent of rainforests have been destroyed, much of it to grow cocoa. Ghana has lost around 65 percent of its forests to cocoa. Reports reveal that the European Union is about to implement Deforestation-free Regulation that bans the import of beans cultivated in deforested land.

DIFFERENTIAL QUALITY OF COCOA

Indian cocoa, unlike the West African one, is mostly shade-grown and the beans have a distinct fruity, sour, and spicy flavour. Beans from Central America are larger, with a light lime-sour taste, while South American cocoa have a nutty note. Spatial variability in the quality of beans have been observed in India also. In Andhra Pradesh, diurnal variations hold great say on the quality of cocoa beans. During high temperature the beans remain thin and undersized. In Kerala, because of high humidity, the beans remain blumpy during the high rainfall seasons. However as there is no abrupt variation in temperature regimes in the state of Tamil Nadu and the quality of cocoa beans remains good at every harvest season.

REASONS FOR PRICE HIKE

The rise in cocoa prices is largely due to a global cocoa shortage. Black pod disease and swollen shoot virus has deprived considerable area of cocoa in West Africa especially in Ghana and Côte d'Ivoire, which have contributed 58 % of the global cocoa production. Global hike in cocoa price has its own reflection in Tamil Nadu also. Graph**(Fig. 4.)** shows the fluctuating price chart of cocoa in the last quarter of 2023 and first quarter of 2024. Implications of price hike in cocoa is that farmers are tempted to rejuvenate the abandoned cocoa orchards or bring new area under cocoa plantations in the state.

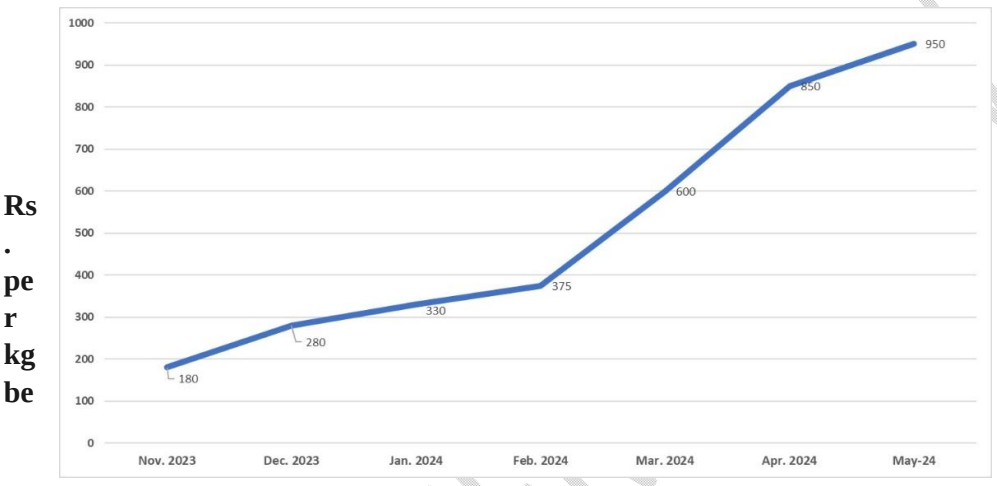


Fig. 6. Fluctuating price chart of cocoa beans (Nov. 2023- May 2024)

CONCLUSION

Global short supply of cocoa beans has led to the upsurge in the price of cocoa beans aross the world. The short supply is mainly triggered by the biotic stress and stringent Government policies of the leading global cocoa suppliers especially the African and European nations. Absymal price hike in cocoa has strong reflection in India where cocoa is intercropped in arecanut and coconut plantations. It has invited the farmers of Tamil Nadu to rejuvenate the existing cocoa orchards and bring new areas under cocoa plantations.

References

1. Agusto FB, Leite MCA, Owusu-Ansah F, Domfeh O, Hritonenko N, Chen-Charpentier B. 2024. Cacao sustainability: The case of cacao swollen-shoot virus co-infection. PLoS ONE 19(3): e0294579. https://doi.org/10.1371/journal. pone.0294579

2. DCCD, 2022. https://www.dccd.gov.in/area-and-production-2022-2022

3. Food and Agriculture Organization of the United Nations, 2023. – with major processing by Our World in Data. “Cocoa bean production – FAO” [dataset]. Food and Agriculture Organization of the United Nations, “Production: Crops and livestock products” [original data]. Retrieved May 18, 2024 from https://ourworldindata.org/grapher/cocoa-bean-production

4. Hannah Ritchie and Pablo Roasado. 2023. Agricultural Production. Data adapted from Food and Agriculture Organization of the United Nations. Retrieved from https://ourworldindata. org/grapher/cocoa-bean-production [online resource]
5. https://www.bloomberg.com/quote/BCOMCC:IND
6. https://www.icco.org/icco-documentation/quarterly-bulletin-of-cocoa-statistics/
7. Franzen M, Borgerhoff Mulder M. Ecological, economic and social perspectives on cocoa production worldwide. Biodiversity and conservation. 2007 Dec;16:3835-49.
8. Ofori-Boateng K, Insah B. The impact of climate change on cocoa production in West Africa. International Journal of Climate Change Strategies and Management. 2014 Aug 12;6(3):296-314.
9. Merem CE, Twumasi AY, Wesley J, Olagbegi D, Crisler M, Romorno C, Alsarari M, Isokpehi P, Hines A, Ochai SG, Nwagboso E. Exploring cocoa farm land use in the West African Region. Int. J. Agric. For. 2020 Apr 1;10(1):19-39.
10. Ruf F, Siswoputranto PS, editors. Cocoa cycles: the economics of cocoa supply. Woodhead publishing; 1995 Jun 30.
11. Vaast P, Somarriba E. Trade-offs between crop intensification and ecosystem services: the role of agroforestry in cocoa cultivation. Agroforestry systems. 2014 Dec;88:947-56.
12. Kalischek N, Lang N, Renier C, Daudt RC, Addoah T, Thompson W, Blaser-Hart WJ, Garrett R, Schindler K, Wegner JD. Cocoa plantations are associated with deforestation in Côte d’Ivoire and Ghana. Nature Food. 2023 May;4(5):384-93.
13. Clarence-Smith WG. Cocoa plantations in the third world, 1870s–1914: the political economy of inefficiency. InThe new institutional economics and third world development 1995 Dec 14 (pp. 171-185). Routledge.
14. Wartenberg AC, Blaser WJ, Gattinger A, Roshetko JM, Van Noordwijk M, Six J. Does shade tree diversity increase soil fertility in cocoa plantations?. Agriculture, Ecosystems & Environment. 2017 Oct 1;248:190-9.
15. Bai SH, Trueman SJ, Nevenimo T, Hannet G, Bapiwai P, Poienou M, Wallace HM. Effects of shade-tree species and spacing on soil and leaf nutrient concentrations in cocoa plantations at 8 years after establishment. Agriculture, ecosystems & environment. 2017 Aug 1;246:134-43.
16. Schroth G, Harvey CA. Biodiversity conservation in cocoa production landscapes: an overview. Biodiversity and Conservation. 2007 Jul;16:2237-44.
17. Singh S, Singh DR, Velmurugan A, Jaisankar I, Swarnam TP. Coping with climatic uncertainties through improved production technologies in tropical island conditions. InBiodiversity and climate change adaptation in tropical islands 2008 Jan 1 (pp. 623-666). Academic Press.
18. Ramesh SV, Josephrajkumar A, Babu M, Prathibha VH, Aparna V, Muralikrishna KS, Hegde V, Rajesh MK. Genomic Designing for Biotic Stress Resistance in Coconut. InGenomic Designing for Biotic Stress Resistant Technical Crops 2022 Oct 19 (pp. 115-157). Cham: Springer International Publishing.
19. Verter N. Cocoa export performance in the world's largest producer. Bulgarian Journal of Agricultural Science. 2016 Sep 1;22(5).
20. Läderach P, Martinez-Valle A, Schroth G, Castro N. Predicting the future climatic suitability for cocoa farming of the world’s leading producer countries, Ghana and Côte d’Ivoire. Climatic change. 2013 Aug;119(3):841-54.