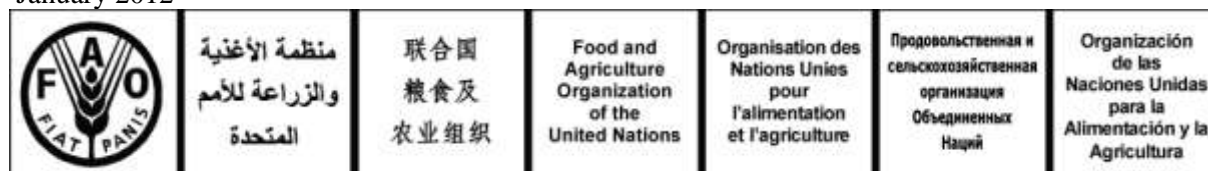


January 2012



COMMITTEE ON COMMODITY PROBLEMS

INTERGOVERNMENTAL GROUP ON TEA

Twentieth Session

Colombo, Sri Lanka, 30 January - 1 February 2012

RISK MANAGEMENT PRACTICES IN TEA MARKETS: A CASE STUDY OF POSSIBLE FUTURES CONTRACTS IN INDIA¹

I. INTRODUCTION

1. The use of risk management tools has become increasingly important in major commodity markets, including those for cocoa and coffee, to mitigate against price volatility. Although there are certain issues and requirements for using these tools, the introduction of risk management mechanisms has the potential to bring benefits to the tea sub-sector.
2. At its last session, the Intergovernmental Group (IGG) on Tea requested that the Secretariat prepare a case study of potential risk management tools that could be employed by the tea trade. This document has been prepared in response to the request of the Group and presents a case study on the potential for tea futures contract in India. Delegates are invited to examine this document and provide guidance on the way forward for the work of the Group in this area.
3. Open and transparent spot and futures commodity markets have a significant effect on the allocation of proceeds of sale between producers and intermediaries. Prices are largely determined by importers because the tea supply chain gives greater market power to importers rather than exporters. The result is a growing gap between prices paid to tea growers and that paid by consumers in importing countries. In India, the main exchanges trading futures contracts are the National Commodity and Derivative Exchange Ltd (NCDEX) and the Multi Commodity Exchange (MCX), which claim that the gap is narrowing as a result of the establishment of futures trading.
4. The initiative of the Tea Board of India to set up electronic auctions in all the Indian auction centres was an attempt to improve market efficiency and price discovery. However, the present framework in which the system has been operating is a replica of the auction market system. This

¹ Extracted from a document prepared by Mr Prabhat Bezboruah, Chief Executive Officer, Jorhat-based Bokahola Tea Company Pvt Ltd. The full document is available as CCP:TE 12/CRS 3.

implies that most of the structural changes required to correct market imperfections still need to be addressed.

II. BACKGROUND: CHARACTERISTICS OF UNDERLYING ASSETS ON WHICH FUTURES ARE TRADED

5. Since a futures contract is an insurance related transaction, it stands to reason that futures contracts on assets with zero or very low variability might neither be popular (high trading volume) nor effective (a successful hedge). Conversely, futures contracts on highly variable underlying assets should be both popular and effective.

6. There are different kinds of variability in asset prices. Variability can be random noncyclical, random cyclical, intra year pattern cyclical, inter year pattern cyclical or monotone trend. The efficacy of futures contracts as a hedge under the different scenarios have been studied in length, but the conclusions are neither definitive nor consistent.

7. Srinivasan and Bhat (2008) found that the introduction of financial futures in India reduced the variance of bank stocks. Alexakis (2007) concluded that index futures trading lowered volatility, asymmetry and improved efficiency of the spot markets. Debashis (2009) found that index futures trading reduced volatility at the cost of diminished market efficiency in the Indian stock markets. Shenbagaraman (2003) concluded that the introduction of futures did not destabilize the stock markets, while market efficiency and liquidity improved them informational asymmetries reduced their stability. Therefore, it might be said that evidence on the effect of stock index futures on the underlying index is mixed, but generally benign.

8. The evidence on commodity futures is more consistent and compelling. Grammatikis and Saunders (1986) found a positive relation between trading volume and volatility and also a strong negative relation between time to maturity and trading volume. Pace, Seal and Costello (2007) suggested that increased financial speculation in commodity index futures was highly destructive of the market, precisely because speculators would never take delivery of the commodity. They argued that agricultural commodity futures have been the means by which a limited number of traders stabilized future prices and enabled farmers to finance investments in future crop production. Speculative purchases of index options have no purpose other than to make money for the speculator, who hold their contracts to drive up spot prices with the intention not of selling the commodities in the real market, but of unloading their holdings onto an artificially inflated market at the expense of the ultimate consumer. If speculation is the major cause rather than supply/demand factors, then prices would be expected to fall dramatically when the market corrects itself.

III. FUTURES CONTRACT ON PLANTATION COMMODITIES IN INDIA

9. Black pepper and coffee have futures market in India. The former under the aegis of the International Pepper and Spice Trade Association (IPSTA) in Cochin since 1958, and the latter under the Coffee Futures Exchange of India (COFEI) based in Bangalore, since 1998. The recently established Coffee Futures Exchange of India (COFEI) based in Bangalore trades in two types of coffee futures contracts, namely Plantation "A" and Robusta Cherry "AB". There are six contracts traded in COFEI every year in January, March, May, July, September and November. The lot size for coffee traded in the exchange is 600 kg. Quality of the basis grades of both types of coffee traded in the exchange is defined preliminary in terms of physical parameters. The COFEI has a clearing house mechanism comprising of its trading members and financial institutions including public sector and private sector banks. The COFEI futures contract has been on a trial phase since its inception in 1998.

10. Both the coffee and pepper futures exchanges had the benefit of learning from past experiences. The arabica coffee contracts administered by the Coffee, Sugar and Cocoa Exchange of New York and the robusta coffee contracts of London have provided the base for the design of coffee futures contract administered by the COFEI. The successful functioning of the domestic pepper contract since 1958 has similarly provided the foundation and learning experience for the international pepper futures contract in Cochin.

11. The tea industry by comparison has no precedent to draw upon and hence, the complexity of developing the framework for a tea futures exchange. In both the following suggested scenarios, due approval from the Forward Markets Commission will have to be obtained.

IV. IS THERE A NEED FOR FUTURES CONTRACT IN TEA?

12. Tea prices show both random and cyclical variability. Theoretically, trading futures in tea would be a useful hedging instrument available to producers to insure themselves against price risks. However, informal systems of entering into forward contracts with reputable buyers of bulk tea already exist in the Indian market and for futures contracts to perform the role of a hedge, they would have to offer superior cover compared to the existing forward booking. For speculators, who would take the long position in these contracts, the depth and liquidity of the market would be crucial, and would determine their sustainability.

A. OPTION 1: DEVELOP A CLASSIC COMMODITY FUTURES FOR TEA

13. Since tea is heterogeneous, it would be challenging to define a quality for delivery or even for an off-setting position. The key to establishing a set of successful futures contracts is to have standardized lots of a given quality that are easily available for delivery. Tea may not conform to this criterion, and contracts may have to be tailor-made for individual gardens. The multiplicity of contracts will confound the market and prevent secondary trading.

14. Damodaran (March 2000), in a report to the Tea Board of India, had suggested a framework for developing commodity based futures contracts in tea, and had worked on segregating more than 50 grades on which such contracts could be traded. He came to the conclusion that such an initiative was indeed feasible since the spot market had sufficient volume, turnover and liquidity; was adequately regulated; operated under a few centralized umbrellas; and also had inbuilt quality regulation mechanisms in the shape of brokers being the unspoken intermediary in every transaction. Damodaran concluded that apart from producers, all three categories of buyers in the Indian auctions, i.e., tea packers, importers' agents and bulk tea merchandisers' agents, would find futures useful. His research also suggested that contracts be restricted to a few volatile high turnover Orthodox and CTC grades, be sold through 2 centres (one in North India and one in South India), be sold over a time cycle of 14 months and delivered from *certified* warehouses.

15. To ensure liquidity, a limited number of well-defined contracts should be offered on grades, or baskets of grades, which are sufficiently distinct from each other. The delivery months should be spread through the year but should skip those months where pronounced upward or downward price variance for the particular basket/grade is known to occur.

16. The contract should be closed out either by actual delivery or by cash settlement. The goods supplied under the actual delivery option should be certified by an agency operating under the futures market. The clearing house could be the present settlement bank. Issues of variability of quality, if actual delivery is taken, will determine the smooth functioning of the system.

B. OPTION 2: DEVELOP A FINANCIAL FUTURE ON TEA

17. The second option would be to identify an index based futures contract where the index could be an auction average price for a defined category of tea. The advantage of this would be total transparency of the asset price at closing and absence of any disputes regarding quality issues. The success of this futures market will depend critically on the selection of the correct index. Also, under this option, the auction centres may not be the ideal organizers of the futures exchange, having no experience in managing financial derivatives. An established stock exchange like the National Stock Exchange may be more suitable.

V. SELECTING APPROPRIATE INDICES FOR A TEA FUTURES CONTRACT

18. Weekly average prices vary more for some categories of tea than others. In fact, higher priced teas have higher variance in weekly averages than common teas. It is appropriate to have at least two index futures contracts on offer, since price behaviour of South Indian teas differ from that of the North. Table 1 outlines the movement of different category average prices for the last ten years:

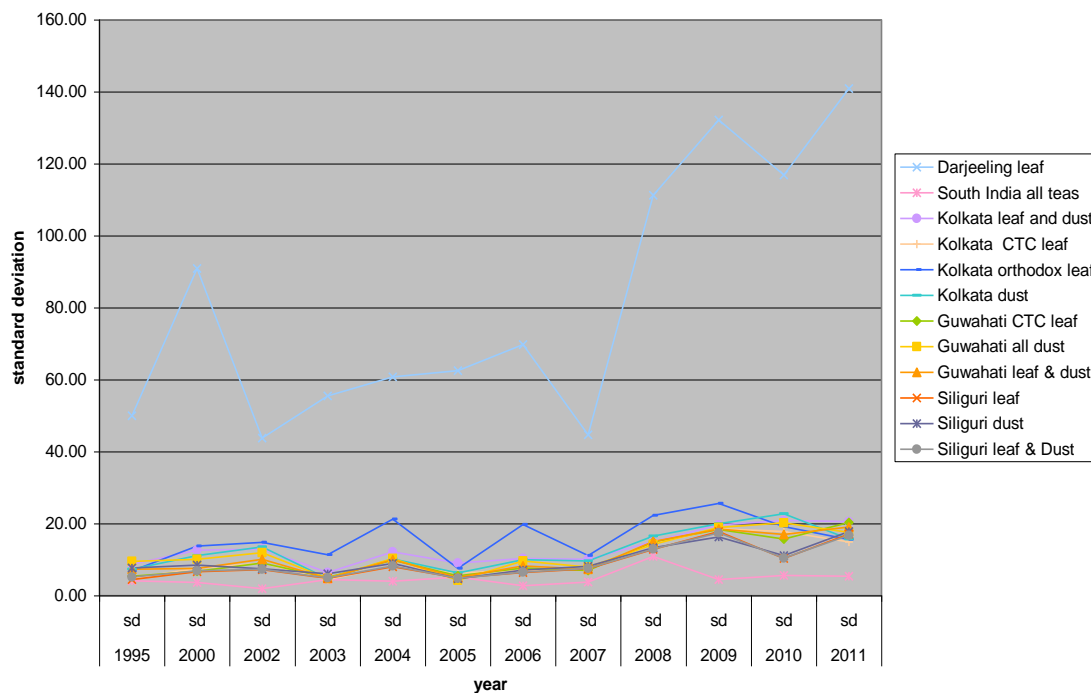
Table 1. North Indian Tea Sales Averages

Year	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010
Assam ctc	50.4	73.04	64.32	62.66	72.12	64.16	71.48	73.90	97.74	118.36	123.02
Assam orth	58.14	91.17	74.33	71.97	97.20	74.70	95.61	91.74	111.78	139.20	155.43
Cachar	44.74	50.31	45.74	46.05	57.11	48.18	57.66	58.50	79.44	92.21	88.46
Darjeeling	119.85	153.75	128.05	148.80	154.32	148.77	158.90	160.53	204.84	224.40	309.29
Dooars	48.02	61.86	58.03	56.25	66.44	62.08	67.58	69.21	87.25	108.09	109.93
Terai	48.41	57.62	53.11	51.71	61.97	54.67	61.91	62.26	82.23	97.66	95.73
Tripura	40.63	47.23	43.87	44.50	56.01	44.72	54.83	55.16	76.96	86.05	77.70
Sikkim	263.70	213.43	192.02	164.20	178.24	177.75	188.37	216.66	270.36	284.01	348.10
Green tea	41.54	56.12	46.15	50.00	63.38	55.78	67.09	64.89	84.82	102.89	95.77
Total	50.92	70.34	62.66	61.32	71.58	63.60	71.63	73.36	95.30	114.99	119.63

19. There is a steady upward trend in prices since 2007, and this has had a profound effect on the economy of the tea growing states in India.

20. Figure 1 illustrates the standard deviation for different categories of Indian tea. The standard deviation during the year for monthly Darjeeling averages is much higher than that for other categories. However, the large price fluctuations for Darjeeling tea are seasonal and predictable and uncorrelated with the trends in other teas, which may impair its suitability as an index. The other categories of teas had lower and similar standard deviations which are increasing over the years, implying greater month to month volatility, which was also seasonal in nature.

category wise sd



Year	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	d/dx
Category	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	d/dx
Darjeeling leaf	49.96	90.94	43.84	55.46	60.82	62.56	69.81	44.67	111.31	132.24	116.92	140.89	35.30
South India all teas	4.13	3.70	1.92	4.47	4.01	5.13	2.76	3.80	10.93	4.54	5.64	5.37	2.23
Kolkata leaf and dust	8.73	12.68	13.04	6.39	12.14	9.13	10.32	10.10	15.02	19.62	20.93	20.53	4.86
Kolkata CTC leaf	4.84	7.63	9.13	4.50	8.27	6.30	6.99	7.59	14.48	18.63	17.86	14.98	5.01
Kolkata orthodox leaf	6.92	13.84	14.85	11.40	21.25	7.64	19.82	11.11	22.26	25.60	19.16	15.65	5.93
Kolkata dust	7.34	11.10	13.56	4.71	10.21	6.29	10.06	9.66	16.57	20.01	22.70	15.77	5.52
Guwahati CTC leaf	5.37	6.84	9.06	5.10	9.86	5.48	7.71	7.03	14.92	18.33	15.73	20.36	5.41
Guwahati all dust	9.50	10.06	11.95	4.86	10.36	4.27	9.68	7.98	14.30	18.96	20.25	17.62	5.20
Guwahati leaf & dust	7.31	7.60	10.09	4.86	9.96	5.10	8.29	7.30	15.00	18.51	17.07	19.11	5.18
Siliguri leaf	4.46	6.69	7.21	4.80	8.10	4.91	6.40	7.46	12.89	17.77	10.32	17.14	4.61
Siliguri dust	7.75	8.53	7.44	6.04	8.95	4.73	7.09	8.11	13.29	16.29	11.12	17.79	4.07
Siliguri leaf & Dust	5.14	6.92	7.34	5.00	8.23	4.86	6.53	7.53	12.96	17.51	10.41	16.76	4.41

21. The monthly price behaviour of different varieties of Indian teas has been analysed and a synopsis is presented in Annex 1, Figures 2 to 13.

22. Except for Darjeeling, where there is a pronounced seasonal variation, all other varieties of Indian tea show some seasonal trend but have adequate offsetting variance that confounds this trend and imparts sufficient random variability. The Indian auctions handle around 500 million kg of tea every year, worth USD 1.2 billion, and a weekly composite Indian auction average (excluding Darjeeling) could serve as the proxy for the proposed tea futures contract. Although this would be a financial derivative, it would be a useful instrument for both hedgers with positions in the physical stock of tea as well as speculators.

VI. CONCLUSION

23. Futures contracts will be a valuable addition to the tea portfolio. While they will serve their purpose as a hedge, they may or may not stabilize spot prices, as the present evidence in this regard is mixed. While index futures designed as suggested would eliminate the structural problems resulting from the heterogeneity of tea, there is some evidence that such futures act as a magnet for speculative investment, which might result in medium term abnormal inflationary pressure on the spot price, followed by a severe correction, in cases where actual demand is weak. Since inflows of such speculative funds into India are still very small, such eventualities are unlikely.

ANNEX I

Figure 2. – Darjeeling Leaf

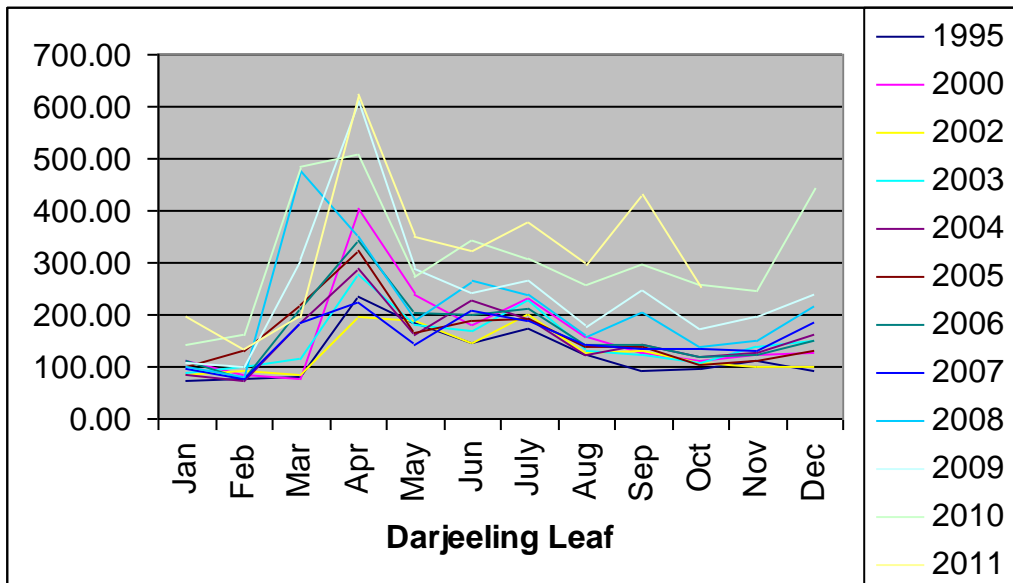


Figure 3. – South Indian Teas

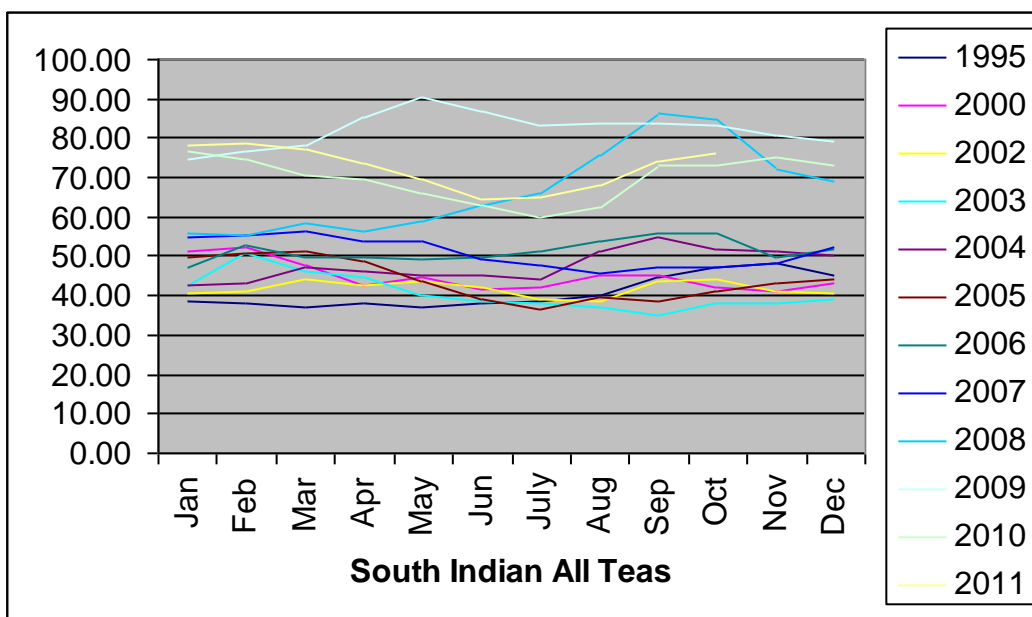


Figure 4. – Kolkata Leaf and Dust

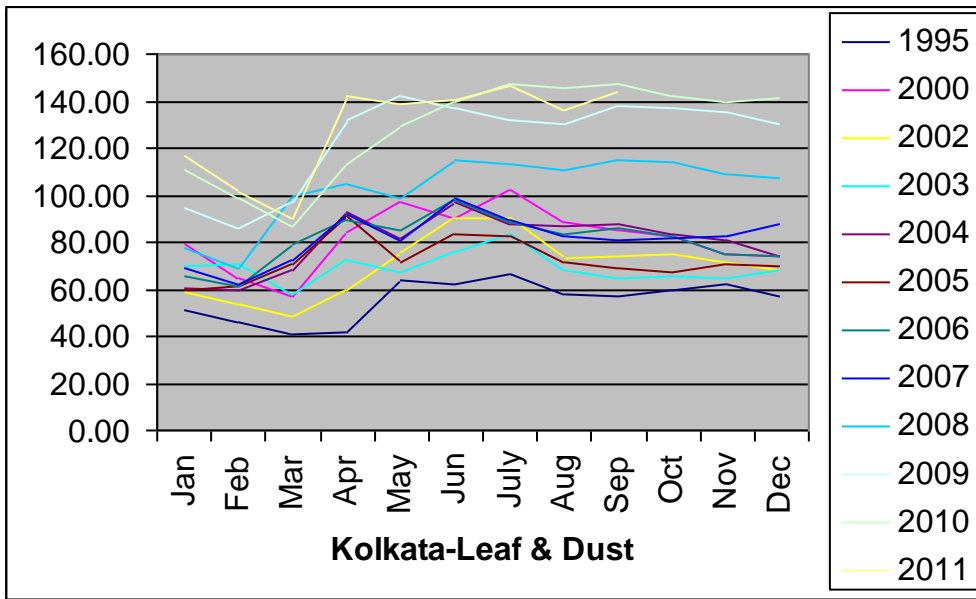


Figure 5. – Kolkata CTC

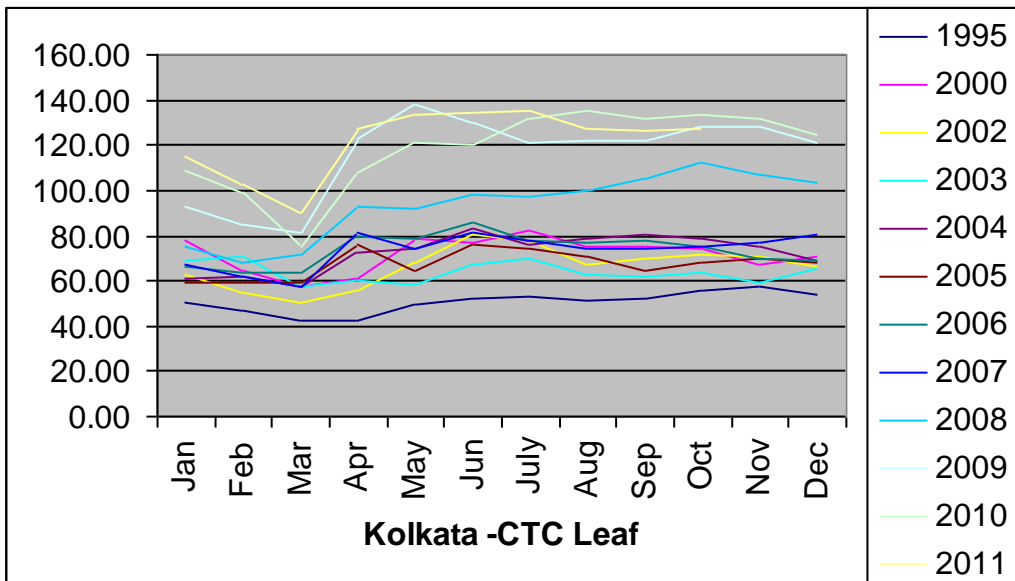


Figure 8.- Guwahati CTC Leaf

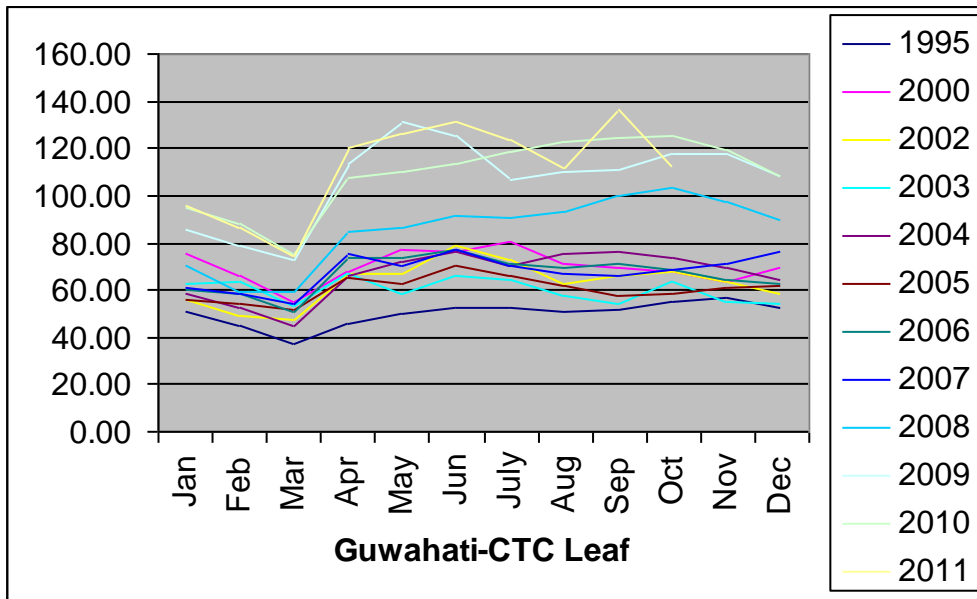


Figure 9. – Guwahati CTC Dust

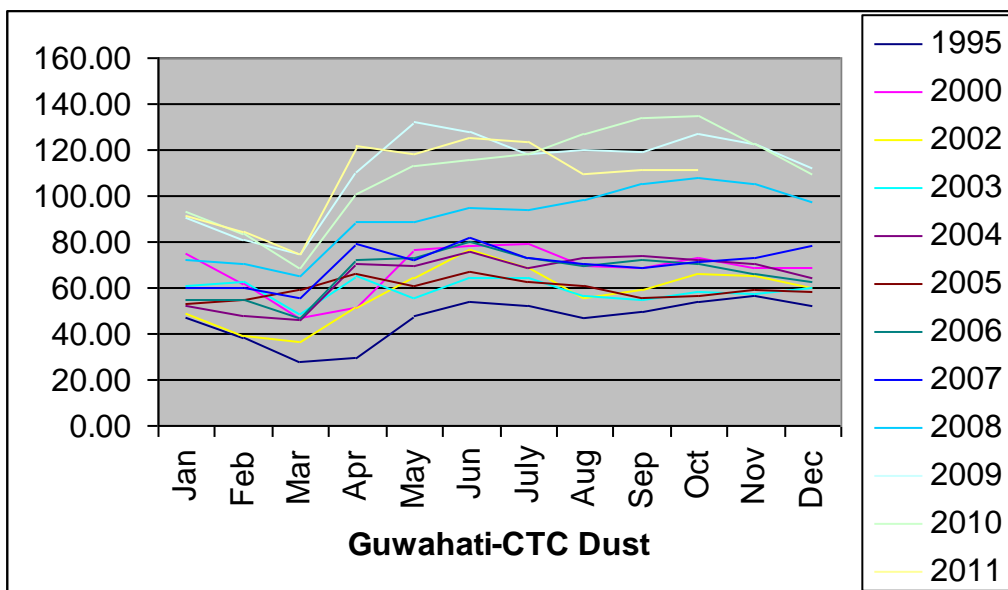


Figure 10. – Guwahati Leaf Dust Combined

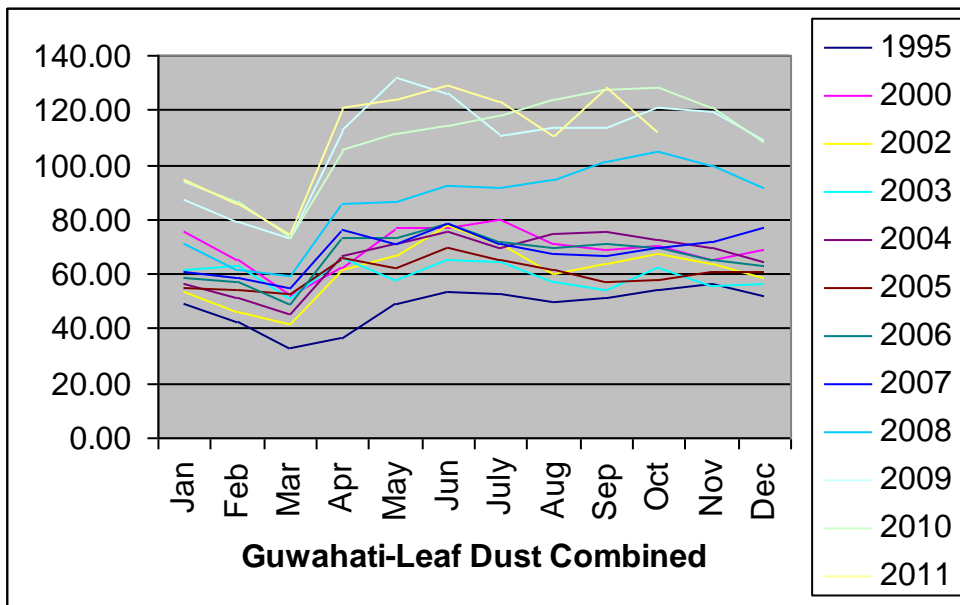


Figure 11.- Siliguri All Leaf

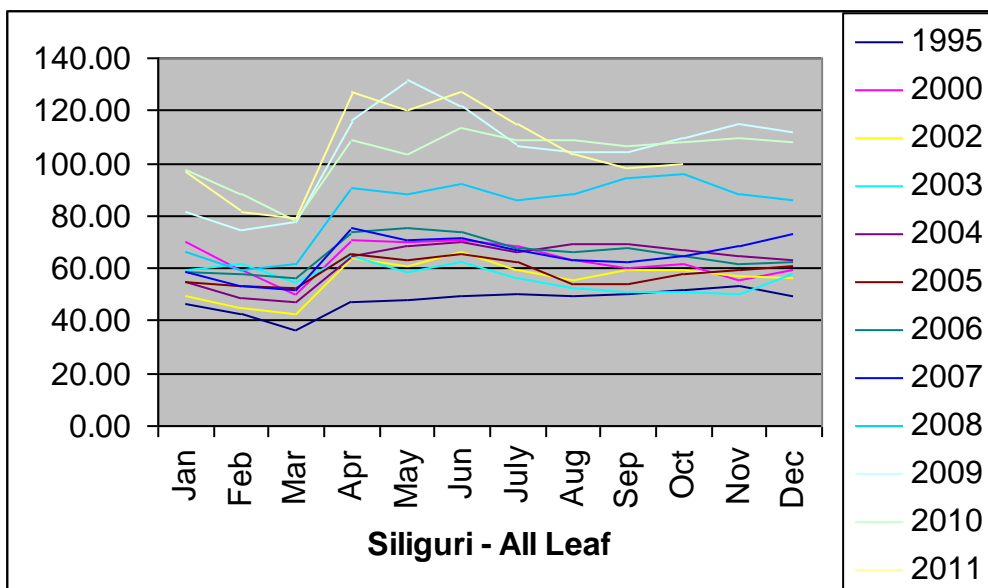


Figure 12. – Siliguri All Dust

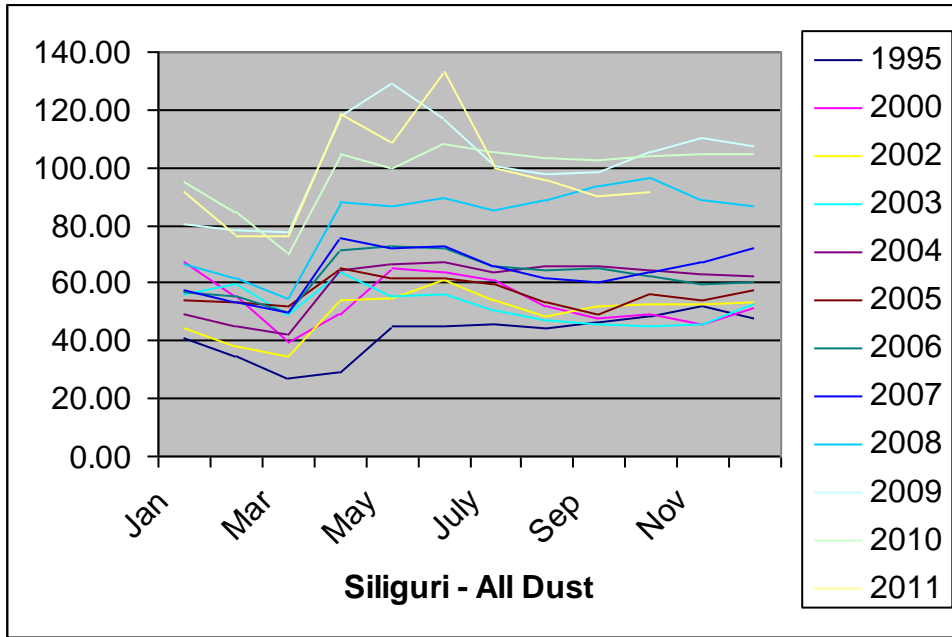
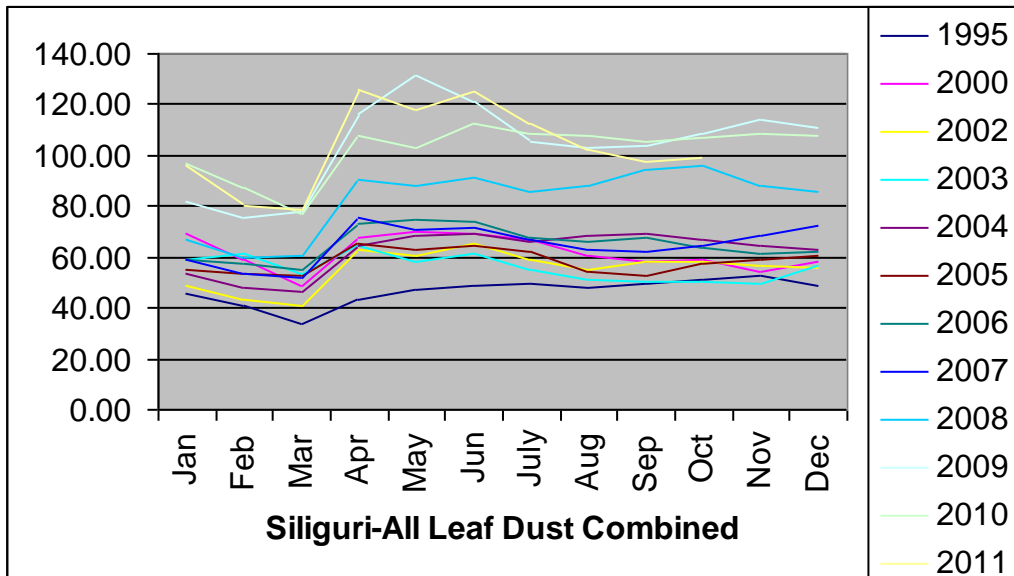


Figure 13. Siliguri All Leaf Dust Combined



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