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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/20051
DOI URL: http://dx.doi.org/10.21474/IJAR01/20051

RESEARCH ARTICLE

SCENARIO OF NATURAL RUBBER PLANTATION AND PRODUCTION IN TRIPURA: AN ANALYSIS

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Manuscript Info

Manuscript History
Received: 13 October 2024
Final Accepted: 16 November 2024
Published: December 2024

Key words:-
Rubber History, Plantation, Data Collection, Data Analysis, Comparative Analysis, Etc

Abstract

Natural rubber is one of the many natural resources found in the state of Tripura. Tripura's rubber plantations have been growing quickly during the past ten years. Because of rubber plantations and rubber-based enterprises, the socio-economic situation of the people of Tripura is steadily improving. My primary goal in this study is to examine the data that is now accessible regarding rubber plantations, productivity, etc., and to attempt to talk about the field's potential in the future.

Introduction:-

The cultivation of rubber began in 1963. The history of rubber cultivation began in year 1963 when the Department of State Forest, along with Rubber Board, brought this crop to Tripura with the goal of conserving soil. The majority of rubber trees are clones of the RRIM 600. In mature areas, the average stand per hectare is less than 280, mostly because of cyclones and storms that happen almost every year. Insurgency also had devastating effects on plant population and health, dominating the state's life for around 20 years in the 1980s and 1990s.

Less disease-pest attacks are a blessing for the state. Another external limiting element is annual wintering.

In Tripura, rubber plantations are owned by three different kinds of people. About 7018 hectares of rubber plantations in degraded forest areas are owned by TFDPC Limited. There are four entities in the estate sector with a combined size of 347 hectares: Stevia Realtors Pvt. Ltd. (125 ha), Binodini Tea Estate (57 hectares), Manu Valley Tea Estate (75 hectares), and Murticherra Tea Estate (90 hectares). The remaining 89807 hectares in the state are owned by individual small growers. TFDPC Ltd., TRPC Ltd., and TTAADC/Tribal development departments have created 2120 hectares, 10852 hectares and approximately 6315 hectares for individual recipients, respectively.

Thus, with the assistance of Rubber Development Schemes of Rubber Board, independent rubber producers have established the remaining area, which is around 70807 hectares. Of this, 3800 hectares were established as part of the Board's prestigious Block Plantation Project.

Most of Tripura's 1.26 lakh individual rubber growers come from rural regions. It is estimated that disadvantaged groups in society (ST and SC categories) control 82 percent of the land used for rubber. The vast majority of rubber plantations in Tripura are now owned by small growers. The holding size is 0.75 hectares on average.

Analysis Objectives:-

Although there have been a few studies on rubber plantations, production, and marketing, a thorough comparative analysis of this industry has not yet been done. In order to provide a futuristic trend in this sector, I have attempted

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to analyze the current trend and growth rate of the cultivated land area as well as the growth rate of production in this article.

Research Methodology:-

The situation of rubber plantations, production etc. in Tripura has been examined and studied using the national and international secondary data that is now available. We analyze reports from local and international organizations, governments and research institutes on the development of rubber plantations, production and industries. Interview-based data are also taken into account.

Area & Production:

As of March 31, 2023, the expected total area under rubber in Tripura is 97171 hectares, of which 78084 hectares are in the yielding stage. The expected amount of rubber produced is 102989 ton. The majority of the mature area is being tapped. In terms of both land and natural rubber output, the state is the second largest in the nation.

Figure 1:- Plantation area of NR in Tripura.

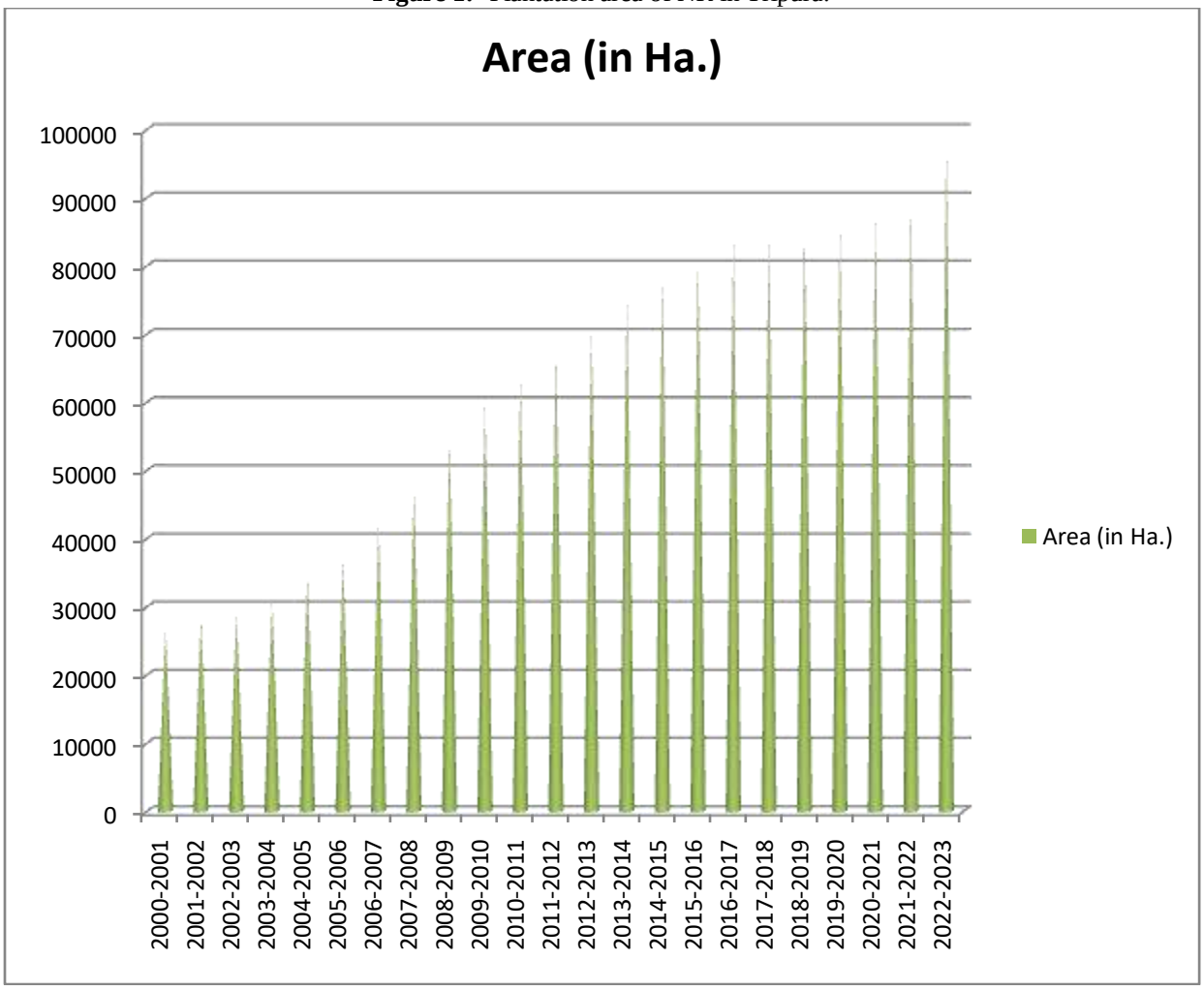

Table 1:- Year wise extension of rubber plantation area in Tripura from 2000-2001 to 2022-23.

Year	Area (in Ha.)
2000-2001	26495
2001-2002	27947
2002-2003	28853
2003-2004	30770

2004-2005	34630
2005-2006	36862
2006-2007	41620
2007-2008	46984
2008-2009	54439
2009-2010	59542
2010-2011	63423
2011-2012	67537
2012-2013	70765
2013-2014	74709
2014-2015	78497
2015-2016	80979
2016-2017	83280
2017-2018	84302
2018-2019	85038
2019-2020	85454
2020-2021	86891
2021-2022	89264
2022-2023	97171

Figure 2:- Growth rate of Plantation Area & Production.

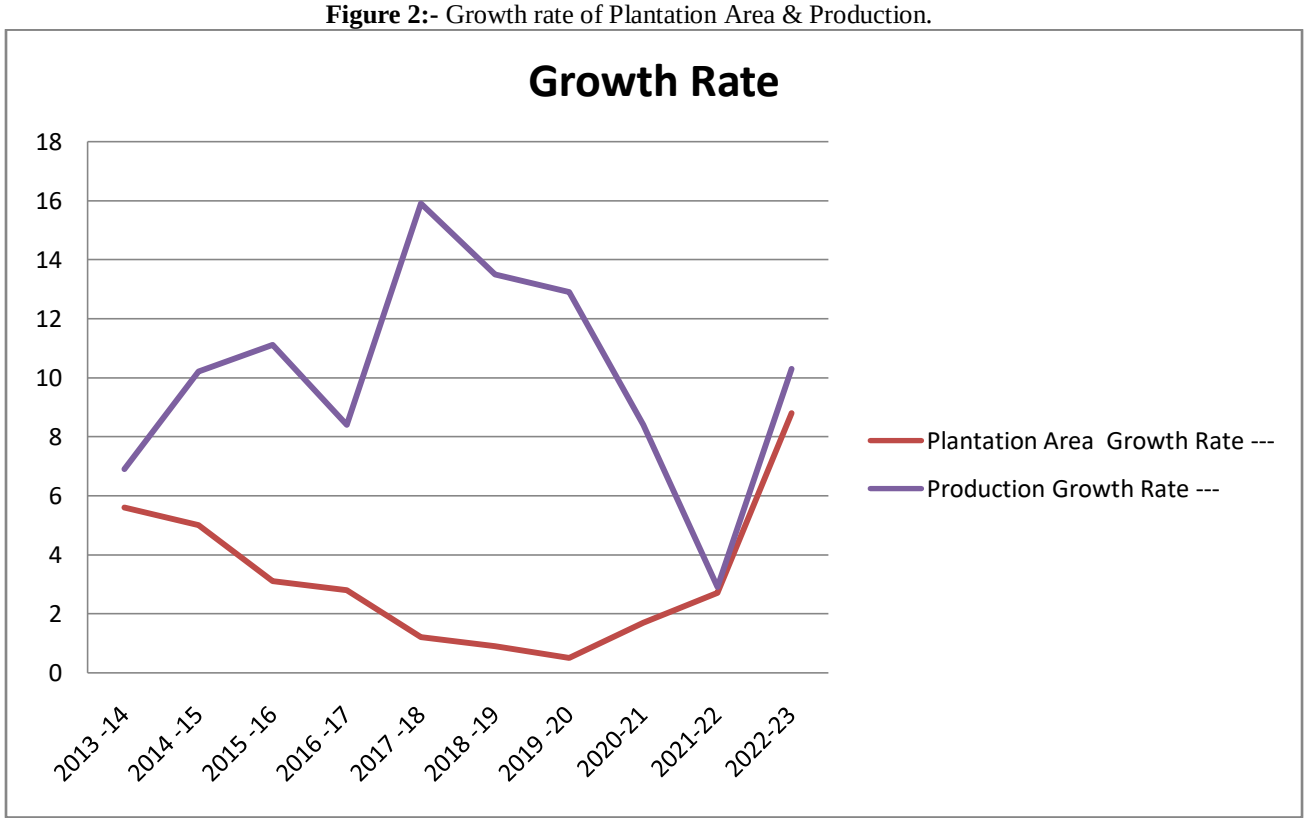

Table 2:- Area and Production of Rubber-year wise.

Year	Area	Plantation Area Growth Rate	Production	Production Growth Rate
2012 -13	70765	---	39737	---
2013 -14	74709	5.6	42491	6.9
2014 -15	78497	5.0	46815	10.2
2015 -16	80979	3.1	52025	11.1

2016 -17	83280	2.8	56380	8.4
2017 -18	84302	1.2	65330	15.9
2018 -19	85038	0.9	74139	13.5
2019 -20	85454	0.5	83701	12.9
2020-21	86891	1.7	90711	8.4
2021-22	89264	2.7	93371	2.9
2022-23	97171	8.8	102989	10.3

District-wise Distribution:

With 18895 hectares (19.44%) of rubber, Sepahijala district leads the list while Unakoti district has the smallest acreage at 4644 hectares (4.78%) in 2022-23. Unakoti district has the lowest production of 4072 tons (3.95% share), while Sepahijala district has the largest production of 23229 tons (22.56% share).

Table 3:- Area and production distribution- District-wise.

District	2018-19		2019-20		2020-21		2021-22		2022-23	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
North Tripura	9663	6347	9665	8869	9687	8354	9988	9450	10805	10336
Unakoti	3862	2468	3942	3449	3748	3469	3947	3630	4644	4072
Dhalai	5735	3233	5744	3987	6126	5355	6553	5861	9009	5950
Khowai	4161	2344	4179	2885	4312	4102	4616	4217	5525	6528
West Tripura	16546	18543	16559	17428	16600	18507	16665	17521	17073	17588
Sepahijala	17852	18232	17884	18881	18021	16841	18318	20739	18895	23229
Gomti	11538	11150	11670	11020	11768	15441	12087	15897	13553	18908
South Tripura	15681	11822	15810	17182	16629	18642	17090	16056	17667	16378
Total	85038	74139	85453	83701	86891	90711	89264	93371	97171	102989

Table 4:- Rubber Plantation area & Production in Tripura over one & half decade.

Year	Planted area	Cumulative Total area	Mature area	Immature area	Production
	Hectares	Hectares	Hectares	Hectares	Tonne
2004 -05	1516	34630	21952	12678	24147
2005-06	2232	36862	23612	13250	25973
2006-07	4758	41620	25469	16151	30563
2007 -08	5364	46984	26900	20084	32280
2008 -09	7455	54439	28145	26294	33774
2009 -10	5103	59542	29507	30035	35408
2010 -11	3881	63423	30872	32551	37046
2011 -12	4114	67537	31747	35790	38096
2012 -13	3228	70765	33114	37651	39737
2013 -14	3944	74709	34630	40079	42491
2014 -15	3788	78497	36862	41635	46815
2015 -16	2482	80979	41620	39359	52025
2016 -17	2300	83280	46986	36294	56380
2017 -18	1028	84302	54441	29861	65330
2018 -19	730	85038	65893	19145	74139
2019 -20	416	85454	69837	15617	83701
2020-21	1437	86891	70817	16074	90711
2021-22	2373	89264	74605	14659	93371
2022-23	7907	97171	78084	19087	102989

Methods of Harvest:-

Tappers:

About 40% of the state's plantations are tapped by professional tappers, with the remaining 60% being tapped by the growers or members of their families. There are still about 250 tapping tasks. The goal of Rubber Board is to continuously skill and up skill tappers. Tappers are often paid on a monthly basis. Alternate day tapping (s/2 d/2) is a common tapping intensity.

Productivity:

Over the past few years, the average productivity has remained between 1200 and 1300 kg/ha/year. This is because, while intermittent productivity-enhancing programs and ongoing up skilling are increasing production, old plantations are gradually becoming senile to reduce their capacity for production. In 2022–2023, the average productivity was 1319 kg/ha.

Table 5:- Productivity.

Year	Productivity(Kg/ha)
2020-21	1281
2021-22	1289
2022-23	1319

Local Consumption Scenario:

Latex is the main source of NR's local consumers in Tripura. They use less than 5 percent of the state's entire rubber production. Due to inherent financial problems and seasonal production reductions, none of these plants were able to operate at full capacity.

Rubber Wood Prospects:

There are untapped rubber wood opportunities in Tripura. The state can provide 2000 hectares of senile rubber trees per year for the next 20 years. In Tripura, there are just three rubber wood processing facilities: two are owned by TFDPC Ltd., while the third is a privately owned treatment facility.

Sl.No.	Name of the Industry	Product
1	TFDPC Limited Anandanagar, West Tripura	Processed rubber wood
2	TFDPC Limited Betcherra, Unakoti Tripura	Processed rubber wood
3	Laxmi Wooden Treatment Plant Barjala, West Tripura	Processed rubber wood

They do not accept wood from individual rubber farmers because the installed capacity of the plants held by TFDPC Limited is even too small for their own needs. Rubber producers opt to labor on senile plantations since there is no feasible price realization for selling rubber trees that are felled for replanting.

Ancillary Income Generation:

Intercropping:

During the first three to four years after planting, rubber plantations offer abundant space, nutrients, and sunlight, allowing for the intercropping of a sizable variety of annual crops. In Tripura's rubber plantations, the most popular intercrops are pineapple, bananas, and upland paddy. By setting up irrigation or water collection systems, there are still opportunities to grow additional annual crops including ginger, turmeric, sesamum, and green vegetables. In established plantations, another group of plants that prefer sheds can be grown as intercrop. A few hectares of mature land were used to grow the aromatic medicinal herb Sugandhimantri last year.

Rubber Honey:

Honey is abundant from rubber trees. Nearly all of the honey generated by rubber trees is available to honeybees because rubber honey is found in the Petiole region. A one-hectare rubber plantation with ten beehives may yield eight to ten kg of rubber honey annually. In Khowai district, there are roughly 139 hectares of rubber plantations that

are systematically collected for rubber honey. In order to get honey, honeybees travel to rubber plantations in other parts of the state.

Rubber seed:
In Tripura, rubber seed is only utilized for reproduction. In all of Northeast India, Tripura has been the center for rubber modification. The domestic need for planting materials for new and replanting is presently met by Tripura on its own. In addition to fulfilling domestic needs, the state has been providing Assam, Manipur, and Mizoram with thousands of planting materials since 2021 in order to carry out the INROAD initiative, which aims to establish 2 lakh rubber plantations between 2021 and 2025. Rubber seed cake is a high-protein food that makes wonderful fodder. Soap, paint, and resin industries use rubber seed oil. In the state, such opportunities remain unexplored. For the first time ever, Kerala received 12 metric ton of various rubber seed from Tripura this year.

Marketing Process:
Moods & Modes:
The rubber market is influenced by a variety of domestic and global trends, including minute-by-minute changes in the prices of gold, silver, petroleum, and other commodities. Therefore, it is clear that rubber growers may have both large and very poor sales realizations even while their cultivation costs are constant year after year and undoubtedly rise over time. When it comes to its accomplishments, sentiments, swings, spreads, and strengths, rubber marketing in Tripura remains the most remarkable. Paying producers in advance is still a crucial part of customer relationship management. The state of the market affects this relationship. Very close and personal dealers occasionally quit picking up the phone. This might even occur the other way around when the producer disconnects following the dealer's advance payment. It is surprising to learn that many grocery stores in rural areas still operate a barter economy in which rubber is exchanged for food and home goods in this day of digital transactions. The availability of infrastructure for marketing the product is the most important of the many variables that have contributed to the extraordinary success of Tripura's rubber development. As of right now, Kerala, which produces roughly 83% of all rubber produced in the country, has only 5331 rubber merchants, while Tripura has 1636 dealers- generating only 10% of all domestic rubber. Nearly all of the state's field coagulum is used by eight excellent ISNR manufacturers. The state's three Cenex factories use all of the PFL that is produced in the state.

Produce Destinations:
The majority of sheet rubber is shipped to North India, with a small amount also going to West and South India. Up until 2017–18, the non-tyre industry controlled the Tripura rubber market. Large dealers are still frequent clients today, and massive tire manufacturers like MRF, Apollo, J K Tyre, CEAT and others also receive tire grade sheets. Creep and ISNR primarily travel to North India. They are mostly utilized in industries including tires, farm equipment, and replacement parts, among others. Nearly all of the state's Cenex production was used locally, mostly for the production of rubber thread. The majority of rubber thread is sold in North India, with the remainder going to West and East India.

In all of Northeast India, Tripura has been the center for rubber notification. The domestic need for planting materials for new and replanting is presently met by Tripura on its own. In addition to fulfilling domestic needs, the state has been providing Assam, Manipur, and Mizoram with thousands of planting materials since 2021 in order to carry out the INROAD initiative, which aims to establish 2 lakh rubber plantations between 2021 and 2025.

Conclusion:-

In this paper I have tried to give some glimpses related to development of rubber plantation and production in Tripura for the past few years which are noticeable. Total harvested areas and natural rubber production significantly increased during past few years. The prospects for growth of plantation area as well as production appear brighter due to the current steady global economy.

The socio-economic and ecological benefits achieved in Tripura due to active participation of the Government of Tripura in the rubber development programmes in Tripura.

State government promoted its plantation with financial support, land allocation, and foreign technical aid due to its high production, storage, transportation and marketing facilities. In various hilly areas, both public and private companies created plantations and within the seventh year of the plantation's establishment, commercial exploitation began to flourish. Additionally, growth and latex flow are quite positive. In order to improve coordination among all

the departments involved in acquiring plantations and marketing rubber, Government of Tripura established Rubber Mission.

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