

## **Chapter – 3**

# **Present Scenario of Tea Production in Assam**

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*The previous chapter has highlighted the survey of related literature. An attempt has been made in this chapter to examine the present scenario of tea production in Assam in context to the nation. Global scenario of tea production, global scenario of tea export, national scenario of tea production, national scenario of tea export, region wise scenario of tea production in India, state wise scenario of tea production etc are analyzed in this chapter over the period under consideration through statistical technique.*

## **Chapter – 3**

### **Present Scenario of Tea Production in Assam**

#### **3.1: Introduction:**

Tea is grown in both the Brahmaputra valley and Barak valley in Assam. Tea gardens in Brahmaputra valley are located plain while most of the tea gardens in Bark valley are located at hilly place known as “tila”. Tea gardens are mostly concentrated in Lakhimpur, Dibrugarh, Tinsukia, Sibsagar, Jorhat, Golaghat, Darrang, Sonitpur and Cachar districts of Assam. Most of the tea gardens in Assam produce black tea in CTC category and recently some of the gardens started to produce green tea, white tea and yellow tea also. One tea garden Manohari Tea Estate located at Dibrugarh district produced gold tea in the year 2018 and created the world record of fetching the highest price Rs39,001 in any auction in the world ( UNI, 2018). There are 767 big tea growers (having grant area more than 10.12 Hectare) and 84577 small tea growers (having grant area up to 10.12 Hectare) in Assam ( GOA, 2016).

Assam occupied unique place in India by producing 53 percent of the national production having plantation area of about 3.22 Lakh Hectares which is more than half of the country’s total area under tea. As per Tea Board of India report, there are about 52000 small tea growers in Assam at the end of March 2011 ,out of which , 4561 were registered with the Tea Board of India covering around 11757 hectare . As per report of economic survey (GOA, 2011) revealed that there are about 9, 00,000 people are involved in the small tea growing business in Assam. It is the single largest industry in Assam that provides average daily employment to more than six lakh persons in the State, which is around 50 percent of the total average daily waged employee in the country. The tea industry occupies an important place in Assam and plays a vital role in the state economy by earning foreign currency. Assam teas are popular in the foreign countries which maintaining its international reputation and commands significant share in the World Tea Market due to their strong, brisk and full bodied

liquor. Tea industry extended largest support by generating highest employment opportunities in Assam ( NABARD, 2015).

Tea is considered as one of the main agricultural produce in the state and is reputed all over the world for its aromatic quality. The other agricultural produce in the state of Assam are rice, potatoes, pulses, jute, sugarcane bananas, jackfruits, pineapples, mangoes, guavas etc. As per 2011 census, the population of Assam became 3, 11, 69,272 of which 1, 59, 54,927 are males and 1, 52, 14,345 females. The economy of Assam continues to be primarily agrarian and the agricultural sector is providing employment to more than 50 percent of the rural population. This sector contributes 25 percent to the State Domestic Product (2010-11).

In this chapter an attempt has been made to examine the present scenario of tea production of Assam in comparison with the national scenario. It is initiated with estimation of trend of global scenario of tea production, global scenario of tea export, state wise tea production in India, tea production scenario in Assam, other industries of Assam, Tea sold from Guwahati Tea Auction Centre, Price in Guwahati Tea Auction Centre, area, yield. In order to know the trend for production in Assam, production in India, export from India, production in World and Export in World, a time series analysis using trend projection model calculated. The regression analysis was applied to find the relationship between the production in Assam with export from India, export of world, total tea sold in Guwahati Tea Auction Centre ( GTAC), Leaf sold in GTAC, Dust sold in GTAC, selling price of leaf and dust in GTAC.

### 3.2. Global Scenario of Tea Production:

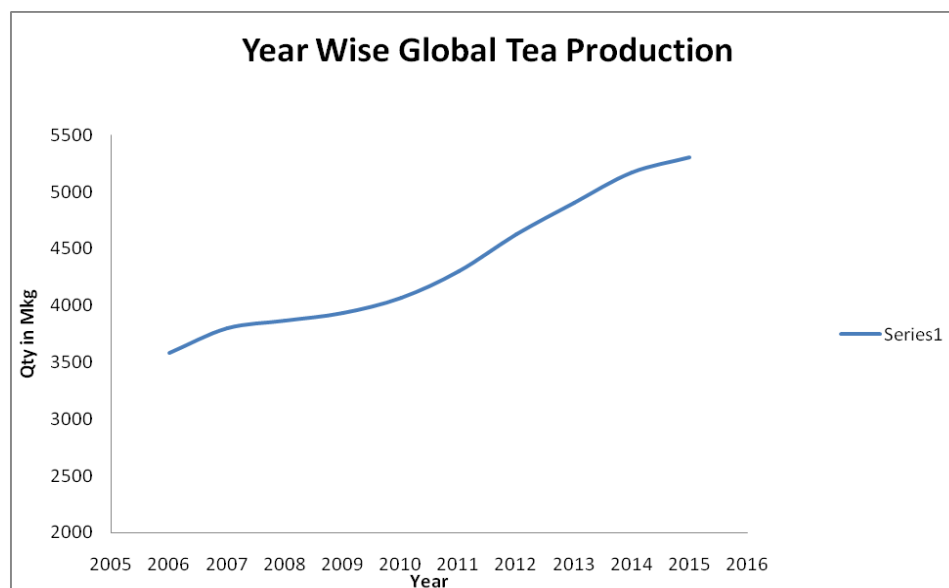
**Table 3.1: Global Scenario of Tea Production**

Country	Description	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
China	Total Production (m.kg)	1028.06	1140	1257.6	1358.64	1370.00	1623.21	1789.75	1924	2095	2278
	<b>Percent of share in world production</b>	<b>28.72%</b>	<b>30.00%</b>	<b>32.54%</b>	<b>34.55%</b>	<b>33.70%</b>	<b>37.76%</b>	38.7%	<b>39%</b>	<b>40.51%</b>	<b>43%</b>
India	Total Production (m.kg)	981.81	986.43	980.82	979	966.40	988.33	1126.33	1200	1207.31	1209
	<b>Percent of share in world production</b>	<b>27.43%</b>	<b>26.00%</b>	<b>25.38%</b>	<b>24.90%</b>	<b>23.76%</b>	<b>23.00%</b>	24.36%	<b>24%</b>	<b>23.34%</b>	<b>22.79%</b>
Kenya	Total Production (m.kg)	310.58	369.61	345.82	314.20	399.01	377.91	369.56	432	445.11	399
	<b>Percent of share in world production</b>	<b>8.67%</b>	<b>9.74%</b>	<b>8.95%</b>	<b>8.00%</b>	<b>9.81%</b>	<b>8.80%</b>	7.99%	<b>9%</b>	<b>8.6%</b>	<b>7.5%</b>
Sri Lanka	Total Production (m.kg)	310.82	304.61	318.70	289.78	329.38	328.63	328.40	340	338.03	329
	<b>Percent of share in world production</b>	<b>8.68%</b>	<b>8.00%</b>	<b>8.25%</b>	<b>7.37%</b>	<b>8.01%</b>	<b>7.64%</b>	7.15	<b>7%</b>	<b>6.53%</b>	<b>6.2%</b>
Vietnam	Total Production (m.kg)	142.50	148.27	166.38	154.00	157.00	178.00	190.00	180.33	175	170
	<b>Percent of share in world production</b>	<b>4.00%</b>	<b>3.91%</b>	<b>4.31%</b>	<b>3.92%</b>	<b>3.86%</b>	<b>4.14%</b>	4.11%	<b>3.67%</b>	<b>3.38%</b>	<b>3.2%</b>
Turkey	Total Production (m.kg)	142	178.00	155.00	153.00	148.00	145.00	147.00	149	230	259
	<b>Percent of share in world production</b>	<b>4.00%</b>	<b>4.69%</b>	<b>4.00%</b>	<b>3.90%</b>	<b>3.64%</b>	<b>3.37%</b>	3.18%	<b>3.04%</b>	<b>4.45%</b>	<b>4.5%</b>
Indonesia	Total Production (m.kg)	146.85	137.25	137.50	137.50	129.20	119.65	137.25	134	132	129
	<b>Percent of share in world production</b>	<b>4.10%</b>	<b>3.62%</b>	<b>3.56%</b>	<b>3.50%</b>	<b>3.18%</b>	<b>2.78%</b>	2.97%	<b>2.73%</b>	<b>2.55%</b>	<b>2.4%</b>
Bangladesh	Total Production (m.kg)	53.41	58.42	58.66	60.00	59.17	59.32	62.16	66.26	64.48	66

	<b>Percent of share in world production</b>	<b>1.50%</b>	<b>1.54%</b>	<b>1.52%</b>	<b>1.53%</b>	<b>1.46%</b>	<b>1.38%</b>	1.34%	<b>1.35%</b>	<b>1.25%</b>	<b>1.24%</b>
Others	Total Production (m.kg)	463.76	473.49	444.31	487.36	508.44	497.17	474.18	481.51	486.54	466
	<b>Percent of share in world production</b>	<b>13.00%</b>	<b>12.47%</b>	<b>11.50%</b>	<b>12.40%</b>	<b>12.5%</b>	<b>11.56%</b>	10.25%	9.81%	9.4%	<b>8.78%</b>
	<b>Total Production</b>	<b>3579.79</b>	<b>3796.08</b>	<b>3864.79</b>	<b>3931.98</b>	<b>4066.60</b>	<b>4299.22</b>	<b>4624.63</b>	<b>4907.1</b>	<b>5173.47</b>	<b>5305</b>

Source: Compiled by researcher from Annual Report of Tea Board of India(various issues)

**Figure: 3.1. Graphical Representation of Global Tea Production**



**Table 3.2: Year to year growth rate of major four Tea Producing countries**

Country	Description	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
China	Total Production (m.kg)	1028.06	1140	1257.6	1358.64	1370.00	1623.21	1789.75	1924	2095	2278
	<b>Year to year basis growth rate</b>	-	<b>10.89%</b>	<b>10.31%</b>	<b>8%</b>	<b>.8%</b>	<b>18.46%</b>	10.26%	<b>7.5%</b>	<b>8.9%</b>	<b>8.73%</b>
India	Total Production (m.kg)	981.81	986.43	980.82	979	966.40	988.33	1126.33	1200	1207	1209
	<b>Year to year basis growth rate</b>	-	<b>.47%</b>	<b>-.56%</b>	<b>-.18%</b>	<b>-1.28%</b>	<b>2.27%</b>	14%	<b>6.54%</b>	<b>.58%</b>	<b>.16%</b>
Kenya	Total Production (m.kg)	310.58	369.61	345.82	314.20	399.01	377.91	369.56	432	445.11	399
	<b>Year to year basis growth rate</b>	-	<b>19%</b>	<b>-6.44%</b>	<b>-9.14%</b>	<b>27%</b>	<b>-5.3%</b>	-2.2%	<b>17%</b>	<b>3%</b>	<b>10.36%</b>
Sri Lanka	Total Production (m.kg)	310.82	304.61	318.70	289.78	329.38	328.63	328.40	340	338.03	329
	<b>Year to year basis growth rate</b>	-	<b>-2%</b>	<b>4.63%</b>	<b>9%</b>	<b>13.66%</b>	<b>-.22%</b>	0%	<b>3.5%</b>	<b>-.6%</b>	<b>-2.6%</b>

Source: Compiled by researcher from Annual Report of Tea Board of India

**Table 3.3: Composite growth of major four Teas Producing countries and world during the period 2006-2015**

<b>Country</b>	<b>Description</b>	<b>2006</b>	<b>2015</b>	<b>Percentage of growth</b>
China	Total Production (m.kg)	1028.06	2278	121.6%
India	Total Production (m.kg)	981.81	1209	23%
Kenya	Total Production (m.kg)	310.58	399	28.52%
Sri Lanka	Total Production (m.kg)	310.82	329	5.86%
<b>World</b>	<b>Total Production (m.kg)</b>	<b>3579.79</b>	<b>5305</b>	<b>48%</b>

Source: Compiled by researcher from Annual Report of Tea Board of India

Table1 shows that the production share of India with respect to world tea production is 27.36 percent in the year 2005 and that of China is 27 percent. In the year 2011, India's share in world tea production became 23 percent by dropping 4.36 percent in compare to the year 2005 while China's share became 37.76 percent by increase in 10.76% in compare to 2005. India was the leading tea producer in the world till 2005 but pushed to 2<sup>nd</sup> position by China in the year 2006 and since then China is the leading tea producing country in the world. The net production of India in 2005 was 945.97(mKg) which increases by 4.47 percent and became 988.33(mKg) in the year 2011. The China produced 934.86(mkg) in the year 2005 which significantly increased by 73.63 percent to attain 1623.21(mkg) in the year 2011. It shows that the production growth of tea in India is fas lagging behind China.



**Table 3.4: Global Scenario of Tea Export during Financial Year**

Country	Description	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Kenya	Total Export (m.kg)	348.28	312.16	343.70	383.44	342.48	441.02	421.27	494.31	499.38	443.46
	<b>Percent of share in world Export</b>	<b>22.18%</b>	<b>19.74%</b>	<b>21.82%</b>	<b>23.19%</b>	<b>21.60%</b>	<b>25.45%</b>	<b>24.05%</b>	<b>26.53%</b>	<b>27.30%</b>	<b>24.57%</b>
China	Total Export (m.kg)	286.56	286.59	289.43	296.94	302.95	302.42	322.58	332.42	301.48	324.96
	<b>Percent of share in world Export</b>	<b>18.25%</b>	<b>18.13%</b>	<b>18.38%</b>	<b>17.96%</b>	<b>19.14%</b>	<b>17.43%</b>	<b>18.40%</b>	<b>17.84%</b>	<b>16.48%</b>	<b>18%</b>
Sri Lanka	Total Export (m.kg)	298.77	314.92	294.25	298.79	279.84	298.59	301.27	309.2	317.89	301.32
	<b>Percent of share in world Export</b>	<b>19.02%</b>	<b>19.91%</b>	<b>18.68%</b>	<b>18.07%</b>	<b>17.68%</b>	<b>17.20%</b>	<b>17.20%</b>	<b>16.59%</b>	<b>17.38%</b>	<b>16.7%</b>
India	Total Export (m.kg)	199.05	218.73	178.75	203.12	197.90	193.29	211.91	219	207.44	228.66
	<b>Percent of share in world Export</b>	<b>12.67%</b>	<b>13.83%</b>	<b>11.35%</b>	<b>12.28%</b>	<b>12.50%</b>	<b>11.15%</b>	<b>12.06%</b>	<b>11.76%</b>	<b>11.34%</b>	<b>12.67%</b>
Vietnam	Total Export (m.kg)	87.92	105.12	110.93	115.00	95.00	98.00	143	140.33	132	133.5
	<b>Percent of share in world Export</b>	<b>5.59%</b>	<b>6.65%</b>	<b>7.04%</b>	<b>6.96%</b>	<b>6.00%</b>	<b>5.65%</b>	<b>8.17%</b>	<b>7.53%</b>	<b>7.21%</b>	<b>7.4%</b>
Indonesia	Total Export (m.kg)	102.29	95.34	83.66	95.00	92.30	87.10	75.45	70.84	66.4	61.92
	<b>Percent of share in world Export</b>	<b>6.51%</b>	<b>6.03%</b>	<b>5.31%</b>	<b>5.75%</b>	<b>5.83%</b>	<b>5.00%</b>	<b>4.30%</b>	<b>3.8%</b>	<b>3.63%</b>	<b>3.43%</b>
Bangladesh	Total Export (m.kg)	9.01	4.79	10.56	8.39	3.15	0.91	1.45	.54	2.66	3.18
	<b>Percent of share in world Export</b>	<b>.57%</b>	<b>0.30%</b>	<b>0.67%</b>	<b>0.51%</b>	<b>.20%</b>	<b>.05%</b>	<b>.08%</b>	<b>.03%</b>	<b>.15%</b>	<b>.18%</b>
Others	Total Export (m.kg)	228.23	434.35	263.71	252.26	169.90	311.67	472.59	298	302.28	308

	<b>Percent of share in world Export</b>	<b>14.53%</b>	<b>24.39%</b>	<b>16.74%</b>	<b>15.26%</b>	<b>17.05%</b>	<b>18.00%</b>	<b>27.00%</b>	<b>16%</b>	<b>16.51</b>	<b>17.06</b>
Total	<b>Total Export</b>	<b>1570.11</b>	<b>1781.01</b>	<b>1574.99</b>	<b>1653.29</b>	<b>1582.95</b>	<b>1733.27</b>	1749.52	1863.32	1832	1805

Source: Compiled by researcher from Annual Report of Tea Board of India

**Table:3.5: Year to year growth rate of four major tea exporting countries**

<b>Country</b>	<b>Description</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Kenya	Total Export (m.kg)	348.28	312.16	343.70	383.44	342.48	441.02	421.27	494.31	499.38	443.46
	<b>Year to year basis growth rate</b>	-	<b>-10.37%</b>	<b>10.1%</b>	<b>11.57%</b>	<b>-10.68%</b>	<b>28.77%</b>	<b>-4.4%</b>	<b>17%</b>	<b>1%</b>	<b>-11%</b>
China	Total Export (m.kg)	286.56	286.59	289.43	296.94	302.95	302.42	322.58	332.42	301.48	324.96
	<b>Year to year basis growth rate</b>	-	<b>0%</b>	<b>1%</b>	<b>2.8%</b>	<b>2%</b>	<b>0%</b>	<b>6.6%</b>	<b>3.1%</b>	<b>-9.3%</b>	<b>8%</b>
Sri Lanka	Total Export (m.kg)	298.77	314.92	294.25	298.79	279.84	298.59	301.27	309.2	317.89	301.32
	<b>Year to year basis growth rate</b>	-	<b>5.35%</b>	<b>-6.7%</b>	<b>1.7%</b>	<b>6.3%</b>	<b>6.8%</b>	<b>1%</b>	<b>2.6%</b>	<b>3%</b>	<b>-5.3%</b>
India	Total Export (m.kg)	199.05	218.73	178.75	203.12	197.90	193.29	211.91	219	207.44	228.66
	<b>Year to year basis growth rate</b>	-	<b>5%</b>	<b>-18%</b>	<b>14%</b>	<b>-2.5%</b>	<b>-2.5%</b>	<b>10%</b>	<b>3.3%</b>	<b>-5.68%</b>	<b>10%</b>

Source: Compiled by researcher from Annual Report of Tea Board of India

Table:3.6: Composite growth of four major tea exporting countries and world during FY 2006 to 2015

Country	Description	2006	2015	Percentage of growth
Kenya	Total Export (m.kg)	348.28	443.46	27.3%
China	Total Export (m.kg)	286.56	324.96	13.63%
Sri Lanka	Total Export (m.kg)	298.77	301.32	1%
India	Total Export (m.kg)	199.05	228.66	15%
World	Total Export (m.kg)	<b>1570.11</b>	<b>1805</b>	15%

Source: Compiled by researcher from Annual Report of Tea Board of India

Table 3.6. shows the world tea export share of different countries. India placed in fourth position in the world tea export where Kenya leading the tea exports market in the world. China and Sri Lanka occupying second and third position. India's share was 12.67 percent in the year 2005 by exporting 199.05(mkg) while the share became 12.06 percent in the year 2011 with exporting 211.91(mkg). The net export has increased by 6 percent in the year 2011 in compare to the year 2005. The export share of China was 18.25 percent in the year 2005 and it became 18.40 percent in the year 2011 while net export increase by 12.57 percent in the year 2011 compare to the year 2005. The export share of leading country Kenya was 22.18 percent in the year 2005 and it increased to 24.05 percent in the year 2011 with net export significantly increased by 21 percent in the year 2011 compare to the year 2005.

**Table 3.7: State wise Tea Production in India**

<b>States</b>	<b>Description</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Assam	Total Production (m.kg)	502.04	511.89	487.50	499.88	480.29	508.74	588.14	629.05	606.8	652.95
West Bengal	Total Production (m.kg)	237.11	236.34	233.13	221.57	229.78	225.69	287.32	312.10	329.46	323.38
Kerala	Total Production (m.kg)	59.46	55.97	70.29	68.96	66.25	66.91	63.76	63.48	65.58	58.01
Tamil Nadu	Total Production (m.kg)	163.66	160.53	170.53	169.36	170.72	168.63	171.93	174.71	169.79	162.94
Karnataka	Total Production (m.kg)	5.44	5.19	6.08	5.81	5.89	5.28	6	5.52	6.74	6.52
Others	Total Production (m.kg)	14.09	16.51	13.29	13.30	12.96	12.30	17.92	23.92	24.77	25.68
	<b>Total National Production</b>	<b>981.80</b>	<b>986.43</b>	<b>980.82</b>	<b>979.00</b>	<b>966.40</b>	<b>988.33</b>	<b>1135.07</b>	<b>1208.78</b>	1172.42	1207.23

Source: Tea Board Annual Report

**Table 3.8: State wise growth of Tea Production during the period 2006 to 2015**

States	Description	2006	2015	Percentage of Growth during the period
Assam	Total Production (m.kg)	502.04	652.95	30%
West Bengal	Total Production (m.kg)	237.11	323.38	36.3%
Kerala	Total Production (m.kg)	59.46	58.01	-2.3%
Tamil Nadu	Total Production (m.kg)	163.66	162.94	-.6%
Karnataka	Total Production (m.kg)	5.44	6.52	20%
Others	Total Production (m.kg)	14.09	25.68	82%
	<b>Total National Production</b>	<b>981.80</b>	1207.23	23%

Source: Compiled by the researcher from the annual report of Tea Board of India

Table 3.8 showing the state wise production in India. Four states viz. Assam, West Bengal, Tamil Nadu and Kerala accounted for more than 95 percent of the total production in India. Apart from the above the other tea producing states in India are Tripura, Himachal Pradesh, Uttarakhand, Bihar , Karnataka, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Orissa and Sikkim.

**Table 3.9 : Production share of Assam with respect to India**

Year	Description	Production in (Million Kg)	Percentage of Tea production in Assam w.r.t India
2001	<b>Total of Assam</b>	<b>453.58</b>	53.11%
	All Total of India	853.92	
2002	<b>Total of Assam</b>	<b>433.33</b>	51.68%
	All Total of India	838.47	
2003	<b>Total of Assam</b>	<b>434.76</b>	49.5%
	All Total of India	878.13	

<b>Year</b>	<b>Description</b>	<b>Production in (Million Kg)</b>	<b>Percentage of Tea production in Assam w.r.t India</b>
2004	<b>Total of Assam</b>	<b>435.65</b>	48.79%
	All Total of India	892.96	
2005	<b>Total of Assam</b>	<b>484.48</b>	51.21%
	All Total of India	945.97	
2006	<b>Total of Assam</b>	<b>502.04</b>	51.13%
	All Total of India	981.80	
2007	<b>Total of Assam</b>	<b>511.88</b>	51.84%
	All Total of India	987.43	
2008	<b>Total of Assam</b>	<b>487.48</b>	49.70%
	All Total of India	980.81	
2009	<b>Total of Assam</b>	<b>499.88</b>	51.00%
	All Total of India	979.00	
2010	<b>Total of Assam</b>	<b>480.28</b>	49.70%
	All Total of India	966.40	
2011	<b>Total of Assam</b>	<b>508.74</b>	51.40%
	All Total of India	988.33	
2012	<b>Total of Assam</b>	588.14	51.80%
	All Total of India	1135.07	
2013	<b>Total of Assam</b>	629.05	52.00%
	All Total of India	1208.78	
2014	<b>Total of Assam</b>	606.8	50.68%
	All Total of India	1172.42	
2015	<b>Total of Assam</b>	652.95	53.00%
	All Total of India	1207.23	

Source: Tea Board of India and Assam Economic Survey of Report

### 3.3: Index numbers of selected industries of Assam:

Index numbers of tea production of Assam, production of other industries of Assam, state wise tea production, region wise tea production , national tea production using these indices an attempt is made to find the pattern of growth.

The present scenario of tea production in Assam begins by calculated index numbers of some selected industries in Assam. Index numbers calculated for the industries are Tea, Wheat, Coal, Jute, Crude oil, Cement and Fertiliser are given in the Table 3.1.

Index numbers calculated by taking financial year 2006-07 as base year and is equal to 100.

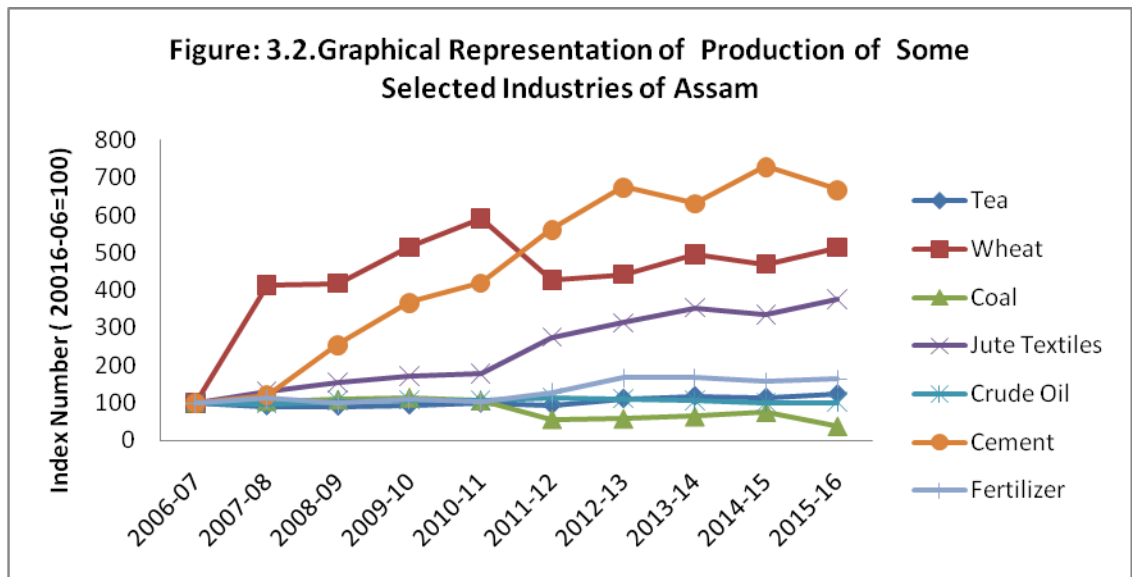
**Table:3.10 Index Numbers of Production of some selected industries in Assam**

(2006-07=100)

Year	Tea	Wheat Flour	Coal	Jute Textiles	crude Oil	Cement	Fertilizer
2006-07	100	100	100	100	100	100	100
2007-08	92	414	104	131	98	121	112
2008-09	91	420	108	155	105	255	101
2009-10	94	516	113	173	107	368	110
2010-11	99	593	105	178	106	420	105
2011-12	94	428	56	276	113	562	128
2012-13	111	444	57	314	110	675	167
2013-14	118	496	63	354	106	632	167
2014-15	114	471	75	336	100	730	158
2015-16	123	515	37	377	102	668	164

Source: Computed by researcher from the data given in Economic Survey, Assam, 2013-14, 2016-17

It is observed that index number of tea production of Assam decreases from 100 in 2006-07 to 92 in 2007-08 which is further decreases to 91 in the year 2008-09. The index number in the year 2011-12 became 94 and then increases to 123 in the year 2015-16. The index number of wheat increases from 100 in 2006-07 to 515 in the year 2015-16. The index number of coal decreases from 100 in 2006-07 to 37 in the year 2015-16. The increasing trend also observed for jute, crude oil, cement and fertilisers which are increases from 100 in 2006-07 to 377, 102, 668 and 164 respectively.



Graphical representation of the index numbers and production of selected industries of Assam shown in the figure 3.1. Now the growth performance of tea production can be looked vis-a vis other selected industries of Assam. It is seen from the figure that growth of production is highest in cement industry followed by wheat and jute industry. There is a moderate growth recorded for crude oil, jute and tea industry. The coal industry showed a declining trend in the whole period. It is observed from the graph that there are huge gap between tea and wheat, coal and jute. This reveals that growth performance of tea production is poor in compare to other industries like cement, wheat and Jute.

### 3.4: Index numbers of Tea Production of Assam, India and World:

Index numbers calculated for the tea production in Assam, India and world as shown in the Table 3.11. Index numbers calculated by taking calendar year 2006 as base year and is equal to 100. The index number of production in Assam increased from 100 in year 2006 to 102 in the year 2007. Upon decreasing the index number, it reached to 96 in the year 2010. The production index of Assam remains volatile in subsequent year increased to 130 in the year 2015.



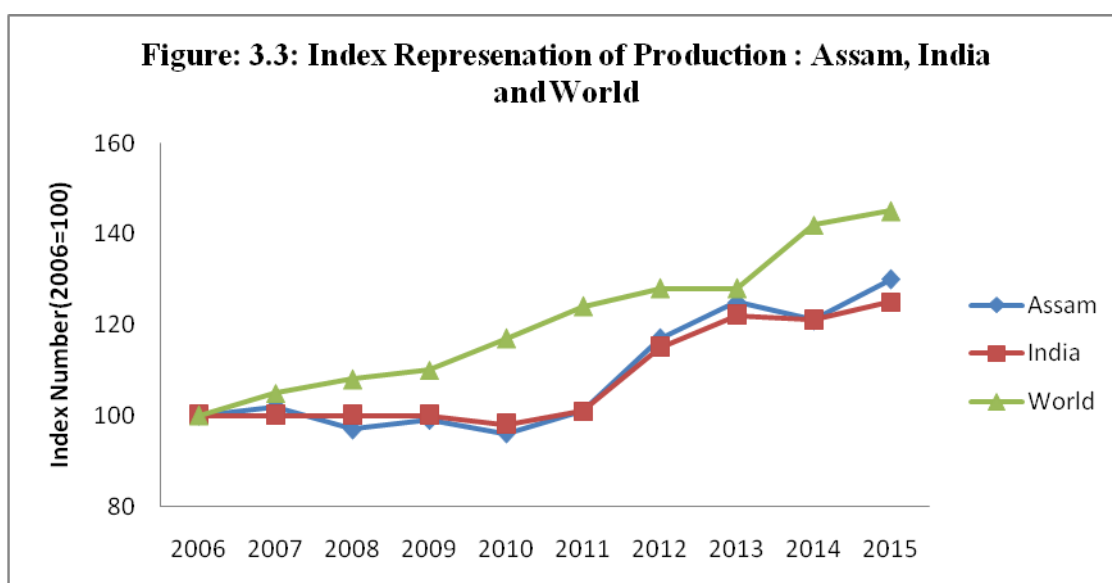
**Table: 3.11. Index numbers of Tea Production of Assam, India and World,**

(2006=100)

Year	Assam	India	World
2006	100	100	100
2007	102	100	105
2008	97	100	108
2009	99	100	110
2010	96	98	117
2011	101	101	124
2012	117	115	128
2013	125	122	128
2014	121	121	142
2015	130	125	145

Source: Computed from the data given Tea board of India report (various years) and ITC Chart retrieves from [www.worldteanews.com](http://www.worldteanews.com)

The production index of India remains same for the year 2006 to 2009. The index decreases and became 98 in the year 2010. The index then increases in subsequent years and became 125 in the year 2015. The index of world tea production increases steadily from 100 in the year 2006 to 145 in the year 2015.



Graphical representation of the index numbers of production in Assam, production in India and production in world is as shown in the figure 3.3. The growth performance of tea production in Assam can be looked vis-a vis tea production in India and tea production in World. It is seen from the figure that growth of tea production world is larger than the growth of tea production in Assam. It is observed from the graph that the growth of tea production in Assam and tea production in India is almost showing similar trend as there is not a considerable gap between two curves. But a big gap observed between the curves between tea production in Assam and tea production in world. This reveals that growth performance of tea production in Assam is poor in compare to the growth of tea production of world. However the growth performance of tea production in Assam is slightly better than the growth of tea production in India as shown in the graph.

### 3.5: Index numbers of Tea Production of Assam, North India and South India:

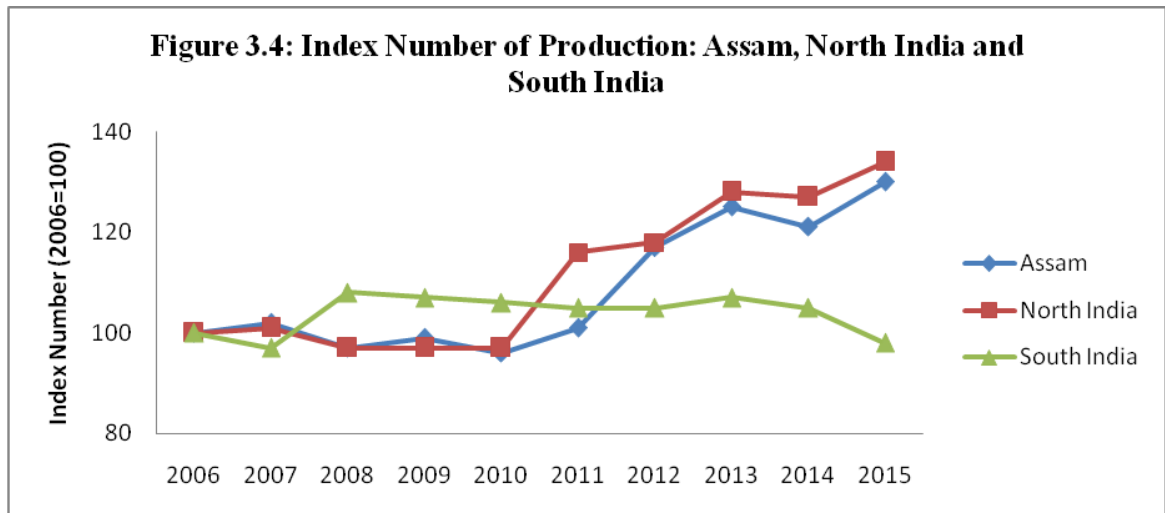
Index numbers calculated for the tea production in Assam, North India and South India as shown in the Table 3.12. The index number of production in Assam increased from 100 in year 2006 to 130 in the year 2015 and that of North India increased to 134 in the year 2015 from 100 in 2006. A volatile trend shown by South India from 100 in the year 2006 and shown highest growth in 108 in the year 2008. The index also shown increasing trend in the year 2009 to 2014. The index decreases to 97 and 98 in the year 2007 and 2015 respectively.

Table 3.12: Index numbers of Assam, North India and South India  
(2006=100)

Year	Assam	North India	South India	All India
2006	100	100	100	100
2007	102	101	97	100
2008	97	97	108	100
2009	99	97	107	100
2010	96	97	106	98
2011	101	116	105	101
2012	117	118	105	115

2013	125	128	107	122
2014	121	127	105	121
2015	130	134	98	125

Source: Computed from the data given various annual report of Tea Board of India



Graphical representation of the index numbers of tea production in Assam, tea production in North India and tea production in South India shown in the figure 3.4. The growth performance of tea production in Assam can be analysed with tea production in North India and tea production in South India. It is observed from the graph that the growth of tea production in Assam and growth of tea production in North India is almost showing similar trend. However the total growth performance of tea production Assam is less in compare to tea production in North India. South India showed a negative trend from the year 2008 and growth performance fall below Assam after the year 2011 and the decreasing trend continue upto the year 2015. A big gap observed between the curves of tea production in Assam and tea production in South India indicates that growth performance of tea production in Assam in far better than that of South India.

### 3.6: Index numbers of Tea Production in Assam, West Bengal, Kerala, Tamil Nadu, Karnataka and Others:

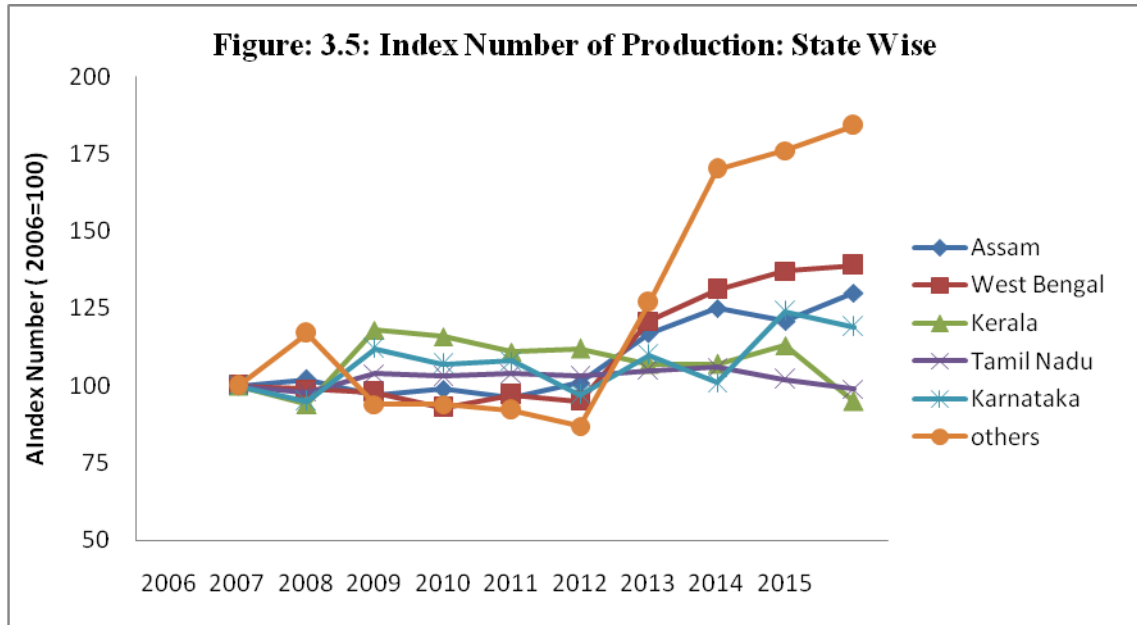
Index numbers calculated for the tea production in Assam, West Bengal, Kerala, Tamil Nadu, Karnataka and Others tea producing states of India taken together. The calculated index numbers are shown in the Table 3.13. The index number of production in Assam increased from 100 in year 2006 to 130 in the year 2015 and that of West Bengal increased to 139 in the year 2015 from 100 in 2006. The index of production in Kerala decreases to 94 in the year 2007 from 100 in the year 2006 and increases to 118 in next year 2008. The index showed a volatile performance in the subsequent years and became 95 in the year 2015. The index of production in the state of Tamil Nadu decreases from 100 in the year 2006 to 98 in the year 2007. The production index increased to 104 in the year 2008, and was in almost similar range up to the year 2014. The production index decreases to 99 in the year 2015. The tea production index in the state of Karnataka increased from 100 in 2006 to 119 in the year 2015. The production index shown a increasing trend by other tea producing states together and it increases from 100 in the year 2006 to 184 in the year 2015.

Table 3.13: State wise index numbers of tea production

(2006=100)

Year	Assam	West Bengal	Kerala	Tamil Nadu	Karnataka	others
2006	100	100	100	100	100	100
2007	102	99	94	98	95	117
2008	97	98	118	104	112	94
2009	99	93	116	103	107	94
2010	96	97	111	104	108	92
2011	101	95	112	103	97	87
2012	117	121	107	105	110	127
2013	125	131	107	106	101	170
2014	121	137	113	102	124	176
2015	130	139	95	99	119	184

Source: Computed from the data given various annual report of Tea Board of India



Graphical representation of the index numbers of tea production in Assam, West Bengal, Kerala, Tamil Nadu, Karnataka and Others tea producing states of India taken together is shown in the Figure 3.5. The growth performance of tea production in Assam is looked with West Bengal, Kerala, Tamil Nadu, Karnataka and Others tea producing states of India taken together. It is observed from the graph that the growth of tea production in Assam and growth of tea production in West Bengal and that of Karnataka is almost showing similar trend. However the total growth performance of tea production Assam is less in compare to that of West Bengal and growth of tea production in Assam is higher than that of Karnataka. Tamil Nadu and Kerala showed a negative trend and the growth performance of Assam is better in compare to these two tea producing states. There is a big gap observed between the curves of tea production in Assam and tea production in other states taken together which indicates that growth performance of tea production in Assam is far lagging behind that of other states taken together.

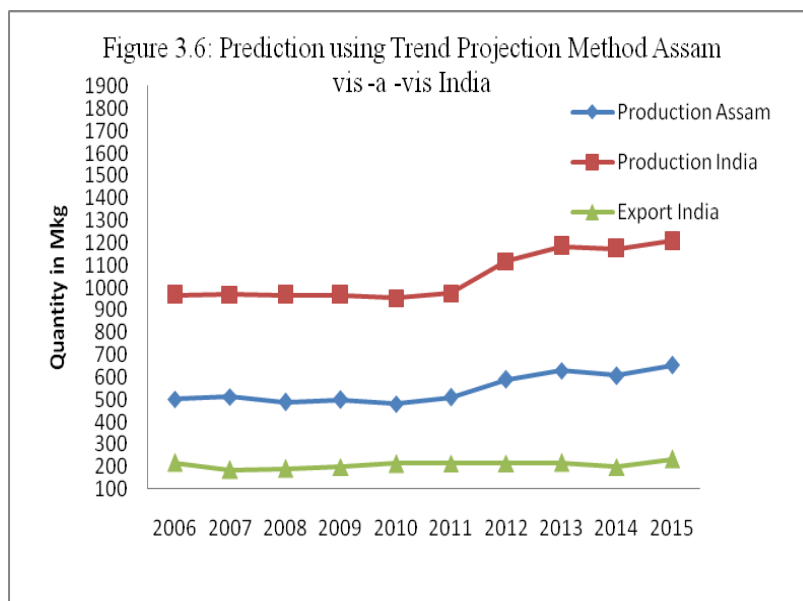
### 3.7: Time series analysis using Trend Projection Model:

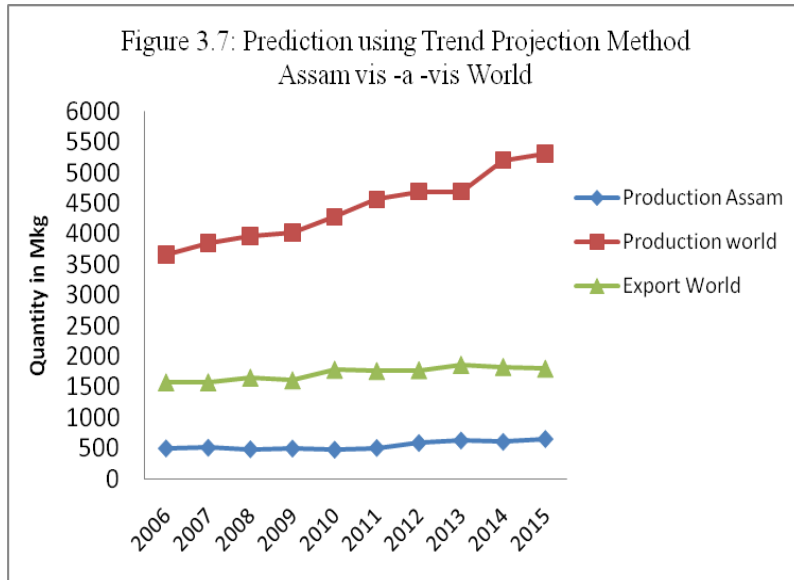
It is important to know the trend for production in Assam, production in India, export from India, production in World and export in World. Here the trend projection method is applied because there is a consistent increase and decrease in production of tea and export over time.

Table: 3.14: Production of India, Export from India, world production and world Export

Year	Assam (Mkg)	India (Mkg)	Total Export From India	World (Mkg)	Total World Export
2006	502.04	967.71	218.73	3665.60	1581.63
2007	511.88	969.91	185.32	3854.4	1582.36
2008	487.48	967.51	190.00	3965.5	1656.10
2009	499.88	965.58	200.02	4018.63	1615.50
2010	480.28	952.92	213.79	4280.23	1786.4
2011	508.74	975.25	214.35	4561.5	1763.90
2012	588.14	1117.16	216.23	4691.63	1777.2
2013	629.05	1184.86	218.12	4691.05	1864.10
2014	606.8	1172.42	199.08	5196.4	1830.3
2015	652.95	1207.23	232.92	5304.5	1801.5

Source: Tea board of India report (various years) and ICT data bank





The figure 3.6 shows the prediction using trend projection model production of tea in Assam by year, production of India by year and the export from India by year. It is shown from the figure that exports from India remain constant over the time although there is increase in growth of production of tea in Assam as well as that in India over that period. There is a huge gap exists between the curve of total production in Assam and total export from India as well as total production in India and export from India. This reveals that the export from India is less in compare to the production in Assam and India. Major share of tea produced in Assam as well as India consumed in the India itself. Consumption trend increases over the period as production increases but export remains constant.

The figure 3.7 shows the prediction using trend projection model production of tea in Assam, production in world and the export in world. It is observed from the figure that the world tea production increases over the period but the export almost remain constant. The huge gap exists between the curve world tea production and world export implies that most of the tea consume in the respective tea producing country itself. Export not increases compare to increase in tea production in world is due to increase in consumption trend of tea in the respective country.

### 3.7. Growth Rate Analysis:

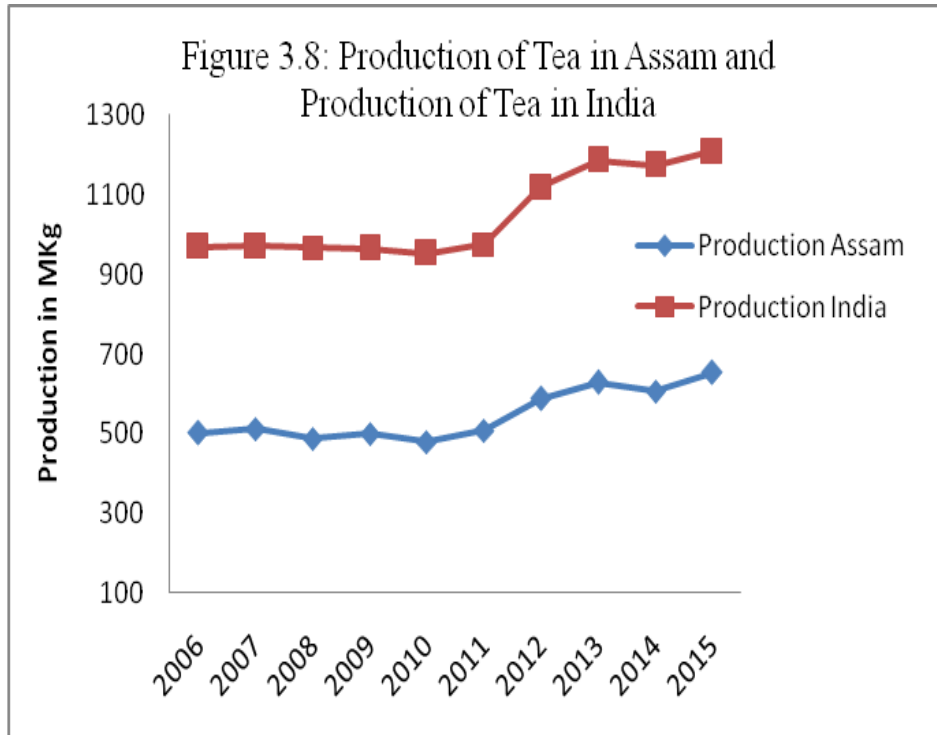
Production (in Mkg)	Year		Percentage of Growth
	2006	2015	
Assam	502.04	652.95	30%
India	967.71	1207.23	24.75%

Growth of tea production in Assam and India during the period 2006-2015 were calculated by using simple percentage. It is observed from the analysis that the growth rate of Assam is 30 percent and that of India is 24.75 percent. The growth rate of Assam is higher is due to increase in number Small Tea Growers in Assam during the period.

### 3.8: Regression analysis of Production of tea in India on production of tea in Assam:

Researcher has attempted to find out the relationship between the production of tea in Assam and production of tea in India. In this context, we framed hypothesis “*The tea production in Assam is not at par with the tea production in India*”. Data on annual production of tea in Assam and annual production of tea India is being shown in the figure 3.8. The correlation and regression analysis have been done to find out the relationship between the two from the table 3.14.





**Table. 3.15: Correlation table of Tea production in Assam and Tea Production in India**

		Production of Tea in Assam	Production of Tea in India
Production of Tea in Assam	Pearson Correlation	1	.990**
	Sig. (2-tailed)		.000
	N	10	10
Production of Tea in India	Pearson Correlation	.990**	1
	Sig. (2-tailed)	.000	
	N	10	10

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table. 3.16: Model Summary<sup>b</sup> of Tea production in Assam and Tea Production in India**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.990 <sup>a</sup>	.981	.978	15.80790	.981	410.173	1	8	.000	2.729

a. Predictors: (Constant), Production of Tea in Assam

b. Dependent Variable: Production of Tea in India

**Table. 3.17: ANOVA<sup>b</sup> of Tea production in Assam and Tea Production in India**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	102498.143	1	102498.143	410.173	.000 <sup>a</sup>
	Residual	1999.119	8	249.890		
	Total	104497.262	9			

a. Predictors: (Constant), Production of Tea in Assam

b. Dependent Variable: Production of Tea in India

**Table. 3.18: Coefficients<sup>a</sup> of Tea production in Assam and Tea Production in India**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	152.009	44.525		3.414	.009					
	Production of Tea in Assam	1.639	.081	.990	20.253	.000	.990	.990	.990	1.000	1.000

a. Dependent Variable: Production of Tea in India

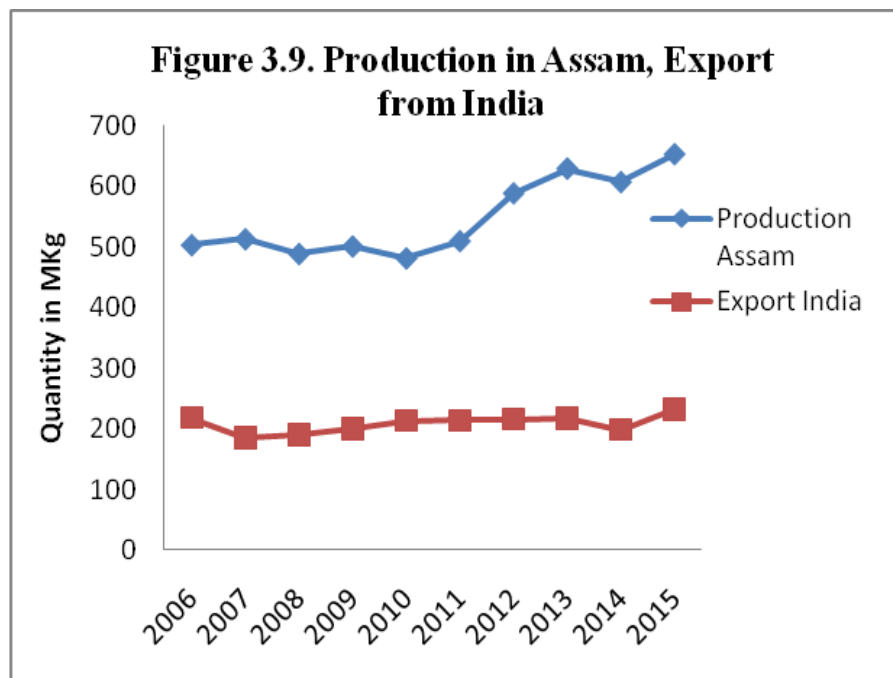
Correlation Table 3.15 shows that there is a strong positive Pearson correlation (R=.990) between production of tea in Assam and production of tea in India. The ANOVA test shows that the production of tea in India ( $p=.000 < .01$ ) were statistically significant related to production of tea in Assam. A simple regression was fitted and the equation thus obtained is as follows:

Production of tea in India = 152.009 + 1.639 production in Assam

Hence high correlation value between annual the tea production in Assam and the total annual tea production of India indicated that our hypothesis “*The tea production in Assam is not at par with the tea production in India*” is rejected.

**3.9: Regression analysis of export of tea from India on production of tea in Assam:**

An attempt has been made to establish the relationship among the production of tea in Assam and export of tea from India. Data on annual production of Assam and annual export from India is shown in the figure 3.9 and table 3.14. It is seen from the figure that production of Assam increases with time however same relation not found for export with time. This indicates that export and production do not shows the same pattern with time.



**Table. 3.19: Correlation table of Tea production in Assam and Export from India**

		Production of Tea in Assam	Export of Tea from India
Production of Tea in Assam	Pearson Correlation	1	.511
	Sig. (2-tailed)		.131
	N	10	10
Export of Tea from India	Pearson Correlation	.511	1
	Sig. (2-tailed)	.131	
	N	10	10

**Table: 3.20 : Model Summary for Production of tea in Assam and export from India**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.511 <sup>a</sup>	.261	.168	13.43821	.261	2.823	1	8	.131	1.892

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Total Export from India

**Table: 3.21: ANOVA for Production of tea in Assam and Export of Tea from India**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	509.751	1	509.751	2.823	.131 <sup>a</sup>
	Residual	1444.684	8	180.585		
	Total	1954.435	9			

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Total Export from India

**Table: 3.21: ANOVA for Production of tea in Assam and Export of Tea from India**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	509.751	1	509.751	2.823	.131 <sup>a</sup>
	Residual	1444.684	8	180.585		
	Total	1954.435	9			

**Table: 3.22: Coefficients for Production of tea in Assam and export from India**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics		
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF	
1	(Constant)	145.666	37.850		3.848	.005					
	Total Production of Assam	.116	.069	.511	1.680	.131	.511	.511	.511	1.000	1.000

a. Dependent Variable: Total Export from India

Correlation Table 3.8 shows that there is a moderately positive Pearson correlation (R=.511) between production of tea in Assam and total export from India. The ANOVA test revealed that the export of tea from India ( $p > .05$ ) is not statistically significant related to production of tea in Assam. A simple regression was fitted and the equation thus obtained is as follows:

$$\text{Export from India} = 145.666 + .116 \text{ production in Assam}$$

### 3.10: Regression analysis of tea sold in Guwhati Tea Auction Centre and Tea Production in Assam:

Correlation Table 3.19 shows that there is a moderately negative correlation ( -.532 ) between tea production in Assam and tea sold in Guwahati Tea Auction Centre(GTAC) . Similar correlation shown for the leaf sold on GTAC. It shows a

negative moderate correlation (  $-.579$ ) with production in Assam and leaf sold in GTAC. However there is a very weak correlation ( $-.144$ ) observed between the production of tea in Assam and dust sold in GTAC.

**Table 3.23: Tea Production in Assam and Quantity of Tea Sold in the Guwahati Tea Auction Centre**

Year	Total Tea production in Assam	Total Tea Sold through GTAC (MKg)	Leaf (MKg)	Dust (MKg)
2006	502.04	142.37	101.47	40.90
2007	511.88	152.56	111.04	41.52
2008	487.48	152.69	110.70	41.99
2009	499.88	138.51	98.77	39.74
2010	480.28	126.63	87.69	38.94
2011	508.74	122.68	86.45	36.23
2012	588.14	121.69	85.43	36.26
2013	629.05	126.57	88.27	38.3
2014	606.8	120.46	80.82	39.64
2015	652.95	129.3	88.1	41.2

Source: Tea board of India report (various years) and GTAC data bank

**Table 3.24 : Correlation for Tea Production in Assam and Quantity of Tea Sold in the Guwahati Tea Auction Centre**

		Total Production of Assam	Tea Sold in GTAC	Leaf Sol in GTAC	Dust Sold in GTAC
Total Production of Assam	Pearson Correlation	1	-.532	-.579*	-.144
	Sig. (1-tailed)		.057	.040	.345
	N	10	10	10	10
Tea Sold in GTAC	Pearson Correlation	-.532	1	.993**	.772**
	Sig. (1-tailed)	.057		.000	.004
	N	10	10	10	10
Leaf Sol in GTAC	Pearson Correlation	-.579*	.993**	1	.689*
	Sig. (1-tailed)	.040	.000		.014
	N	10	10	10	10

Dust Sold in GTAC	Pearson Correlation	-.144	.772**	.689*	1
	Sig. (1-tailed)	.345	.004	.014	
	N	10	10	10	10

\*. Correlation is significant at the 0.05 level (1-tailed).

\*\*.. Correlation is significant at the 0.01 level (1-tailed).

**Table: 3.25: Model Summary** of Tea production in Assam and tea sold in GTAC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.532 <sup>a</sup>	.283	.194	11.09799	.283	3.160	1	8	.113	.887

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Tea Sold in GTAC

**Table: 3.26: ANOVA for** Tea production in Assam and tea sold in GTAC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	389.209	1	389.209	3.160	.113 <sup>a</sup>
	Residual	985.323	8	123.165		
	Total	1374.531	9			

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Tea Sold in GTAC

**Table: 3.27. : Coefficients<sup>a</sup> for** Tea production in Assam and tea sold in GTAC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
		1	(Constant)	188.562			31.259		6.032	.000	
	Total Production of Assam	-.101	.057	-.532	-1.778	.113	-.532	-.532	-.532	1.000	1.000

a. Dependent Variable: Tea Sold in GTAC

The ANOVA test for leaf sold in GTAC ( $p = .113 > .05$ ) and production of tea in Assam is statistically not significant. Model summary shows that there is a moderate linear correlation ( $r = .532$ ) between the production of tea in Assam and tea sold in GTAC. A simple regression was fitted and the equation thus obtained is as follows:

$$\text{Tea sold in GTAC} = 188.562 - .101 \text{ tea production in Assam}$$

**Table: 3.28: Model Summary** of Tea production in Assam and Leaf sold in GTAC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.579 <sup>a</sup>	.335	.252	9.38391	.335	4.029	1	8	.080	1.027

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Leaf Sold in GTAC

**Table: 3.29: ANOVA** of Tea production in Assam and Leaf sold in GTAC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	354.804	1	354.804	4.029	.080 <sup>a</sup>
	Residual	704.462	8	88.058		
	Total	1059.265	9			

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Leaf Sol in GTAC

**Table: 3.30: Coefficients** of Tea production in Assam and Leaf sold in GTAC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	146.593	26.431		5.546	.001					
	Total Production of Assam	-.096	.048	-.579	-2.007	.080	-.579	-.579	-.579	1.000	1.000

a. Dependent Variable: Leaf Sol in GTAC



The ANOVA test for leaf sold in GTAC ( $p = .080 > .05$ ) and production of tea in Assam is statistically not significant. Model summary shows that there is a moderate linear correlation ( $r = .579$ ) between the production of tea in Assam and leaf sold in GTAC. A simple regression was fitted and the equation thus obtained is as follows:

$$\text{leaf sold in GTAC} = 146.593 - .096 \text{ tea production in Assam}$$

**Table: 3.31: Model Summary** of Tea production in Assam and dust sold in GTAC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.144 <sup>a</sup>	.021	-.102	2.16067	.021	.170	1	8	.691	.605

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Dust Sold in GTAC

**Table: 3.32: ANOVA** of Tea production in Assam and dust sold in GTAC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.796	1	.796	.170	.691 <sup>a</sup>
	Residual	37.348	8	4.669		
	Total	38.144	9			

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Dust Sold in GTAC

**Table: 3.33: Coefficients of Tea production in Assam and dust sold in GTAC**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	41.969	6.086		6.896	.000					
Total Production of Assam	-.005	.011	-.144	-.413	.691	-.144	-.144	-.144	1.000	1.000

a. Dependent Variable: Dust Sold in GTAC

The ANOVA test for dust sold in GTAC ( $p = .691 > .05$ ) and production of tea in Assam is statistically not significant. Model summary shows that there is a weak linear correlation ( $r = .144$ ) between the production of tea in Assam and leaf sold in GTAC. A simple regression was fitted and the equation thus obtained is as follows:

$$\text{dust sold in GTAC} = 41.969 - .005 \text{ tea production in Assam}$$

### 3.11: Regression analysis of Auction price of leaf and dust in Guwhati tea Auction Centre on tea production in Assam:

Regression analysis performed for Table 3.9.1 by using SPSS software to find the correlation among the tea production in Assam, Price of leaf and price of dust sold from GTAC. It is shown that there is a strong positive correlation (.762) between tea production in Assam and price of leaf sold in Guwahati Tea Auction Centre(GTAC) . Similar strong correlation shown for price of dust sold on GTAC. It shows a strong positive correlation (.768) with production in Assam and price of dust sold in GTAC.

**Table 3.34: Tea Production in Assam, average price leaf and average price of dust in the Guwahati Tea Auction Centre**

Year	Total Tea production in Assam	Leaf (Rs. per kg)	Dust (Rs. per kg)
2006	502.04	67.97	68.27
2007	511.88	70.09	73.02
2008	487.48	90.20	95.73
2009	499.88	108.52	115.10
2010	480.28	113.06	116.26
2011	508.74	108.74	107.93
2012	588.14	138.27	143.17
2013	629.05	130.11	137.34
2014	606.8	142.52	145.15
2015	652.95	140.93	146.80

Source: Tea board of India report (various years) and GTAC data bank

**Table 3.35 : Correlation for Tea Production in Assam, Price of Leaf sold in GTAC, Price of Dust sold in GTAC**

		Total Production of Assam	Leaf Price in Rs	Dust Price in Rs
Total Production of Assam	Pearson Correlation	1	.762**	.768**
	Sig. (1-tailed)		.005	.005
	N	10	10	10
Leaf Price in Rs	Pearson Correlation	.762**	1	.996**
	Sig. (1-tailed)	.005		.000
	N	10	10	10
Dust Price in Rs	Pearson Correlation	.768**	.996**	1
	Sig. (1-tailed)	.005	.000	
	N	10	10	10

\*\* . Correlation is significant at the 0.01 level (1-tailed).

**Table: 3.36: Model Summary** of Tea production in Assam and price of leaf sold in GTAC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.762 <sup>a</sup>	.580	.527	19.13168	.580	11.047	1	8	.010	.831

a. Predictors: (Constant), Total Production in Assam

b. Dependent Variable: Leaf Price in Rs

**Table: 3.37: ANOVA** of Tea production in Assam and price of leaf sold in GTAC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4043.325	1	4043.325	11.047	.010 <sup>a</sup>
	Residual	2928.169	8	366.021		
	Total	6971.494	9			

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Leaf Price in Rs

**Table: 3.38: Coefficients** of Tea production in Assam and price of leaf sold in GTAC

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-66.927	53.887		-1.242	.249					
	Total Production of Assam	.326	.098	.762	3.324	.010	.762	.762	.762	1.000	1.000

a. Dependent Variable: Leaf Price in Rs

The ANOVA test for price of leaf dust sold in GTAC ( $p = .010 < .05$ ) and production of tea in Assam is statistically significant. Model summary shows that there is a strong correlation ( $r = .762$ ) between the production of tea in Assam and price of leaf sold in GTAC. A simple regression was fitted and the equation thus obtained is as follows:

$$\text{Price of leaf sold in GTAC} = -66.927 + .326 \text{ tea production in Assam}$$

**Table: 3.39: Model Summary** of Tea production in Assam and price of dust sold in GTAC

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.768 <sup>a</sup>	.590	.539	19.70563	.590	11.525	1	8	.009	.799

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Dust Price in Rs

**Table: 3.40: ANOVA** of Tea production in Assam and price of dust sold in GTAC

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4475.170	1	4475.170	11.525	.009 <sup>a</sup>
	Residual	3106.495	8	388.312		
	Total	7581.664	9			

a. Predictors: (Constant), Total Production of Assam

b. Dependent Variable: Dust Price in Rs

The ANOVA test for price of leaf dust sold in GTAC ( $p = .009 < .01$ ) and production of tea in Assam is statistically significant. Model summary shows that there is a strong correlation ( $r = .768$ ) between the production of tea in Assam and price of dust sold in GTAC. A simple regression was fitted and the equation thus obtained is as follows:

$$\text{Price of leaf sold in GTAC} = -72.354 + .342 \text{ tea production in Assam}$$

**References:**

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