

Tradable Bioresources
in
West Bengal

Edited by

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FOREWORD

The importance of Biological Diversity for sustainable development is unquestionable as the biological resources have a critical role to ensure the food and nutritional security along with other needs of the alarmingly growing population across the globe. However, several anthropogenic activities especially overexploitation of the biological resources for commercial purposes are adversely affecting it, resulting to loss of many of these. So, it is vital to identify such biological resources, extent of their present and further potential uses to conserve, use sustainably those and sharing the benefits out of their commercial uses.

With this aim, our Board is implementing the first Global Environment Facility (GEF) national project “Strengthening the implementation of the Biological Diversity Act and Rules with focus on its Access and Benefit Sharing (ABS) Provisions” with the support from United Nations Environment Programme (UNEP) and Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India. We are very happy that National Biodiversity Authority has entrusted us to implement this unique globally important project. The basic objective of it, is to identify, assess and quantify the economic value of biological resources present at local, state and national levels using appropriate methodologies to determine benefit sharing which will help in better implementation of the Biological Diversity Act, 2002 and its Rules 2004 and inform decision makers on prioritizing conservation action. As a major activity under this project and prerequisite to achieve the goal, we have carried out the “Study on tradable bioresources in West Bengal”.

I welcome the publication of the study and hope it will serve as an important source to know the tradable bioresources in the state and several other critical issues related to it. I believe it will be very useful for industries, policy makers, scientists and civil society organizations to formulate suitable plan for conservation and sustainable use of these resources and institutionalizing benefit sharing mechanism for livelihood promotion of the community to make them interested in the whole process. Undoubtedly, this publication is a welcome effort at a time when ABS is much discussed globally.

Dr. A. K. Sanyal
Chairman

West Bengal Biodiversity Board

PREFACE

In spite of the fact that products worth millions of rupees are being traded, the assessment of the extent of tradable bioresources available in the State remained grossly unexplored. The much vaunted cosmetics, nutra-ceuticals, consumables and drugs have their origin from a large number of bioresources - both cultivated and wild. Even a commonly cultivated bioresource has to pass through an intricate chain of trader networks, till it reaches the ultimate user industry that by and large keeps setting lofty targets. This unbridled demand throws up a telling impact on the supply of bio resources especially those from the wild, leading to the near extinction of bioresources which were once common. There has been steady fall in procurement which in turn has led to dependence on other States, gradually depleting those too. The scenario is getting aggravated by the renewed interest worldwide on our traditional knowledge as well as on the herbal products.

In the backdrop of this scenario, the West Bengal Biodiversity Board decided to take up the survey on the “Tradable Bio resources in West Bengal” through the UNEP-GEF-MoEF &CC funded project “*Strengthening the implementation of Biological Diversity Act, 2002 and Rules, 2004 with focus on its Access and Benefit Sharing provisions*”. The rationale behind the decision was that for any conservation programme, primary requirement is the inventorization and quantification of the bioresource concerned and armed with these information, strategies could be chalked out. The Board selected the RIDDHI Foundation & Business Brio Consortium for the study. The Consortium with the help of the Board, contacted the district administration, relevant line department officials and various Non-Government Organisations and collected substantial data. Every district was covered and sample survey and select market study were organised.

As this study was first of its kind and no previous data were available, the Board ensured that the grass root community level organisations like Biodiversity Management Committees (BMCs), gram panchayats and various village elders in the districts were contacted.

The Consortium has thus taken all out efforts to gather the requisite information through secondary as well as primary sources.

The survey revealed some startling findings and opened up the door for further study in the areas identified in the report. Value chain estimation of various bioresources through the trader network was found to be highly undervalued and hidden. It revealed how much less our rural people who are the custodian these resources, receive in the process.

This book has tried to capture most of the cultivated tradable bioresources (such as the produces obtained from agriculture, horticulture, sericulture, animal husbandry, aquaculture etc.) and the wild tradable ones (like forest and allied products, medicinal plants etc.). It has also given an overview of the bioresources based industries in the state, along with some `way forward` options.

All functionaries of the West Bengal Biodiversity Board took part in the exercise and extended their cooperation and made valuable contributions. The Ridhhi Foundation and the Business Brio led by Sri M.N. Roy IAS (retd) had taken it as a challenge to unravel those hitherto unexplored zones and deserves much appreciation. It may be possible that some of the areas are not fully covered; then considering the time and resource constraints, the task could be said to have been well-accomplished. It would be much gratifying if our humble efforts help the readers to view our bioresources in a different perspective with respect to its wide ranging potential uses and our absolute dependence on it. This insight would certainly help the user industry as well as the real conservers of our bioresources alike as well as the goals of conservation as a whole. That is exactly what the Board stands for which is vowed to see that benefits from bioresources pass to the commons (through the revolutionary “ABS Mechanism”), paving way for saving the bioresources while making sure that the industry get these resources on a sustainable basis.

Editors

Jose T Mathew

Rupam Mandal

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 - All other consultants, field investigators and support staff
- B. Business Brio, Kolkata
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- D. Mr. Chandan Sinha, IAS, Principal Secretary, Department of Environment, GoWB
- E. Chairman, Officials and support staff of WBBB
- F. National Biodiversity Authority
- G. United Nation Environment Programme - Global Environment Facility (UNEP-GEF)
- H. Ministry of Environment, Forest & Climate Change (MoEF&CC)
 - I. State level officials of the secretariats and directorates of related line departments
 - J. District Magistrates and Additional District Magistrates of West Bengal
 - K. District level officials of related line departments and agencies across the state
 - L. Organizations engaged in production, marketing and processing of bioresources
- M. Various Regulated Market Committees
- N. Various Merchants' Associations
- O. Various growers, traders, manufacturers and exporters
- P. Members of the Biodiversity Management Committees (BMCs)
- Q. Dreamland Printers

ABBREVIATIONS

ABS	- Access and Benefit Sharing
ADM	- Additional District Magistrate
ARD	- Animal Resource Development
APEDA	- Agricultural and Processed Food Products Export Development Authority
BMC	- Biodiversity Management Committee
BPL	- Below Poverty Line
BLF	- Bought Leaf Factories
DM	- District Magistrate
DGCI & S	- Directorate General of Commercial Intelligence and Statistics
EDC	- Eco-Development Committee
EU	- European Union
FGD	- Focus Group Discussion
FPC	- Forest Protection Committee
FSI	- Forest Survey of India
GI	- Geographical Indication
GP	- Gram Panchayat
GoI	- Government of India
GoWB	- Government of West Bengal
GS	- Growing Stock
GSDP	- Gross State Domestic Product
HFCS	- High-Fructose Corn Syrup
IEC	- Importer Exporter Code
IMC	- Indian Major Carp
IQF	- Individually Quick Frozen

KG	- Kilogram
MoA & AH	- Ministry of Agriculture & Animal Husbandry
MPEDA	- Marine Products Export Development Authority
MT	- Metric Ton
MSME	- Medium, Small & Micro Enterprises
NPOP	- National Programme for Organic Production
NOP	- National Organic Programme
NPCBB	- National Project for Cattle & Buffalo Breeding
NTFP	- Non-Timber Forest Produces
PBGSBS	- Paschim Banga Go-Sampad Bikash Sanstha
PGI	- Protected Geographical Indication
RKVY	- Rashtriya Krishi Vikash Yojana
SDP	- State Domestic Product
SIF	- Small Indigenous Fishes
SHG	- Self Help Group
TOF	- Trees Outside Forests
WBFDC	- West Bengal Forest Development Corporation

CHAPTER - I

TRADABLE BIORESOURCES OF THE STATE – A HITHERTO UNEXPLORED AREA

1. Introduction

The state of West Bengal has been endowed with a rich treasure trove of bioresources because of its unique geographic position leading to the development of highly varied agro-climatic regions ranging from coastal zone to Himalayas, rich alluvial tracts to semi arid regions, erosion-prone high rainfall sites to flood plains. The world's largest delta, the Sunderbans is well known for its rich mangroves where as the Darjeeling hills can boast of temperate forests and alpine meadows. Temperature soars upto 48°C in the Rarh regions of southwest Bengal where as it dips to subzero in Himalayan heights. Forest types vary from semi evergreen type to moist and dry deciduous types to littoral forests amidst vast expanses of Sal forests interspersed with stretches large wetlands. West Bengal has always been the rice bowl of the country and has unique cultivars. Indigenous people have a rich repository of traditional knowledge. Bioresources from Agriculture sector contributes to around 24% of the State's Net Domestic Product. Share of employment in this sector is still the largest. The State is also having the highest population density implying tremendous pressure on its bioresources which provides all the basic needs for sustenance. Gradual change in lifestyle manifested by increasing consumerist tendencies coupled with overlay of market forces and near absence of a definite policy have resulted in altered production and utilization pattern of bioresources. It has led to overexploitation of certain bioresources and neglect of others causing disappearance of these resources where it was once abundant. Many more varieties are under threat as well. Concern of conservation of bioresources have transcended over to national and global level and has witnessed the International Convention on Biological Diversity in 1992 which reiterated the

necessity of fair and equitable sharing bioresources for its long term conservation. India Passed the Biological Diversity Act in 1992 for conserving the biodiversity of our country. Still knowledge on the extent of the availability of the bioresources, its tradable potential and threat perceptions on these bioresources including the spectre of biopiracy has remained a gray area. Hence an attempt was made by the West Bengal Biodiversity Board for an assessment of the State's bioresources to address the above concern.

The Board with the assistance from the UNEP-GEF- MoEF&CC has embarked upon a study of tradable bioresources with the objective of identifying various bioresources being traded in the State, assessing its volume and economic potential as well as inventorizing the bioresource-based industries operating in the State. The study was entrusted to a consortium of Ridhi Foundation and Business Brio who made extensive survey the various corners of the State including the 'Haats', collected secondary information from district level meetings chaired by respective District Magistrates and related line departments, various NGOs and other personnel under the constant supervision and guidance of the Board.

The study was not without its problems since it was undertaken for the first time in the State. The bioresource based industries, though often had the information and data, but were not willing to share. It was observed that the complex chain of trader network stymie the information related to the actual source of the biorresources; also the presence of umpteen firms with less reach and investment adds to the complexity. On the other hand, the growers or those gathering the bioresources were highly scattered and unorganized. Time constraint was also a factor.

1.2 Approach to the Study

Considering the constraints of taking up direct market survey as the only means of gathering information, a mixed method of collecting information from the market as well as collecting production data from the official sources of the state government was adopted to

identify the tradable bio-resources of each district as well as for collection of trade data.

Since the types of bio-resources are very diverse, the entire gamut of tradable bio-resources has been broadly categorized under Agriculture, Horticulture, Sericulture, Animal Resource, Fishery, Forestry and Medicinal plants. Some of the products like honey, lac etc. are collected from forest as well as from outside the forest and those have been covered under Forestry. In fact, Sericulture and medicinal plants also come under this category but being very important in terms of total volume and value of silk produced in the state, and medicinal plants as an important input in industry, the same has been discussed separately. Important bio-resources used in industries have also been documented and the 22 Tradable Bioresource in West Bengal inventory of industries that use these bio-resources has been prepared as per the stated objective of the project and those are included in a separate chapter.

For this project, no exclusion was made in terms of tradable bio-resources as defined in the Biological Diversity Act, 2002 and all bio-resources were included within the scope of the study.

1.3 Methodology

The methodology of the study involved focus group discussions (FGD), in-depth interviews and interactions with the key stakeholders and informants. Information was also collected through visits and observations in the markets. In order to collect data, interviews were conducted with individuals when they were not forthcoming to share data in groups. This method was adopted mostly with traders and representatives of trade associations at markets and haats. They were encouraged to provide information without giving reference to any particular business unit so that they would not feel threatened on future liability of payment of any tax etc. However, it did not work in some cases and it proved difficult to get trade/valuation specific data.

Following group of stakeholders were contacted for data collection -

- i. District level officers of the departments associated with promotion and management of bio-resources (like agriculture, horticulture, fishery, animal resources, sericulture, forestry etc.) and District Magistrate (DM) or other senior officers like Additional District Magistrate (ADM) in each district of the state.
- ii. Trade bodies and some representative traders in the districts along with the Agricultural Marketing Officer.
- iii. Industry bodies and industry representatives along with General Manager, DIC and District Khadi & Village Industries Officer of the districts.
- iv. Representatives of the relevant Directorates and various state level Councils/Promotion Agencies.
- v. Individuals and experts for gathering and also validating information received from other sources.

The rationale of choosing the stakeholders, the information sourced from them and the detailed methodology is given below.

1.2.1 Group discussions with line departments in districts

Prior to the meetings, District Magistrates were informed in every district about the importance of the study. Meetings were organized in coordination with the district administration that cooperated to bring the officials of relevant government departments and experts as mentioned below:-

- Agriculture
- Horticulture
- Animal Resource
- Fisheries
- Forestry
- Sericulture
- DIC
- Agricultural



Brainstorming Session with District Officials of Hooghly District

Marketing

- NABARD
- KVIB

As the line officers are most aware of the products and developments in the districts, the above departments associated with different bio-resources were selected. These meetings were organized under the supervision of DMs or ADMs with district level officers concerned. These Focus Group Discussions were conducted in 19 out of 20 districts of West Bengal. No such meeting could be organized in the district of South 24 Parganas, but information was collected from individual offices. The sessions were mostly presided over by the respective DMs or ADMs (generally ADM in charge of development) and organized at the Collectorate building, mostly in the chamber of the DM/ADM in respective districts. These meetings were facilitated

by the study team and WBBB officials which started with brainstorming for identifying the bio-resources of the district. The participation was very encouraging and exciting, which also helped in sensitizing the key officials of the districts to the knowledge



Discussion with Officials & Others at Jalpaiguri

of bio-diversity of the district and collecting more information through their sub-district level officials where needed. It brought into light many species of bio-resources that are found naturally as well as those that are being cultivated in the districts. The exercise also unearthed many lesser known bio-resources that are consumed locally and either traded in very small quantity in local markets and *haats* like *timbur*, *bokrom*, red round *chilli*, *kudrum*, *kaon millet*, *geri-googly* (mollusc), different types of mushrooms, different types of weed fish etc. or not traded at all. After exhaustive identification of the products the next exercise was to quantify the volume of production and the market value. This

was not possible during course of the FGD and the officials and other key informants gathered such information subsequently from their office records as well as from the field level data and shared the same with the research team.

1.2.2 Interaction with Trade Bodies

Meetings were conducted with trade bodies and industry representatives. These were held in group discussion mode to elicit information on bio-resources which are traded in large quantities including those that are used as inputs to industries. Some of these meetings were presided over by the DMs or ADMs of respective districts along with other officials including officials of the Commercial Tax Directorate in a few cases. Individual entrepreneurs, representatives of professional bodies and agencies engaged in promotion of select bio-resources also participated in a few cases. There were also separate meetings with industry representatives, held generally in presence of the GM-DIC. Representatives from more than one hundred organizations, the list of which are given in Annexure 1.1, attended the meetings at the district level. Types of participants, other than government officials and other public sector representatives who attended the group discussions at their respective districts are given below.

- Producer Societies/Grower's association/ *Krishi Unnayan Samiti*
- Farmers club
- Individual producer/entrepreneur
- Cooperative Societies/*Samabay Krishi Unnayan Samiti*
- Chamber of Commerce/*Byabsayee Samiti*
- Industrial Associations
- Society of artisans
- Individual market based association
- Nature Club
- Biodiversity Management Committees (BMCs)

- Research organization
- Societal organization having interest in bio-resources
- Experts known to be dealing with any particular bio-resources

Feedback from more than five hundred persons were captured at the district level interactions apart from those whom the members of the study team met by visiting individual market/organization/village etc. The study team also met state level and other important organizations. Names of some of them are mentioned below:

- Agricultural and Processed Food Products Export Development Authority (APEDA)
- Marine Products Export Development Authority (MPEDA)
- Bureau of Applied Economics and Statistics
- Directorate General of Commercial Intelligence and Statistics (DGCI&S)
- State Medicinal Plant Board
- Tea Board
- Office of the Jute Commissioner
- West Bengal Khadi & Village Industry Board
- State Pollution Control Board
- Tannery Association
- Bazaar Samiti in Mallickghat Flower Market, Kolkata
- Byabsayee Samiti Task Force in Sealdah Kole market, Kolkata
- West Bengal Poultry Federation
- Indian Leather Product Association
- Council for Leather Export

1.2.3 Interaction with Individual Traders

In many cases the meetings mentioned above were followed up with individual interactions (interviews) with respective trade bodies like poultry federation, vegetable growers' association, tannery association, *byabsayee samiti* as well as individual traders to understand the nature of trade and estimate the volume. Interviews

with individual stockist (*aratdar*) and traders in prominent markets and *haats* of the districts have also been conducted across categories. However, trade bodies and traders were mostly reluctant to share data on volume and value of trade in fear of being taxed by the government or getting caught unaware.

1.2.4 Visits to Markets/Haats

Observational studies were conducted in major markets/*haats* in the districts as well as many wholesale and special markets in Kolkata, Howrah and Siliguri. There are about 3000 big and small markets in West Bengal. Some are regulated markets under government management and others are private markets. Stratified sampling method was used for market identification. The first level of stratification was based on categories of bio-resources like agriculture, fishery, animal resources etc. Then factors like diversity of products in each category, source areas and trading hubs were considered to identify markets to be visited. Information received from Agri-marketing department was also used for this purpose. The research team interacted with wholesalers as well as retailers in these markets.

During the course of the study, 149 markets of different sizes covering all the bio-resource categories and all the districts of West Bengal were visited by the research team. This included general markets like Siliguri market in Darjeeling, Dhupguri market in Jalpaiguri, Gadamura and Deganaga markets in North 24 Parganas, Amtala and Baruipur markets in South 24 Parganas, Asansol Borobazar in Burdwan, Bethuadahari and Kalyani markets in Nadia, Garbeta in West Medinipur, Egra in East Medinipur etc. where many items are traded across categories. The team also visited markets where special items are traded like Egra (East Medinipur) for dry fish; Malancha, South 24 Parganas for fish; Falakata, Jalpaiguri for pig

meat; Mechhua phal patty Kolkata for fruits; Rajakatra, Kolkata for chhana; coconut market in Sankrail, Howrah; Chawkbazaar in Bankura for sal leaves; Cotton street, Kolkata for medicinal plants; Mallickghat flower market, Kolkata; fish seed market at Rajendrapur (Naihati), North 24 Parganas, Siliguri Gurung Basti, Siliguri for broomstick, Kumartuli (Kolkata) and Bonkapashi (Burdwan) for pith (*shola*) etc. A detailed list of markets visited may be referred in Map 1.1. The focus here was to spot unique items and interact with traders to find out the price, availability, sourcing, volume, command area for these markets etc.

1.2.5 Interaction with Industry

Industry representatives were also approached and interviewed in Kolkata as well as in district headquarters for information on processing of bio-resources as well as data on usage of ingredients. Companies manufacturing Ayurvedic products in Howrah and Kolkata; meat and milk processing companies in Howrah, Hooghly, Kolkata, Darjeeling; oil mills in Bankura and Burdwan; Vermicompost manufacturers in Bankura and Hooghly; fish processing units near Kolkata and East Medinipur; floriculture and orchid growers in Darjeeling and many food processing companies manufacturing diverse products from snacks to rice mills were met for estimating the value of industrial input taken from bio-resources. Executives from small, medium and large companies in these sectors were met for getting an all-round understanding and estimate. However, due to lack of awareness about Bio-diversity Act or its benefit, they were generally not co-operative to share data. Many craftsmen were also met to understand usage of bio-resources like jute, bamboo, cane, *shola* (pith), timber in producing different types of handcrafted and machine crafted items and their trade value.

1.2.6 Data Collection Instruments

Primarily, two instruments were used during the course of the study –

- i. A data collection format was designed and circulated to collect data on bio-resources from the line departments as well as trade bodies, traders, directorates and councils. The format is enclosed as Annexure 1.2.
- ii. Discussion guides and interview guides were also created and used for probing and capturing information from group and individual interactions respectively.

1.2.7 Geographical Coverage

As availability of bio-resources depends on geographical and climatic conditions, the research methodology had to be developed in such a way so as to capture the unique bio-resources found or grown in different geographical regions apart from the common ones which are grown across geographies. Therefore all districts were covered in the primary field survey.

- The research team visited each of the 20 districts of West Bengal to capture this bio-diversity through group discussions as well as individual interactions with officials of line departments in the government and trade.
- In these interactions, emphasis was given on having relevant data on unique species of the district apart from the common ones.
- Markets and haats were also visited in these districts to spot the bio-resource (wherever possible, given the seasonality aspect) and to estimate the trade aspect. Total 149 markets/haats were visited the list of which is given in Annexure 1.3. The locations of the markets/haats are shown approximately in the map below.

- Directorates and councils were also contacted and visited like Indian Leather Product Association, Council for Leather Export, Agricultural and Processed Food Products Export Development Authority (APEDA), Marine and Processed Food Products Export Development Authority (MPEDA), Bureau of Applied Economics and Statistics, Directorate General of Commercial Intelligence and Statistics (DGCI&S), WB Poultry Federation, Tannery Association, State Medicinal Plant Board, Tea Board, Office of the Jute Commissioner etc. to collect aggregate level information on production and trade related to West Bengal.
- All the markets visited in each district are listed below as well as shown in the map.

1.2.8 Data Collation and Review

The discussion of the sessions with government officials were captured in Minute of the Meeting (MoM) and re-circulated to the relevant department heads for validation and further inputs. The received data has been reviewed thoroughly – collating and crosschecking whether it is correct and relevant. In either case, if data was found to be missing or irrelevant, the same was referred back to the concerned official or expert to get an update or clarify the same as the case may be. Wherever the bio-resource could not be spotted in the local market due to seasonality factor, help of local traders, growers and experts were taken to identify and gather data. The received data was reviewed and scrutinized by the research team and in some cases the subject matter specialists were consulted for final validation and estimation. Rate of different produces were collected from different markets and locations as well as Agri-marketing department in districts. Data collected on amount of bio-resource bought and sold, price, supply etc. from traders were noted and then verified.

Map 1.1: Map showing all the markets visited in West Bengal



1.2.9 Data Estimation and Analysis

For production volume, the average of last two or three years, as available, and the market rate have been taken to estimate the tradable value. Due to variation in price range on account of seasonality and availability, average market price has been taken to arrive at tradable value. Out of the total produce of bio-resources (both plant and animal-based resources), some amount of produce is used for own consumption of farmers as well as for seed for sowing in the next season. However, it is negligible when compared to the overall production or trade. Though attempt was made to identify the command area (from where the commodities are sourced) of the markets and the ultimate destination of the traded commodity, it was difficult to do it for all the markets visited under this study. Also, there is a possibility of double counting of tradable volume and value as the items/goods move across markets within districts and across districts. Produces from adjoining states are also sourced and sold in different markets as well as used as industry inputs. Total tradable value of many bio-resources was not so significant and those have been mentioned for listing purpose.

CHAPTER – II

AGRICULTURE

2.1 An Overview of Agriculture in West Bengal

West Bengal has been broadly divided into six agro-climatic zones based on rainfall, temperature, soil types and topography of land. Despite having only 2.78 per cent of the nation's cultivable land, the state has achieved significant growth in agricultural production over the past few decades and is now on the top in producing a variety of agricultural produces in the country. It is one of the most important food producing states in India, producing nearly 20 per cent of the rice and 33 per cent of the potato, although accounting for only around 8 per cent of the population of India². Rural economy of West Bengal is primarily dependent on agriculture (including allied activities) and related industry. Agriculture accounts for the largest share of the labour force. Employment generated from the sector including horticulture is nearly 57 per cent of the rural workforce (Adhikari et al.). The importance of agriculture in the state's economy is reflected by its contribution of about 20.69 per cent to the total net State Domestic Product (SDP)³. The tradable value of different agricultural crops in West Bengal is estimated to be Rs. 58,133.16 crore of broad details are given in the Table 2.1 below.

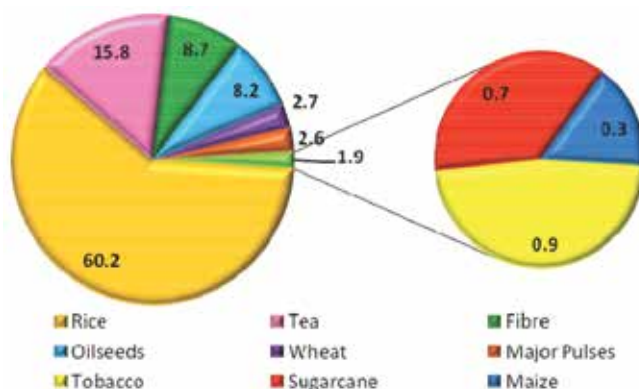
Type	Production in '000 MT	Total Tradable Value (Rs. crore)
Rice	10006.8	35023.75
Tea	305.6	9,170.00
Fibre	1911.9	5,066.28
Oilseeds	784.1	4,748.78
Wheat	911.9	1,550.20

2. Kali Sankar Chattopadhyay, Debajit Roy. 2011. Impact Study of the National Horticulture Mission Scheme in West Bengal
3. Food Processing Industries Survey, West Bengal

Major Pulses	195.2	1,493.67
Tobacco	25.5	510.00
Sugarcane/Gur	1781.0/140	1,258.18
Maize	107.1	150.00
Total	14248.1	58,970.86

Details of tradable value are given in the relevant sections below. In terms of tradable value, rice contributes to about 60 per cent share of total agricultural crops followed by tea at 16 per cent, jute at 9 per cent and oilseeds at 8 per cent. This is shown in Chart 2.1 below.

Chart 2.1: Share of Tradable Value of Different Agricultural Crops in West Bengal



2.2 Cereals

2.2.1 Rice (*Oryza sativa*)

Rice is the principal food crop and cereal of West Bengal and the state is the largest producer of paddy in India with an annual output of around 15 million tonnes⁴. Rice is used in a wide range of food

4. B. Adhikari, M. K. Bag, M. K. Bhowmick and C. Kundu. Status Paper on Rice in West Bengal

categories in West Bengal. There are three rice-growing seasons - Aus, Aman and Boro. Consumption of cooked rice in the state is 164 kg/year/person⁵, which contributes 64 per cent of the total calorie intake/person/day⁶.

Production data of three different types of paddy crops available with the government at the state level was collected and validated with the data collected from the districts. Production volume for the latest years after conversion in to rice is given in Table 2.2. Comparing the available data on production of major rice crops in West Bengal during 2012-13 and 2013-14, it works out that *Aman* paddy contributes to about 70 per cent of production followed by contribution of about 27 per cent by Boro paddy. Aus variety contributes to only balance 3 per cent of production. Top five rice producing districts of West Bengal are Burdwan, West Medinipur, Bankura, Birbhum and Murshidabad.

Table 2.2: Production Volume of Rice – 2012-13 and 2013-14 ('000 MT)		
Crop	Production in 2012-13	Production in 2013-14
Aus	310.96	325.81
Aman	6,870.95	6959.75
Boro	2,682.93	2863.17
Total	9,864.84	10148.73
Source: Table compiled on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14) and market survey		

The tradable volume and value of rice is given in the Table-2.3.

5. K.S. Kavi Kumar, Kamal Karunagoda, Enamul Haque, L. Venkatachelam, Girish Nath Bahal. 2012. Addressing Long-term Challenges to Food Security and Rural Livelihoods in South Asia
 6. B. Adhikari, M. K. Bag, M. K. Bhowmick and C. Kundu. Status Paper on Rice in West Bengal
 7. Report from Zonal Adaptive Research Station, Krishnagar and information provided by Mr

Table 2.3: Estimated Volume and Trade Data of Rice			
Crop	Production ('000 tonnes)	Market Rate Total (Rs/kg)	Tradable Value (in Rs. crore)
Rice	10006.79	30 - 40	35023.75
Source: Table compiled on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14) and market survey			

The tradable volume of rice, averaged over the years 2011-12 to 2013-14 in the state is 100,06,786.86 tonnes which amounts to Rs. 35,023.75 crores. Apart from the three seasonal varieties of paddy grown in the state, namely, Aman, Boro and Aus, West Bengal is also known for cultivation of many other rice varieties based on their shape, flavour, taste, and disease tolerance. In the next section, information on aromatic rice has been provided.

2.2.1.1 Aromatic Rice

Different varieties of aromatic rice are cultivated in many districts of West Bengal. An estimated 1,11,355 MT of aromatic rice is cultivated in the state having tradable value of Rs 835 crores. It is about 1 per cent of total volume of rice produced and 2.5 per cent of tradable value of rice. Gobindobhog is the most important aromatic rice of the state. Districts of Burdwan and Bankura are the main producers of Gobindobhog rice. 48,732 MT Aromatic rice is produced in Burdwan. About 70 per cent of rice produced in blocks of Ausgram, Bhatar, Galsi, Jamalpur, Khandarghosh, Memari, Raina, Kalna, Katwa, Purbasthali, Manteswar, Ketugram in Burdwan is of *Gobindobhog* variety. Total tradable value of Aromatic rice of Burdwan district is Rs. 366 crores. Bankura is the 2nd most important producer of aromatic rice. It produces 29,700 MT Aromatic rice of value Rs. 223 crores. Other major aromatic rice producing districts are: West Medinipur (production volume: 14025 MT), North Dinajpur (production volume: 9929 MT) Hooghly (production volume: 4371.27 MT) and Jalpaiguri (production volume: 430 MT). Some amount of aromatic rice is also cultivated in Nadia, Murshidabad and South Dinajpur districts.

The Table 2.4 shows the list of different varieties of aromatic rice and districts where those are cultivated. Apart from the varieties mentioned in the table the research team also found an attempt to introduce Basmati variety of aromatic rice in Kulgachhi village of Krishnanagar I block in Nadia district with support of the ZARS, Krishnanagar⁷.

Table 2.4: Major Aromatic Rice cultivated in West Bengal	
Type	District (s) where cultivated
Govindabhog	Hooghly, Burdwan, Bankura, South 24 Parganas, West Medinipur
Black Rice	Nadia
Kalo Nunia	Jalpaiguri, Coochbehar, South Dinajpur,
Katari Bhog	Jalpaiguri, Coochbehar, South Dinajpur
Chorkatha rice	Coochbehar
Kalabhat Rice	Purulia
Radhunipagol	North 24 - Paraganas
Red Rice	Nadia
Sampa Rice	South Dinajpur
Tulaipanji Rice	North Dinajpur, Murshidabad
Tulsivog rice	Coochbehar
Kanakchur	North 24 – Paraganas
Badshahbhog	Bankura
Source: Interactions at district levels	

One of the most popular aromatic rice apart from *Govindobhog* is *Tulaipanji*. It is primarily grown in the blocks of Hemtabad, Kaliaganj and Itahar of North Dinajpur district. The productivity of *Tulaipanji* rice is 320-330 kg per bigha or about 2.4-2.5 MT/hectare.

⁷ Gurudas Mandal of Biswabharati Krishi Swambhar Gosthi, Kulgachhi, Nadia.

⁸ Based on input from Mr. Sahana, Solvent Plants Association of Eastern India

Total production of *Tulaipanji* in North Dinajpur in the year 2013-14 was about 9,929 MT. *Tulaipanji* is also reported to be grown in Dahapara of Murshidabad district. It is sold at an average price of Rs. 70 – 90 per Kg. The annual tradable value of *Tulaipanji* is about Rs. 80 crores. *Kanakchur* is grown mainly in North 24 Parganas and is used for making moa, a typical Bengali sweet using debt palm juice and puffed rice (*khoi*). *Kaalabhat* is one of the locally grown rice of Purulia district. It is drought resistant, high in iron-content and is said to be good for the health of pregnant women. *Shampa* rice is good quality rice produced in South Dinajpur district. *Kalo nunia* is grown mostly in the districts of erstwhile Jalpaiguri and Coochbehar. There are several other varieties of aromatic rice in the erstwhile Jalpaiguri district. Table 2.5 presents the production volume and value of such rice.

Table 2.5: Different Types of Aromatic Rice Cultivated in Jalpaiguri (erstwhile) District				
Name	Cultivated in volume	Production Rate/kg	Retail Market (Rs. Crore)	Total Value
<i>Kalo Nunia</i>	Throughtout Jalpaiguri & Alipurduar	396 MT	Rs. 50-55	2.10
<i>Malsira</i>	Jalpaiguri sadar & adjoining blocks	7.92 MT	NA	NA
<i>Kalsira</i>	Jalpaiguri sadar & adjoining blocks	7.92 MT	NA	NA
<i>Kalojira</i>	Jalpaiguri sadar & adjoining blocks	4.95 MT	Rs. 70-90	0.04
<i>Sada Pajjam</i>	Jalpaiguri sadar & adjoining blocks	2.64 MT	Rs. 28-30	0.01
<i>Masuri Pajjam</i>	Jalpaiguri sadar & adjoining blocks	2.64 MT	Rs. 24-26	0.01
<i>Katari Bhog</i>	Jalpaiguri sadar & adjoining blocks	2.64 MT	Rs. 40-45	0.01
<i>Kasia Binni</i>	Jalpaiguri sadar & adjoining blocks	2.64 MT	NA	NA
<i>Sada Kalam</i>	Jalpaiguri sadar & adjoining blocks	2.64 MT	Rs. 23-25	0.01
Source: Report received from Department of Agriculture, Jalpaiguri District.				

The above mentioned varieties of aromatic rice are cultivated in the state as captured through focus group discussions at district level. The tradable volume or value is not high compared to the total rice produced and traded in the state. Apart from these, there are many

other varieties of rice that are grown in West Bengal but the quantity of those are even smaller to get captured in trade. Hence, there is a huge scope to promote the cultivation of these high value (higher unit rate compared to regular rice) aromatic/scented rice in the state.

2.2.1.2 By-products of Rice

By-products of rice are very important. The economics of rice milling industries is largely dependent on commercial utilization of its by-products. Husk, bran and broken rice are the valuable byproducts of the rice milling industries.

(i) **Rice Husk:** Rice husk constitutes the largest by-product of rice milling and one fourth of the paddy by weight consists of rice husk. An estimated 3718,800 tonnes of husk is available for use in West Bengal. Rice husk has a considerable fuel value for a variety of possible industrial usages, such as boiler fuel, source of silica for the manufacturing of silicates, or in glass manufacturing. Pulverized husk can be used as cattle feed on large scale. However, the tradable value of husk could not be estimated.

(ii) **Rice Bran:** Rice bran is the most valuable by-product of the rice milling industry. Rice bran oil is the oil extracted from the hard outer brown layer of rice and it amounts upto 4 – 9% of the weight of paddy milled. Rice bran can be utilized in various ways. Refined rice bran oil is a supplementary source of edible oil. Rice bran also contains high fat, protein, vitamins, minerals and many other useful chemicals and is highly nutritious.

Bran from rice mill yields about 20-22 per cent rice bran oil while the yield of bran from husking mill contains only about 7-8 per cent oil. On an average, it produces about 17 per cent of rice bran oil⁸. Rice bran oil is also used in the preparation of vegetable ghee. Rice bran wax, obtained from rice bran oil, is used as a substitute for carnauba wax in cosmetics, confectionery, shoe creams and polishing compounds. Because of its nutritional value, it is also being used as

9. A. Th. G. Elzebroek, Koop Wind Guide to Cultivated Plants 2008

feed for poultry and livestock. The de-oiled rice bran (DOB) is used as a major ingredient of poultry feed and fish feed within the state as well as sent out to other states like Andhra Pradesh and exported to countries like Vietnam.

The installed capacity of Rice bran oil in West Bengal is about 318,000 MT annually. However, due to inadequate demand as an edible oil, the production stands at about 140,000 – 145,000 MT annually. The estimated tradable value of rice bran oil is Rs. 1,576 crores.

Solvent Extraction plants in West Bengal which produces rice bran oil are primarily located in Burdwan district. There are also a few plants located in the districts of Hooghly, Birbhum, West Medinipur and North Dinajpur. Most of the sellers sell the oil to bigger companies as they consider packaging and marketing cost to be prohibitively high for them to sell under their own brand names. A list of plants producing rice bran oil is given in Annexure 9.1.

(iii) **Broken Rice:** Broken rice is an important by-product of rice milling industry as almost 16 per cent of total volume of paddy is converted into broken rice⁹. From nutritional point of view, broken rice is as good as whole rice itself. Broken rice is used as a part of animal feed. It is also used in the diet of the poor rural households of the Sundarbans, Purulia and Bankura. Tribal people of the state also use this rice (boiled & fermented) for the preparation of their local wine (known as Haria).

(iv) **Rice based food products:** In the state of West Bengal, rice based main food products are –puffed rice (khai), parched rice (muri) and pressed or flake rice (chiraa), rice flour etc. Many types of snacks are made from rice and its products. Details of rice based food processing units are covered under Industry segment in Chapter IX.

(v) **Rice Straw:** This is an important by product, which is used as fodder and roofing material.

10. Report from ZARS Krishnanagar.

2.2.2 Wheat (*Triticum aestivum*)

Wheat is another important cereal that is cultivated in West Bengal, predominantly in North Dinajpur and South Dinajpur districts. Total production of wheat in the state is given in Table 2.6.

Table 2.6: - Estimated Production and Value of Wheat		
Production ('000 tonnes)	Rate (Rs/kg)	Total Tradable Amount (Rs Crore)
911.89	16 - 18	1,550
Source: Compiled based on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14), Govt. of West Bengal and district agriculture offices, market survey		

2.2.2.1 By-products of Wheat

Major wheat products are: coarse wheat flour (ata), refined wheat flour (maida), semolina, macaroni products, wheat germ and wheat bran. Wheat is utilized to make products like straw particle board (wood substitute), hand-made paper-making (wheat starch makes paper stronger). Wheat starch is also used to make adhesives. Wheat germ oil is now extensively being used in cosmetics and pharmaceutical products, such as hair conditioners, moisturizers, liquid laundry detergents, water-soluble inks etc.

2.2.3 Maize (*Zea mays*)

Darjeeling, North Dinajpur, South Dinajpur and Purulia are the major maize-producing districts and total annual production of maize in the state during the year is 1.07 lakh MT with value Rs. 150 crore as shown in Table 2.7 below.

Table 2.7: - Estimated Production and Value of Maize		
Production ('000 tonnes)	Rate	Total Tradable Value (in Crore Rs.)
107.09	Rs. 13 to 15 per kg	150
Source: Compiled based on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14), Govt. of West Bengal and district agriculture offices, market survey		

Maize and corn have many by-products and derivatives, such as corn starch, dextrose, liquid glucose, sorbitol, oil, gluten, germ oil, corn-flakes, high-fructose corn syrup (HFCS) etc. Starch from maize can also be made into plastics, fabrics, adhesives and other chemical products. There are many local players in West Bengal who manufacture corn-flakes; a few are: H. R. Food Products, M/s Sibalika, Swastick, Tai Industries Limited, Herald Food & Commodities Private Limited. There is a growing demand for hybrid maize because of its high protein content. ZARS, Krishnanagar is promoting production of hybrid maize seeds through Biswabharati Krishi Swayambhar Gosthi in Kulgachhi village of the district. Total volume of seeds produced and traded annually is around 1000 MT and the same is sold at Rs 50 a kg, which makes the total value to about Rs 5.0 crore¹⁰.

2.2.4 Barley (*Hordeum vulgare* L.)

Barley, locally known as *soti*, is grown in Alipurduar and Coochbehar districts. Production is very little and it is used as powder for sweetness in Homeopathic medicine.

2.3 Minor Millets

Several minor millets are cultivated in the state. Their tradable value is not much and the same could not be determined for some of the millets. These are mostly consumed locally by the farmers themselves and a small amount is also sold in local haats. The common millets are:

i. Finger Millet or Marwa (*Eleusine coracana*) is cultivated in Siliguri region. It is very adaptable to higher elevations and is grown in the Himalaya up to 2,300



Marwa (*Eleusine coracana*)



Dhenchi (*Fagopyrum esculentum*)



Kodo (*Paspalum scrobiculatum*)

11. APEX Update, APEDA, Jul-Sep2012

metres above the ground. Finger millet is used as cooking item in cakes, puddings or porridge. The grain is made into a fermented drink. The straw from finger millet is used as animal fodder. It is also used for a flavored drink in festivals.



Cheena rice (Panicum miliaceum)

ii. Buckwheat or dhenchi (*Fagopyrum esculentum*) is cultivated in Alipurduar, Jalpaiguri. Total production volume is 15 MT.

iii. Kodo (*Paspalum scrobiculatum*) is cultivated in Malbazar, Meteli, Nagrakata blocks of Jalpaiguri and in Darjeeling. In Jalpaiguri production of Kodo millet is about 10 MT. It is used in liquor-making.



Kaon (Setaria italica)

iv. Common millet/ Proso millet or cheena rice (*Panicum miliaceum*) is also cultivated in small amount in Jalpaiguri (Malbazar, Meteli and Nagrakata) and Darjeeling districts of the state.

v. Foxtail millet or kaon (*Setaria italica*) is cultivated in Alipurduar, Coochbehar, Jalpaiguri. Production of Foxtail millet in Jalpaiguri and Alipurduar district is about 12 MT.



Shyama (Echinochloa crusgalli, E. colona)

vi. Barnyard millet or shyama rice (*Echinochloa crusgalli*, *E. colona*). It is a type of small grained sticky rice produced from this grass. It is grown in small quantity in parts of East Medinipur and Nadia districts and is said to be good for those suffering from diabetes. It is available in the market at Rs. 70 per kg.

vii. A type of millet is also produced from the flower of kudrum in Purulia. This millet is consumed by local poor people for their livelihood and fodder also. Its red colour extract from the petals is used for food colouration.



Kudrum grown in Purulia



Kudrum flower

2.4 Pulses

Other major food crops of West Bengal include various types of pulses. Production of pulses in West Bengal has increased by about 5 percent between 2012-13 and 2013-14. The tradable value of pulses in West Bengal stands at Rs. 1493.67 crores. Major pulses produced in the state are masur or lentil (*Lens culinaris*), mung or green gram (*Vigna radiata*), maskalai or urad dal or black gram (*Vigna mungo*), chhola or Bengal gram (*Cicer arietinum*), matar or green pea (*Pisum sativum*), arahar or red gram (*Cajanus cajan*) and khesari (*Lathyrus sativus*). Production, price range and tradable value of major pulses are given in the table 2.8.

Table 2.8 - Estimated Production and Value of Pulses			
Name	Production('000 tonne)	Rate (Rs/kg)	Value (in Crore Rs.)
Lentil	61.93	90 to 100	588.29
Black gram	37.28	87 to 93	335.52
Green gram	13.31	115 to 125	159.72
Bengal Gram	29.41	45 to 50	139.70
Green pea	14.49	80 to 85	126.79

Khesari	36.73	33 to 35	124.88
Red gram	2.09	85 to 95	18.77
Total	195.23	-	1493.67
Source: Table compiled on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14)			

Different kind of pulses, not mentioned above, that were found during the market survey are as follows:

- *Lafa* is a kind of long kidney beans, grown at Jiyaganj block of Murshidabad.
- A minor pulse named kulthi kolai (*Macrotyloma uniflorum*) is predominantly cultivated at Khoribari block of Siliguri and processed as dal. Its production volume is quite small (about 1.34 tonne). It is sold in Adhikary, Ghoshpukur areas and is consumed locally. The tradable value of kulthi kolai is about Rs. 87,000 which is very small.
- A type of pulse called 'bakram' (*Vicia faba*) is grown on the riversides/islands (char) in Nadia district. This is used in food processing industry for making snacks like mixture (chanachur). Total production of bakram in Nadia is about 81.5 tonne and tradable value is Rs. 53 lakh. The volume of bakram is believed to be increasing due to its growing use in food processing industry.

2.5 Oil Seeds

Oilseeds are becoming one of the major agricultural crops in West Bengal. Remarkable progress has been made during the last decade in the production of oilseeds, which increased from 0.24 million tonne to 0.55 million tonne during the last decade¹¹. This has further gone up to 0.78 million tonne at present as per the study.

12. Annual Report of Tea Board 2012

2.5.1 Data on Oil Seeds

The estimated trade of oilseed in the state at present is 4,748.78 crores. Mustard is the primary oilseed that is produced in West Bengal. Main districts which produce mustard seeds are Murshidabad, Malda, Burdwan and South Dinajpur. Mustard oil is extracted by crushing the seed, which is the main cooking medium of the state. De-oiled cake is a by-product of the oil extraction process, which is used as cattle feed. Production of oil and cake from crushing are 35 per cent and 65 per cent respectively. Details of oil mills have been covered under Chapter IX. Sesame and groundnut are also cultivated in large quantity in the state. The state also produces small amount of linseed, which is processed to produce linseed oil. It is cultivated predominantly in Khoribari, Phansidewa and Naxalbari blocks of Siliguri sub-division of Darjeeling district. Production volume of linseed in Siliguri subdivision is 40 tonne. It is sold in Khoribari, Ghoshpukur, Matigara, Naxalbari and Bidhannagar. About 40 per cent of the sub-division's production is exported out of West Bengal. The tradable value of linseed in Siliguri subdivision is Rs. 14 lakh. Sunflower, hybrid Castor (*Rerdi*) and Niger are other oilseeds that are cultivated in lesser quantity in the state. Production, price range and tradable value of major oilseeds are given in the Table 2.9.

Table 2.9 - Estimated Volume and Value of Oilseeds			
Crop	Production ('000 tonne)	Rate (Rs/kg)	Tradable Value (in Rs crore)
Mustard	476.46	38 to 40	1,858.17
Sesame	179.04	85 to 95	1,611.36
Groundnut	127.13	97 to 103	1,271.30
Linseed	1.45	52 to 58	7.95
Total	784.07	-	4748.78

Source: Table compiled on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14)

2.6 Tea (*Camellia sinensis*)

Tea is one of the most important cash crops of West Bengal. Though the primary tea producing areas in West Bengal are Darjeeling hills, Terai and Dooars; districts of Coochbehar, North Dinajpur and Purulia also have some tea estates. There are 400 tea gardens in North Bengal spreading across the Darjeeling hills, Terai and Dooars region. The youngest tea gardens are Chinchula Tea Estate, Raimatang Tea Estate and Kalchini Tea Estate which are 72 years old. The largest tea garden is Samsing Tea Estate which is spread over 1256.6 hectares. The production season, when leaves are plucked, is from April to November. The leaves are processed in the factories owned by most traditional gardens. Small growers, which have come up recently, sell their leaves for processing. Tea produced is sold mostly through auction and there are three tea auction centers in the state at Siliguri, Jalpaiguri and Kolkata.

Darjeeling tea has a Geographical Indication (GI) status that is globally recognized and was the first GI tagged product of India. GI tagged Darjeeling tea grows in 87 gardens of Darjeeling district. The distinctive, exclusive and rare character of Darjeeling tea is the result of several factors. The tea gardens are situated at elevations from 610 to 2,134 meters on slopes which provide ideal natural drainage for generous rainfall, which the area receives. On November 9, 2011, Darjeeling tea became the first non-Chinese tea to be looked after as a Protected Geographical Indication (PGI) in the EU. This was an important recognition for its uniqueness and special qualities and thus making its place among the world's most well-known teas. With the PGI registration, Darjeeling is protected in all EU Member Countries.

2.6.1 Data on Tea and Tradable Value

According to a report on tea industry by West Bengal Industrial Development Corporation, there were 309 tea estates in the organized sector in 2009 and there were also 8078 small tea growers. The total area under tea cultivation in West Bengal was 140.44 lakh

hectares in 2012¹². Total production of tea was 221.57 million kg in 2009 and it increased up to 312.88 million kg in 2013. The estimated tea production in 2014 is likely to be around 326 million kg. West Bengal contributes to about 26 per cent of total tea production in India

Table 2.10: Tea Production at a glance in West Bengal	
Year	Production (in million kg)
2011	271.60
2012	279.30
2013	312.88
2014 (Jan to Sep)	232.22
Source : Tea Board	

Tea production in small tea gardens is quite significant. It contributes to about 22-25 per cent of the total leaf production in the state. There are six BLFs (Bought Leaf Factories) that process tea, produced from these small tea gardens. Tea was auctioned at Siliguri and Kolkata auction centers at a price range of Rs. 95 to Rs.130 per kg in 2012 while at the retail level, the price ranges from Rs. 150 to Rs. 450 per kg. Price is even higher for finer varieties. Total tradable value of tea is estimated to be 9,170 crores as given in Table 2.11.

Table 2.11: Tradable Value of Tea		
Production Volume (avg. of 2012 – 14)	Rate (Rs/kg)	Tradable Value (Rs crore)
305.6 million kg	150 to 450	9,170
Source: Tea Board		

Total tea export in India in 2013-14 was 225.7 million kg, accounting for Rs. 4,509 crores of trade. Though the exact share of West Bengal in tea export could not be ascertained, still it is understandable that the state contributes a large share of tea export.

13. Information received from Shri Sadananda Maharaj of Nimpeeth Ramakrishna Mission.

2.7 Tobacco (*Nicotiana tabacum*)

Tobacco is an important cash crop of Coochbehar district. Three varieties of tobacco, namely Jati, Mansai and Jatra are cultivated mostly in Sitai, Dinhata and Mekhligunj areas of the district. Jati variety is used as wrapper of cheroots and other varieties are used for making snuff (nossey), gudakhu (tobacco based tooth paste) and bidi-mixture. There are a couple of factories in Dinhata, which purchase the tobacco and produce these items for sale within and outside the state. Total cultivated area of tobacco as on 2012-13 was around 14,000 ha and average yield was 1.82 MT/ha. Thus, total production of tobacco is 25,500 MT. Average price of Jati variety varies from Rs 2 lakh to Rs 2.5 lakh per MT and the other varieties fetch lesser price. Total amount of trade of raw tobacco is estimated to be Rs. 510 crore per annum.

2.8 Sugarcane (*Saccharum officinarum* L.)

Sugarcane is another important crop of West Bengal. It is predominantly cultivated in the districts of Nadia, Birbhum, West Medinipur, Murshidabad, North 24 Parganas, North Dinajpur, Hooghly, Burdwan and Malda. Productivity is the highest in West Medinipur where total production of sugarcane (dry) during 2013-14 was 7.08 lakh MT. Total production in the state during 2013-14 was 1.45 Lakh MT. The tradable value of sugarcane in West Bengal is Rs. 418.18 crores.

2.8.1 Data on Sugarcane in West Bengal

The estimated volume and trade data of sugarcane has been given below in Table 2.12.

Table 2.12 - Estimated volume and Trade Data of Sugarcane		
Production ('000 tonne)	Rate (Rs/kg)	Total Value (Rs. crore)
1781.04	2.1 to 2.2	418.18
Source: Table compiled on available data from Bureau of Applied Economics & Statistics (for years 2012-13 and 2013-14) and market survey		

College Street Wholesale Market of Sugarcane, Kolkata

Sugarcane harvested from Mazdia, Karimpur of Nadia district, Katwa of Burdwan district, Guptipara of Hooghly district, Jaigachi, Jaytara of Howrah district and Amdanga of North 24 Parganas district is being traded at College Street Wholesale Market in Kolkata from 8 p.m. to 8 a.m. daily. There are about 10 traders in this market.



In West Bengal, typically two varieties of sugarcane generally grow - *basmal* (dark maroon color) and *samsura* (greenish yellow color). One variety known as MP comes from Madhya Pradesh. Market supply, harvest season and variety are the major factors that cause price variation in Sugarcane. Typically, they are sold in mote (20 strands of Sugarcane stick = 1 Mote). Though Rs. 300 to Rs. 350 is the selling prices of 5 Motes (100 strands) of Sugarcane from May to January months, the same price rises up to Rs. 700 - Rs. 750 between the months of February and April. An estimated trade of Rs. 5 crore is carried out in College Street market in sugarcane on an annual basis.

2.8.2 Gur (Sugarcane Molasses)

The study indicates that 40 per cent of cane produced in the state used for chewing purposes. Rest 60 per cent which comes to 11.67 lakh MT, is used for production of gur. At a conversion ratio of 12 per cent, it is estimated that about 1.4 lakh MT of *gur* is produced. At market rate of Rs. 60 per kg, an estimated trade value of gur from sugarcane is about Rs. 840 crores.

2.9 Natural Fibres

There are many natural fibres that are available in West Bengal. Jute is the highest produced fibre cultivated in West Bengal. Production of jute (*Corchorus olitorius* and *Corchorus capsularis*) and mesta (*Hibiscus cannabinus*) is shown in Table 2.13. There are few other natural fibers like hemp (*Cannabis sp.*) and sisal (*Agave sisalana*)

which grows in small quantity in the state. Production of hemp in the state is about 4,688 bales i.e. 843.84 tonnes per annum, value of which is round Rs. 2.1 crore. Small amount of cotton is grown in some of the Sundarban blocks. Annual production of cotton is around 100 MT which is procured by the Cotton Corporation of India at the rate of Rs. 40/kg¹³. The total traded value is Rs. 40 lakh. Silk cotton (Shimul) grows in many districts and the product is mostly locally consumed. The total estimated value of natural fibre including hemp and cotton is Rs. 5068.78 crore.

Table 2.13 - Estimated volume and trade data of Natural Fibres				
Name of the natural fibre	Production (in '000 bales)	Production (in tonnes)	Rate (Rs/kg)	Total Tradable Value (in Rs. crore)
Jute	10525	18,94,500	24-29	5028.00
Mesta	96.67	17,400.6	20-24	38.28
Total	10621.67	19,11,900		5066.28
Source: Data available from Jute Commissioner (for years 2012-13 and 2013-14) and market survey				

2.10 Other Natural Fibres in West Bengal

Other fibres from plants used in the state are mentioned below:

- Banana fibre is used for making ropes in Egra of East Medinipur. The state has potential to produce banana fibre.
- Sitalpati, is a traditional product of Coochbehar, which is woven from fibres of Muthra cane (*Schumannianthus dichotomus*). Production has dwindled in West Bengal though there are trained artisans in Coochbehar and Jalpaiguri districts and their work is suffering due to lack of raw material supply. There are as many as 14,000 families trained to weave pati in Ghughumari and its surrounding area in Coochbehar district¹⁴. In this area, Ghughumari haat is a central trading hub for sitalpati. Raw

14. Rural Craft hub – Sitalpati of Ghughumari by banglanatak.com, MSME, Govt, of WB

15. Chattopadhyay Kali Sanka and Roy Debajit. 2011. Impact Study of the National Horticulture

material is reported to be sourced from outside the state. Availability of cane in the district has dwindled substantially and the artisans are mostly dependent on cane imported from Assam.

Bamboo fiber is not very malleable. It has been reported that in Murshidabad, bamboo fibre is being treated to make it malleable for furniture making.

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CHAPTER III

HORTICULTURE

3.1 An Overview of Horticulture in West Bengal

West Bengal's six agro-climatic zones offer an extensive and diversified variety of environs for the development of temperate, sub-tropical and tropical horticulture produce to cater to the market round the year. Fertile soil and adequate rainfall in the plains of West Bengal highly influence the production of a large variety of fruits, vegetables and flowers. As consumer preferences have shifted from cereals and moved towards high-value horticultural products, there has been spectacular change in terms of adoption of new technologies, production and availability of fruits and vegetables. The production and availability of flowers have also increased significantly.

Horticultural crops cover 21 per cent of net cultivable area in the state and West Bengal counts for over 11.4 per cent of all Indian production of fruits and vegetables¹⁵. The major fruit crops cultivated in the state are mango, banana, guava, pineapple, litchi, various citrus fruits, jackfruit, water melon, orange etc. The productivity of pineapple, papaya and coconut is higher than the national average. The overall productivity of fruit crop in the state was 12.5 tonne/ha in 2009 and it is assumed that at present it has increased to about 14 tonne/ha¹⁶.

Given the large variety of fruits and vegetables grown in the state, it was an uphill task to capture and make a list of all the major fruits and vegetables grown in different parts of the state. Many experts and officials at the government level (at directorate and districts) as well as knowledgeable people in the districts, people from the academia, members of local Bio-diversity Management Committee

Mission Scheme in West Bengal

16. Report of the West Bengal State Agriculture Commission 2009

17. Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market

etc. were contacted in order to make a comprehensive list of fruits and vegetables of West Bengal that are traded. Many major haats as well as smaller haats in different districts were visited to identify and capture information on unique products in this segment. Support of local people has been crucial in identification of many fruits and vegetables which are locally grown and consumed.

Since most of the fruits and vegetables are seasonal produces, their availability is also seasonal. Hence, the market rate fluctuates heavily from season to off-season. So a range of price has been reported here as collected from the markets and average price has been taken to arrive at tradable valuation.

Vegetables, fruits, flowers, plantation crops and spices come under horticulture category. Based on the derived estimate, the tradable value of horticultural produces in West Bengal works out to be Rs. 67,749.99 crore. Broad item wise estimate is shown in Table-3.1.

Table 3.1: Production and Tradable value of Horticultural crops of West Bengal		
Type	Production in '000 tonne	Total Tradable Value (in Rs. crore)
Vegetables	27033.30	47,373.8
Fruits	3406.00	10,988.9
Debt Juice Products	-	104.5
Flowers	-	2,687.6
Spices	318.56	2,986.2
Plantation Crops	-	4,199.3
Bamboo, Broom & Mat Stick	-	35.75
Aquatic Crops	-	55.98
Miscellaneous	-	15.03
Total	-	68447.06

Vegetable has the largest pie in horticulture sector by contributing 70 per cent of total tradable value followed by plantation crops (20 per cent). Share of fruits is 16 per cent while spice, flowers and plantation crops together contribute around 14 per cent of the tradable value. During the course of this study and survey many unique bio-resources have been identified. For example, makhna (*Euryale ferox*), behi, timbur, titepati (*Artemisia vulgaris*), gundlu, khero, khori etc. are found in few districts of West Bengal. Details of these resources have been covered in the relevant sections under vegetables and fruits.

3.2 Vegetables

West Bengal is the largest producer of vegetables in the country. It produces about 27,033.25 thousand tonnes of vegetables per annum¹⁷. The state is the leading producer of cauliflower (*Brassica oleracea botrytus*) with 23.6 per cent of the country's total production; brinjal or aubergines (*Solanum melongena*), with 22 per cent of the country's total production; cabbage (*Brassica oleracea capitata*) with 25 per cent of the country's total production and is also the second largest producer of potato (*Solanum tuberosum*) with an average annual output of 11.6 million tonnes, which is 25.5 per cent of total production of the country¹⁸. It also produces significant quantities of other traditional vegetables like tomato (*Lycopersicon esculentum*), cucurbits (includes pumpkin, bottle gourd, cucumber etc.) and okra (*Abelmoschus esculentus*) and non-traditional vegetables like broccoli (*Brassica oleracea italica*), gherkins (*Cucumis sativus*), baby corn, Brussels sprouts (*Brassica oleracea var. gemmifera*), celery (*Apium graveolens*) etc. In terms of tradable value, the share of vegetables stands at 71.74 per cent of total tradable value of horticultural crops in the state¹⁹. Favourable agro-climatic conditions, fertile soil and low cost of cultivation are identified as the growth incentives in the sector.

survey and district horticulture data

18. Data from Ministry of Food Processing, Government of India

19. Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market survey, district horticulture data

20. Ministry of Agriculture, Government of India

3.2.1 Trade Data of Major Vegetables in West Bengal

Production and value of major vegetables during 2012-13 are reported in Table 3.2 below.

Table 3.2- Estimated Volume and Tradable Value of Major Vegetables				
Sl. No.	Name of the Vegetables	Production in '000 MT	Market Rate (Rs/kg)	Total Tradable Value (in Rs. crore)
1.	Potato	11620.65	10-25	15,106.8
2.	Brinjal	2965.60	18-40	6,524.3
3.	Cauliflower	1863.00	25-50	5589.0
4.	Cabbage	2179.20	10-30	4,358.4
5.	Cucurbits	2177.70	16-40	4,355.4
6.	Okra	869.10	15 -40	2,172.8
7.	Radish	496.20	16-40	992.4
8.	Onion	309.10	20-60	927.3
9.	Taro	344.57	20-40	861.4
10.	Beans	126.80	20-50	380.4
11.	Sweet potato	236.10	20-40	590.3
12.	Arum	216.67	20-40	541.7
13.	Peas	132.11	20-100	396.3
14.	Tomato	1125.60	20-40	3,376.8
15.	Others	600.27	10-30	1,200.5
Total		25262.67	-	47,373.8
Source: Data from Directorate of Horticulture, Govt of West Bengal, market survey, district horticulture office				

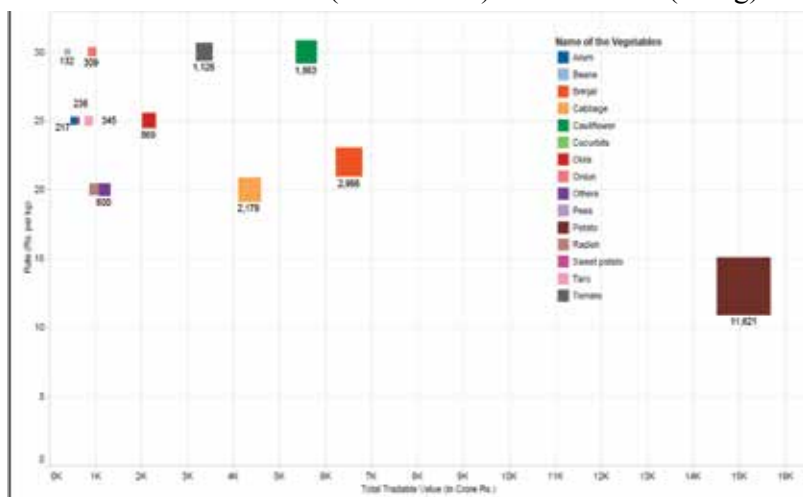
Thus, in terms of tradable value, potato is the highest among all vegetables at 32 per cent; followed by 14 per cent of brinjal, 12 percent of cauliflower, 9 per cent of cabbage and another 9 per cent of vegetables belonging to cucurbit family. A wide range of vegetables within the cucurbit family like kumro or pumpkin (*Cucurbita maxima*), lau or bottle gourd (*Lagenaria siceraria*), chal kumra or ash gourd (*Benincasa hispida*), potol (*Trichosanthes dioica*), jhing (*Luffa acutangula*), chichinga or snake gourd (*Trichosanthes*

cucumerina), uchhe/karala or bitter gourd (*Momordica charantia*), sheem or lablab beans (*Lablab purpureus*), kankrole or ghee karala (*Momordica dioica*), kundri (*Coccinia grandis*) are grown widely in the state. Cucumber (*Cucumis sativus*) of the same family is mostly used as salad. Other common vegetables of the state are okra or dhyardos (*Abelmoschus ficulneus*), mulo or radish (*Raphanus sativus*), different varieties of yam (genus *Dioscorea*). Comparing available data on production of major vegetables in West Bengal during 2012-13 (as presented in Table 3.2), it can be observed that the highest contributions have been from potato (43 per cent), brinjal (10.97 per cent) and cabbage (8.1 per cent), while the lowest contribution has been from beans (0.46 per cent).

Chart 3.2 below shows the production volume and traded quantity of important vegetables in the state.

Chart-3.2: Rate, Production Volume and Tradable Amount of Vegetables of West Bengal

Total Tradable Value (in Rs. crore) vs. Unit Rate (Rs/kg)



(Colour indicates the name of the vegetable. Size shows production in '000 MT. Marks are labelled by production in '000 tonne)

21. http://www.pepsicoindia.co.in/media/Press-Releases/release_03_23_10.aspx

Apart from common brinjal, a few other varieties of brinjal are cultivated in different districts of West Bengal. They are bigor, jhumko, kaste, muktakeshi and be (a type of wild brinjal found in Darjeeling). Jhumko and kaste brinjals are predominantly cultivated in Coochbehar. Bigor brinjal, which is quite large in size is mainly cultivated in North and South Dinajpur and is the best quality of exported brinjal. Cultivation of muktakeshi brinjal is reported to be declining. In addition to common cabbage, Chinese cabbage and red cabbage are cultivated in North 24 Parganas and Hooghly.

Varieties of potatoes that are produced in large quantities are common potato, chipsona, Atlantic and shimlai. Contract farming of potato is being done at Hooghly and Burdwan districts. Pepsico's Frito Lays' India, Gee Pee Food Products and Pailan Food Products are a few large players in contract farming of potato in West Bengal. It is reported that Pepsico covered a total acreage of 2,600 acre in the year 2009 and the farmers earn profit between Rs. 25,000 – 40,000 per acre²¹. In Hooghly district 4,312 tonne potato is cultivated through contract farming; which is only 0.3 per cent of total potato production of Hooghly. Total tradable value of potato, cultivated through contract farming in Hooghly stands at Rs. 5.61 crores.

Different types of kachu or taro roots (*Colocasia esculenta*), such as common taro, suji taro, shola taro and panchamukhi taro are found in West Bengal. The last type is predominantly cultivated in Jalpaiguri.

Vegetable market at Gadamarā

A visit to Gadamarā vegetable market by the research team and interaction with the representatives of Traders' Association provided with valuable information about vegetable trade in North 24 Parganas and adjoining Nadia districts. Cabbage, brinjal, tomato, beetroot, potato are mostly traded here. Vegetables



Gadamarā Vegetable Market in N. 24 Parganas

22. Information from Dr. Debrata Das, Assistant Professor, Darjeeling Govt. College

in this market come from Nadia and adjoining districts. Vegetables are exported to other districts of West Bengal as well as to Delhi and urban centres of other states. There are 400 traders in Gadamura market. Total tradable value is of Rs. 24 lakh per week. Hence, about Rs. 12 crore of trade takes place annually in this market.

3.2.2 Other Vegetables

Group discussions and interactions with the horticultural officers, growers and traders at the district level highlighted many lesser known and minor vegetable produces of West Bengal and helped in identification of the same. Visits to markets and haats have also shown that the state has rich resources of many types of leafy vegetables. The varieties of vegetables produced in any district may be seen from the list of vegetables, may be seen from the list of vegetables produced in Darjeeling mentioned in Annexure 3.1



Vegetable market (Sabjimandi) at Purulia (left) and trading of vegetables at Koley market



Vegetable markets at Sibaichandi (left) and Sheorafuli of Hooghly

- The state produces wide types of leafy vegetables, such as palang or spinach (*Spinacia oleracea*), vine spinach (*Basella alba*) also known as puin shaak, various types of note shaak (*Amaranthus*), water spinach or kalmi shaak (*Ipomoea aquatica*), betua (*Chenopodium album* L.), Brahmi (*Bacopa monnieri*), gime, hinche (*Enhydra fluctuans*), kulekhara (*Hygrophila spinosa*), lettuce (*Lactuca sativa*), fenugreek or methi (*Trigonella foenum-graecum*) and sushni (*Oxalis* sp.). Most of these leafy vegetables are cultivated in almost all the districts in varying quantities. Burdwan, West Medinipur, Hooghly, East Medinipur, Nadia and North 24 Parganas are the major producers of such vegetables.
- All these leafy vegetables have many medicinal properties. So, these are used for culinary purpose as well as for medicinal properties to make Ayurvedic medicines. In East Medinipur total tradable value of *Oxalis* is of Rs. 2 lakh and thankuni (*Centella asiatica*) is of Rs. 0.9 lakh.
- 300 tonne seeds of *Amaranthus* is cultivated through contract farming in Tehatta I and II blocks of Nadia district of value Rs. 2.4 crore. *Oxalis* is cultivated in Chapra block of Nadia district, production volume of which is 6 tonne amounting to a trade value of Rs. 4.8 lakh.
- Dhenki shaak (*Diplazium esculentum*), Watercress or simrai (*Nasturtium officinale*) and tamarke (*Stephania glabra*) are predominantly cultivated in Darjeeling District. Tamarke is consumed raw as well as used in medicines; tender herbs of Tamarke are used as leafy vegetable. Timbur is processed to make essence for pickles²².



Tamarke (Stephania glabra)

Other minor vegetables that are cultivated in West Bengal are discussed below.

- Broccoli, green capsicum and coloured capsicum or Bell pepper (*Capsicum annuum*) are predominantly cultivated in Hooghly.
- Asparagus (*Asparagus officinalis*) is cultivated in North 24 Parganas, West Medinipur and the Laalmati region of Purulia. In Birbhum, Asparagus grows in wild naturally.
- The climatic condition of Coochbehar is favourable for the production of choi and machalu (type of potato). Stem of ‘choi’ plant is used in curry; it also has medicinal properties. It is a twining plant mostly found in the wild²³.
- Chubrialu, a type of potato (*Dioscorea bulbifera*) is mostly cultivated in East Medinipur.
- Dhokra is a local vegetable that is found within the boundary of North Dinajpur.
- Cherry tomato is cultivated in Hooghly and North 24 Parganas.
- Elephant apple or chalta (*Dillenia indica*), olive (*Olea europaea*) and rose apple (*Syzygium jambos*) are predominantly cultivated in many districts including Jalpaiguri and North 24 Parganas. In North 24 Parganas, 10 MT elephant apple is produced per year and its tradable amount is Rs. 1.8 lakh. Production volume of olive in North 24 Parganas is 15 MT and tradable amount is Rs. 1.35 lakh per annum.
- Fennel (*Foeniculum vulgare*) is another minor vegetable that is reported from North 24 Parganas. Its stem is cut into pieces and sold in market as vegetable²⁴.



Choi climbing a mango tree

Management Committee

24. Communication. Chittaranjan Mallik, Gaighata, North 24 Parganas

25. Communication: Mr. Mrinal Sinha of DMR Agro Fresh (P) Ltd

- Squash (*Cucurbita pepo*) is cultivated widely in Darjeeling and to some extent in the foothills of Alipurduar district.
- Red Round Chili, locally known as ‘Dallekhursani’, is a major vegetable of Darjeeling district. This is used to make pickle and dalle paste.
- A number of local foods are made from different vegetables in Darjeeling district, such as gundruk (Fermented dry food, prepared from radish leaves and spinach), sinki (Fermented dry food, prepared from radish and mixed pickle prepared from radish/carrot/ginger).
- Other vegetables that are cultivated in good quantity are drum stick (*Moringa oleifera*), carrot (*Daucus carota*) and beetroot (*Beta vulgaris*). Fruits like fig (*Ficus carica*) and chalta are also cooked as vegetable.
- The list of vegetables that are cultivated in West Bengal is shown in Annexure 3.2 .

3.2.3 Export of vegetables

There are 12 traders belonging to Vegetable Export Association, who export fruits and vegetables to Europe and Middle-East from West Bengal. London and Dubai are the two major hubs where most of the fruits and vegetables are being exported. The total annual tradable volume is 33.20 lakh kg estimated to 33.20 Lakh kgs, the value of which is estimated at Rs 40 crore. This is primarily sent through air route. The horticulture items for export include - snake gourd, point gourd, spiny gourd, betel leaf, raw banana, bottle gourd, wax gourd, lablab beans, jackfruit, sponge gourd, green chilli, green oapaya and guava. These bio-resources are mainly sourced from the districts of North 24 Parganas, Burdwan and Hooghly²⁵.

3.3 Fruits

West Bengal is one of the leading producers of a wide range of fruits in the country. The state is the seventh largest producer of fruits in

26. Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market

India by producing 3.4 million tonnes of fruits²⁶. Out of a variety of fruits that are produced in this state, the principal fruits are banana, mango (*Mangifera indica*), papaya (*Carica papaya*), pineapple (*Ananas comosus*), watermelon (*Citrullus lanatus*) and jackfruit (*Artocarpus heterophyllus*). These six fruits contribute to almost 84.6 per cent of total fruit production in the state²⁷. Other important fruits are guava (*Psidium guajava*), mandarin orange (*Citrus reticulata*) and sapota (*Manilkara zapota*), locally known as safeda or sabeda. The state is the largest producer of pineapple and second largest producer of litchi (*Litchi chinensis*). West Bengal is also the ideal destination for pineapple processing units. The state accounts for 23 per cent of national pineapple production²⁸. Considering the soil and climatic conditions, the area under minor fruits in the state is increasing. Sapota is grown in Jaoyagar, Nimpeeth areas of South 24 Parganas. Some other fruits like tamarind (*Tamarindus indica*), which grows widely in south Bengal, sweet lime (*Citrus limetta*) and pomegranate (*Punica granatum*) have very good potential to be grown in the western part of the state. The list of fruits is given as Annexure 3.3.

3.3.1 Trade Data of Major Fruits in West Bengal

Table 3.3 presents data on major fruits grown in West Bengal, its volume and tradable value.

Table 3.3 - Estimated volume and trade data of Major Fruits – 2012-13				
Sl. No.	Name of the Fruits	Production in '000 MT	Rate (Rs/kg)	Tradable Value (Rs. crore)
1.	Mango	735.00	40-60	2,940.0
2.	Banana	1077.80	12 to 18	1,616.7
3.	Pineapple	310.00	25 to 35	930.0
4.	Papaya	331.00	40-60	1,655.0

survey, district horticulture data

27. Based on report received from Directorate of Horticulture, Govt. of West Bengal

28. Ministry of Food Processing Industries, GOI

29. Food Processing Industries Survey, West Bengal

5.	Guava	184.00	40-50	828.0
6.	Jackfruit	193.50	20-40	580.5
7.	Litchi	90.00	60-150	720.0
8.	Orange	38.30	15 to 25	76.6
9.	Other Citrus	71.10	40 to 60	355.5
10.	Sapota	44.80	20-40	134.4
11.	Watermelon	233.50	10-20	700.5
12.	Temperate Fruits	30.35	40 to 70	151.8
13.	Misc. Fruits	66.65	40 to 60	299.9
Total		3406.00	-	10,988.9
Source: Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market survey, district horticulture data				

Comparing available data on production of major fruit crops in West Bengal during 2012-13 (as shown in Table 3.3), it can be observed that the higher contributions in quantity of fruits production in the state have been from banana (31.64 per cent), mango (21.57 per cent), papaya (9.71 per cent) and pineapple (9.1 per cent), while the lowest contribution among the common fruits has been from mandarin orange (0.89 per cent).

In terms of trade value, mango is the highest among fruits with a valuation of Rs. 2,940 crores of trade. Varieties of mangoes that are produced in large quantities are: Himsagar, Laxmanbhog, Gulabkhas, Langra, Amrapali, Fazli, Aswina, Gopalbhog and Rani Pasand²⁹. Himsagar, Laxmanbhog and Fazli mangoes are GI tagged. Cultivation of Alfonso mangoes is being introduced on banks of Dwarakeswar river, Ranibandh of Bankura³⁰. Mallika is another variety which is being introduced in various places. Production of special varieties like Kohitur of Murshidabad has decreased drastically over the years due to low productivity and greater care required.

30. Communication. Ms. Sonali Bhattacharya, Official from Horticulture Department, Bankura.

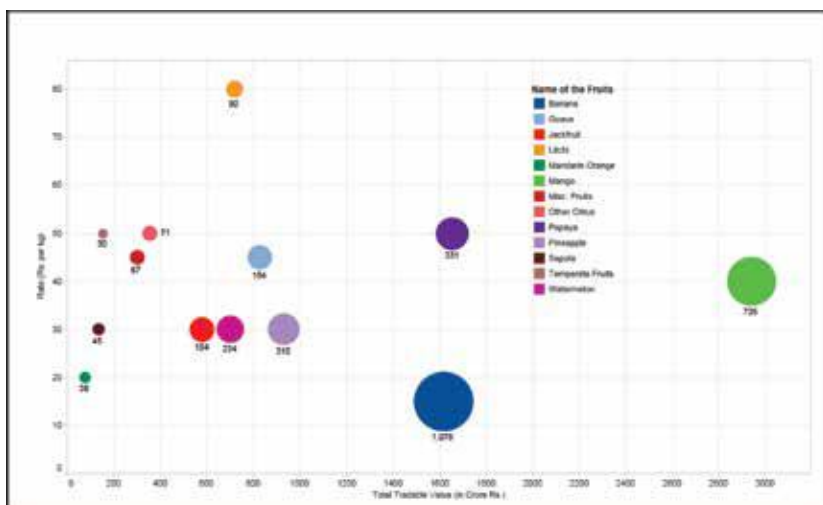
31. It may be interesting to know that the highest production of 37.3 kg pf jiggery per tree has

Major varieties of banana that are cultivated in West Bengal are: champa, malbhog (found in Coochbehar, Jalpaiguri, North Dinajpur and South Dinajpur), G9 variety (cultivated mostly in Murshidabad), kanthali, singapuri and manik-kola (produced in North Dinajpur and South Dinajpur).

Orange is cultivated in Darjeeling and in the northern parts of Alipurduar and Jalpaiguri districts bordering Bhutan and Bankura (Khatra Sub Division, Saltora, Chhatna, Bankura-I). Quality of Darjeeling orange is much superior in taste but has lower shelf-life. Other citrus fruits produced in the state include lemon (Citrus limon), grapefruit (Citrus paradisi) etc.

Rate, Production Volume and Tradable Amount of Fruits of West Bengal have been presented in Chart 3.3

Chart 3.3: Total Tradable Value (in Rs. crore) vs. Unit Rate (Rs. per kg)



(Colour shows the name of the vegetable. Size shows production in '000 MT. Marks are labeled by production in '000 MT)

Guava produced in West Bengal is consumed in the state and also distributed through market channels to Bihar, Odisha, Delhi, Jharkhand and Madhya Pradesh.

Pomelain (used for losing weight) is extracted from Pineapple and the same is being done in a limited manner.

Fruit market at Baruipur

A visit to Baruipur fruit market and interaction with the representatives of Farmers' Association provided the study team with valuable information about fruit trade in Baruipur and adjoining areas of South 24 Parganas district

- Primarily Guava, Litchi, Banana and Cucumber are traded from here.
- Guavas are packed in 15 kg or 30 kg cartons. During the peak trading season (which lasts for 3 months during Monsoon) 70-80 trucks of Guava are exported to Delhi, Bihar, and Jharkhand. Total exported amount is 160 MT of Guava, accounting for about Rs. 60 Lakhs.
- Rose berry (golap jam) is cultivated in Loket, Baruipur and Khodarbazaar.
- Rose apple (jamrul), Sapota and Water Chestnut (paaniphal) are also sold here by local farmers and sent to Kolkata and outside the state for trade.
- Fruits like orange, pomegranate etc. are brought in from Mechhuabazar, Kolkata for selling in this market by traders.



3.3.2 Products from Date Palm and Palmyra Palm

Date Palm Juice: Date palm (khejur) trees are found in abundance particularly in the districts of Bankura, North 24 Parganas, Nadia and South 24 Parganas. The blocks where date palm juice is mostly produced are Simlapal, Raipur, Sarenga, Ranibandh, Khatra, Taldangra, Indpur, Onda and Gangajaldhati blocks of Bankura; Hura, Puncha, Raghunathpur



I & II, Neturia, Santuri and Manbazar II blocks of Purulia; and Bangaon, Bagda, Swarupnagar, Baduria, Deganga of North 24 Parganas. The sap is extracted from the tree during winter months by cutting a portion of the bark near the top of the tree, which is done by traditional professionals, known as Shiuli or Gachhi, who cuts the tree and hang an earthen pot there to collect the sap. The trees are tapped just before dusk and the pot containing transparent juice is taken out in the early morning before fermentation starts. There are people who take lease of around 300 to 500 trees in a compact area called Mahal and the juice collected from all trees is brought for making jaggery. The juice is very refreshing before fermentation and is also consumed directly. It is also used to some extent as liquor, known as tadi, by allowing the same to ferment. The juice collected is mostly converted to jaggery through heating till it becomes thick and of burgundy colour. The jaggery, also known as gur is sold in liquid form known as nolen gur or is allowed to solidify which is known as patali. The flavor of the jaggery is very refreshing and is an integral part of Bengali culinary, particularly for preparing desserts and sweetmeat items during the winter months.

Production of jaggery from one tree varies from 120 to 250 kg of sap per annum and the yield of jaggery varies from 12 kg to 30 kg³¹. Total production of jaggery from date juice in the state has been estimated to be around 5000 MT³². The price varies from Rs. 250 to Rs. 150 and total tradable value per annum is estimated at around Rs. 100 crore.

The sap of palmyra palm (taal) tree is normally converted to tadi by fermenting the same. Tadi can be sold only by lincensed vendors of the Excise department. According to report of Excise department, there are 148 sites (licensee) for selling tadi in West Bengal. Average consumption of Tadi is 30-40 thousand litres annually. With a rate Rs 12.5/litre total annual turnover of tadi is estimated to be Rs 4.5 crore. This excludes illegal manufacturing of tadi which is consumed locally and is very difficult to estimate.

been recorded in Jessore district of Bangladesh in the year 1877, Source: <http://www.palm-sugar.org/>
32. The estimate has been made with help of District Officers KVIB of Bankura, Purulia, North & South 24 Parganas and own survey by the study team in other districts.
33. Report received from T. R. Rai, Asst. Director of Agriculture (P. P), Darjeeling.

3.3.3 Other Fruits

While making an attempt to assess the production of minor horticultural crops in the districts, this study has been, to some extent, constrained by scattered availability of data due to seasonality. However attempts were made to create an inventory of District-specific horticultural crops which were identified during the group-discussions with the Horticultural officers and traders at the district-level. Most of these fruits are grown in many districts but only those districts have been mentioned where these are grown more.

- Wood apple or bael (*Limonia acidissima*) grows predominantly in the districts of Bankura, Purulia, West Medinipur, Birbhum, Hooghly and Burdwan. Morobba (made of bael) is being processed in Birbhum.
- Blackberry or jaam (*Syzygium cumini*) is cultivated in almost all the districts of South Bengal with predominance in Purulia.
- Fishtail palm or chao (*Caryota urens*) is predominantly cultivated in Coochbehar. It is used as replacement of Arecanut. Also used as dry decorative.
- Water chestnut or paanifal (*Eleocharis dulcis*) is found in fresh water lakes of Howrah, North 24 Parganas, Hooghly and Nadia. Production volume of water chestnut in North 24 Parganas is 200 MT and tradable value is Rs. 18 Lakhs per annum.
- Custard apple (*Annona reticulata*) is found predominantly in Purulia, Bankura and West Medinipur.
- High volume of Date Palm fruit or desi khejur (*Phoenix dactylifera*) is found in Bankura, West Medinipur and Birbhum and traded in different markets. It is also found in Bankura, West Medinipur and South 24 Parganas but the volume or tradable value could not be estimated as it is not yet cultivated in a systematic manner.



Timbur (*Zanthoxylum acanthopodium*)

- Dragon fruit (*Hylocereus undatus*) is a comparatively newer fruit in this state and is cultivated in Birbhum and Jalpaiguri.
- Four types of Jujube, known as kool, (*Ziziphus jujube*) are cultivated in West Bengal: apple jujube and bao jujube is cultivated in Hooghly and Purulia; boro jujube in Alipurduar and Coochbehar and Thailand jujube in Nadia. However, the traditional jujube grows in almost all the South Bengal districts.
- Karonjo (*Pongamia pinnata*) is found in wild in Alipurduar. Oil is extracted from karonjo seeds.
- Bengal currant or karamcha (*Carissa carandas*) is predominantly found in South and North 24 Parganas. Annually 5 MT Bengal currant is produced in North 24 Parganas accounting for trade of Rs. 0.9 lakh.
- *Kaulo/ fampal* (Wild Avocado) [cultivated variety of kaulo is butterfruit], Lapsi, Betgera (palm fruit), Malleri, Omola, passion fruit (*Passiflora edulis*), peach (*Prunus persica*), pear (*Pyrus boissieriana*), plum (*Prunus cultivar*), kiwi (*Actinidia deliciosa*), behi, timbur (*Zanthoxylum acanthopodium*) are exclusively found in Darjeeling³³.
- *Pondiaspurpurea var. lutea* (*amra*) grows in entire south Bengal and is predominantly cultivated in North 24 Parganas. Its production volume in this district is 30 MT annually and tradable amount is Rs. 2.7 lakh.
- *Latkan* is cultivated in Coochbehar and Jalpaiguri.
- *Kodal* fruit, which is found in Siliguri, is used in decorative items.



Market of Jujube at Moinabari, Alipurduar

34. Information and photographs provided by Dy Director of Horticulture, South 24 Parganas.

- Kekole is cultivated in Burdwan and Nadia. Kekole is a small fruit that looks like lemon. Price of Kekole fruit is Rs. 200-250/kg.
- Strawberry (*Fragaria ananassa*) is cultivated in Nadia.
- Paniala (*Flacourtia cataphracta*) is predominantly found at Coochbehar. The fruit is eaten both raw and processed as jam, and the bark is sometimes used for medicinal purpose.
- Kamranga (*Averrhoa carambola*) is cultivated in South Bengal districts. Total production volume of Carambola in North 24 Parganas is 10 MT and tradable amount is Rs. 1.8 lakh.
- Lakucha (*Artocarpus lacucha*) is predominantly found in North 24 Parganas. Total 8 MT lakucha is cultivated in this district and tradable amount is Rs. 0.72 Lakh.
- Other major fruits are Indian Gooseberry (*Amlaor amloki*), tamarind, longan or aansphal (*Dimocarpus longan*), date palm and taal (palmyra palm). The sugary sap of palmyra palm is fermented into tady and is consumed as liquor in rural areas.
- Aquaponic crop cultivation (fruits cultivated in water) is being experimented in Burdwan district.
- Boinchi grows in bush in the western parts of the state, which is dwindling and is hardly available now.

3.4 Flowers

West Bengal enjoys favourable agro-climatic conditions and abundant water supply to grow a variety of high-value, exotic flowers. Tuberose (*Polianthes tuberosa*), Rose (*Rosa sp. L.*), Chrysanthemum (*Chrysanthemum indicum*), Gladiolus (*Gladiolus communis*), Marigold (*Calendula officinalis*), Jasmine (*Jasminum sambac*), Sunflower (*Helianthus annuus*), Gerbera (*Gerbera jamesonii*), Gypsophila (*Gypsophila sp.*), Balsam (*Abies balsamea*), China rose (*Hibiscus rosa-sinensis*), Cosmos (*Cosmos sp.*), Orchid, Lotus (*Nelumbo nucifera*) and Lily (*Lilium candidum*) are some of

the major ornamental flowers grown in the state. Darjeeling has a pioneering role in the development of floriculture in the state.

3.4.1 Data of Flowers in West Bengal

For proper assessment of tradable flowers of West Bengal those have been categorized in three groups: Cut Flowers, Pot Flowers and Ornamental Foliage. The production data of major cut flowers has been captured. But total volume of Pot flowers and Ornamental foliage production is hard to assess as these are cultured and sold mostly through private nurseries, which are widely scattered except the Bisnupur belt of South 24 Parganas and Rajarhaat of North 24 Parganas. Large flower markets were visited to capture the price range of cut flowers based on availability and seasonality. Production, price range and tradable value of major cut flowers are given in the following Table 3.4.

Table 3.4- Estimated volume and trade data of Cut Flowers– 2012-13				
Sl. No.	Name of the Flowers	Cut Flower (Production in crore Sticks)	Rate	Total Tradable Amount (in Rs crore)
1	Rose	79.37	Rs. 10-20 per stick	1,191
2	Chrysanthemum	13.36	Rs. 70 per 10 piece	94
3	Gladiolus	39.70	Rs. 60 per 12 piece	199
4	Tuberose	121.87	Rs. 2.5 per Spike	305
Total		254.30	-	1,789
Sl. No.	Name of the Flowers	Loose Flower (Production in '000 MT)	Rate (Rs. per kg)	Total Tradable Amount (in Rs. crore)
5	Marigold	53.42	100	534.2
6	Jasmine	0.63	45	3.0
7	Seasonal flowers	7.83	200	157.0
8	Misc. Flowers	3.36	100	33.6
Total		65.24	-	727.8
Source: Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market survey, district horticulture data				

3.4.2 Flower Market at Mallickghat

The flower market of Mallickghat trades different varieties of flowers coming from mainly East Medinipur, Nadia, North 24 Parganas and Hooghly. The price fluctuation is so drastic that it is very difficult to estimate an average. Multiple factors such as status of transport, climatic conditions and religious rituals, festivals etc. have a strong influence on the price. The commonly traded flowers in this market are Marigold, Chrysanthemum, China Rose, Rose, Bael etc. Other big flower market is Deuli haat near Kolaghat of East Medinipur.



Marigold garland being sold at Mallikghat

Trading of flower in Mallikghat market

3.4.3 Other Flowers

Other flowers that are cultivated in lesser quantity but have considerable economic value are mentioned below:

- Dicentra, Rhododendron (*Rhododendron ferrugineum*), Orchids and Cacti are cultivated in Darjeeling for ornamental purpose. Fruit and rhizome of Dicentra plant are exported to Kathmandu as these are used in heart ailment.
- Totolakaphul is also found in Darjeeling.
- Gandhokalas, Rakto-dron (*Leonurus civiricus*) and Shwet-dron (*Lucus aspera*) are found in Siliguri.
- Amola is predominantly grown at Alipurduar. It is used in flower bouquet.
- Karan, a small size flower that is grown in Panshkura of East Medinipur, and exported to Bangalore through Mallickghat.

- Sattu is produced from Dhemsia flower that is cultivated in Krantihat, Malbazaar of Jalpaiguri. Dhemsia is cultivated on plane land, and it looks like mustard. Khoi is also produced from it at Rabi season. Dhemsia is black in colour. The whitish portion is sold and eaten during fast.
- Water lily or shapla (*Nymphaea* sp.), shurimala/kanaidinga are predominantly found in Coochbehar. Shurimala is used in jaundice, and also used as decorative; colour is produced from its petals. Fried seed of shapla is known as 'Dyaper Khoi' in Jalpaiguri and is eaten.

3.4.4 Pot Flower

Number of nurseries for flowering pots and foliage is growing in this state and some of the areas are developing as centres for producing plot flowers. The largest such concentration is some of the blocks of South 24 Parganas, particularly Budge Budge II Bisnupur II, Falta and Bisnupur I blocks. Pot flowers are exported out of the state as well as to outside the country. It has been difficult to assess the actual amount of export of pot flowers by gathering information from so many nurseries. Number of nurseries and annual turnover of business of pot flower is shown in Table 3.5³⁴.

Table 3.5: Number of nurseries and their annual turnover of different blocks of South 24 Parganas			
Sl. No.	Name of the Block	No. of Nurseries	Annual Turnover (Rs. Crore)
1	Budge Budge II	1,500	100.00
2	Bisnupur II	1,200	60.00
3	Falta	400	10.00
4	Bisnupur I	75	0.80
Total		3,175	170.80

Thus, total traded value of flowers of all types – cut flower, lose flower and pot flower works out to be Rs 898.6 crore per annum.

35. National Bamboo Mission, Annual Monitoring Report 2007-08, accessed from www.nbm.gov.in

3.5 Spices

Climatic conditions of West Bengal is found to be suitable for cultivation of many spices, though both in terms of area and production, spices have much lower contribution than that of fruits and vegetables. Red pepper (*Capsicum frutescens*), ginger (*Zingiber officinale*), turmeric (*Curcuma longa*), coriander (*Coriandrum sativum*), fenugreek (*Trigonella foenum-graecum*), black cumin (*Nigella sativa*), fennel (*Foeniculum vulgare*), black pepper (*Piper nigrum*), garlic (*Allium sativum*), large cardamom (*Amomum subulatum*) and radhuni (*Trachyspermum roxburghianum*) are the spices grown in different districts of West Bengal based on climatic preferences suitable for their respective cultivation.

3.5.1 Data of Spices in West Bengal

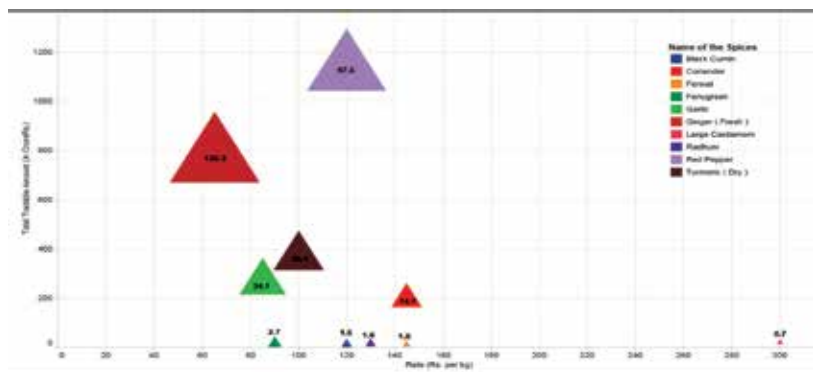
Data of major spices are presented in the Table-3.5.

Table 3.5- Estimated volume and trade data of Spices – 2012-13				
Sl. No.	Name of the Spice	Production in '000 MT	Rate (Rs/kg)	Total Tradable Amount (in Rs. crore)
1.	Red Pepper	97.50	120	1,170.0
2.	Ginger (Fresh)	125.28	50-80	814.3
3.	Turmeric (Dry)	39.40	100	394.0
4.	Fenugreek	2.65	80-100	23.9
5.	Black Cumin	1.51	120	18.0
6.	Fennel	1.03	140-150	15.0
7.	Black Pepper	0.06	850-1050	5.0
8.	Garlic	34.14	80-90	290.0
9.	Coriander	14.69	140-150	213.0
10.	Large Cardamom	0.72	300	22.0
11.	Radhuni	1.59	120-140	21.0
Total		318.56	-	2,986.2

Source: Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market survey, district horticulture data

In terms of tradable value, red pepper has the highest share of 39 percent among all spices. It is followed by ginger fresh (27.3 per cent), turmeric (13 per cent) and garlic (10 per cent). Rate, production volume and tradable amount of spices of the state have been presented in Chart 3.5 below.

Chart-3.5: Unit rate (Rs. Per kg) vs. Total Tradable Value (in Rs. crore)



Colour shows the name of the vegetable. Size shows production in '000 MT. Marks are labeled by production in '000 MT

3.5.2 Other Spices

Few other spices that are cultivated here are:

- Kachur and Curry leaves (*Murraya koenigii*) at Alipurduar. Kachur looks like Ginger and it is also used as perfume.
- Bay leaves (*Cinnamomum tamala*) at Jalpaiguri, North Dinajpur and South Dinajpur.
- 0.76 MT of jowan (*Trachyspermum ammi*) is produced in East Medinipur. Price of Jowan being Rs. 80 per kg and the tradable value in the district comes to about Rs. 61,000.
- Chandani is another spice that is also cultivated in East Medinipur. Production volume of Chandani in the district is 0.66 MT; and tradable amount is Rs. 46,200.

- Gondri seed, used as spice, is grown on the fields of East Medinipur after the paddy are cut during the summer.

According to Regional Office of Spice-Board, favourable climatic and soil composition helps in producing the best quality of large cardamom in Darjeeling district and black pepper in the districts of Jalpaiguri, Alipurduar and Coochbihar.

3.6 Plantation Crops (other than tea)

Common plantation crops of West Bengal are: betel leaves, areca nut, coconut and cashew nut etc. Total value of annual production of these crops in the state is Rs. 4199.32 crore and the details are shown in Table 3.6.

Table 3.6 - Estimated volume and trade data of Plantation Crops – 2012-13				
Sl. No.	Name of the Plantation Crops	Production in '000 MT	Rate	Total Tradable Amount (in Rs crore)
1.	Betel leaves	150.00 (lakh motes*)	Rs. 2,000 per Mote	3000.00
2.	Arecanut	21.89	Rs 200 to Rs 300/ kg	547.25
3.	Coconut	3693.81 (lakh nuts)	Rs. 15/ piece	554.07
4.	Cashewnut	10.842	Rs. 90/kg	98.00
Total				4199.32
*Mote is a bundle Source: Based on 2012-13 data from Directorate of Horticulture, Government of West Bengal, market survey, district horticulture data				

Betel leaves (*Piper betle*) are predominantly grown in East Medinipur, West Medinipur, Nadia, Howrah, South 24 Parganas, Alipurduar and North Dinajpur. Based on quality, shape and taste, there are different types of Betel leaves like mithe, sachi, aaymal, kalimal, batul etc. Organic paan lasts more and commands higher price. Betel leaves are cultivated in 6,175 hectare in East Medinipur district and 56 lakh Motes of leaves are grown annually in that district. Total production of West Medinipur is 19.34 lakh Motes in 2,052 Hectare area. Price varies from 1,500 to 10,000 per mote

based on quality, and durability (i.e. for how many days the leaves stay fresh). Estimated tradable value of betel leaves in West Bengal is Rs. 3,000 crores. Bamboo baskets are used as container (dabla) for packing betel leaves, which results in good demand of basket made out of bamboo another common bio-resource of the state.

Areca nut (*Areca catechu*) grows mostly in the districts of North Bengal, particularly Jalpaiguri, Alipurduar and Coochbehar districts. These are exported to mostly north Indian states for preparing pan-masala or sold to wholesalers for supply to markets and paan shops for consumption as ingredient for chewing paan (betel leaves).

Coconut (*Cocos nucifera*) grows mostly in the coastal districts of East Medinipur, South 24 Parganas as well as in Howrah, Hooghly and North 24 Parganas. A substantial part is consumed as tender coconut for drinking purposes and rest are sold as nuts for manufacturing oil or direct consumption

Coconut market at Sankrail:

In the district of Howrah, Sankrail is a hub of Coconut trading. A visit to one of the 'Gola' (traditional name for Coconut dealer shop) of Coconut revealed the following trading information.



Buying price of coconut is Rs. 10 plus tax per piece and sold at Rs. 15 per piece. Annual tradable amount is Rs. 2 lakh for each Gola. Currently there are four golas in Sankrail. Due to the burden of taxes, the trade is on decline. Earlier there were twelve golas that has come down to four. Due to this tax addition and higher price of Bengal Coconut, the Bengal Coconut traders are gradually losing market to other states.

Cashewnut (*Anacardium occidentale*) grows in the coastal areas of East Medinipur, mostly in Contai sub-division and in the forest areas of West Medinipur, Bankura and Purulia. The quality of cashew nuts is not very good and the same is mostly sold in the local market.

Processing of cashew takes place mostly in the Contai sub-division of East Medinipur.

3.7 Bamboo (*Bambuseae dendrocalmus*)

Bamboo is grown in every district of West Bengal and has versatile uses like building material, producing various implements and utilities, manufacturing paper pulp. Pickled or stewed bamboo shoots are edible and are regarded as delicacies. 30 different species of bamboo is grown to grow in different agro-climatic zone of the state (Biswas S.). There are some special varieties of bamboo such as coloured bamboo which is found in Alipuduar district. It is grown in forest as well as in and around the villages. Total forest area where bamboo is grown is estimated to be 164 sq km (Chakraborty, 1988). There is little commercial cultivation of bamboo in the state³⁵. It is difficult to find data on production and trade of bamboo. Based on market survey of the study team, tradable value of bamboo in the state is estimated to be around Rs. 25 crores per annum.

Bamboo basket is an important product for day to day use for various purposes. In Chak-bazaar (Bankura) market visit it was observed that Bamboo baskets were traded at a rate of Rs. 25/piece in quite a few number of shops. There are 23 working units in Kenjakura supplying such baskets.

3.8 Broom Stick and Mat Stick

There are horticultural bio-resources in West Bengal like broom stick and mat stick, which are exclusively found in few districts.

3.8.1 Broom Stick

Broom Stick (locally known as Kuchu/kuche) is another important horticultural commodity that is grown in the wild in the districts of Darjeeling and Jalpaiguri. The study team visited Broomstick Merchants Association in Darjeeling District located at Siliguri. The association has about 50 members. They procure raw material from Darjeeling and Jalpaiguri districts. Some materials are also sourced

westbengalforest.gov.in

36. Information received from Mr. Jayanta Sarkar, Jt. Secretary, Traders' Association, Kumartuli

from Sikkim and North-East. January to March is the season of flowering. 1 kg raw broom gives 650 gm of final dried broom. Therefore, almost 30-35 per cent goes during drying. 1 kg broomstick gives 3 – 4 pieces of brooms. Annually 250-300 trucks are



Broom sticks cottage units at Siliguri

are loaded per truck. Price of broomsticks is on average Rs. 20/kg in the local market while it fetches about Rs. 40 – Rs.50 per piece in city markets. Loose broomsticks go to Delhi, Kolkata and Western part of the country. About 10,000 people are involved in broomstick growing/drying/making/tying in these districts during the peak season. The remnant after cutting the tree is used as bio-fuel. The estimated value of trade for broomstick is about Rs. 10 crores per annum.

3.8.2 Mat Stick

Matstick is cultivated in Potashpur block of East Medinipur and Sabong, Pingla, Narayangarh of Pashchim Medinipur. Total tradable amount of Matstick in East Medinipur is 4,500 bundles, the tradable value of which is Rs. 75 Lakh per annum.

3.9 Aquatic Plants

- *Makhna* (*Euryale ferox*) is grown in marshy lands and wetlands of Malda and North Dinajpur. In Malda 10.4 thousands Quintal Makhna is grown. Total tradable amount of Makhna is 46.8 Crores. It is exported mainly to Middle-East.



Hogla for sale at Uluberia

- *Hogla* (*Typha elephantina*) grows naturally in the marshy lands of the state and the biggest concentration is in and around Uluberia, like Amta and Kulgachhia etc. of Howrah district and to some extent in the adjoining East Medinipur district. The plant grows

to a height of around 20 ft. The same is harvested around the month of September by cutting at a point 2 to 3 ft above their root and is bundled for transportation. Such bundle is called 'Galda' and usually weighs around 70 to 80 kg. The Hogla leaves are dried and used to prepare Chhai by stitching the leaves with rope, which is used mostly for temporary roofing of make shift houses. Chhai is traded in Nimdighi market near Uluberia and some of the nearby markets like Bazarpara, Gangarampur and Alpukur etc. There are around 100 big traders and around 1,000 labourers are engaged in stitching and handling of Chhai. Price of one Chhai varies from Rs 80/ to Rs 200/ depending on the quality. Around 5 lakh Chhai are traded every year and a substantial part of the same is used for Gangasagar mela. Total value of Chhai traded is around Rs. 8 crore a year³⁶.

- *Shola* or pith (*Aeschynomene aspera*) grows naturally in the marshy land in South Bengal. It grows predominantly in Burdwan, South 24 Parganas (Mandirbazaar



Shola work of Burdwan

and Kulpi Blocks), Nayanjali, and East Medinipur (Kolkaghat Block). Production volume of Shola is 3 lakh pieces per month. Total tradable amount is Rs. 1 Crore 10 lakhs per year. Shola works of Rs. 2.5 to 3 Lakhs are sold in Kumartuli during Durga puja³⁷. Shola work is done at Habra (North 24 Parganas), Uluberia (Howrah), Joynagar (South 24 Parganas), Baharampur (Murshidabad) and Kumartuli (Kolkata).

- *Azolla* (*Azolla* sp.) is grown at several districts including Salanpur and Barakar of Burdwan district for vermicompost & medicinal purpose.

37. Communication. D.K. Mazumdar of Mushroom Biotech, Jalpaiguri.

38. Source: Sericulture Industry in India – A review by D Gangopadhyay, 2008

3.10 Miscellaneous

- Mushroom: Edible mushrooms are used extensively in cooking. They are known as the “meat” of the vegetable world. Edible mushroom is cultivated in indoors under artificial environment and strict hygiene. Using aerial space, mushroom cultivation multiplies the cultivable floor and thereby produces highest amount of protein per unit area compared to any other agricultural or animal resource. The foothills of Himalayas and the hilly region of Darjeeling are a haven for wild edible and medicinal mushrooms. Key types of Mushrooms cultivated in West Bengal are as follows: Kurkuri, Oyster, Button, and Paddy Straw Mushroom. Kurkuri is sold at Rs.100-150/kg and Korom at Rs. 250/kg in Bankura district. Per day 2,000-3,000 kg Mushroom is cultivated in North Bengal³⁸. Total annual production of mushroom in the state is estimated to be Rs. 15 crore per year.
- Khero is an exclusive and popular vegetable of Birbhum. Price of Khero is higher than bottle gourd (lau).
- Khori is grown in fields of betel leaves; predominantly found in Potashpur-1, 2, Moyna, Sorkathi of East Medinipur. It is used for making baskets. Total tradable volume in East Medinipur is 100 bundles and total tradable amount in the district is Rs. 0.5 Lakhs.
- June grass is cultivated in Egra- I, II, Contai-III, Moyna, Nandakumar, Panshura, Tamluk blocks of East Medinipur district. It is used for rope-making. Total production volume is 5000 kg and total tradable amount is Rs. 2 lakh.
- West Bengal is a rich hub of many other horticultural bio-resources such as, Bhagreshishnu (Darjeeling), Gandhokalas (Siliguri), Gherkin (Jalpaiguri), Simaltorul

(Darjeeling), Titepati (Siliguri), Gnuarshuti (Burdwan), Shapne (Hoogly), Gundlu (Purulia).

- Kagde (*Daphne canabina*) is grown in Darjeeling and used for handmade paper.

Total value of all these products per annum is estimated at Rs. 15.03 crore.

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CHAPTER IV

SERICULTURE

4.1 An overview of Sericulture in West Bengal

Sericulture is a farm-based, labour intensive and commercially attractive economic activity. It is particularly suited for rural-based farmers, entrepreneurs and artisans, as it requires low investment with potential for relatively higher returns. It provides income and employment to the rural poor especially, farmers with small land-holding and marginalized and weaker sections of the society. Women have been contributing to all the activities related to sericulture starting from on-farm activities to reeling and weaving. The involvement of women in different activities of sericulture is well above 53 percent³⁹ (Gangopadhyay, 2008).

4.2 Present status of Sericulture in West Bengal

West Bengal has the unique distinction of producing all the four varieties of silk produced by different worms viz., domesticated mulberry silk (*Bombyx mori*), semi-domesticated Eri silk (*Samia cynthia ricini*), wild tasar silk (*Antheraea mylitta*) and exclusive muga silk (*Antheraea assamensis*), the wild golden silk being unique to India. Except mulberry, other varieties of silks are generally termed as banya silks (wild silks or natural silks). In 2011-12, 7471.76 hectares of land were available for the production of vanya silk, of which 6320.49 hectares were used for tasar silk followed by eri (609.97 hectares) and muga silk (541.30 hectares)⁴⁰.

Silkworms are introduced through DFLs (Disease Free Layings, i.e. a bunch of approximately 500 disease-free silkworm eggs). DFLs are generally provided by the Sericulture Directorate, which the farmers release in the host trees. In the financial year 2011-12, 472.89 lakh

(Sericulture), Government of West Bengal.

40. Annual Production Return of Sericulture Industry of the Year 2011-12, Directorate of Textiles (Sericulture), Government of West Bengal.

41. Dy Director of Sericulture, Bankura

mulberry, 8.74 lakh tasar, 1.61 lakh eri and 0.46 lakh muga DFLs were produced⁴¹. Maximum DFLs producing district was Malda, followed by Murshidabad, Birbhum and Bankura. There are 62 basic seed farms, 16 egg production centres (grainages) and 59 technical service centers throughout the state under Directorate of Textiles (Sericulture Division) to serve those engaged in sericulture.



Reeling of Muga Cocoon by SHG Members

Sericulture, as an agro-based cottage industry, is providing employment and livelihood to more than one lakh families of whom 60 per cent of the work force is women and consequently a large population of women folk reaps the benefit of various developmental schemes.

4.3 Data on Sericulture in West Bengal

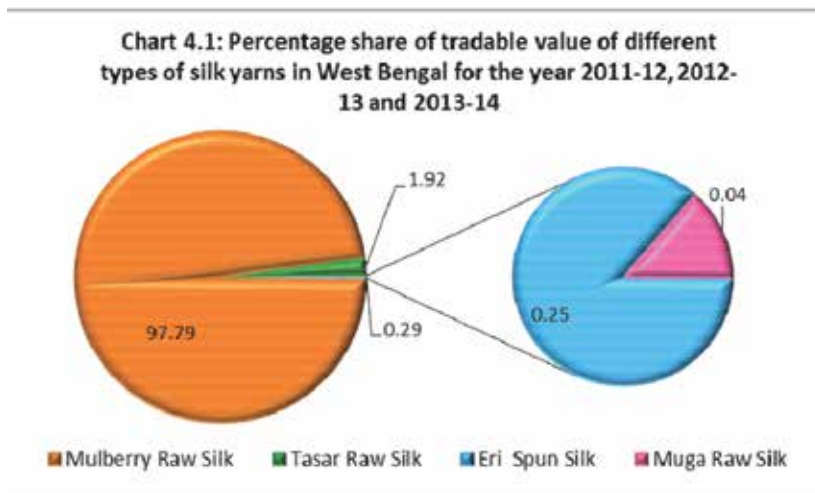
The production as well as trade data of different types of silk produced in West Bengal is given in Table 4.1. Total trade in silk is worth Rs. 462.24 crores.

Table 4.1: Data on Sericulture, West Bengal				
Sl. No.	Particulars	Average of Years 2011-12, 2012-13 and 2013-14		
		Production MT	Rate Lakh/MT	Amount (Rs. lakh)
1.	Mulberry Raw Silk	1990.00	22.71	45199.67
2.	Tasar Raw Silk	43.31	20.48	886.94
3.	Eri Spun Silk	8.55	13.52	115.59
4.	Muga Raw Silk	0.22	90.75	22.36
Total		2042.08		462,24.56

Source: Based on the report received from Directorate of Textiles (Sericulture), Govt. of West Bengal for the years 2011-12, 2012-13 and 2013-14 and Market Studies.

42. Dy Director of Sericulture, Jalpaiguri

Relative share of tradable value of different types of silk yarns in West Bengal during 2011-12, 2012-13 and 2013-14 has been shown in the Pie Chart 4.1.



4.3.1 Mulberry Silk

Mulberry silk worm is reared at household levels and chopped leaves of mulberry trees (*Morus indica*, *M. alba*, *M. multicaulis*, *M. bombycis*) are fed to the worms. It has been observed that there is a steady growth in production of mulberry silk in



Mulberry Silk Rearing in Coochbehar

West Bengal. Malda is the major producer of mulberry silk in the state. During the year 2013-14 the district produced 13,817 MT of mulberry cocoon of value Rs. 290 crore and 1527 MT of mulberry silk yarn, value of which is Rs. 381.75 crore. Murshidabad, Birbhum, Nadia, Bankura districts have also contributed to the total production of the state in significant amounts. The total production of mulberry silk yarn in West Bengal during the year 2013-14 was 1990 MT with market value of Rs. 452 crore.

4.3.2 Tasar Silk

Over the years, there is a gradual trend of decline in tasar silk production in West Bengal. The tasar silk worm is mostly grown in host trees like arjun (*Terminalia arjuna*) and asan (*Terminalia tomentosa*) within forests



Mulberry Silk Worm

or its fringe areas in the western part of the state. Decline in host trees is a problem in growth of tasar silk. There was a decline in total production by 3.57 per cent in the financial year of 2013-14 as compared to that in the previous year. Proper planning is essential for maintaining the existing Tasar host trees and in regularly pruning them. This will in turn, facilitate more breeding and thereby more growth of tasar cocoon.

Bankura is the largest producer of tasar cocoon with a tradable production of 230.58 lakh MT amounting to Rs. 479.52 lakh and is well ahead of other districts in West Bengal. It has produced 16.77 MT of tasar silk yarns that amount to Rs. 368.94 lakh⁴². It is followed by the districts of Purulia, Birbhum, West Medinipur and Burdwan.

4.3.3 Eri Silk

Eri silk is produced mostly in Alipurduar district of the state and the worm is grown in castor plants (*Ricinus communis*). In the financial year of 2013-14, production of Eri cocoon is 4 MT amounting to Rs. 14 lakh while 20 MT of Eri pupae amounting to Rs. 20 lakh has been traded as food in that district⁴³. Alipurduar is the largest producer of Eri cocoon followed by Jalpaiguri, South Dinajpur and small amount of Eri is also grown in the South 24 Parganas. Production of Eri silk in the state is on decline. There has been 6.22 per cent decrease in production of Eri silk in the financial year of 2013-14 as compared to its previous year. Measures need to be taken to stop deforestation and destruction of host plantation of castor. Inadequate

43. Dy Director Sericulture Coochbehar, who also provided the photographs used in this chapter.

44. Dy Director of Sericulture, Jalpaiguri

market accessibility, poor linkage among different stake holders and frequent price fluctuation are the detrimental factors that need to be addressed.

4.3.4 Muga Silk

Muga silk is produced mostly in the districts of Coochbehar and to some extent in Alipurduar, Jalpaiguri, Darjeeling and Uttar Dinajpur. Muga silkworms feed on som (*Machilus bombycina*) and sualu (*Litsaea polyantha*) leaves. Coochbehar district produced 50 lakh Muga cocoon of value Rs 8 lakh during the year 2013-14. Muga yarn produced during the year in the district was 158 kg of value Rs 20 lakh⁴⁴. Alipurduar district produced 2 lakh Muga cocoon in the financial year of 2013-14⁴⁵. Other



Muga Silkworm



Muga Silkworm Moth and Cocoon

districts, such as, Darjeeling, Jalpaiguri, Coochbehar and North Dinajpur also contribute to the total production of Eri reeling cocoon. Trend shows muga silk production in West Bengal is not stable. Although there was an increase by 12.17 percent in the financial year 2012-13, but it again went down by 28.3 percent in the year of 2013-14.

4.4 Cocoon Markets in West Bengal

There are a few cocoon markets in the state such as tasar cocoon market and Bishnupur Sericulture Complex in Bankura district, Dinhata cocoon market in Coochbehar, Belpahari and Kaliachak cocoon markets in Malda district.

45. 18th All India Livestock Census ,Agriculture, Implements & Machinery , Fishery Statistics, West Bengal, Dt of AH & ARD, GoWB

46. Source: Report from Dt. of AH & ARD, 2013-14

4.5 Silk Textile in West Bengal

West Bengal is a place for traditional weaving of silk using handloom. The Paschim Banga Resham Shilpi Samabaya Mahasangha Ltd. markets the products of 16 primary cooperative societies engaged in reeling and weaving of silk fabrics. However, much of the trade is in the private sector. Nagar and Margram are the two places in Murshidabad district where silk kora than, silk shirting are being fabricated. Baluchari silk saree is fabricated at Bishnupur and Panchmura-Sabrakone of Bankura district. Apart from this, silk than and silk scarf are also made in Bishnupur. Tasar than, saree and other garments are being fabricated in Raghunathpur, Manbazar and Pancha of Purulia district. Tantipara of Birbhum is one big centre where Tasar than is fabricated while traditional Silk than is fabricated in Margram Baswa, Bishnupur and Tentulia of Birbhum district. Silk saree is fabricated at Sabdhan in Uttar Dinajpur district.

Reference

1. Directorate of textiles (Sericulture). Annual production return of sericulture industry of the year 2011- 12.
2. Gangopadhyay D. (2008). Sericulture industry in India – A review. Science and Technology, India.

CHAPTER V

ANIMAL RESOURCES

5.1 Overview of Animal Resources in West Bengal

Farmers in the state have been rearing different varieties of animal species for centuries for their living. Tradable animal resource of the state includes domestic livestock like cattle (*Bos taurus*), buffalo (*Bubalus arnee*), sheep (*Ovis aries*), goat (*Capra aegagrus hircus*), yak (*Bos grunniens*) pig (*Sus scrofa domesticus*), rabbit (*Lepus curpaeums*), horse (*Equus ferus caballus*), donkey (*Equus africanus asinus*) and birds like duck (*Anas platyrhynchos*), chicken (*Gallus gallus domesticus*), etc. These indigenous species, though underdeveloped, have continued to retain invaluable and distinct physical characteristics.

West Bengal abounds in cattle population of which the yield of milk is very poor. There is no recognized breed of cattle in the state. The buffalo population is negligible in spite of the climate being congenial. Though a good infrastructure has been created for collection and processing of milk from the rural produces and marketing the same to consumers of urban areas by co-operatives, private sectors as well as government, dairy sector of the state is dwindling due to the absence of any recognized highly productive breed of cattle. Negligible buffalo population of the state only adds to the woe.

The total bovine population of the state as per the 18th Livestock Census (2008) is about 19.95 million out of which 16.55 million is non-descript indigenous cattle, 2.64 million is crossbred cattle and buffalo population is only 0.76 million⁴⁶. Thus, the crossbred population is only 13.5 per cent of the total cattle population. The non-descript type of cattle in the state yields a meager amount of milk, about 400 litres in 300-lactation days. Annual milk production

47. Source: Ibid.

of the state is 4906.20 MT⁴⁷. Per capita availability of milk is merely about 143.30 gm per day and. Annual egg production within the state is 4,746 million⁴⁸.

The tradable animal bio-resources of the state are milk (from cattle, buffalo, goat), egg (from fowl and duck), meat (poultry bird, pig, goat, sheep, buffalo and cow) and wool from sheep and the estimated annual production is around Rs. 31,869 crores. Maximum amount is of raw meat of various types amounting to total Rs. 15,299 crores, followed by milk of Rs. 13,443 crores and egg of Rs. 2,808 crores. The data has been compiled from 'Basic Animal Husbandry & Fisheries Statistics' 2013, MoA & AH, GoI; Annual Report, 2011 of the Department of Animal Resources Development, GoWB; Report from Nimpith Krishi Vigyan Kendro and market survey conducted during this study. A quick view of total tradable volume and value of Animal Resources of the state is shown in Table 5.1 and item wise details of these have been mentioned in subsequent paragraphs.

Table 5.1: Overview of Animal Based Products of West Bengal			
Sl. No.	Name of the Product	Average Annual Production	Total value of Annual Trade (Rs. in crores)
1	Milk & chhana	44.97 lakh MT	13,696.0
2.	Meat (total)	5.77 lakh MT	15,299.0
3.	Egg	40.12 lakh in nos.	2,808.0
4.	Skin & Hides	1.20 million pieces	60.0
5.	Sheep Wool	705.00 MT	3.5
6.	Ornamental bird/pet bird	24,000 pair	0.7
Total		-	31,867.2

Apart from the primary products as mentioned in the above Table 5.1, there are many by-products too. Bird feathers are extensively used in handicrafts industries. Various parts of the animal carcasses

48. All the population no. is quoted from 19th Livestock Census-2012 All India Report Ministry Of Agriculture Department Of Animal Husbandry, Dairying And Fisheries Krishi Bhawan, New Delhi

49. "REPORT ON TRADEABLE BIO-RESOURCES IN THE DISTRICT HOOGHLY", 2014,

are utilised in manufacturing beneficial goods like shoe, bag, knife handle, belt, comb, glue, brush, candle, buttons, furniture, packets, etc. Bones of cattle are collected and grinded in mills. The by-products like chhana, ghee, cheese and curd cater to the high demands of the people, mainly in big cities and small towns. Production and marketing of these products provide livelihood to a large section of the population and help many households to generate income. These products are sold in the entire state through retail shops. Sweetmeat shops, restaurants, café and tea stalls utilise livestock products like meat, egg, milk, butter and cheese in substantial quantity and on regular basis. This study has tried to capture the trade of aforesaid by-products, but there is limited information available from the private sectors and entrepreneurs and no centralised data is available. However, based on the available information captured from the State Government agencies and some of the producers and businessmen, estimates have been made of total volume and value of these products and these are presented below item-wise.

5.2 Livestock Population in West Bengal

As per the Livestock census of 2008, a total of 30.34 million livestock population is available in West Bengal. The Livestock comprises cattle, buffalo, sheep, goat, pig, horse and pony, mule, donkey, camel, mithun and yak as well as 52.8 million poultry birds, which include total birds in the poultry farms and hatcheries. The cattle population is predominantly non-descript with little productivity of milk compared to crossbred cattles.

5.2.1 Bovine

Cattle and buffalo count for this category of animals. A total of 19.95 million bovine population is available in the state. They are used to produce milk and support in agricultural operations like ploughing, drawing carts, threshing crops, squeezing sugarcanes and oilseeds and other activities like mud mixing and mud pressing. A small number of yaks are also available in the high altitudes of Darjeeling district.

5.2.1A Cattle

Out of the 19.18 million cattle population, more than 90 per cent belong to the indigenous variety. In different parts of the state, they differ in built, structure and production capacity. In general, these are small in size, non-descript and produce little milk per lactation. The indigenous breeds are less prone to diseases and require very low or no care as far as cattle management is concerned. However, they provide pivotal service in agricultural works, such as ploughing. In order to increase the production capacity of milk among the indigenous variety, efforts are being made for improvement by breeding with other indigenous varieties such as Shahiwal, Haryana, Gir etc. and with foreign breeds, such as Jersey and Holstein Friesian. The villagers in the state use the natural forest or uncultivated lands for grazing the animals. Use of concentrated feed is not much popular as yet as the owners do not find it much economical. There are some families, who keep cows in a larger scale for selling milk as their major source of income and use concentrated feed and modern management practices for cattle rearing.

5.2.1B Buffalo

The entire cattle and buffalo development in the state has been entrusted upon an agency called “Paschim Banga Go-Sampad Bikash Sanstha (PBG SBS)”, acting under the aegis of the state government. A comprehensive centrally sponsored National Project for Cattle & Buffalo Breeding (NPCBB) has been launched in the state since 2001-02 and the PBG SBS has become the State Implementing Agency for this project. These bodies have nurtured the growth of 0.86 million buffalo population in the state.

5.2.1C Yak

Total 1,088 yaks exist in the state, which graze in the high altitudes and produces milk, which is converted in to chhurpi and meat. However, it has very little impact on the traded volume of either milk or meat.

5.2.1D Goat

West Bengal is the breeding tract of Black Bengal goat. The Black Bengal goat is famous for its excellent quality of meat, high fecundity and good quality of skin (glace-kid). Small livestock makes valuable contributions to farming systems and to people's livelihoods. They are of special value to the poorer households and provide support to the state's poverty reduction strategies. To augment meat production in the state by way of generating of better productive local Black Bengal stock through selective breeding with quality male animals, State Animal Resource Development Department has initiated a project on "Conservation of threatened breed" Black Bengal Goat at Koltulpur in Bankura district. The state houses around 15.09 million of goat population⁴⁹. Total annual sale of goat meat in the state has been estimated to be 233.30 thousand MT of value Rs. 9,332 crores.



A woman carrying Black Bengal Goat

5.2.1E Pig

Three typical pig-keeping systems are presently in vogue in different parts of the state:

- i. Free-range scavenging pig keeping: A more or less extensive system whose main purpose is to guarantee the household emergency fall-back funds, whilst also supplying it with a little meat occasionally, without any major investment of time or money with non-descriptive type of deshi pig. This domestic scale is very typical of small farmer mixed holdings.
- ii. Semi-intensive pig keeping: A system where the animals are housed in a more



Free ranging non descriptive pig rearing by the tribal in Dubrajpur, Birbhum



Semi intensive rearing by tribals in Nagrakata, Jalpaiguri

submitted by ADM , Hooghly as follow up of a meeting held in the district.

50. "REPORT ON TRADEABLE BIO-RESOURCES IN THE DISTRICT HOOGHLY",2014, submitted by

attentive ambience for keeping eyes especially to their health and feeding. Its aims remain those of domestic pig keeping, but given a modest amount of inputs, its production is higher.

- iii. Intensive pig keeping: Housing, feeding and regular vet care is the modus operandi of this practice.

Taking all these three types, around 8,14,600 pigs thrive in West Bengal at present. The Ghungroo pig is famous for its meat quality and high fecundity. Total sale of pig meat per annum has been estimated to be 26,000 MT of value Rs. 481 crores.

5.2.1F Sheep

Sheep is a multi-faceted animal producing wool, meat, milk, skin and manure. It provides a dependable source of income to the owners. The advantages of sheep farming are: i) a low key investment in housing and labour can rear the sheep well. ii) The foundation stock is relatively cheap and the flock can be multiplied rapidly. iii) Sheep are economical converter of grass into meat and wool. iv) The sheep's diet includes a variety of plants, as compared to other kinds of livestock. Thus they gain the status of an excellent natural weed destroyer. v) Unlike goats, sheep hardly damage any tree. vi) The by-products like wool, meat and manure, only equates with money for the shepherd. vii) The structure of their lips helps them to clean grains lost at harvest time and thus convert waste feed into profitable products. viii) Mutton is one kind of meat against which there is no prejudice by any community in the state and further development of superior breeds for mutton production will only ensure to the developing economy of the state. Garole sheep found in the Sundarbans is an exquisitely adapted animal and a cherished agricultural resource. The renowned Merino sheep had been developed by isolation of Boorula and Fec-B gene from Garole sheep. Garole sheep is also known for its taste. However, because of lack of pasture the number of sheep being reared is rather low and number of sheep in the state has been estimated to be 15,77,193 in the 18th Livestock Census conducted during the year 2008.

5.3 Poultry Bird

Poultry eggs and meats provide high quality proteins, minerals and vitamins, which are required to balance the human diet at a cheap rate. Specially developed varieties of layer birds are now available with abilities of quick growth

and high feed conversion efficiency, which will aggrandize the production of eggs. Although West Bengal is enjoying the leading position with respect to the poultry production in eastern India, it has to depend on the southern states for meeting the shortage of eggs. There is scope to augment production of eggs since marketing is not a problem.

With a low emphasis on infrastructural demands, the backyard farming of poultry is a flourishing practice among the farmers. Basically, it can be grouped under 'No-Input Farming'. This is a well-furnished procedure for a steady flow of income to the underprivileged women, as confirmed by the last two Censuses, which suggest existence of a population of 64.2 million poultry birds in the state. Out of these, 12 millions are duck, which are mostly reared at home traditionally. A small portion of these are crossbred with Khaki Camble variety, which increases egg production. Chicks are also being reared as a part of composite culture for intensive farming. Rest of the poultry birds are chicken, both traditional as well as cross-bred varieties.

Box 5.1

In the unorganized sector, a programme to distribute chicks (from a day old to 28 days old) amongst women members of self-help groups has been continuing since 2008-09 and being continued taking fund from Rashtriya Krishi Vikash Yojana (RKVY). 20 lakh chicks amongst 2 lakh women members involving 20,000 SHGs are being distributed under this programme with a view to develop social empowerment of women and reduction of gender inequality and also for improvement of food security of the rural BPL families.

(Source: Report 2013, ARD Dept, GoWB)

Box 5.2

Though it is mentioned in Table 5.2 that the state produces 40 lakh of eggs per annum on average, but the provisional figure received from ARD, GoWB for the year 2013-14 says the production of total egg from deshi fowl, improved fowl and duck is 47 lakh. 47 per cent (22.10 lakh) of the total egg is received from deshi fowl whereas 25 per cent (11.60 lakh) is received from improved poultry and rest 28 per cent (13.30 lakh) from duck.

There are also other types of birds like Quail, Turkey etc. whose total number is 2,53,439 and has good market.

5.4 Ornamental or Pet Bird

Ornamental bird is gaining popularity as a tradable bio-resource and rearing of such birds is providing, albeit in a very small scale, an alternative livelihood option in the districts of South 24 Parganas, Nadia and North 24 Parganas. After successful demonstration, the technology was disseminated by Nimpith Krishi Vigyan Kendra to a large area of those three districts. Damkal village in Kultali block of south 24 Parganas district is known as ‘Ornamental Bird Village’ by the local community, where nearly 50 farm women are employed in growing such birds, which fetch a substantial income. The birds are sold at their doorstep by middlemen, who transport those to the markets in Kolkata. Price of such birds at Kolkata market is given below in Table 5.2.



Middleman carrying ornamental birds from villages

Table 5.2: Trading of Ornamental Birds	
Name of the birds which are traded	Approximate market price (Rs)
Budgerigar	240/pair
Cocktail	1300/pair
Java	1200/pair
Love bird	1400-1800/pair
Finch	130/pair

Few birds which are illegally sold include birds from the parakeet family like Alexandrine Parakeet (*Psittacula eupatria*), Rose-ringed Parakeet (*Psittacula krameri*), Blossom-headed Parakeet (*Psittacula roseata*), Red-breasted Parakeet (*Psittacula alexandri*), Chestnut-tailed Starling (*Sturnia malabarica*), Black-headed Oriole (*Oriolus larvatus*), Asian Koyel (*Eudynamys scolopaceus*) and Red Myna (*Acridotheres sp.*). Around 24,000 pairs of ornamental birds are sold per annum, the market value of which is around Rs. 0.72 crores.

5.5 Hide and Skin

Production data of hide and skin is not centrally available. This has been worked out in the district of Hooghly with the district level officials of the ARD Department and it is estimated that a total of 62,509 pieces of skin and hides (skin 26,229 and hide 36,280) are produced per annum in the district⁵⁰. The district is home to 3.5 per cent of the total Bovine and small ruminant population (around 17,57,349). Based on this, total production of hide and skin in the state has been estimated to be 1.2 million pieces per annum.

5.6 Production Scenario in the Livestock Sector of West Bengal

Mainly thirteen types of primary products are sold in the market from the livestock sectors. These are raw milk, chhana (casein), goat meat, poultry meat, sheep meat, pig meat, buffalo meat, cow meat, processed meat, egg, skin and hides, sheep wool and ornamental birds. An estimated production of these items is presented below in Table 5.3.

Sl. No.	Name of the Product	Average Annual Production	Retail Market Price (Rs)	Total value of Annual Trade (Rs. crore)
1.	Milk	44.81 lakh MT	25-30/kg	13,443.0
2.	Chhana	0.16 lakh MT	-	252.7
3.	Meat (total)	5.77 lakh MT	120-480	15,299.0
3.1	Goat	2.33 lakh MT	380-420	9,332.0
3.2	Poultry	2.75 lakh MT	140-170	4,262.5
3.3	Sheep	0.26 lakh MT	300-350	845.0
3.4	Pig	0.26 lakh MT	170-200	481.0
3.5	Buffalo	0.15 lakh MT	120-150	202.5
3.6	Cow	0.11 lakh MT	150-170	176.0
4.	Processed Meat*	65.10 MT	260-300	1.9
5.	Egg	40.12 lakh in nos.	5-7/pc	2,808.1
6.	Skin & Hides	1.2 million pcs	150-900/pc	60.0
7.	Sheep Wool	705.0 MT	40-50/kg	3.5
8.	Ornamental bird/pet bird	24,000 pairs	250-350/pair	0.7
Total		-	-	31868.9

*Includes processed meat produced in private sector mentioned at paragraph 5.8.4

ADM, Hooghly as follow up of a meeting held in the district.

51. Source: Ananta Dey, Field surveyor in Hooghly

5.7 By-Product from Animal Bio-resources



Lean Pork

Chicken meat and pig meat are processed by the state Govt. agencies as well as private entrepreneurs. Pork nuggets, sausages, salami are the products sold in the market. Few processed chicken meat and dressed quail are also sold in the market. An average of 1,775

kg of pork product worth Rs. 6.46 lakh has been sold in the market during 2011-12 to 2013-14. Similarly, on an average, 2,248 kg of processed chicken product is sold, which has fetched an earning of Rs. 8.30 lakh. Other processed meats like dressed quail, meat of turkey, vitamin enriched eggs etc. have earned a valuation of Rs. 1.17 crores per annum during last 3 years.



Pork Sausage

5.8 Market Analysis of Animal Products

5.8.1 Pig Market

Market related to pig rearing can be divided into input and output markets. Input market comprises of all inputs related to keeping pigs (e.g. piglets, fodder, vet care support, etc.). Output market comprises of sale of pig for meat. Since Jalpaiguri is a conspicuous market in the pig meat production of the state, a study has been carried out on the pork market of this terrain. The finding of the survey is shown in Table 5.4.

Table 5.4: Weekly market-wise demand in Nagrakata

Name of the Market	Day of the Market	Market demand						Annual Demand (Q) (Q)
		Peak (December to March)	Peak season demand (Q)/Day	Mean (September to November) (Q)	Mean season demand to Q/Day	Lean (April August) Q	Lean Season Demand Q/Day	
Mal	Sunday	1.0	16.0	0.8	9.6	0.7	14	39.6
Odlabari	Sunday	4.5	72.0	3.5	42	2.0	40	154.0
Damdin	Sunday	2.5	40.0	2.0	24	1.4	28	92.0
Meteli	Sunday	4.5	72.0	4.0	48	3.5	70	190.0

Mangalbari	Sunday	4.5	72.0	3.5	42	2.5	50	164.0
Garubathan	Monday	5.0	80.0	4.5	54	3.0	60	194.0
Chalsa	Tuesday	1.5	24.0	1.0	12	0.7	14	50.0
Lataguri	Wednesday	1.5	24.0	1.0	12	0.8	16	52.0
Damdin	Wednesday	2.0	32.0	1.5	18	0.8	16	66.0
Chalsa	Thursday	3.5	56.0	3.0	36	2.0	40	132.0
Jholong	Thursday	2.5	40.0	2.0	24	1.5	30	94.0
Mainglass	Thursday	1.2	19.2	1.0	12	0.7	14	45.2
Total (Quintal)			547.2		333.6		392	12272.8
No. based on average size of 50 kg/pig			1094		667		784	2546

There are two ways the product is sold. In weekly hatia, the butchers sell the pork. It is found that 50 per cent of the total produce sold alive and transferred to the hills from the valley.

The pork sale is season specific and the seasons are divided in peak, mean and lean periods across the year. The peak season belongs to the four winter months; mean



Pig Market in
Nagrakata Block

spans for three months and the summer months (five) prove to be the lean months. This demarcation has been made on the basis of weekly demands in the local markets. There has been a detail assessment of pork sale in the area in local weekly markets as shown in Table 5.4. The study found that average weight of pigs sold is 50 kg. The Table 5.4 shows that during peak season monthly demand is 274 pigs per month (from December to March) and the same comes down to 157 pigs per month during the lean season (April to August).

5.8.2 Milk Market

There are milk collectors in Jalpaiguri district who collect milk from the households on a weekly payment basis. The distribution of collection villages are mutually fixed by the collectors and they operate under a 'milk collectors' union' based at Malbazar. These milk vendors access multiple outlets to supply the milk namely household

consumers, sweet shops, tea shops and some of the restaurants. Some of the collectors locally process the milk to produce ghee, paneer, curd and chhurpi (in few cases). Though the vendors are to fix purchase and sale rates of milk on fewer stances, mostly they have to accord with the rates fixed by the Union. Conflicts among the vendors are also resolved by the Union.

Milk is sold mostly to household consumers, sweet shops, tea stalls etc. Some of the traders also produce ghee and paneer simultaneously for higher profits. Consumption of milk for the sweet shops varies across different seasons, with peak demand during September to March. The mean and lean periods are between April to June and July to August respectively. In the Darjeeling hill areas milk is converted to chhurpi. A local producer who supplies the produce to a couple of outlets at Odlabari in Jalpaiguri district mentioned that “chhurpi has tremendous market” and one family can earn up to Rs. 18,000/ per month if they produce both chhurpi and ghee. 100 litres milk produces almost 5 kg of ghee and fetches Rs 1,200 by selling at Rs. 240-280/kg which helps in higher price realization. However, production of chhurpi is not much since the production process is labour intensive and also requires machinery support.

5.8.3 Chhana Market

Primary survey reveals that 1706.20 thousand MT of chhana⁵¹ is produced and traded from 18 developmental blocks in Hooghly district per annum, the value of which is about Rs. 26.77 crores. The total milk production in the district in 2013-14 was 5,19,798 MT which shows that about 0.33 per cent of the milk is converted in to Chhana (Annexure-5.1). Therefore, an extrapolation indicates that the entire state is producing approximately 16104.29 MT of Chhana which is traded with an amount of Rs 252.66 crores. Chhana is produced at household level and then traded in the local markets. From there, it further moves to urban markets to cater the need of sweetshops. An example can be cited here, which has revealed

52. Source: Dr. Debabrata Das, Assistant Professor of Botany, Darjeeling Govt. College, Darjeeling

from our primary study that 50 persons bring chhana in Sibaichandi market of Hooghly from adjoining areas. They bring approx. 50 kg each per day. This chhana is next transported to Seoraphuli market, further to Howrah and Kolkata markets⁵².

5.8.4 Other processed product from Private Sector

Keventers Co. Ltd in Darjeeling produces different animal resource based processed products, which are sold in local markets as well as in Siliguri market. About 18 MT of processed product is produced per annum from this outlet, which is valued as Rs. 57.60 lakh⁵³. The products and their values are shown in Table 5.5.

Table-5.5 Production of Processed Meat by Keventers Co. Ltd Darjeeling		
Chicken sausage @320/- per Kg	Chicken Salami @320/- per Kg	Meat loaf@340/- Per Kg
Chicken meat ball @320/-Per kg.	Cart let @320/- per Kg	Pork sausage@280/- per Kg
Ham@340/- per Kg	Pork Salami @320/- Per Kg.	Chicken meat ball@320/- Per kg

Reference:

1. Department of Animal Husbandry, Dairying & Fisheries. (2012). Nineteenth Livestock Census All India Report. Ministry of Agriculture, Government of India.
2. Department of Animal Husbandry, Dairying & Fisheries (2013). Basic animal husbandry and fisheries statistics. Ministry of Agriculture, Government of India.
3. Directorate of Animal Resources and Animal Health (2013-14). Provisional Annual Report. Government of West Bengal
4. Directorate of Animal Resources and Animal Health. Eighteenth All India Livestock Census. Agriculture implements & machinery, Fishery statistics. Government of West Bengal.

53. Hand Book of Fisheries Statistics, 2012-13, Dept. of Fisheries, Govt. of West Bengal

54. Ibid Table: 1 & 2 in page 1

55. Ibid

CHAPTER VI

FISHERIES & OTHER AQUATIC PRODUCTS

6.1 Overview of Fisheries Resources of West Bengal

Fish and other aquatic products are important bio-resources of the state and are major sources of protein with per capita consumption of 9 kg/year. This sector makes substantial contribution towards economic development and employment in the state. Fish production and allied activities contributed 2.44 per cent of the State Domestic Product and generated 20.36 lakh person-days during the year 2012-13⁵⁴. Pisciculture is accepted as a vehicle for promotion of rural livelihood and in providing food security. West Bengal is the only state in India, where fish cultivation takes place in all possible types of water bodies, i.e. brackish water, sweet water, sewage water and marine water as well. The entire state is bestowed with natural water bodies in different forms. However, only about 85 per cent of the available 3.34 lakh hectares of ponds, tanks, beels, baors and sewage fed fisheries for freshwater aquaculture and 98 percent of a total potential brackish water resource of 0.6 lakh hectares are being utilized at present⁵⁵. The state also has around 4.22 lakh hectares of potential open water system like reservoir, river, canal etc⁵⁶. In spite of having the highest productivity of fish in the country and total production of more than 15 lakh MT of fish per annum, there is a gap between demand and supply of the order of 0.9 lakh MT. More research & development support, strong linkages between research and practice, increased investment and establishment of aquaculture estates, feed mills and ancillary industries have all been identified as integral in hastening the growth of this sector. The total production of fish during 2009-10, 2010-11 and 2011-12 are shown in Table 6.1. Fish production is likely to reach 18.50 lakh MT by the end of 12th plan period. The total value of fish produced in the state in the year 2011-12 was Rs. 31,383 crores.

56. Personal communication with Mr Bablu Ghosh, President Naihati Fish seed Suppliers Welfare Association.

57. Verbal information from Sri Milon Sinha, Bijoynagar, South 24 Parganas, a magur seed grower

58. WB state Biodiversity strategy and Action Plan 2002.dept. Environ. GOWB, p-153

Fish Production	Year of Production		
	2009-10	2010-11	2011-12
Inland Fish (lakh MT)	12.46	12.9	13.38
Marine Fish (lakh MT)	1.97	1.82	1.52
Shrimp (lakh MT)	1.44	1.47	1.49
Fish Seed (millions)	13,453	13,846	15,002

Table 6.1 shows that production of carp fish in fresh water and shrimps in brackish water constitute the major production of aquatic bio-resources in the state and marine aqua-culture has a small share in total fish production of the state. The total production and value of different categories of pisciculture is presented below in Table 6.2.

Table 6.2: Estimated Volume and Value of Trade (Average of 2009-10 to 2011-12)			
Primary & Processed product from Fish Resource	Avg. Annual Production (lakh MT)	Retail market price (Rs per Kg)	Amount of trade (Rs crore)
1. Inland fresh water fish			
1.1 Indian major carp (Rui, Catla, Mrigal etc)	7.88	120-140	10244.00
1.2 Indian minor carp (Bata, Calbau etc)	0.46	120-150	621.00
1.3 Exotic carp (Silver, Grass carp etc)	1.42	100-120	1562.00
1.4 Murrels (Lata etc)	0.22	150-200	385.00
1.5 Cat fish (Singi, Magur etc)	0.31	200-400	930.00
1.6 Other fish	0.57	250-350	1710.00
1.7 Shrimp (fresh water & Brackish water)	1.06	350-400	3975.00
1.8 Fish seed spawn	15,002 million pc	350 per lakh pc	5.25
1.9 Fish seed fry	0.15	120-130	187.50
2. Marine			
2.1 Shrimp	1.06	350-450	4240.00
2.2 Marine fish	1.75	100-300	3500.00

3. Production from <i>beef</i> , baor	0.35	150-250	700.00
4. Production from sewage fed fisheries	0.24	120-150	324.00
5. Production from reservoir	0.026	120-150	35.00
6. Production from cold water	0.004	150-200	7.00
7. Capture from River & Canal	0.043	120-150	58.05
8. Capture from other waterlogged areas	0.49	120-150	661.50
9. Ornamental fish	93 -124 lakh pieces	4-250/- per pc	99.20
10. Ornamental fish-exported (MPEDA)	11 ton		2.88
11. Dry fish	0.40	60-160	440.00
12. Processed fish & fish products- exported			
12.1 Frozen Shrimp	0.28		1313.35
12.2 Frozen fish	0.08		147.42
12.3 Frozen Cuttle fish	0.029		49.28
12.4 Dried items	0.067		64.48
12.5 Live items (includes crab also)	0.02		24.01
12.6 Chilled items	0.12		94.72
12.7 Others	0.003		2.78
Total Trade (in Rs. Crores)			31,383.42
Sources: i) Hand Book of Fisheries Statistics 2012- 13; Deptt. of Fisheries, Govt. of WB; ii) Communication from MPEDA, GOI; iii) Report from Mr. Ujjal Nag, Fish Processor, iv) Market survey during this study and V) Verbal communication from Mr. Naren Santra, Ornamental fish Trader, Tejendranath Das; Secretary, Kakdwip Fishermen Association; Bablu Ghosh Rajendrapur, Naihati and others.			

6.2 Fresh Water Aquaculture

6.2.1 Carp Culture

Carp forms the most important species farmed in fresh water in West Bengal as well as in India. The three Indian major carps, namely, catla (*Catla catla*), rohu (*Labeo rohita*) and mrigal (*Cirrhinus mrigala*), contribute to more than 50 per cent of the total aquaculture production in the state. In terms of productivity, this is followed by silver carp (*Hypophthalmichthys molitrix*), grass carp (*Ctenopharyngodon idella*) and common carp (*Cyprinus carpio*), which were introduced

as fast growing carp species for polyculture in the country in 1970s. The technologies of induced carp breeding and polyculture in static ponds and tanks have virtually revolutionized the fresh water aquaculture sector and turned the sector into a fast growing one.

6.2.2 Cat Fish

Among the cat fishes, magur (*Clarias batrachus*) is the species which has received maximum attention. Stinging catfish (*Heteropneustes*



Singhi-*Heteropneustes fossilis*

fossilis), locally known as Singhi, is another air-breathing cat fish species, being cultured, to a certain extent, in the swamps and derelict water bodies, especially in the southern part of the state. Attempts have been made in recent years to develop the



Magur- *Clarius batracus*

culture of non-air breathing cat fishes like *Pangasius pangasius*, *Wallago attu*, *Sperata seenghala*, *S. aor* and *Ompok pabda*.

Other finfish species of importance include climbing perch (*Anabas testudineus*), murrels (*Ophiocephalus striatus* and *C. marulius*) and tilapia (*Oreochromis mossambicus* and *Oreochromis niloticus*). Tilapia is available and cultured in most parts of the backyard ponds in rural areas of the state.

6.2.3 Fresh Water Prawn

Among the fresh water prawns, *Macrobrachium rosenbergii* is the most important species followed by the monsoon river prawn, *M. malcolmsonii*.

6.2.4 Mussels and Pearl

Although West Bengal possesses several other potential species of finned fish and shell fish, production of these is still very low. Generally, three species of commonly available fresh water

mussels viz. *Lamellidens marginalis*, are found to produce pearl experimentally.

6.2.5 Fresh Water Fish Catch /Production in the State

The three Indian Major Carps (IMCs), namely catla (*Catla catla*), rohu (*Labeo rohita*) and mrigal (*Cirrhinus mrigala*) contribute to the bulk of production of fresh water fishes. The state has produced 8,47,383 MT of IMCs like catla, rohu, mrigal, calbaus etc, in the year 2010-11 out of which 8.2 lakh MT has been cultured in ponds and lakes and rest 0.27 lakh MT has been captured from open water bodies. This production has slightly gone down in 2011-12 with a total of 6,61,420 MT. It has again gone up to 8,55,340 MT during 2012-13. Similarly, 47,383 MT and 45,689 MT of Indian minor carp (bata, etc) has been produced in 2010-11 and 2011-12 respectively. An average 22,430 MT of murrels (*Ophiocephalus* sp. etc) has been captured from open water non-cultured tanks and ponds in last 3 years i.e. 2010-2013. Exotic carps (silver carp, grass carp and common carp) are produced from culture ponds, beels and baors. An average of 1,41,667 MT has been harvested during the year 2010-13. Cat fishes like *Wallago attu*, *Rita rita* etc. are produced in culture ponds, and also harvested from open water like beels and baors. Average harvests of these species were 31,528 MT in the last three years. Apart from these, other fresh water indigenous species have contributed 67,006 MT of harvest on average during the last three years.

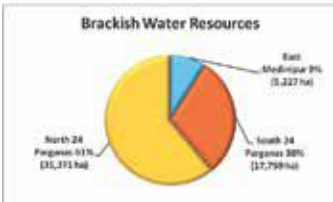
Production of giant freshwater prawn (*Macrobrachium rosenbergii*) is around 23,801 MT per annum. Production of inland penaeid, which is produced through monoculture practices, is 74,583 MT per annum. This sector has been witnessing increased diversification with the inclusion of high-valued species, including medium and minor carps, cat fishes, murrels etc. While carp and other finned fishes are grown for the domestic market, a large proportion of fresh water prawn production is exported. The study shows that prawn-cum-carp culture in fresh water is widely practiced in Barasat and

Basirhat Sub-Divisions of South 24 Parganas along with some more blocks of the Sundarbans. Around 30 per cent of total fresh water prawn production of these districts is exported and the balance is sold in Kolkata and other markets. Polyculture with carp and prawn is practiced in areas like Swarupnagar which spreads over to Dutapara, Balti, Bithari, Bankara and Nirman under North 24 Parganas and has potential for growth. The total area under polyculture is about 21,250 hectares and about 550 farmers are engaged in this activity. Production and productivity of scampi is shown in Table 6.3

Table 6.3: Average Scampi production per hectare in WB					
Year	Type of prawn	Area developed (ha)	Area utilised (ha)	Production (MT)	Productivity (MT/ha/year)
2011-12	Scampi	48,558	45,999	0.95	1.0
Source: Annual Report of 42nd Annual General Meeting of Seafood Exporters Association of India(SEAI) ,2011-12					

6.2.6 Brackish Water Fish Resources

The first two districts have much higher area as shown in the adjoining



pie chart. In contrast to fresh water fish culture, the development of brackish water aquaculture has been confined to a single species, *Penaeus monodon*, the scientific farming of which began only during the early 1990s. The area devoted

to shrimp farming extends to as much as 58,357 hectares producing approximately 23,907 MT, the majority of which is exported.

There are three different types of aquaculture in the tide water fed backwaters (bheries) of the state. These are extensive (traditional), modified extensive (which has higher stocking density) and Semi intensive monoculture (of shrimps). The first one is eco-friendly culture and does not pose any environmental hazards and is practiced by the small farmers either on their own ponds or on leased ponds. The other two types are more capital and technology intensive, which are mostly located in the Sundarban blocks.

West Bengal possesses nearly 30 per cent of the total pool of brackish water resources in the country and is the second highest producer of shrimps. During the year 2012-13, 1,11,654 MT of shrimp was harvested in the state. Total production in the previous two years i.e., in 2011-12 and 2010-11 were 1,06,886 MT and 99,977 MT respectively, indicating gradual increase in production. Average export of shrimp from the state during the last three years ending in 2012-13, as per data of the MPEDA, was 1,06,172 MT and average earning of foreign exchange per year was Rs. 1,400 crore.

6.3 Fish Seed Production in West Bengal

West Bengal is the pioneer and leader in production of fish seed in India. It contributes approximately 54 per cent of the total fish seeds produced in the country. The production has grown from 12,200 million spawn during 2004-2005 to 15,002 million spawn of estimated value of Rs. 5.25 crore in the year 2012-13. Commercial production of carp seed in the state functions like an industry and a number of hatcheries have come up in the private sector. Out of total 604 carp hatcheries, 8 are run by the government and the rest 596 are private hatcheries.

Carp hatcheries in both public and private sectors have contributed towards the increase in seed production in India from 6,321 million spawn/fry in 1985-86 to over 15,002 million spawn/fry at present. Rapid increase in the area under pisciculture has promoted production of quality fish seed under controlled conditions on a large scale both in the Chinese type and eco-hatcheries.

West Bengal has limited success in scampi seed production. Although, at least eleven hatcheries are trying to produce scampi seeds but only two have started commercial production. So, to meet the huge demand of seed, West Bengal is importing the scampi seeds from other states, mostly by air. There are four ornamental fish hatcheries in the state. Production of the hatcheries is mostly sold in the fish seed market at Rajendrapur near Naihati of North 24 Pargana district.

Box 6.1

A unique fish seed market exists at Rajendrapur in Naihati area in North 24 Pargana, which is perhaps the largest fish seed market of the country. This is a private market managed by the “Naihati Fish seed Suppliers Welfare Association”. Approximately 670 traders sell fry and fingerling of different fish in this market. During peak season i.e., post monsoon, each trader sells 100-110 kg fry/ fingerling per day on average, cost of which varies as per the fish species and size. Sri Bablu Ghosh, President of the Association, has estimated that the average price is Rs. 120-130 per kg. The season continues for six months, after which the sale reduces to 25-30 kg per day per trader for the remaining six months. This seed goes to different parts of the state and to other states of the country. Around 10,000 fish seed buyers come to this market. Annual sale from this market, as estimated by Sri Ghosh, is Rs 181 crore .

6.3.1 Indian Magur Seed:

Since 1990s there is a growing trend of diversification of pisciculture to meet the demand of consumers. One important species, which has higher demand, is the Indian magur (*Clarias batrachus*) due to its nutritional value and taste. In fact, it occupies 7th position in order of priority based on demand and taste as per one recent market survey, (Sinha, M. et al. 2014) yet there is a gap between demand and supply, which results in a higher price of around Rs. 400-500 per kg of the fish. There is huge demand of 3” Indian magur fingerling since natural sources of seeds have dwindled due to several ecological factors. A few entrepreneurs have standardized the protocol for breeding magur in captivity, which bridges the gap between demand and supply of magur fingerlings to some extent. It is estimated that 20-25 lakh fingerlings are required per year in West Bengal whereas only 2-3 lakh fingerlings could be supplied to the growers by 5-6 magur seed farms, which exist in the state.⁵⁷

59. Table 10, West Bengal Coastal Areas Development Project-Inception Phase, Concept paper, available from the web link: enrap.org.in/PDFFILES/IFAD%20project%20inception%20Paper_Final_%20Main%20Txt.pdf.

6.4 Diversified Aquaculture Sub-sectors (Small Indigenous Fish & Ornamental Fish)

6.4.1 Small Indigenous Fish (SIF)

A participatory survey conducted by the study team in a typical village of West Bengal indicated that five types of water bodies were found in the village and all were utilized for freshwater aqua-culture or capture. These are small domestic ponds, big ponds (either owned by individuals or few families), rain-fed canals, land-shaping ponds (mainly excavated for agricultural irrigation purpose) and low-lying inundated paddy fields. A wide range of fresh water indigenous species are found in these water bodies. In coastal or riverine areas, different water bodies in the same village host different categories of fish: marine, brackish water and fresh water.

West Bengal has the richest species diversity of fish as compared to any other state in India, with a total number of 574 species⁵⁸. Many of the species are available in certain regions only, like boroli and rai khoira in the Teesta river system of North Bengal, etc. In the name of eradication of predatory and trash fish for scientific fish culture, the community has lost many wanted and preferred species. Many of the fish species such as pabda (Ompokpabda), a predatory indigenous fish species, are immensely popular. Ease of culture without any supplementary feed, good marketability, taste and food preferences were ignored while promoting scientific pisciculture introduced from the 1980s. In spite of repeated efforts to discourage culture of predatory species like *Channa striatus* (sol), *Anabus testudineus* (koi), *Mystus vittatus* (tangra) and *Ompok pabda* (pabda), these are grown due to consumer preferences along with some 'weed' fish like *Amblypharyngdon mola* (mourala), *Puntius ticto* (punti), *Colisa fasciatus* (kholve) etc. in fresh water fish farms. However, there is short supply in the market and retail price of these fishes is around Rs. 300-600 per kg. There are many other Small Indigenous Fishes (SIF) in the state the list of which is mentioned in Table 6.4. SIF

60. Hand Book of Fisheries Statistics 2012- 13, page 1.

category of fish is high in demand, which is increasing in spite of higher prices of such fishes. It has been difficult to assess production of SIF in the state since the State Government data also includes other fishes with this variety. This has been worked out from the actual figures obtained from district fisheries officers of Hooghly, Burdwan, Jalpaiguri and Darjeeling districts. Burdwan district produced 2,323 MT of indigenous cat fish, 2,903 MT of SIF including 2 MT of sorpunti in the year 2013-14. 54 varieties of SIF have been reported as available in the district of North 24 Parganas. A total of 15,000 MT of SIF and 3,000 MT of cat fish which includes 1,800 MT of riverine cat fish and 12,000 MT of fresh water fish (tangra etc), were harvested in that district during the year 2013-14. It is reported from Howrah district that although commercial culture of SIF (mourala, koi, kholse etc), crabs (*Scylla*), minor prawn (chapra chingri) are yet to be taken up in this district and these species are captured from natural water bodies and are sold at high price in the market.

Sl. No.	Cultured Species	Sl. No.	Captured Species
1.	Ompok pabda (Pabda)	1.	Gilli pungti (<i>Puntius gelius</i>)
2.	Tilapia (<i>Oreochromis niloticus</i>)	2.	Kalo bele(<i>Eleotris fusca</i>)
3.	Nandos(<i>Nandus nandus</i>)	3.	Pabda (Ompok pabda)
4.	Bhetki (<i>Lates calcarifer</i>)	4.	Kakle (<i>xenentodon cancila</i>)
5.	Chital(<i>Notopterus chitala</i>),	5.	Dheney (<i>Esomus dandricus</i>)
6.	Khorsula (<i>Rhinomugil corsula</i>)	6.	Techokha (<i>Panchax panchax</i>)
7.	Sol (<i>Channa striatus</i>)	7.	Potke chingri (<i>Acetes indica</i>)
8.	Singhi (<i>Heteropneustes fossilis</i>)	8.	Dim chingri(<i>M. rude</i>)
9.	Magur (<i>Clarias batrachus</i>)	9.	Chanda (<i>Chanda nama</i> , <i>Chanda ranga</i>)
10.	Koi (<i>Anabus testudineus</i>)	10.	Guri Kholse (<i>Colisa lalius</i>)
11.	Tangra (<i>Mystus vittatus</i>)	11.	Kholse (<i>Colisa fasciatus</i>)
12.	Mourala(<i>Amblypharyngodon mola</i>)	12.	Pankal (<i>Mastacembelus pancalus</i>)

13.	Punti (<i>Puntius ticto</i>)	13.	Kunche (<i>Amphipnous cuchia</i>)
14.	Golda Chingri (<i>Macrobrachium rosenbergii</i>)	14.	Batasi Tangra (<i>Pseudeutropius antherioides</i>)
15.	Fouli (<i>Notopterus notopterus</i>)	15.	Boroli (<i>Barilius vagra</i>)
16.	Lata (<i>Channa punctatus</i>)	16.	Bogo (<i>Xenentodon cancila</i>)
17.	Sor Punti (<i>Puntius sarana sarana</i>)	17.	Bele (<i>Glossogobius giurus</i>)
18.	Sol (<i>Channa striatus</i>)	18.	Ban (<i>Mastacembelus armatus</i>)
		19.	Rai Khoira(<i>Cirrhinus reba</i>)
		20.	Chela (<i>Salmostoma bacaila</i>)

6.4.2 Ornamental Fishes

Ornamental fishes are one of the most popular pet throughout the world at present. More than 1000 ornamental fish species have been reported worldwide from various aquatic niches and environments. India has a large repository of ornamental fishes with over 100 varieties of indigenous species in addition to a similar number of exotic species that can breed in captivity. Furthermore, with the presence of varied ecosystems and natural resource bases, India has an edge over other potential Asian countries like Singapore, Sri Lanka, Malaysia, Indonesia, Hong Kong and Thailand, which offers great scope and promises of commercial fresh water ornamental fish production and export. The internal market is also growing because of increasing popularity. By volume of the business the domestic demand is more than the current export turnover.



Puntius filamentosus



Puntius terio

West Bengal is the pioneering state for the ornamental fish trade in India. The breeding and rearing activities of ornamental fishes are gradually picking up in West Bengal and consequentially ended up in the foundations of more than 500 units which have come up in the districts of Howrah, Hooghly and 24 Parganas surrounding Kolkata.

The districts of Darjeeling and Jalpaiguri having a number of rivers, canals, jhoras and innumerable hill streams are the potential sources of a large number of indigenous ornamental fishes. A survey (Paul et al, 2010) had collected 67 indigenous ornamental fish species of 3 families like Cyprinidae, Cobitidae and Sisoridae. Some common species are *Danio aequipinnatus*, *Esomus danricus*, *Puntius conchoniis*, *Puntius sophore*, *Puntius ticto*, *Botia dario*, *Botia lohachata*, *Mystus vittatus*, *Pangasius pangasius*, *Badis badis*, *Xenentodon cancila* etc. Gradually indigenous species are getting good price in the market. A total of 115 varieties of native species have been identified as ornamental fishes across the state. Out of these, 65 species have good export potential. Ornamental fishes are mainly being traded at weekend (Sunday) markets in Galif Street near Shyambazar in Kolkata. There are also scattered outlets in Kolkata, Howrah and in other towns of West Bengal.

There is little data available on total trade of ornamental fish in the state. The study team has estimated the same through survey of the market in Kolkata and Howrah. It is estimated that around 100-120 species are sold in the market and 1500-2000 pieces of each species is sold on average per week. Thus total number of ornamental fishes sold per annum in the state is estimated to 90 lakh to 115 lakh pieces. Total value of the traded ornamental fishes is around Rs. 94 crore per annum. That apart, ornamental fish is also exported through Kolkata port and the value of export during the years 2011-12 and 2012-13 is shown in Table 6.5 below.

Table 6.5: Ornamental Fish is also exported through Kolkata Port					
2011-12			2012-13		
Quantity	Value		Quantity	Value	
Tons	Rs. Lakh	Million US \$	Tons	Rs. Lakh	Million US \$
12	298.02	0.63	11	288.10	0.54

6.5 Sewage Fed Fish Culture/East Kolkata Wet Land (*Bheri*) Fish Culture

East Kolkata Wetlands, which is a unique eco-system and is recognized as a Ramsar site (No. 1208), is a model of multiple use wetlands. It provides an alternative low-cost methodology of resource recovery through aquaculture and agriculture by using the same water in multi-type/tier options to reduce the pressure of freshwater supply. The wetland provides facility for treating the city's waste water and utilizing the treated water for pisciculture and agriculture through the recovery of nutrients in an efficient manner. The water flows through fish ponds covering about 3,633 ha, and the ponds act as solar reactors and complete most of the bio-chemical reactions with the help of solar energy. The system which has been developed by local people through ages has saved the city of Kolkata from the cost of constructing and maintaining waste water treatment plants. Thus, the system is described as "one of the rare examples of environmental protection and development management where a complex ecological process has been adopted by the local farmers for mastering the resource recovery activities". (Ghosh. Dhruabajyoti, 1999)

This multifunctional wetland ecosystem is of an area of 12,500 hectares and it comprises of 254 sewage fed fisheries (bheries). Out of total 12,500 hectares area of east Kolkata wetland, water body constitutes approximately 3,633 hectares, which provides about 0.244 lakh MT of common table fish per year, which finds easy market in nearby Kolkata as well as in nearby districts. As reported by the Department of Fisheries, Government of West Bengal, an estimated area of 616 hectares of sewage fed fisheries are available in Hooghly, Nadia districts of the state. A variety of sweet water fishes are produced in the bheries. The main varieties in the existing practice of polyculture include:

- Indian Major Carp – Rohu (*Labeo rohita*), Catla (*Catla catla*), Mrigal (*Cirrhinus mrigala*),
- Indian Minor Carp – Bata (*Labeo bata*)

- Exotic Variety – Silver Carp (*Hypophthalmichthys molitrix*), Common Carp (*Cyprinus carpio*), Grass Carp (*Ctenopharyngodon idella*)
- Tilapia- Nilotica (*Oreochromis niloticus*), Mosambica (*Tilapia mossambica*)
- Other varieties – Punti (*Puntius japonicus*), Sol (*Ophicephalus striatus*), Lata (*Ophiocephalus punctatus*), Chyang (*Ophiocephalus gachua*), Singi (*Heteropneustes fossilis*), Magur (*Clarias batrachus*), Folui (*Notopterus notopterus*), Pungus (*Pangasius sutchi*), etc.

Production from the sewage fed fisheries is shown in Table 6.6.

Table 6.6: Sewage Fed Fisheries Production Pattern		
<i>Size of Bheri</i>	Total Harvesting Period (days /year)	Avg. Quantity Harvested (per day)
Between 30-50 ha	120-135 days	150-200 Kg
Between 50-80 ha	150 days	200-300Kg
Between 80-100 ha	180-200 days	350-380 Kg
Above 150 ha	250 days	500 Kg
<i>Source: Survey Saha, D. 2005</i>		

The villagers (mostly women) living around the East Kolkata Wetlands wade through the shallow ponds slowly having a container on their waist and collect snails from the bottom of the pond. The harvested snails are sent to “Alaghar”, the site office of the fishery establishments (bheries). These snails are sold both for human consumption and as duck feed (Ghosh, 2014).

6.6 Marine Sub-Sector Overview

West Bengal has a coastline of 158 km, and East Medinipur and South 24 Parganas are the two major coastal districts of the state. Department of Fishery of the state government includes North 24 Parganas



Fish Landing Jetty at
Kakdweep

as a coastal district because of its estuarine areas but it has hardly any direct coastline⁵⁹. However, saline water flows well into the district from the Bay of Bengal through the numerous rivers and channels, and brackish water aquaculture is practiced widely in blocks like Sandeshkhali-I, Sandeshkhali-II, Hingalgunj, Hasnabad and Basirhat-II blocks.

The marine resource base of the state comprises of 777 sq. km of inshore area (up to 10 fathom depth), 1,813 sq. km (between 10 fathom and 40 fathom depth) and a continental shelf of 17,049 sq. km (up to 100 fathom depth). Brackish water areas in the deltaic region encompass a territory of 60,000 hectare (of which only 59,000 is under culture)⁶⁰. In contrast, the state has a potential resource of 3,94,000 hectares of inland water bodies like ponds, tanks, reservoirs, etc. (of which 3,45,000 hectares are under culture), and another 1,80,000 hectares in the numerous rivers and canals⁶¹. Consumer preference in the state is also strongly inclined towards inland water fish, with marine fish traditionally consumed in coastal areas and by some of the tribal people in the hilly areas of North Bengal. Failure of the supply of inland fish to increase in line with demand has caused prices to rise steeply over the years, leading to consumption of fresh marine fish spreading to other areas in the state. However, our survey reveals that consumption of marine fish is prevalent in poorer regions and regions with high concentration of Muslim population.

The marine fisheries sector in the state has started to develop only from the late 1950s. However, the pace of development has accelerated only in the 1980s, with creation of berthing, landing and post-harvest facilities, motorization of fleets, infrastructure development, fisher folk welfare measures, diversification of fisheries and development of the brackish water farms. The coastline stretches 158 km, out of which 90 km is available as fishing base. There are 78 fish landing

61. Ibid, page 1.

62. Ibid, page 15

63. Hand Book of Fisheries Statistics 2012- 13, page 39

64. Meen Dhara: The activity of catching prawn PL in the creeks of Sunderban and on coasts. Also, the person who carry out this activity.

centers (khutis) out of which 37 fish landing centers are in south 24 parganas and 41 *khutis* are in East Medinipur⁶².

Average catch of marine fish during the last three years (2010-11 to 2012-13) was 1.77 lakh MT⁶³. The important types of marine catches are Hilsa, Sea cat fish, Sardinella, Croackers, Seer fish, Bombay duck, Latarius, Silverbellies, Eels, Mulletts, Parches, yellow-fin Tuna, penaeid and non-penaeid prawns, crabs etc.

6.7 Catch/Production Profile from Marine Sector

6.7.1 Shrimp Seed Collection

Another source of by-catch in traditional sector is the shrimp-seed collection, locally known as “*meen dhara*”, in Matla and adjoining rivers and rivulets in South and North 24 Pargana districts⁶⁴. Although legally banned, shrimp seed, i.e., meen collection continues at many places. In that process juveniles of almost all commercial fishes are captured and the target being the black tiger shrimp seed (*P. monodon*) other species are thrown away leading to their deaths and decline in supply of those fishes. It is reported that a large number of shrimp seed collectors, mostly the womenfolk, are operating in the Sundarban islands as a part of their livelihood (Anon, 1994). The annual family income from shrimp seed catch ranged between Rs. 8,032 to Rs. 10,946 (Mahapatra et al. 1995).

6.7.2 Marine Fishing

About 85,000 fishermen earn their livelihood wholly or partially from marine fishing in the two maritime districts of South 24 Parganas and East Medinipur. Motorization of fishing craft was first attempted in the late '50s, but the tempo increased only from the late '70s, 4,618 mechanised boats and 583 non-mechanised boats are in operation in the two districts for fishing in the coast and sea⁶⁵.

65. P.41, HBFSWB-2012-13

The main fishing methods in West Bengal are drift gillnetting for Hilsa and behundi (bag nets) for other species. They are used both in the estuary, during summer, as well as in the open sea, during the winter months. Bottom-line fishing and gillnets are also used, but to a lesser extent, in both the maritime districts. Seasonal gear, such as boat seines and encircling gillnets are also employed besides shore seines. In recent times, bottom trawling has been observed in East Medinipur.



Icing in Marine fish landing Jetty

Average annual harvest of 32 categories of marine fish and shrimp inclusive of penaeid and non-penaeid varieties during last three years have been 1.75 lakh MT and 1,06,106 MT respectively. Other than penaeid other important species are Hilsa (partly captured from tidal rivers), Pomfret, Mackerel and Indian Oil Sardine (*Sardinella longiceps*). Table 6.7 gives the annual catch of these species and the value.

Species	Trade volume (2012-13)	Estimated trade (Rs. crore)
1. Hilsa i. Marine ii. Riverine	i. 8510 MT ii. 1603 MT	505.65
2. Pomfret	9924 MT	347.34
3. Mackerel	8094 MT	202.35
4. Indian Oil Sardine	3139 MT	94.17
Source: Jt. Director(M.E &MS) , Deptt. Of Fisheries, Govt. of WB		

6.8 Crab

Four tradable species of crab found in the state are *Scylla serrata*, *Scylla tranquebarica*, *Scylla paramamosain* and *Scylla olivacea*.

The female crabs taste better due to higher fat content and also fetch higher market value, which may be even two to three times higher than male crabs. The price is decided on the weight and that hovers

between Rs. 150-Rs. 800 per kg. Crabs weigh between 300 gms and 800 gms and the larger ones have higher market price. The price, based on weight, varies from Rs. 400 - Rs. 600/kg for crabs with weight above 500 grams. For those with weight less than 500 grams the market price varies from Rs. 150 - Rs. 350/kg

6.9 Dry Fish

6.9.1 Overview of Dry Fish Sector in West Bengal

There are around forty-odd fish drying centers of various sizes on the coasts of East Medinipur and other thirty-odd centers are in South 24 Parganas. Fishermen and labourers are organized into a number of units called khuti, in which anything between a few to 10-12 boats, a number of fishermen (3-5 persons per boat including the owner) and a number of mostly women labourers (for drying fish) gather together during the season (usually four to five months



Net mending by fisher women in



Fish drying in Purba Medinipur

between October and March)⁶⁶. The size of these drying centers, determined by the number of workers (labourers) and fishermen camping during the season varies from a few hundred to 10,000 – 12,000. Of the forty-odd khutis in East

Medinipur, four are quite large. These are Jaldah (with around 10,000 people during season, is the largest one), Junput (around 5000 people), Kharpai/Dadanapatrabar (around 4000 people), New Jaldah (about 3500 people), Dash Number (about 1000 people) (Ghosh.et al 2008). Other centres in East Medinipur and those in South 24 Parganas are much smaller with a few hundred people gathering during the season.

66. Khuti: A fish drying unit consisting of a few fishing boats and a number of labourers. Such units migrate to drying area on a sea coast for four-five months in a year (in West Bengal) from November to March

There are two major wholesale markets for dry fish around Kolkata – Uluberia (in Howrah district) and Sheorafuli (in Hooghly), from where the Kolkata market is fed. The market of Howrah is located at Fuleswar Egaro Fotok, where there are around 50 stalls for trading dry fish. Traders of Kolkata and head-load retailers buy dry fish from these two markets. The retailers in and around Kolkata enjoy a margin of around Rs. 10/kg. Traders from distant markets in North Bengal, North-East and Bangladesh directly come to the fish drying centres for buying dry fish. Not all varieties of fish go for human consumption. Certain varieties of dried fish, and that too if the quality of the product is good (i.e., dried properly, without dusts, sands and other impurities), are used for human consumption. The market for such dried fish is spread over entire North-East, parts of West Bengal, and Bangladesh. Poorer qualities of dry fish are used as poultry feed. While in East Medinipur, especially around Contai and Ramnagar, there are a number of poultry feed manufacturing units. These units buy the fish meal from intermediaries. Some of the paikars (who are involved in fish drying sector) directly sell to these units, while another layer of intermediary comes into play who buys from the paikars at fish drying center and sells to these units in East Medinipur. In the fish drying belt of South 24 Pargana (Fraserganj, Kalistan, Mousuni, etc.), there is only one poultry feed manufacturing unit. However, a few such units exist in Namkhana and Kakdwip. Nevertheless, the fish meal from fish drying belt of South 24 Pargana primarily goes to Kolkata. The involvement of intermediary, who arranges for credit and other materials for fish drying, and boats and boatmen, enjoy a substantial portion of the value of dry fish. Our surveys indicate that such middlemen enjoy around 20 per cent margin. Then there are the wholesalers near Kolkata who also enjoy a margin (for dry fish that are consumed in and around Kolkata).

Box 6.2: Socio-Economic Profile of Jaldah Khuti

The khuti (Jaldah) is located at a distance of 7 km from the Digha-Kanthe state highway. Around 300 boats come to Jaldah from various places to catch fish. One such boat can store up to 1,200 kg fish. They do not carry ice while going for the catch. They use behundi net (bag-net) for fishing. Rest of the people is engaged in other activities (drying fish, loading and unloading, auctioning, etc.). Permanent population of the village is about 500-600; while about 10,000 people migrate there during the season, which extends for 4-5 months, from other areas (from the same and different districts). Varieties like Pomfret, Chela, Chandi etc. are sent with ice to auction center at Digha mohana. Ice is procured from Choddomile (12 km away) and/or Shankarpur (20 km away). Other varieties of fish are dried on open sand on the shore. The dried fish goes to the nearby auction center at Balighai near Ramnagar (about 15 km from Jaldah). Wholesale traders from Tripura, Assam, and even Bangladesh also come to the khuti for buying dry fish directly. Price of dry fish for fish meal is Rs. 11-13/kg. Prices of various types of dry fish for human consumption are Chhuri: Rs. 16/17 per kg, Bomla: Rs. 30/kg, Tapra: Rs. 22/kg, etc. Earning of each fisherman varies between Rs. 10,000 – Rs. 40,000 over the entire season spanning over 4 to 5 months. A vast majority of the people gathering at the fish drying center get involved as labourer in fish drying. The workers get paid on the basis of quantity of fish dried. The wage varies slightly with the type of fish. For example, the wage rate for fish drying is Rs. 50/ tray of bomla if the fish is one day old, Rs. 30/tray for fresh bomla; the wage rate for handling (e.g., shuffling) the fish is Rs. 50 /day (with food consisting of 2 meals a day), or Rs. 70/day without food.

6.9.2 Marketing and Value Chain of Dry Fish

As the field survey was conducted not during the drying season, there was no scope to interact with all the intermediaries in the value chain. However, there were some interactions with few of the labourers and fishermen, and also a few retailers in Kolkata. It was not possible to assess the margin that traders from outside the state enjoy.

In this system the people involved in processing of dried fish are called fish processor. In the processing industry two categories of workers are common. The first group comprises owners of drying enterprises and the others are labourers. The latter group also includes female workers, children along with men. Big traders, also known as Byaparies, are relatively large and professional traders who buy dried fish from fish processors and generally sell it to the

wholesalers and retailers in wholesale markets. Major varieties that are dried for human consumption are bomla, chhuri or fite (ribbon), ruli, and pata. Most striking feature of the value chain of dry fish for human consumption is that the retail price (in big retail markets in Kolkata) is Rs. 80 per kg for all varieties, even though the price of dry fish that producers get varies according to variety. The drying process uses up 15 – 20 per cent, paikars (traders) consume another 15 – 24 per cent, wholesaler retains 25 – 56 per cent, and retailer account for 18 – 25 per cent of the price mark-up in case of dry fish for human consumption in Kolkata, as shown in Table 6.8

Table 6.8: Price Mark-Up at Various Stages in the Supply Chain of Dry Fish for Domestic Consumption				
Dry Fish Variety	Producer gets	Middlemen Sell at Wholesale Market Kolkata# (Rs. per kg)	Wholesale Price Kolkata (Rs. per kg)*	Retail Price Kolkata (Rs. per kg)**
Bomla – early season	Rs. 40-45/kg	Rs. 50-60/kg	70	80
Bomla – latter half of the season	Rs. 30-35/kg	Rs. 40-45/kg	70	80
Chhuri/Fite	Rs. 15/kg	Rs. 25/kg	70	80
Ruli	Rs. 17-18/kg	Rs. 20-25/kg	70	80
Pata	Rs. 25-35/kg	Rs. 35-50/kg	70	80
For fishmeal	Rs. 5-6/kg	Rs. 15-16/kg*	Rs. 19-20**	NA

Of which, cost of drying is Rs. 8-10/kg for dry fish for human consumption

* Company in same district (PMDP) buys at this rate from middlemen (paikar) – 20 km distance.

** Company in other district buys at this rate from middlemen (paikar).

The market remains most active during the winter season (October to January) as the supply and climate remains most consistent. Rest of the season the supply of the fish falls. The dry fish trading system in West Bengal depends on several stakeholders like fish processor, Beparis, Aratdars, wholesalers and retailers. It is estimated that 14000 to 18000 tons of dried fish move through Egra regulated market per annum (Ghorai, S. 2014), Further estimated that approximately

12000-14000 MT dry fish is marketed in Kakdwip & Namkhana market in South 24 Parganas⁶⁷.

The rate of dry fish varies according to the quality of the product; the lower grade one is sold at Rs. 50-60 per kg whereas the good quality one fetches Rs. 150- 160 per kg.

6.10 Fish Products

6.10.1 Pituitary Gland

Pituitary gland is sold in the market, which is used for carp breeding. Few years back the demand of pituitary gland was more. Presently, many hatcheries are using synthetic hormone, therefore, demand for pituitary gland has decreased. However, as estimated after primary survey, a total of 80-90 lakh pituitary glands are collected by local youths at onset of monsoon till peak monsoon, which is sold at Rs. 5-8 each.

6.11 Fish Markets

Consumption preference of the population is predominantly oriented towards inland fish. Even though the state is the highest producer of inland fish, it remains a fish-deficit state so long as inland fish is considered. Discussions with wholesale traders in large auction markets (in Digha, Diamond Harbour and Kolkata) indicate that West Bengal exports primarily marine varieties (prawn, crab, pomfret, and other sea fish) and cultured prawns to other countries, and predominantly Hilsa to other states within the country. Export of 61,915 MT marine catch (chilled fish) was reported through ports of Kolkata and Haldia in 2011-12⁶⁸. On the other hand, import of 1,14,625 MT fish by the state from other states (Andhra Pradesh, Orissa, Madhya Pradesh, Bihar etc.) predominantly constitutes inland carps (Rui, Katla, etc.). Discussions with large traders and intermediaries in auction markets in Digha, Diamond Harbour, Canning, Barasat, Basirhat and Kolkata indicate that certain low-

67. Verbal Communication with Mr. Tejendranath Das, Secretary, Kakdwip Fishermen Association.

68. Table 6.1, p.52, HBFSWB-2012-13

value marine fishes (especially those which are either not exported at all or are exported if the size is larger than some cut-off mark) are consumed by poorer people. Some examples of such fish are Amadi, Bombay Duck, Fite (Ribbon), Aila, etc. A snapshot of total production and consumption of fish in the state is shown in Table 6.9.

Table 6.9: Production and Consumption of Fish in West Bengal in 2012-13			
Production/Consumption	Inland	Marine	Total (1000 MT)
Production ⁶⁹	1490	152	1477
Import from Other States			114
Primarily inland*			
Export to Other Countries	Negligible	Primarily marine (shrimp, pomfret, crab and others)*	25
Export to Other States	Negligible	Raw fish like hilsa and dried fish (raw weight 35-50)*	45-65
Consumption within the State	Primarily inland fish	Hilsa and small quantities of low-value sea fish	2704
Source: Table 6.2, p.52 and Table 3.2, p.31 of Hand Book of Fisheries Statistics 2012- 13 and, * Information received from wholesale traders in Kolkata, Digha and Diamond Harbour.			

6.11.1 Marketing System of Fish for Domestic Consumption

After catch, fish travels through two distinct channels to reach different final destinations, viz., domestic consumption and export. Major types of fish that go for domestic consumption are low value sea fish, Brackish water fish (prawn, parshe, bhetki, etc.) and pond fish (carps like rui, katla, etc.). Major types of fish that go for export are prawn (aquaculture and marine), pomfret, ribbon, sol, mackerel, cat fish, sardine, etc., and crab. The marketing system and involvement of intermediaries are slightly different in the two channels.

69. Table 3.1& 3.2, p. 31, HBFSWB-2012-13

Marine fish, brackish water fish and pond fish meant for domestic consumption from the districts of south 24 Pargana and East Medinipur and brackish water aquaculture fish and pond fish (meant for domestic consumption) from north 24 Pargana reach the retailers across the



Egra Fish Market

state in two different manners after the catch. First, a small portion of the total catch goes for local consumption. Such fish travels from auction market to retail centers without ice (ice is removed from the fish before weighing at the auction center); and goes to places that can be covered within two hours in any means of transport engaged. After reaching the retailing point (which is usually a nearby town, where price and availability of ice is better than at the auction center like Digha mohana), ice is applied to the fish to preserve the fish for the period until which the



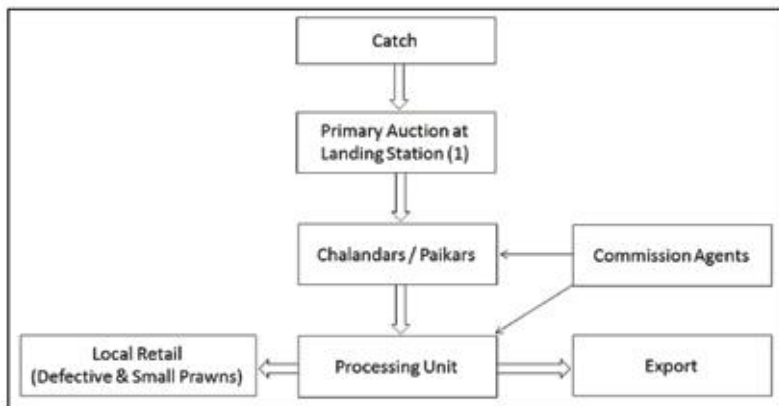
Interview with Aratdar
at Raidighi Market

stock is sold out. Second, a significant portion of the catch goes to distant places within the state. Primary among these are Kolkata and Howrah (200 km from Digha mohana, 65 km from Diamond Harbour, 49 km from Canning, 110 km from Raidighi, and 100-125 km from Kakdwip, Namkhana, and Fraserganj). Fish also goes to the urban centers in districts surrounding Kolkata and Howrah (Barasat, Basirhat, Hasnabad, Hooghly, etc.) and in distant districts like Murshidabad and districts in North Bengal (most important center is Siliguri). For better preservation ice flakes are used instead of ice cubes. Fish is auctioned for the second time in these urban centers before reaching the retailers. The type of fishes sent to urban centres for domestic consumption are primarily low-value sea fish, some quantities of high-value sea fish like pomfret (for premium consumers in Kolkata and adjoining areas), brackish water fish like parshe, bhetki, prawn (usually smaller ones) and pond fish like carps (ru, katla) etc.

6.11.2 Marketing System of Fish for Export

Fishes that are exported are primarily prawn (both marine and inland) and sea fishes like pomfret (most important), ribbon, varieties of cat fish, and few other varieties in small quantities. In this case, the fish is exported from primary auction centers to the fish processing units in Kolkata directly. Thus, fish reaches the processing units usually after one auction. Crab is another important item of export, which also reaches the processing unit in a similar manner. The first level of intermediaries is the aratdars or auctioneers. The producer brings his fish to the aratdar for primary auction. Aratdar usually charges a fixed commission to the seller on the value of fish auctioned. Thus, income of aratdar depends on the price of fish, and he has incentive to ensure that fish is auctioned at a higher price than lower. However, there is pressure from the other side too – if price of fish is too high for a particular aratdar, wholesale traders will move to a different aratdar for procuring fish. Aratdars are also present in secondary auction markets and tertiary auction markets. Aratdars provide credit to the fishermen to catch/produce fish, and to paikars for buying fish in primary auction centers and deliver to secondary auction centers. The system of supply is shown in Figure 6.1.

Figure 6.1: Supply Chain of Fish for Export



Commission rate of the aratdar varies across regions between 4-7 per cent. In most places, a 2 per cent higher commission is charged from producers/fish farmers who have taken dadan (credit) from the aratdar. Total 636 wholesale fish markets are in operation in all the 19 districts including Kolkata. Similarly there are 3,208 retail fish markets in the state. The numbers of retail markets in south 24 parganas are highest among all the districts where as Uttar Dinajpur is having only 31 retail fish markets.

Some of the big wholesale fish markets are:

- Howrah fish market, near Howrah station, which is the largest fish market in eastern India
- Diamond harbour market, the biggest sea fish market in West Bengal
- Wholesale Markets in Kolkata: Baithakkhana Market, B. K. Pal Market, Bantala Fish Market, Bagha Jatin Bazar, Chingrighata Fish Market & Orphananj Market.
- Wholesale Market in 24 Pargana (South): Malancha Market especially for shrimp
- Wholesale Market in 24 Pargana (North): Patipukur Market for a variety of fishes.

There are three major wholesale markets of crab in Canning, Basanti and Diamond Harbour. Each day at each of these markets the tradable volume ranges from 50 MTs to 90 MTs. Most of these products goes to processing unit and exported. Average estimated tradable volume is 70 MT per day.

6.11.3 Ornamental Fish Market

There are two types of traders who control the entire Kolkata and Howrah markets. About 15 to 18 traders sell ornamental fishes within Kolkata. Another 6-8 traders in Howrah export the fish to other states like Delhi, Mumbai and Andhra Pradesh etc. Big

traders procure from them and finally export the fish outside India. It is gathered from Galif Street market (around 1,800-2,000 pieces of about 100 species are sold per week). The rate varies with the species and quality of the fish e.g. Guppy is sold at Rs. 4-6 per piece, whereas Discus fetches Rs. 2000 per piece. Therefore, it is difficult to directly estimate the value of total trade. However, after discussing with a group of traders of that market it is estimated that about 10-12 lakh ornamental fish of value Rs. 1.2-1.5 crore is marketed through these two markets⁷⁰.

6.12 Export of Fish

Export of marine fish beyond boundaries of the country earned handsome revenue of Rs. 700 crore in the year 2009-10. West Bengal occupies the 4th position in the country in terms of export of sea food products. Fishes are exported primarily through Kolkata and Haldia port to mostly Japan followed by Vietnam and China. Annual export to Japan is of the order of Rs. 650 crore. Out of the total exports 90 per cent are shrimps and the rest includes ornamental fish, crab and fresh water prawns.

During 2012-13, six categories of fishery based items have been exported i.e. frozen shrimp, frozen fish, frozen cuttle fish, dried items, live items, chilled items and other miscellaneous items. A total 66,941 MT of products has been exported which has earned Rs. 1819.08 crore. Following is the detail shown in Table 6.10.

Table 6.10: Export of Fish (Quantity in MT and value in Rs. crore)								
Year	Exported Item	Frozen shrimp	Frozen Fish	Frozen Cuttlefish	Dried items	Live items	Chilled items	Others
2011-12	Quantity	26566.00	8244.00	2614.00	4665.00	1382.00	9329.00	247.00
	Value	1290.42	141.91	29.57	46.33	27.83	56.07	2.37
2012-13	Quantity	30004.00	8526.00	3343.00	8853.00	1618.00	14278.00	3.19
	Value	1336.28	152.93	68.99	82.63	44.20	133.38	0.67

70. Verbal discussion with Mr. Naren Santra, Ornamental Fish trader, Galif Street Kolkata

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CHAPTER VII

FOREST AND ALLIED PRODUCTS

7.1 Overview of Forests in West Bengal

Forest is the father of land biodiversity. Forest provides important resources for the mankind to survive. People depended heavily on forest for food, fodder, building materials, medicines etc. from the very beginning of the civilization. West Bengal has different varieties of forests. It includes the sub-alpine, temperate and subtropical forests in the Himalayan region within Darjeeling district having trees like Rhododendrons, conifers like Silver Fir (*Abies alba*), Hemlock (*Tsuga sp.*), Pines (*Pinus palustris*) etc and broadleaved species such as, Oaks (*Quercus velutina*), Laurels (*Laurus nobilis*), Katus (*Castanopsis*), Birch (*Betula pendula*) etc., and tropical moist deciduous and semi-evergreen forest in the foothills of the Himalayas with Sal (*Shorea robusta*) and its associates and the dry deciduous Sal and miscellaneous forests in the western lateritic zone. The most common species in the plains of North Bengal and south western tract is the Sal. Around one third of the world's largest mangrove forest, the Sundarbans, is also located in the south-eastern part of the state in the districts of South 24 Parganas and the North 24 Parganas. High rainfall and rich soil make home for wide varieties of flora and fauna in the forests of the state. The state has five national parks and ten wild life sanctuaries, though total coverage under the forest is only 14 per cent of the land mass compared to national average of 23 per cent. Major forests are available in the Indian Sundarbans in the south, the Himalayas in Darjeeling district and sub-Himalayan foothills and plains in Jalpaiguri and Coochbehar districts and western part of the state covering West Medinipur, Bankura, Birbhum, Bardhaman and Purulia districts. All these regions are rich in bio-resources.

7.2 Forest Based Bio-Resources

The resources which are available from forests have been traditionally classified into major and minor forest produces. Major forest produce generally includes round timber, sawn timber, poles, roughly fashioned timber, like clogging sleepers, charcoal, plywood and pulp wood. Whereas minor forest produce, known as Non-Timber Forest Produces (NTFP) includes all other non-wood and non-timber forest produce such as medicinal plants and products there from like catechu, wood-oil, resin, natural varnish, bark, lac, flower and seeds of sal, mahua and other species, decorative parts of plants, grasses, creepers,

reed and moss; silk, cocoon, honey and wax etc. The list of important NTFPs of the state is shown in Annexure 7.1. Roots, barks, leaves etc of large number of plants have medicinal use and all such plants, commonly known as medicinal plants, is a major and important forest resource regularly collected and used in *Ayurvedic* and *Unani* medicines and in cosmetic industries. Total amount of forest and allied produces, as mentioned in this chapter is around Rs. 3,235 crore.

7.3 Methodology

Apart from accessing available secondary data including published reports, much of the information on forest based bio-resources have been collected through interaction with the District Forest Officers, Range Officers, Beat Officers and some of them were also separately interviewed for in depth understanding of the produces and the marketed volumes. A couple of Forest Range Offices were separately visited. It was easier to collect information on major forest produces like timber since the entire marketing is done by the West Bengal Forest Development Corporation.

Collecting data for NTFP has been more difficult. Data for these produces have been collected from all possible sources, starting from the State Medicinal Plants Board and the West Bengal Tribal Development and Finance Corporation which deals with some of the minor forest produces, at the state level up to the Forest Protection Committees (FPCs) at the village level. Some of the studies conducted for the Sundarbans and North Bengal forests have also been useful in identifying the NTFPs⁷². Other secondary data on NTFP consulted has been mentioned at the end of this chapter, which has helped to identify the bio-resources but those were of little use to quantify the volume of trade.

The research team visited some of the FPCs and had interactions with their members to have an estimate of NTFPs collected from the forests and how those are marketed. Some of the produces like medicinal plants and Sabai grass are also grown outside the forests and similarly honey is also collected from outside the forest areas. Information was collected by visiting those areas and collecting information from some key informants. A number of forest produce based industries were also visited for more specific information. Attempt was made to track the entire supply chain and consumption pattern of medicinal plants by industries. Such produces are traded by individual persons

⁷²Dhaundiyals S - NTFP in Buxa Tiger Reserve along with their harvest, season and Uses; Vyas P. - Biodiversity Conservation in Indian Sunderban in the Context of Anthropogenic Pressure and Strategies for Impact Mitigation

in different locations though there is some concentration of such traders in *Burrabazar* area of Kolkata. However, little information could be collected by meeting some of those traders. A good quantity of medicinal plants are collected clandestinely and traded. The other difficulty is that the inputs to industries are sourced from West Bengal as well as adjoining states like Jharkhand and share of West Bengal of these produces is much less compared to those sourced from elsewhere. It has also become difficult to assess the produces sourced from West Bengal. Because of these it was difficult to quantify tradable volume of medicinal plants grown within the state. Total volume and value of different types of forest based produces along with a few commodities, which are produced from both within and outside forests are presented below.

7.4 Major Forest Produce - Timber

Among major forest produces, the most important is timber. Timber grows naturally all over the state and is also raised as plantation crops. The most important naturally grown timber specie is Sal, extensive forests of which exist in the plains and foothills of North Bengal. Teak/ Segun (*Tectona grandis*) was planted in fairly large scale in the past, as a result of which some quantities of this quality timber also flow to the market, mainly in sawn form or as plywood, ply veneers. Total production and value of timber and wood based products of the state harvested and marketed by the WBFDC is given in the table below⁷³.

Table 7.1: Total production and value of timber and wood based products of the state				
Sl. No.	Item	Quantity	Rate (Rs.)	Total value (Rs. lakh)
1.	Round timber	28,389 cu.m	30,000	8519.40
2.	Sawn timber	4,561 cu.m	60,000	2736.60
3.	Poles	10,70,620 Nos	200	2141.24
4.	Cogging sleeper	18,13,600 Nos	80	1450.88
5.	Pulp wood	92,122 cu.m	3,000	2763.66
6.	Fire wood	56,263 cu.m	2,000	1125.26
Total				187,37.04

Trees grown outside the forest are also extensively used to meet the demand of timber in the state. Direct estimation of total traded volume of timbers collected from outside the forest or fire wood sold is very difficult. However, an indirect estimate can be made from the total stock of available timber outside the forest.

⁷³Information received from the W.B.Forest Development Corporation

Forest Survey of India (FSI) has estimated, over the years the Growing Stock of forests and treelands outside forests in all the states of India. The results, as published in India State of Forest Report 2013, indicate that the total Growing Stock in recorded forest area in West Bengal is 83.31 million cu.m, whereas the Growing Stock for trees outside forests (TOF) is 41.74 million cu.m. TOF thus has a potential production of timber. The FSI has also estimated a quantum of 33.51 million cu.m. of GS in Agro forestry systems in the state. They have further estimated total timber and fire wood available in the state annually to be 1.436 million cu.m, and 0.529 million cu.m respectively⁷⁴. From the State Forest Report 2011-12 of West Bengal, it is found that there were 1531 nos. of sawmills and other wood-based industries in the state with a total installed capacity of 2.408 million cu.m. From personal communication with the officials concerned it is learnt that the number has grown to 2,108. It may be interesting to note that the Supreme Court has restricted the number of such units to 2,296 with an annual capacity of 1.425 million cu.m. If these run at 50% of installed capacity, the requirement of timber for these would be 1.204 mcm. So, the estimate of total production of timber, out of TOF is to be around 1.4 million cu.m seems reasonable. Price of timber from TOF, being less compared to forest species, it is estimated to be Rs. 20,000/- per cu.m and total annual traded value comes to around Rs 2,800 crore. In respect of fire wood assuming a price of Rs 2,000/- per cu.m, the rate at which WBFDC is selling timber, the total annual turnover comes to Rs 106 crore. Thus, total volume of traded timber, fire wood and other products mentioned in the table above comes to around Rs 3093.37 crore.

7.5 Non-Timber Forest Produce (NTFP)

Non-timber forest produces, also known as minor forest produces, are of many types of and are used as food, fodder, medicinal plants, input for industries and in some cases for decorative purpose. NTFPs provide livelihood to many poor households in different ways.

An innovative NTFP based income generating activity at *Biharinath Hills* in Bankura district

'*Biharinath Parbat*' is a forest mouza located in Tuluri Beat under *Saltora* Range of Bankura (North) Division. It is endowed with a forest having only *Bel* (*Aegle marmelos*) trees on account of a specific microclimatic variation in this location. The area is around 1,000 hectares and there are about 5,000 *Bel* trees in this forest. The trees are of short height and the fruits are also of small size. There is a Forest Protection Committee named *Biharinath Parbat* FPC. The Committee has 268 families, out of which, about 100 families remain engaged in an interesting

⁷⁴Forest Survey of India: Annual State of the Forest Report, 2011

pursuit during mid July to mid August (Bengali month of *Shravan*), when *Bel* leaves are in extensive use for worship of *Lord Shiva*. Around five members from each of these families make a trip daily to the forest and each member collects one sac-load of *Bel* leaves for which they are paid Rs. 60/- each. Thus, each family earns Rs. 9000/- during the month and the total earning of the 100 families work out to Rs 9 lakh. This way a substantial income accrues to the FPC members in a short period. There are around 3000 trees which bear good amount of fruit, which are collected by people from outside the village who are skilled in processing these and making garlands out of these, which also have a market among the religious persons. The FPC collects Rs. 25/- per tree and that generates an additional income of Rs. 75000/- for them.

Source: Centre for Biosocial Advancement on behalf of the Dept of Development & Planning, Govt of WB. 'Study on Impact of Forestry on the Livelihood Pattern of People in the districts of Bankura and Malda and the scope of its enhanced role' in 2006.

NTFPs of the state which are most important from trade point of view are the following.

- Medicinal Plants
- Honey and wax
- *Kendu* Leaf
- *Sal* leaf
- *Sabai grass*, Citranella grass
- *Lac*
- *Sal* seed, *Mahua* seed, *Mahua* flower

Medicinal plants are one of the most important NTFPs. However, plenty of medicinal plants are also available outside forests and hence, this has been discussed separately in the next chapter.

7.5.1 Honey and Wax

Honey and wax are grown naturally by the honey-bee in large forest area. For assessment of availability of honey and wax the bee-keepers association was consulted and data was also collected from the Forest Department. Tradable volume and money value of honey is given below:

Sl No.	Item	Quantity traded	Rate	Money value
1.	Honey	5,000.0 MT	Rs. 1,50,000 /MT	Rs 75.00 Crore
2.	Wax	250.0 MT	Rs. 2,50,000 /MT	Rs 6.25 Crore

A good number of flowering trees and plants in the forests induce honey-

bee to live and form honeycomb. One important source of honey in the state is the Sundarbans for which permit is issued to the collectors by the Forest Department. Honey is also collected by keeping boxes in villages near the forest areas of Sundarbans.

Honey Collected from the Sundarbans

Around 100 bee-keepers collect honey from Sundarbans regions of the state every year by putting their boxes in villages which are separated from the forests by narrow creeks, over which the honey-bee can fly to reach the forest. The number of boxes which are used to collect honey are around 20,000 in Hingalgunj block (Samsernagar village of Kalitola GP and Hemnagar village of Jogesjgunj GP); 30,000 in Gosaba block (in villages within Kumirmari, Mollakhali, Satjelia, Lahiripur, Gosaba, Rangabelia and Bali II GPs); 5000 boxes in Jharkhali GP of Basanti block and another few thousands boxes in Kakdwip and Namkhana blocks. Total around 56,000 to 60,000 boxes are deployed between mid-February to mid-April when Goran and Kholsa trees have flowers. The honey-bees collect honey mostly from forest and a part is also collected from the flowering crops in nearby fields and thus the honey produced in these boxes is mixed types. Total honey collected annually is around 1500 MT, which is traded at around Rs 22.5 crore with market price of Rs 150/kg⁷⁵. Honey is also collected by 'Moule',

collectors who take license from the Forest Department and sale the same to the Forest Deptt. Total honey sold by Forest Department, collected from Sundarbans and elsewhere through the WBFDC is 39,150 kg, which is sold @ Rs. 222/- per kg and total amount comes to Rs 86.91 lakh.

Honey is also cultivated by private individuals through honey-bee boxes. The boxes are kept in areas during flowering season of crops like mustard, litchi, mango etc. The areas where such collections are made are predominantly Murshidabad, South and North 24 Parganas, Bankura etc. Small amount of honey, known as *Putka* honey and is produced by a small type of honey bee, is collected in Darjeeling district. Honey is used for preparation of *Ayurvedic* medicines, personal consumption as well as to some extent for religious purposes. The raw honey is de-waxed and refined and the wax is available as a by-product.

7.5.2 Sabai Grass and Citronella Grass

The Forest Protection Committees are allowed to cultivate *Sabai* grass on forest land in the fringe area of forest. The same is also cultivated in fallow and infertile land in the western plateau areas of Purulia, West Medinipur and Bankura. *Sabai* grass is used for making ropes. Cultivation or and collection of *Sabai* grass and making ropes or other value added products are important source of livelihood of the people living in areas within parts of Jhargram

⁷⁵Information gathered from Mr Kanal Lal Sarkar, an employee of Rangabelia Tagore Society, Gosaba.

subdivision of West Medinipur, Khatra sub-division of Bankura and the blocks of Purulia adjoining Jharkhand, where such grass is grown. Ropes are brought to local haats from where the traders purchase the same and are mostly taken out of the state for making cots. About 1,250 MT Sabai grass and 195 MT of *Sabai* ropes are sold annually in the markets of the *Sabai* growing areas, the total value of which comes to around Rs. 35 crore.

Citronella grass is grown mostly in Jalpaiguri district and oil is extracted from the grass by the Forest Department. The annual production is around 100 litre, only the price of which is Rs 15 lakh (at the rate of Rs. 1,500 per litre). The oil is used mainly as insect repellent.

Quantity of *Sabai* grass and rope and Citronella oil produced and traded is given in the table below:

Sl. No.	Item	Quantity traded	Rate (Rs per kg)	Money value (Rs. crore)
1.	<i>Sabai grass</i>	1250 MT	18	22.5
2.	<i>Sabai rope</i>	195 MT	65	12.7
3.	<i>Citranella oil</i>	100 litre	1,500/litre	0.2

7.5.3 Kendu Leaf

Kendu leaf is used to roll *bidi*. *Kendu* leaf is collected by the members of Forest Protection Committees (FPCs) and sold through LAMPS only. Data on trade of *Kendu* leaves has been collected from the West Bengal Forest Development and Finance Corporation, which is the state level apex body for LAMPS. The same is given in Table 7.4 below.

Item	Quantity traded	Rate	Money value
<i>Kendu leaf</i>	6,000 Quintals	Rs. 30.00	1.8 Crore

7.5.4 Sal Leaf

Sal leaves are collected from forest by the FPCs during the period from Mid March to Mid June. A small part of the collected leaves are used locally by small vendors for wrapping ready to eat food or other edible items like pan in the rural markets, mostly in areas adjoining *Sal* forests. Remaining leaves

are stitched in to plates, mostly by women, which provides livelihood to a large number of poor families in those areas. In West Medinipur district, alone 55,957 households belonging to 1,149 FPCs within the four forest divisions are engaged in collection and stitching of *Sal* leaves and around 8 lakh plates are prepared every day during the collection season⁷⁶. The stitched plates are moulded using machine to improve utility and value. It is estimated that around 25 lakh moulded plates are produced per day in the entire state and value of the same is around Rs. 17 crore per year.

7.5.5 *Sal* Seed, *Mahua* Seed, *Mahua* Flower

Sal seed, *Mahua* seed and *Mahua* flower are important bio-resources, which are abundantly available in the forests. But none of these are used for commercial purpose. *Sal* seed had good market but recently *Sal* seed could not be traded by the authority for lack of market. *Mahua* seed is collected by the local people to extract oil for household use only. *Mahua* flower is used as cattle fodder in the forest villages. *Mahua* flower contains good amount of fermentable starch. Local people ferment *Mahua* flower to get alcohol locally. The Directorate of Excise was contacted to get an estimate of availability and use of *Mahua* flower for preparation of spirit. But no data was available from that source.

7.5.6 Lac

Lac is grown mostly in the district of Purulia on trees like *Kusum*, *Palash* and *Kul*. However, the production of lac has declined in the recent past in that district. Lac is also being grown in West Medinipur by cultivating Semialata *Flamingia*, which is known to be better host plant. Yield of lac per tree of *Kusum*, *Palash* and *Kool* is around 10.5 kg per year. Total yield from these trees is around 20.16 MT per year. Yield from Semialata *Flamingia* is 350 mg per plant and the estimated production from these plants in West Medinipur is 14 MT per year. Average trading price for lac is Rs. 180 per kg, which gives an annual turnover of Rs. 6.14 crore.



Cultivation of Semialata *Flamingia*



Broodlac growing on the host plant

7.6 NTFPs of Protected Forest Areas

NTFPs play a very important role in the conservation of Protected Areas by helping in augmentation of the income of members of the Eco-Development Committees (EDCs), who are entrusted with the upkeep and protection of these forests under the Joint Forest Management system. The incidence of the NTFPs in both quantity and diversity is enormous due to the extra protection received by these areas through strict enforcement of law. The poor members of the EDCs are however allowed to collect and sell these for their daily sustenance although they have no access to the major forest produce of these areas. In fact, no felling or extraction of timber, firewood etc. is allowed here. Therefore, even though commercial exploitation of the NTFPs for revenue is not done, these are nevertheless traded and the benefit flows to the community for overall betterment and ecological restoration of the area. Another point to be made is that this tradable commodity is actually finding way to the market.

NTFPs of Buxa Tiger Reserve

The Buxa Tiger Reserve is a vast store house of NTFP. The NTFP not only plays a significant role from the ecological point of view but also has great potential in uplifting village economy. The fringe people around the forest of Buxa Tiger Reserve are directly or indirectly benefited by NTFP through collection and selling it in local market. People of *Jayanti* are extracting 35 species of plants of commercial importance to maintain their livelihood. Quantitatively Broom stick, Bet leaf, Golden Mushroom, Tanki fruit, Dhundul chhobra (fibrous mesocarp) and Narikeli fruit are harvested in more than one lakh (1,00,000) pieces and more than one lakh kgs harvested products are *Ritha*, Bet fruit, *Phirphire* fruit, *Sikakai* fruit and *Lali* fruit. However, in terms of cost, *Chilauni* fruit and leaf of *Basak* are recorded the highest price of Rs. 200 per kg. Gross annual income of NTFP harvesters is around Rs.57,68,870/- (Rupees Fifty Seven Lakh Sixty Eight Thousand Eight Hundred Seventy only). Monthly average income is recorded as Rs.2,716/- per family. Per capita daily income among the NTFP harvesters from this resource is Rs.18.40/-. As per state average most of the NTFP harvesting families are enjoying better life, taking into consideration Rs.350.17/- as the demarcation of Below Poverty Line (BPL). 11 (Eleven) SHGs (self Help Groups) have also been formed in the area.

Source: Studies of Dhaundiyaal S and Sarkar Animesh and Das A.P mentioned in the reference in this chapter.

Reference:

1. Centre for Biosocial Advancement on behalf of the Department of Development & Planning. (2006). Study on impact of forestry on the livelihood pattern of people in the districts of Bankura and Malda and the scope of its enhanced role. Government of West Bengal.
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CHAPTER VIII

MEDICINAL PLANTS

8.1 Introduction

Plants synthesize wide variety of chemical compounds to influence important biological functions. People identified various uses of plants for more than 2000 years and the traditional knowledge has grown over the years, which helped use of plants for therapeutic purposes. The Indian System of Medicine, especially *Ayurveda* and *Unani* use a good number of plants and herbs. The ethnic people of South West Bengal (mainly Santal) are known to depend on plants and their parts to cure their health problems (Tripathy S. et al, 2013). Before introduction of western system of treatment with modern medicines through advancement of modern sciences, the Indian society was entirely dependent upon indigenous treatment which mainly stood upon knowledge of medicinal property of plants. Use of such drugs has declined with advancement in modern medicines based on chemical formulations. However, herbal remedy is still quite popular to a section of the people and there is also renewed emphasis for using plants based products as medicines including cosmetics, which are likely to have less adverse effects on the human body. Approximately 150 species of medicinal plants are in common use, and of these 45 are heavily used in traditional healthcare systems (ibid.). Ghosh (2008) has identified 46 medicinal plants in use in the west Rarrh regions of the state. 43 ethno-medicinal plants of Bankura district, West Bengal, India belonging to 24 families were used by the local health healers for the treatment of different diseases (Sinhbabu A and Banerjee A, 2013). Another study in Coochbehar district found 46 plant species belonging to 42 genera and 27 families in use by the tribal population of that that district for treating 33 various physical ailments (Datta T et al, 2014). In order to preserve the traditional knowledge of use of plants as source of active ingredients for preparation of medicines and to cultivate plants on commercial basis to ensure supply of medicinal plants to pharmaceutical companies, the National Medicinal Plants Board was established in 2000 by the GOI. The Government of West Bengal has also set up State Medicinal Plant Board under the Department of Health & Family Welfare. Therefore, inventory of medicinal plants available along with their current use and possible potential becomes an important part of the study on bio-resources of any state. The forest of the state is a rich reserve of medicinal plants. But a small share of the reserve is collected for trading purposes. Some of the plants with medicinal use are cultivated outside the forest. It is very difficult to estimate the total value of medicinal plants which is traded in the

state. However, the best estimate puts the figure at around Rs. 55 crore per annum.

8.2 Methodology

Collection of data on trade of medicinal plants has been very difficult. The trade is highly unorganized and has wide seasonal variation. Big Pharma companies collect their requirements from traders who source the materials from outside the state to a substantial extent. They were reluctant to share the data and wherever some data was available the portion sourced from within the state was not known precisely. Therefore, the study had to rely more on primary data. The team has also collected feedback from the FPC members of West Medinipur and North Bengal forests. The research team tried to assess the market volume and value of medicinal plants for which the entire supply chain was traced. Discussion was held with the collectors of plants, local dealers and the wholesale dealers in Kolkata. The Director of the State Medicinal Plants Board, Controller of Drugs were also consulted for an estimation of tradable volume and approximate money value of the medicinal plants used by the pharmaceutical and cosmetic industries. The main impediment of assessment of tradable volume and cost of medicinal plants is that the industries, as well as the dealers are quite reluctant to share information with the members of the team. There is no secondary source or data from any Government department. Even the Director, Drugs Control could not provide any such data, as data on intake of medicinal plants by the industries is never required by the Drugs controller. The State Medicinal Plants Board, however, has data of consumption of medicinal plants by the industries, which is placed at Annexure 8.1. The research team could identify 219 *Ayurvedic* drug manufacturers and 6 *Unani* drug manufacturers, but they do not have information on consumption of medicinal plants from West Bengal. Therefore, the volume of trade has to be assessed totally from the field level data. The team collected information from each district from people who are knowledgeable on this matter and also visited certain pockets, which are mostly in forest fringe areas, from where medicinal plants are sourced and tried to get the best estimate of the amount traded. It has been estimated that around Rs 25 crore worth of medicinal plants are traded every year. Actual trade of such products could be more since some of the medicinal plants are cultivated in the fields outside the forest, which could not be captured and a part of the collection of medicinal plants from the forests is believed to be carried out clandestinely, which could not be estimated.

8.3 Collection of data from the Forest Protection Committees (FPCs)

During in-depth discussion with the forest department officers, members of the

Forest Protection Committees and traders of medicinal plants, it transpired that the FPC members collect medicinal plant parts like leaf, bark, fruit, creeper and seeds from the fringe area of forests only as demanded by the local dealers. Much of the potential resources remain untapped because of lack of steady demand. A detailed study of medicinal plants collected and sold from Goaltore region of West Medinipur district illustrates the diversity of medicinal plants and related dynamism of collection and marketing of medicinal plants.

8.3.1 Medicinal Plants Collected from a Typical Forest Area (Goaltore Region)

Medicinal plants are collected from *Goaltore* region of West Medinipur. The research team had a day long interaction with the members of the FPCs of that area, who assembled for the meeting, to get a feel of the dynamics relating to collection and trade of medicinal plants.

Representatives from Dulduli FPC, Murakati FPC, Shaluka FPC, Dudhpatri FPC and Babuibasa FPC were present in the meeting. Sri Samir Mahato of



Meeting the FPC representatives at Goaltore

Dulduli Forest Protection Committee expressed during probing interview that the medicinal plants or the leaves, barks, roots, whole plants are collected from the fringe area of the forest. A small portion of the collected plants is sold to local *ayurveda* practitioners- the *kavirajs*, the *Ojhas & Gunins*. The rest portion is sold to the wholesale traders in Goaltore. The medicinal plants do not have any support price and therefore the collected plants are sold to get whatever amount is paid. He mentioned that about a quintal of *Kalmegh* (*Andrographis panichulata*) leaf is collected per month and sold to the local traders. *Satmul* (*Asparagus racemosus*), *Bahera* (*Belleric Myrobalan*), *Nayantara* (*Catharanthus Roseus*) are also collected as per demand of the local traders. Sri Subal Mal of Murakati Forest Protection Committee expressed that he does not know the names, used by urban folk, of the plants collected. They can identify by local names only.

As for example Nishinda (*Vitex Negundo*) is locally known as Begna pata. The members of Murakati Forest Protection Committee collect 150 kg of Begna pata



Samples of Medicinal Plants

per month and the stock is sold to traders. Sri Sanjay Bhunia of Shaluka

Forest Protection Committee told that the members of their Forest Protection Committee collect *Bahera*, *Haritaki*, *Belera*, *Bonkutli*, *Banda lata* [*Rasna- a kind of orchid-(Pluchia lanceolata)*], *Gulancha*(*Gulancha tinospora*). *Bahera*, *Bel* [wood apple]. *Chaula* and *Gulancha* are the major items for trade and are collected in good quantity. Sri Palash Chongdar of Dudhpatri Forest Protection Committee told that a Forest Protection Committee consists of 25 to 150 families. Members of Dudhpatri Forest Protection Committee collect *Bahera*, *Gulancha*, *Begnapata*, *Chaula*, *Kantikari* and *Kalmegh*. The members of the FPC also get job of plantation in forest areas. Babuibasa FPC mentioned that despite huge reserve of medicinal plants in the forest, they do not collect medicinal plants for low price of the materials. During discussion with them, it appeared that though available in abundance, *Sal* seed and *Kendu* leaf were not collected during the year 2014-15, as there was no market.

8.4 Cultivation of Medicinal Plants

Cultivation of medicinal plants for commercial purposes is still quite limited. The study team could not find large chunk of cultivation with established marketing and production linkage. In fact absence of such linkage stands in the way of cultivation of medicinal plants in commercial scale. However, in a study in Birbhum district, it was found that cultivation of medicinal crop is very remunerative. The study observed high productivity of Aloe Vera. 170.62 tonnes in three years with a return of Rs. 7,19,000 per year per hectare (Biswas, 2010). The study also found successful cultivation of drumstick, which is used both as vegetable and as medicinal plant. However, it was not possible to study cultivation of medicinal plants within the scope of this study.

Reported gap between demand and supply of some of the medicinal plants

The research team met some of the traders who have mentioned that there is substantial gap between demand and supply of certain medicinal plants, which includes a few varieties of plants cultivated outside forest areas. These are *bahera*, *bel*, *kalmegh*, *thankuni* (*Centella asiatica*), *brahmi* (*Bacopa Monnieri*), *ekangi* (*kaempferia galang*), *manjishtha* (*Rubia cordifolia*), *soti* (*Kurkuma zedoaria*), *latakushmi* and current annual trade of these products is of the order Rs 110 lakh. Shortfall in last financial year in *Thankuni*, *Nir Brahmi*, *Ekangi*, *Manjishtha* and *Soti* production was almost 50 percent, 20 percent, 20 percent, 25 percent and 25 percent respectively. Cultivation of these medicinal plants is affected due to excessive use of pesticides. *Nir Brahmi* is cultivated in the fields in between two cropping seasons. It is also cultivated in wet/waste land. Use of pesticide in the field for the major crops (rice) has greatly affected the yield of *Nir Brahmi*. *Manjishtha* is found in the few places in Darjeeling (West Bengal). *Ekangi* is cultivated in Malda and Murshidabad districts of West Bengal. According to them, *Ekangi* cultivation in West Bengal has largely increased in recent years and is being traded upto 1000 tons, which is generating big revenue in the market. *Ekangi* is exported from Bengal to Sri Lanka, China and other South-East Asian countries. During field visit any major source from where such huge quantity of *Ekangi* is collected and marketed could not be noticed and the same require further probing.

8.5 Collection of data from Traders

A meeting of the main traders of medicinal plants of West Medinipur was organized with the support of the Divisional Forest Officer to get an estimate of the total volume and value of trade⁷⁷. They had expressed that the medicinal plants are purchased from the Forest Protection Committees and then the plant parts are cut and processed. The leaves, barks, roots are sundried and then kept in the godown. They have to maintain registers of stock as these are forest produce and the local Forest Department Officers inspect the Registers intermittently. The stock is sold in Posta of Burrabazar in Kolkata . The main impediment of trade in medicinal plants is that the demand is irregular. In some year there exists demand for a particular plant, but in the subsequent year(s) demand for the said plant may not be there. Forest Department has a manufacturing plant to prepare ayurvedic formulations using medicinal plants collected by the Forest Department and these are sold in the name and style of 'BANAJA'. The quantity of produce collected by the only manufacturing unit is, however, very little. Consumption of Medicinal Plants (in kg) by different Manufacturing Unit in West Bengal is given in Annexure 8.1.

8.6 Export of Medicinal Plants

Export of medicinal plants requires lot of licensing and certificate from the Forest Department that these are not grown within forest. The study team could locate only one unit in Jalpaiguri district, called Anirban Herbal, which cultivates *Serpentina* and export the same. That requires Importer Exporter Code (IEC) from the office of the Director General



Sarpagandha roots for export

Foreign Trade. The unit has also obtained certificates for maintaining standards as per the National Programme for Organic Production (NPOP), India and the National Organic Programme (NPO) Technical Standards (USA). The unit cultivates serpentine roots (*Rauwolfia* spp.), also known as *Sarpagandha*, on 0.88 Ha and exports around 1.8 MT of roots every year. The stringent requirement for export has prevented more entrepreneurs to establish such units and probably there is no other such producing unit in the state, which exports organic medicinal plants .

⁷⁷Sri Asok Kumar Dan, Sri Paban Kumar Mallik, Sri Rabindra Nath Dan and Sri Gunadhar Dutta are the leading traders of West Midnapore, with whom the team interacted.

8.7 Total Trade of Medicinal Plants

Total value of medicinal plants which are traded in the state has been estimated by the number of truck loads of medicinal plants which are brought for trade. Commonly traded medicinal plants of the state are Sarpagandha (*Rauvolfia serpentina*), Aswagandha (*Withania somnifera*), Chirata (*Swertia chirayita*), Kalmegh (*Andrographis paniculata*), Haritaki (*Terminalia chebula*), Bahera (*Terminalia bellirica*), Pippal (*Ficus religiosa*), Gulancha (*Gulancha tinospora*), Shatamuli (*Asparagus racemosus*), Musraj, Chilauni, Basakia (*Justicia adhatoda*), Bel, Neem (*Azadirachta indica*), Arjun (*Terminalia arjuna*), etc. The trucks are occasionally loaded with various types of medicinal plants. Average value of one truck load of medicinal plants generally varies from Rs 8.0 lakh to Rs 12.0 lakh. It is estimated, after discussion with traders of medicinal plants as well as participants in various meetings with members of FPCs and key informants of North Bengal and South Bengal that around 500 trucks loads of medicinal plants are traded annually. The traded value is estimated to be around Rs. 55 crore per annum. Some of the medicinal plants are reported to be traded illegally, which cannot be estimated. Actual trade of medicinal plants may be even higher.

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CHAPTER IX

BIO-RESOURCE BASED INDUSTRIES

9.1 Overview

Bio-resources have an important role in the ecology as well as in the economy. Such resources are used as raw material and are also exported in its original form with or without some basic preservation to earn foreign exchange for the state as well as for the country. Often these get processed resulting in change in form and the new product earns more value and can be put to better use. A better understanding of the bio-resources used for industrial purposes and related value addition is helpful in taking measures for sustainable use of the resources and putting in place appropriate Access and Benefit Sharing (ABS) mechanism for fair and equitable sharing of the gains made in using the bio-resources with those associated with conserving and supplying the same.

Capturing the entire chain of value addition and to quantify the same is very complex. This may be illustrated for the case of paddy to have an idea of the complexity. The first stage of processed entity from paddy is rice. Husk and bran are the most important byproducts of converting paddy into rice. These are then used to produce rice bran oil and de-oiled rice cake. There is substantial value addition by producing rice bran oil that takes place in rice mills followed by oil mills (solvent extraction and refining plants). There are many other products that are made from rice like puffed rice, snacks, sweets and savouries. Working out the value chain for the bio-resources used for industries in the state has been limited within the purview of the present study. However, because of the importance of the matter, some analysis of a few important bio-resources like food processing, leather, jute etc, which are transformed to other product through industrial processes for value addition, has been presented in this chapter along with an inventory of companies and units in these sectors. These companies provide employment to a large section of population with different skill levels.

9.2 Industry Sector - Food Processing

Food processing is the transformation of raw ingredients into food, or of food into other forms. Food processing typically takes clean, harvested crops or butchered animal products and uses these to produce attractive, marketable and often long shelf-life food products. The processed food industry is divided into the following broad segments:

- **Primary processed food** - which includes products such as fruits and vegetables, packed milk, unbranded edible oil, milled rice, flour, tea, coffee, pulses, spices, and salt, sold in packed or non-packed forms.
- **Value-added processed food** - which includes products such as processed fruits and vegetables, juices, jams, pickles, squashes, processed dairy products (ghee, paneer, cheese, and butter), processed poultry, and processed marine products, confectionary, chocolates, alcoholic beverages etc.

Across the world, food-processing is considered to be a sunrise sector because of its large potential for growth and socio-economic impact. Availability of raw materials, changing lifestyles and appropriate fiscal policies have given a considerable push to the industry's growth. This sector serves as a vital link between the agriculture and industrial segments of the economy.

In West Bengal, Food processing is one of the most important bio-resource based industries due to high availability of raw material (like grains, fruits, vegetables, fish etc.) and manpower. Improved technology can be a catalyst in transforming and taking this industry to the next level. There are many organized units and companies in food processing industry. At the same time, there is a large unorganized sector. Some salient points of this sector are-

- In West Bengal, agriculture is the chief occupation of the people. It contributed 18.0 per cent to the state's GSDP in 2012-13.
- Rice is the principal food crop of West Bengal. The state is the largest producer of rice in India. In 2012-13, the total production of clean rice was around 15.0 million tonnes. Other major food crops in the state include potato, jute, sugarcane, coconut and tea.
- 2nd largest producer in potato and litchi; largest producer of pineapple.
- Leading manufacturer of tea.
- Leading exporter of flowers.
- Largest brackish-water resources for shrimp farming and a leading exporter of shrimps from India.
- Medium, Small & Micro Enterprises (MSME) sector contributes about Rs. 4,600 crores of trade in Food Processing. There are 1900 units with annual turnover of more than Rs. 10 lakhs in West Bengal.
- There are 2.9 lakh people working in Food Processing industry in West Bengal.

- There are about 1,018 rice mills in the state (of which about 300 rice mills are closed).
- Edward Food Research and Analysis Centre Limited, a first-of-its-kind food testing, research & analysis laboratory in Eastern India has been set up at Barasat.

Names of the big companies having manufacturing units in Food Processing in Howrah are given in Table 9.1.

Table 9.1: List of Food Processing Companies in Howrah	
Name of the Company	Product
Frito Lays India, Sankrail	Potato Chips
Epic Agro Pvt. Ltd	Biscuits
SAJ Industries Limited, Uluberia	Cakes & Biscuits
Ganesh Wheat Products, Sankrail	Wheat Items
Thacker Dairy, Andul	Milk Products
MPS Food Products	Spices
Rollick Ice Cream	Ice cream
Monginis	Bread

Names of the big companies having manufacturing units in Food Processing in South 24 Parganas are given in Table 9.2.

Table 9.2: List of Food Processing Companies in Howrah	
Name of the Company	Product
Dabur Pvt Ltd	Chyawanprash
Bharat Margarine Ltd	Bakery, Refined veg. oil
Pureline Foods	Milk based product
Kwality Ice cream (India) Ltd,	Ice cream
Britannia Industries Ltd, Taratala	Biscuits
Monorch (India) Pvt. Ltd	Biscuits
Swadist biscuits Ltd	Milk products
Eastern Bakeries Pvt Ltd	Cakes & Pastries
IFB Agro Industries	Fish Processing
RASOI LIMITED	Hydrogenated oils & vanaspati ghee,
Pepsico India Holding Pvt. Ltd.	RTs Beverages
Raja Udyog Pvt. Ltd.	Biscuits
Gem Refineries P Ltd.	Veg oil

9.3 Industry Sector: Rice based products – Rice Bran Oil

The installed capacity of Rice bran oil in West Bengal is about 318,000 MT annually. However, due to inadequate demand of rice bran oil as edible oil, the production stands at about 140,000 – 145,000 MT annually. Estimated tradable value of rice bran oil is Rs. 1,576 crores currently.

Solvent Extraction plants in West Bengal that produces rice bran oil are primarily located in Burdwan district. There are also a few plants located in Hooghly, Birbhum, West Medinipur and Uttar Dinajpur. Most of them sell the oil to bigger companies as they consider packaging and marketing cost to be prohibitively high for them to sell under their own brand names.

Rice bran oil is very nutritious and healthy. If it is adequately promoted as healthy edible oil, its potential tradable value can go as high as 3,260 crores annually.

A few big names in rice bran oil are -

- Sethia Oils
- Emami Bio Tech
- Bharat Margarine Ltd.
- Bansal Oil Extraction Pvt. Ltd
- Vinda Basini Oils (P) Ltd.
- Kalyani Solvex Pvt. Ltd
- Ruchi Soya industries

A list of solvent plants and refineries are given in Annexure 9.1

A sector wise summary of Food processing industry is given below -

Segment	Opportunity	Market Structure	Key Players
Fruits and Vegetables	India is the world's 2nd largest producer of fruits and vegetables. It is expected that by 2025, the processing will grow to 25% from current 10%. WB is 1st in vegetable and 7th in fruit production in the country.	Market is divided between organized and unorganized participants. Organized sectors mostly produce juices and pulp products; while unorganized sectors have a foothold in traditional areas like pickles, sauces, squashes etc.	Mostly MSMEs. Big companies include Frito Lays, Pailan Food Products, Haldiram, Britannia Industries, Dabur India.
Milk and Dairy	India is the largest producer of milk and milk products. WB produces about 4% of milk of the country.	Market is dominated by unorganized sector. There are a few national and local companies here.	National players like Amul and Mother Dairy; local players like Metro, Amrit, Thacker Dairy, Howrah Dairy Farm and milk co-operatives and unions like

Segment	Opportunity	Market Structure	Key Players
			Kagshabati, Haringhata etc. Hillman Milk Foods Pvt. Ltd makes paneer, curd etc.
Grains and Cereals	WB is the largest rice producer of India.	Market is controlled by unorganized sector.	There are many rice mills in the state (1018 mills) for converting paddy into rice. Cornflakes makers –H.R. Food products, Swastik, Tai Industries Ltd., Herald Food and Commodities etc.
Oilseeds and oil	Tradable value of oilseeds is 4,749 crores. Price goes up significantly when sold as oil after value addition (rice bran oil, mustard oil, sesame oil etc.).	Market is dominated by smaller companies and mills (MSME).	There are many oil mills in MSME sector that produce mustard oil and sesame oil. Major oil manufacturers - Sethia Oils, Emami Bio Tech, Ruchi Soya etc.
Consumer Food	Ready to eat packaged foods – meals, snacks, sweets, bakery items etc. Huge opportunity to boost this segment.	Market is dominated by unorganized sector.	Mainly small groups. Few big players like ITC, Haldiram, Anmol biscuits with manufacturing units in the state.
Processed Meat	Processing units in this segment is very few in WB. Hence there is a huge opportunity for growth.	There are not many companies in this segment – organized or unorganized.	Key groups –Keventers, Arambag Hatcheries etc.
Fish/Dry Fish	Foreign Exchange Earnings from export of marine fish is over Rs. 700 crores. WB is the leading shrimp exporter and is in the 4th position in export of sea food products out of which 90% are shrimp.	Market is dominated by unorganized sector. There are a few large players here involved in processing.	Key groups - BenFish, IFB and Tribeni.

Annexure 9.2 has the list of large companies in Food Processing Industry.

A few other sectors which are small in terms of value but large in terms of livelihood potential are covered below.

9.4 Processed Fish

Fish is processed and sold or exported in the following forms:

- Processed and Canned Fish, Frozen (IQF) shrimps, canned shrimps/prawns and lobsters
- Dried Fish
- Fish paste & fish pickle

There are around 52 M&SSE operating out of Kolkata, Howrah, 24 Parganas North & 24 Parganas South of which the major players are IFB Agro Industries limited, Unitriveni Overseas, Nezami Rekha Seafoods Pvt. Ltd, Coreline Exports, Calcutta Sea foods Pvt. Ltd, Elque & Co. Bela Park are a few to name ⁸⁰. The units are approved by the Export Inspection Council. Out of the 21 fish processing units approved in the eastern region 15 are located in West Bengal. The first ever sea food processing zone was opened in the state of West Bengal in Chakgaria 24 Parganas (South). This unit has 10 fully export oriented operational units. There are fish processing unit at Junput and dry fish farm at Junput and Haripur.

In West Bengal processed fishes are available in two forms:-

Frozen fish which are mainly prepared for export purpose

- More than 90 per cent contributed by shrimp
- 10 per cent contributed by pomfret, cat fish and hilsa

Ready to eat, ready to cook & ready to fry items are available from ----

1. **BENFISH:** It has mobile and stationary counters to sell various ready to eat products.

However it only depends on markets of Kolkata.

2. **IFB:** The Company with its different marketing strategy from BENFISH is able to serve greater market. It prepared ready to cook products and these products are available in sub-urban areas also. It supplies product to local restaurant, interested grocery shops with frozen facilities. However the market is limited by geographical boundary of south Bengal.
3. **TRIVENI:** The Company supplies variety of fishes to hotels and restaurants on contract basis. Their products are not likely available in stores. They prepare itemized value added fish product for specific consumption.

As per available information, presently 31 numbers of fish processing factories are in operation with daily processing capacity of 473 MT per day

9.5 Ayurveda and Unani Medicine Producing Units

The state has large number of units, big and small, producing ayurvedic and Unani medicines. There are 219 Ayurvedic medicine manufacturers and

⁸⁰Source: Food Processing Industries Survey, 2007 West Bengal

6 Unani medicine manufacturers in the state the list of which is given in Annexure 9.3. Some of the units also manufacture cosmetics.

9.6 Industry Sector: Jute

West Bengal is the pioneer and till now most important state in the country for manufacturing of jute textiles. First jute mill was set up in 1859 at Rishra near Kolkata. Since then a number of mills were established in and around Kolkata and the production was increased rapidly. India became world leader in the production of jute textiles. There was a decline after partition of the country since the jute growing area went mostly to present Bangladesh. There has been further decline in total number of mills because several mills became non functional and got closed and production of the running mills has remained more or less stagnant during last 20 years. At present there are a total of 84 jute mills in India, of which 64 are located in West Bengal. District-wise names of jute mills in West Bengal are given in Annexure 9.4.

Location pattern - Jute textile industry in West Bengal is predominantly concentrated on the banks of river Hooghly near Kolkata. Major centers of production are Naihati, Bhatpara, Titagarh and Kamarhati in North 24 Parganas district; Bansberia, Baidyabati, Rishra and Serampore in Hooghly district; Salkia and Uluberia in Howrah district and Budge Budge in South 24 Parganas district.

West Bengal holds the first position in India in terms of production volume of Jute and Mesta by contributing 75 percent of total country's production. The total production of jute goods in India was ~ 24 lakhs MT (April to March 2013-2014), of which, West Bengal produced ~19 lakhs MT, which is about 77 percent of the total production in India. The main products is hessian for making gunny bags and the more value added products are floor coverings, hand bags and shopping bags which has good export market. Internal consumption of gunny bag is 8.91 lakh MT, the value of which is Rs 2406.20 crore. Total export of jute products is shown in Table 9.1.

Table 9.1: Export Data		
Area	Quantity ('000 MT)	Value (Rs. Crores)
India	160.75	1992.0
West Bengal	124.42	1541.8

9.7 Industry Sector: Leather

Cheap raw material, abundant water supply, skilled labours and low cost

of operations are the important factors that make West Bengal an attractive destination for leather based industries. The state has about 500 tanneries; majority being tiny and small, with a capacity of processing around 800 tonnes of raw material per day. Kolkata is the second most important tanning centre of India; accounting for an estimated 22-25 per cent of the country's tanning activity.

In Kolkata there are three important clusters, viz, Tangra (267 units), Tiljala (223 units) and Topsia (48 units) as shown in Table 9.2. In these three belts many leather factories manufacture leather products for domestic and international fashion labels including Couch, Debhams, House of Frazers, Marks & Spencers and Gucci.

No. of Tanneries	Capacity	No. of Units	Outsourcing Brands
500	800 Tonnes per day	Tangra -267 Tiljala – 223 Topsia - 48	Couch, Bebhams, House of Frazers, Gucci, Marks & Spencers

The state's export from Leather industry constitutes to 55 percent of India's total leather goods exports. Total revenue of Rs. 2,300 crore was generated from leather and leather goods exports from Kolkata in 2010. West Bengal is the largest Indian exporter of leather goods and leather gloves, which comprise 53.36 percent and 89.44 percent respectively of all India exports. As of 2010, the state had around 529 manufacturing units producing leather and leather goods.

Total Good's Export (%)	Revenue	Leather Gloves Export (%)
55	Rs. 2300 Crores	90

9.7.1 State-of-the-art Infrastructure

The Government of West Bengal has set up a state-of-the-art integrated leather complex on the eastern fringe of Kolkata spreading over 1100 acres, where a large number of tanneries located earlier within the city precincts have

shifted and new investment interest has been generated. West Bengal Leather Industrial Development Corporation provides assistance to small & micro scale industries of the state for the development and marketing of leather goods.

Annexure 9.5 provides a list of leather companies in West Bengal. The leading names in the leather sector with manufacturing units in West Bengal include:

- Bata India Ltd, one of the leading and the most popular shoe brands in the country. It sells around 60 million shoes and exports around 3 million footwear each year.
- Khadim Group is another prominent player in the footwear industry in West Bengal and has 183 franchised outlets across the country.

Products made from leather (Illustrative List)

- Leather Shoes
- Leather handbags, wallets, belts and key holders
- Leather garments and clothing
- Manufacturing of machines to produce leather products
- Leather footwear components
- Leather Harness & Saddler
- Finished leather
- Leather furniture
- Leather Fashion Jewellery
- Leather chemicals
- Leather component and luggage bags

9.8 Industry Sector: Plywood

There are 10 plywood units with annual turnover of Rs. 10 crores located in North 24 Parganas. These are primarily located in Bongaon, Habra II, Baduria and Amdanga blocks. They manufacture ply wood, ply board and veneer sheet. There are some more factories in the districts of Jalpaiguri, Alipurduar and Siliguri. List of the plywood industries is in Annexure 9.6.

9.9 Industry Sector: Cane & Bamboo

Cane: There are 237 units (MSME) registered in Jalpaiguri district engaged

in cane and related activities and with reported installed capacity to produce goods worth Rs. 56 crores as reported by the DICs. There is one such unit located in West Medinipur (Pingla).

Bamboo: The reports from the DICs also show that about 140 MSME units with reported installed capacity of producing goods worth Rs. 9 crores are there in Jalpaiguri district which are engaged in bamboo based activities like bamboo basket, handicrafts, crates and related bamboo works. There are 8 MSME units in Hooghly, 2 units in Uttar Dinajpur and 260 units in West Medinipur (turnover Rs. 2.09 crores). There are a few units in Mohanpur, West Medinipur and Jalpaiguri that work in both cane and bamboo products.

CHAPTER X

WAY FORWARD

10.1 In-depth Understanding of the Bio-resources

Knowing the tradable bioresources of the state is the need of the hour for conservation, better utilization and giving a check on overexploitation of those for the holistic development of the state, as it provides livelihoods for the millions, especially the marginalized section of the society.

This work has turned out to be the first initiative to get an overview of the tradable bio-resources occurring within the state. The study revealed the tremendous potential the bioresources have in village economy and its myriad roles in understanding the richness of the diversity that the various agro-climatic zone of the state offer. Conservation and sustainable use of those resources and giving fair and equitable share of the gains from exploiting the resources to those engaged in gathering or cultivating the bio-resources is the only way to sustain these resources in perpetuity. Overexploitation and destructive harvest practices of bio-resources that have much importance in promoting livelihoods and are consequently threatened requires more detailed in depth understanding of the issues specific to these species. There is need for conducting further specific studies related to production, harvesting, marketing and trade of at least a few selected bio-resources of the state to know the opportunities and threats associated. A value chain analysis would reveal, how a bioresource is reaching to the ultimate consumer through different media, how the different players are contributing in its journey, what probable interventions needed to augment the efficacy of this path, which would ultimately provide more benefits to the community. In the aftermath of the study, the authors have computed business value with respect to following 21 bioresources clearly revealing the hidden potential of these resources and its contribution to the economy. It is an eye opener vis-à-vis the under-rated status of these resources.

Table 10.1: Species with High ABS Potential for Further Studies

Sl. No.	Name of the Species	Value (in Rs crore)
1.	Rice	34780.35
2.	Potato	15106.80
3.	Milk	13443.00
4.	Shrimp (all types)	8215.00

Sl. No.	Name of the Species	Value (in Rs crore)
5.	Jute	5028.95
6.	Tomato	3376.80
7.	Mango	2940.00
8.	Timber	2912.56
9.	Mustard	1858.17
10.	Sesame	1611.36
11.	Wheat	1550.00
12.	Red pepper	1170.00
13.	Pineapple	930.00
14.	Guava	828.00
15.	Ginger	814.30
16.	Tobacco	510.00
17.	Turmeric	394.00
18.	Maize	150.00
20.	Hide and skin	60.00
21.	Medicinal plants	55.00
Total		34780.35

10.2 Regular Data Collection from All Sources

There is need for regular collection of data on bio-resources for better understanding of various aspects of production, trade, management, conservation of the resources and contribution of specific resources to the economy. Further, industrial processing of the resources for value addition as well as allowing more diversified uses requires collecting data from the industries. Most of the bio-resources being captured or cultivated are in the unorganized sectors scattered over wide area and there is hardly any mechanism for capturing data at any level. Most of these resources are non-taxable and does not come under the purview to document trade of any authority for keeping record of the same. Some of the government departments who maintain data on promotion or

export of bio-resources are also not concerned with the place of origin of the material, which makes it difficult to have geographic area wise analysis. There is need for sensitizing the government agencies of both the centre and the state governments on keeping records of source of the materials they are dealing with and easier availability of the data in future. The market authorities, trading bodies and manufacturers should also be encouraged to maintain data for use by any public authority for proper understanding in production, trade or other aspects of bio-resources for which they need to be oriented for taking up those not under any compulsion but as their responsibility as citizen or corporate entities.

10.3 Capturing Data by State Government Offices

Till now most of the data is available in various offices of the state governments, which has been the source for many data used in this report. There is scope for improving their data base keeping in mind the issues relevant for conserving and managing bio-diversity. In many meetings at the district level in which District Magistrate and other senior officials participated were very enthusiastic about identifying the bio-resources of the district and documenting those. Their involvement in conservation and management of bio-resources can be crucial. The district level and lower level field officials as well as the departments need to be sensitized on different aspects of the Biological Diversity Act, 2002 and Rules, 2004 to appreciate their roles including in proper documentation and sharing of data available with them with the West Bengal Bio-diversity Board. At present data is captured by the district level offices only for those which form part of a regular reporting mechanism. These are generally the major bio-resources or which have some programme related reporting requirement. They need to be sensitized in this respect to document all resources they are associated with even if such data is not regularly asked for by the government and to improve the quality of the data. The line department officials present at local bodies especially at Gram Panchayat (Village Panchayat) and Panchayat Samity (Block or Taluka) level may be capacitated for this particular job and be involved during preparing the local bioresource database.

10.4 Sensitizing the Local Governments

Need for community ownership in conservation and exploitation of bio-resources is generally well understood but this can be made operational only with appropriate institutional mechanism. The Panchayats can play an important role in this respect as already identified under the said Act. The Biodiversity Management Committees (BMCs) needs to be strengthened and there should be effort on generating awareness at local level. BMC members should be oriented and strengthened to generate required data on bioresources on a regular basis. Unlike the other different Acts of the country, the Biological Diversity Act, 2002 and Rules, 2004 has given enormous power as well as responsibility to the community. It is the local body i.e. Biodiversity Management Committee who will decide how the bioresources of their jurisdiction can be sustainably utilized. And for managing the bioresources of the locality, a judicious planning is needed. In many of the states like West Bengal, the local self governments are capacitated for holistic local area planning. Those plan should incorporate bioresource component thoroughly and Local Self Government can take a lead in managing its own bioresources aiming the enhancement of livelihoods of the commons who are dependent on the bioresources in many ways.

10.5 Community Ownership and Involvement in Managing Bio-resources

It is ultimately the community who has the highest stake in proper conservation and sustainable exploitation of the bio-resources. The community based organization and the villagers in general need to be more sensitized to be able to appreciate the danger of dwindling bio-diversity and sustainable use of available resources. The team came across nature clubs and similar organization that are devoted to the cause of conserving the nature and partnership with such civil society organization will go a long way in management of bio-resources and strengthening community involvement in that process. Self Help Groups (SHGs), Framers' Clubs, Different sector based Producer Companies also can help in this regard. The local level Non Governemnet Organisations (NGOs) who work in the sector of Natural Resource Management & Livelihood Promotion issues may take lead for sensitizing the community and building their capacity.

ANNEXURE

Trade Bodies, Traders and Industrepresentatives met by the Study Team

Annexur 1.1

1. A.P.Deys Hatchery, Hooghly
2. Alipurduar Agriculture social Welfare Foundation
3. Alipurduar Court SanglagnaByabsayeeKalyanSamiti
4. AlipurduarManabikMukh
5. Alipurduar Nature Club
6. APD Avivabok
7. APD Chamber of Commerce & Industries
8. APD Nabarup Social Welfare Foundation
9. Aqua Tercaion by Exller Health Care Pvt. Ltd, Hooghly
10. Ayush Mushroom, Jalpaiguri
11. Baishali Fish & Feed, Bankura
12. Bankura Agro Processing Pvt. Ltd. (Manufacturing andTrading Sesame oil)
13. Bankura District Chamber of Commerce
14. BarasatMaataryAratdarKalanay, North 24 Parganas
15. BarobishaByabsaeSamiti
16. Bazaar samiti in Mallickghat Flower Market, Byabsayeesamiti Task Force in SealdahKole market, Kolkata etc.
17. Bengal Research & Chemical Laboratory, Howrah
18. Bharati Poultry, Bankura
19. Bina Saw Mill, Jalpaiguri
20. BirparaMarchants Welfare Association
21. BMC, Kalchini
22. BMC, Siliguri
23. ByabsayeeSamiti, Birbhum
24. CADC, Falakata Project, Jateswar
25. Cargill India Pvt. Ltd

26. Central Institute of Fresh Water Aquaculture, Nadia
27. Centre for the Development of Human Initiatives
28. Comprehensive Area Development Corporation, PurbaMedinipur
29. DakshinDinajpur Chamber of Commerce
30. DAMRI (NGO)
31. Darjeeling Chamber of Commerce
32. Darjeeling Wings Welfare Organisation
33. DCF&S, Darjeeling
34. Duck Feathers Association, Howrah
35. Economs Handicraft, Howrah
36. Exller health Care Pvt. Ltd
37. FalakataByabsayeeSamiti
38. Farmers club, North 24 Parganas
39. Financial Escort Service, Uttar Dinajpur
40. Fish Farmar, Hoogly
41. FisheryMan, Hasnabad Block, North 24 Parganas
42. Flower Cold Storage, PurbaMedinipur
43. GJ Poultry, Nadia
44. Glorious Agro Ind (Poultry), Bankura
45. GothraKhishiUnnayanSamiti, Nadia
46. Haldibari Regulated Market Committee
47. Hari Chand Mini Rice Mill, Jalpaiguri
48. Haringhata Meat Plant, Nadia
49. Hooghly Vegetable Growers Production Company Ltd
50. Indian Institute of Packaging
51. Indramani Mini rice Mill, Jalpaiguri
52. IX, ZARS, Krishnanagar, Nadia
53. Joy Bhavani Rice & Oil Mill, PaschimMedinipur
54. K.G.N Enterprise, North 24 Parganas

55. K.G.N Fish Suppliers, North 24 Parganas
56. Kishan Milk Union, Nadia
57. Kolaghat Flower Market, PurbaMedinipur
58. Koyel Tourism, B.M.O
59. KrishiSamobaysamiti, East medinipur
60. Krishna Horticulture, Jalpaiguri
61. Krishnanagar Poultry Farm, Nadia
62. LAMPS, Bankura
63. Layer & Broiler Farmar, A.P.Deys Hatchery, Hoogly
64. Livestock Meat plant, Haringhata Farm, Nadia
65. M/S Joy Bhavani Rice & Oil Mill, West Medinipur
66. Malda Industrial Chamber of Commerce, Malda
67. Mat Artisian of Narayani&YuvaUnnayanSanstha, Paschim Medinipur
68. Nadia District Chamber of Commerce & Industries
69. North bengalAgriHorti Laboratory, Jalpaiguri
70. P.M.F.W Association, PurbaMedinipur
71. PanishyaolaSamabayKrishiUnnayanSamity, Hooghly
72. Pat ShilpoSamabaySamity, P.L.T.D, Coochbehar
73. Patna bazar FP Group, West Medinipur
74. Phytochemical Complex, WBPPDC, Jalpaiguri
75. Pragi Edible Oil prossecing , West Medinipur
76. Prantik, Jute Product Trader, Howrah
77. Prince Food Products, Jalpaiguri
78. Rabbit Farmer
79. Raipur, DRMS Lamps, Bankura
80. RanaghatNawpara Social Welfare Society, Nadia
81. Ranaghat Poultry Farm, Nadia
82. Renewable Energy Development Authority, Murshidabad

83. SHG, Mandarpur, East Medinipur
84. Sara Bangla Phool Chasi o Phool ByabsayeeSamiti, Purba Medinipur
85. Sarada Starch and Chemicals Pvt. Ltd.
86. Serampur Bio Vision, Hooghly
87. Siliguri Social Forestry
88. SNCADA (NGO)
89. Sonavets PVT. LTD, Jalpaiguri
90. State Poultry Farm Krisnanagar
91. Swastika Jute, Jute Product Trader, Howrah
92. Trishna Food Products, PaschimMedinipur
93. TufangunjAnwasha Welfare Society, Tfg. Cob, Coochbehar
94. Uttar BangaTeraiMahilaSamiti (UBTMS), Jalpaiguri
95. V.S.K.V.S, Hoogly
96. W.B.P.F Farmer, Hoogly
97. West Bengal Khadi& Village Industry Board
98. West Bengal Poultry Federation
99. Zoom Agro Input, Hooghly
100. ZARS, Krishnanagar

Other associations/industry bodies met

- Indian Leather Product Association
- Council for Leather Export
- Agricultural and Processed Food Products Export Development Authority (APEDA)
- Marine and Processed Food Products Export Development Authority (MPEDA)
- Bureau of Applied Economics and Statistics
- Directorate General of Commercial Intelligence and Statistics (DGCI&S)
- WB Poultry Federation
- Tannery Association

- State Medicinal Plant Board
- Tea Board
- Office of the Jute Commissioner
- Joint Director, Agri-Marketing
- State Pollution Control Board

Annexur 1.2

Template for collecting Report

1. Name of the bio-resource (common name)	2. Category (Agri/Horti/ Fishery etc.)	3. Place (Sources, where available)	4. Natural or cultivated	5. Ra (y/n)

6. processed (name), if applicable	7.Used as Factory input (y/n)	8. Uses (cosmetics/ medicine/ leather/food etc.	9. Production volume	10. Percentage exported out of West Bengal from district

11. Which markets/ haats sold in	12. Tradable Volume	13. Rate per Units (Rs. per kg or lt or ton)	14. Total Amout(rupees/ unit/annum)	15. Contact of trader

Annexure 1.3**List of Markets visited**

<p>Bankura:</p> <ol style="list-style-type: none"> 1. Chokbazar 2. Borro Bozar 3. Bhagwanpur More Bazar 4. Jhanti Pahari Chalk Bazar 5. Ola Dubrajpur Sabji Market 6. Bishnupur Chawk Bazar 7. Barjora Market 	<p>Burdwan:</p> <ol style="list-style-type: none"> 1. Katwa Bazar 2. Bonkapashi (Shola Work) 3. Bhatar Market 4. Antpara Bazar 5. Raina Hat 6. Boro Bazar, Asansol
<p>Hooghly:</p> <ol style="list-style-type: none"> 1. Shibaichandi Vegetable Market 2. Sheorafuly Vegetable Market 3. Arambagh Bazar 4. Tarakeshwar Amtala Bazar 5. Singur Market 6. Sheorafuli fish market 	<p>Howrah:</p> <ol style="list-style-type: none"> 1. Sankrail (coconut) 2. Domjur (ornamental fish) 3. Uluberia (dry fish) 4. Madhya Howrah Kalibabur Bazar 5. Baksara Rail Bazar 6. Benapur Bakhantala 7. Betaitala Bazar
<p>Jalpaiguri:</p> <ol style="list-style-type: none"> 1. Turturi Khanda, Kumargram 2. Dinbajaar 3. Meteli 4. Lataguri 5. Mainaguri 6. Damdim 7. Odlabari 8. Malbazar 9. Falakata (pig market) 	<p>Kolkata:</p> <ol style="list-style-type: none"> 1. Medicinal plant market in Cotton Street 2. Mallick Ghat Flower Market, 3. Mechua Fruit Patty 4. Rajakatra Chhana market, Burrabazaar 5. Green coconut and Sugercane market in College Street 6. Sealdah Kole Market 7. Galib St (ornamental fish) 8. Chhatubabur bazar 9. Lake Market

<p>Malda:</p> <ol style="list-style-type: none"> 1. Mongolbari 2. Gobra Hat 3. Achinatala Hat 4. Pakuahat 5. Chittaranjan Market 6. Netaji Market 	<p>Nadia:</p> <ol style="list-style-type: none"> 1. Bethuadahari 2. Kalyani 3. Karimpore 4. Singerhaat 5. Nokari 6. Ranaghat 7. Purnanagar 8. Dhubulia 9. Chakdah hat(vegetable) 10. Simurali hat(vegetable)
<p>North 24 Parganas:</p> <ol style="list-style-type: none"> 1. Gadamara 2. Barasat (marine fish auction mkt) 3. Patipukur (fish) 4. Dattapukur Hat 5. Akunji Hat 6. Prasannaganj Bazar 7. Nonachandanpukur Bazar 8. Baduria market (for jute) 9. Nilganj haat (near Barasat) 10. Bagjola hat 11. Amodpur hat (Bongaon) 	<p>East Medinipur:</p> <ol style="list-style-type: none"> 1. Egra (dry fish) 2. Digha 3. Ramnagar (contai) 4. Choddo Mile 5. Junput 6. Jalda 7. Ajanbari hat (Khejuri) 8. Byabarta hat (Mahishadal I) 9. Boitala hat (Patashpur)
<p>South 24 Parganas:</p> <ol style="list-style-type: none"> 1. Baruipur fruit market 2. Kakdwip (fish) 3. Namkhana (fish) 4. Diamond Harbour auction market (fish) 	<p>Darjeeling:</p> <ol style="list-style-type: none"> 1. Siliguri Gurung Basti (broomstick) 2. Gorubathan 3. Jhalang 4. Chokbazar

<ol style="list-style-type: none"> 5. Canning (fish) 6. Malancha 7. Amtala market 8. Raidighi 9. Sorisha 	<ol style="list-style-type: none"> 5. Kalingpong Market 6. Hat Bazar, Darjeeling
<p>North Dinajpur:</p> <ol style="list-style-type: none"> 1. Kamalabari, Hemtabad 2. Baroduary, Raiganj (Jute market) 3. Bilaspur haat, karandihi 4. Bhaalai haat (Kaliaganj block) 5. Bishnupur haat (Hemtabad) 6. Panjipara haat (animal skin) 7. Rupahar haat (jute market) 	<p>South Dinajpur:</p> <ol style="list-style-type: none"> 1. Parpatiram Hat 2. Kamarpara Hat 3. Bhikahar Hat 4. Rampur Hat 5. Daral Hat 6. Bajitpur hat (Gangarampur) 7. Laskar haat, Tapan
<p>Murshidabad:</p> <ol style="list-style-type: none"> 1. Godhanpara Hat 2. Bhaduria Para 3. Huda - Herampur Hat 4. Fatehpur Sabji Bazar 5. Suparigola Hat 6. Beldanga hat (vegetable, green chilli) 	<p>West Medinipur:</p> <ol style="list-style-type: none"> 1. Kharagpur Market(Gol Bazar) 2. Kshirpai Hat 3. Kshirpai Municipal Market 4. Jenkapur Hat 5. Gopiballavpur hat (Sabui grass) 6. Daspur hat (Vegetable) 7. Khukurdaha hat (Vegetable) 8. Keshiery hat (sugar cane and molasses)

<p>Coochbehar:</p> <ol style="list-style-type: none"> 1. Mathabhanga Bazar 2. Sahebganj Hat 3. Nazir Hat 4. Chowra Hat 5. Kadamtala Hat 6. Changrabandha hat (tobacco) 7. Haldibari hat (tobacco) 8. Toofangange hat 	<p>Birbhum:</p> <ol style="list-style-type: none"> 1. Rajnagar Hat 2. Tantipara Hat 3. Panrui Bazar 4. Bishnupur Hat 5. Batikar Hat 6. Bahir hat, Bolpur 7. Amodpur bazaar (for molasses) 8. Paikar Cattle hat (Murarai-II)
<p>Purulia:</p> <ol style="list-style-type: none"> 1. Chatanipara 2. Purulia Boro Hat 3. Dabha Hat 4. Nowahatu Hat 5. Torang Hat 6. Kotshila 	<p>Alipuduar</p> <ol style="list-style-type: none"> 1. Alipurduar 2. Kamakshyaguri 3. Moynabari 4. Hamiltongunj

Annexure 3.1**List of vegetables cultivated in West Bengal**

Common Name	Scientific Name
Amaranthus	<i>Amaranthus cruentus</i> (Laal saak), <i>Amaranthus tritris</i> (Note saak)
Arum	<i>Arum sp.</i>
Asparagus	<i>Asparagus officinalis</i>
Beetroot	<i>Beta Vulgaris crassa group</i>
Bell Peppers	<i>Capsicum annuum</i>
Betuashaak	<i>Chinopodium album</i>
Bittergourd	<i>Momordica charantia</i> Linn
Bottle gourd	<i>Lagenaria siceraria</i>
Brahmi	<i>Bacopa monnieri</i>
Brinjal	<i>Solanum melongena</i>
Broccoli	<i>Brassica oleracea italica</i>
Butternut squash	<i>Cucurbita moschata</i>
Cabbage	<i>Brassica oleracea capitata</i>
Capsicum	<i>Capsicum fruitscence</i>
Carrot	<i>Daucas carota</i>
Cauliflower	<i>Brassica oleracea botrytus</i>
Chinese cabbage (Pak choi)	<i>Brassica rapus chinesesis group</i>
Choi	
Chubrialu	<i>Dioscorea bulbifera</i>
Cucumber	<i>Cucumis sativus</i>

Dhokra	
Drumstick trees	<i>Moringa oleifera</i>
Elephant foot yam	<i>amorphophallus paeoniifolius</i>
Fig	<i>Ficus carica</i>
Green beans/string bean/Common bean/common field bean	<i>Phaseolus vulgaris</i>
Heron flower	<i>Sesbania grandiflora</i>
Hinche	<i>Enhydra fluctuans</i>
Ivy Gourd (Kundri)	<i>Coccinia grandis</i>
Jicama (Shakhalu)	<i>pachyrrhizus erosus</i>
Karela	<i>Momordica charantia</i>
Kulekhara	<i>Hygrophilla schulii</i>
Lablab-beans (Sheem)	<i>Dolichos lablab</i>
Lady's fingers/ okra	<i>Abelmoschus esculentus</i>
Lettuce	<i>Lactuca sativa</i>
Machalu	<i>Dioscorea alata</i>
Methishaak	<i>Trigonella foenum-graecum</i>
Onion	<i>Allium cepa</i>
Pea	<i>pisum sativum</i>
Potato	<i>Solanum tuberosum</i>
Potol (Pointed Gourd)	<i>Trichosanthes dioica</i>
Pumpkin	<i>Cucurbita maxima</i>
Radish	<i>Raphanus sativus</i>
Red Cabbage	<i>Brassica oleracea var. capitata f. rubra</i>

Red Vine Spinach (Pui saak)	<i>Basella albavar rubra</i>
Ridge Gourd (jhinge)	<i>Luffa acutangula</i>
Round Chilli ‘Dalle khursani’	
Shushni	<i>Oxalis sp.</i>
Snake Gourd	<i>Trichosanthes cucumerina</i>
spinach	<i>Spinaceae oleracea</i>
Spiny Gourd (Kankrol)	<i>Momordica dioica</i>
Sponge Gourd (Dhudhul)	<i>Luffa aegyptiaca</i>
summer squash/ squash	<i>Cucurbita pepo</i>
sweet potato	<i>Ipomoea batatas</i>
Tamarke	<i>Stephania hernandiafolia</i>
Taro	<i>Colocasia esculenta</i>
Thankuni	<i>Centella asiatica</i>
Tomato	<i>Lycopersican esculentum</i>
Turnip (Shalgam)	
Veg Fennel	<i>Brassica rapus rapifera</i>
Watercress (Simrai)	<i>Nasturtium officinale</i>
Wax Gourd/ Ash Gourd (Chalkumro)	<i>Benincasa hispida</i>

Annexure- 3.2**Production volume and tradable value of non-traditional fruits of Darjeeling district**

Name of the Bio Resources	Place (Sources, where available)	Natural (N) or cultivated (C)	Production volume	Which markets/ haats sold in	Tradable Volume	Rate per Unit (Rs. Per kg or lt or ton)	Total Amount (rupees/ unit/ annum)
Winter Vegetables (Cauliflower, Cabbage, Pea, French bean, Ri Sag, Carrot, Radish)	Goke, Hasinghatta, Relling, G.P. Lamahatta, Takdah GP, Sittong, Gaiyabari GP Saureni, Duptin GP Bhalukhop, Loley GP Payung, Dalapchnad GP, Gorubathan, Kumai GP	(c)	25000 MT	Siliguri, Darjeeling, Kurseong, Kalimong	12500 MT	Rs 10 per Kg	1250 Lakh
Round Chilli	Scattered all over the hills	(c)	300 MT	Siliguri, Darjeeling, Kurseong, Kalimong	200 MT	Rs 100 per Kg	Rs 200 Lakh
Behi	Scattered all over the hills	(c)	50 MT	Siliguri, Darjeeling, Kurseong, Kalimong	25 MT	Rs 20 per Kg	Rs.5 Lakh

Timbur	Scattered all over the hills	(c)	2 MT	Siliguri, Darjeeling, Kurseong, Kalimong	1 MT	Rs 1000 per g	Rs.10 Lakh
Kaulu	Scattered all over the hills	(c)	30 MT	SillIGURI, Darjeeling, Kurseong, Kalimong	15 MT	RS 20 per Kg	RS.3 LAKH
Tamarke	Scattered all over the hills	(c)	5 MT	NA	NA	NA	NA
Passion Fruit	Grown in small area as new cultivation	(c)	200 MT	Darjeeling, Kurseong, Kalimong	150 MT	Rs 10 per Kg	Rs.15 LAKH
Squash	Scattered all over the hills	(c)	2000 MT	Siliguri, Darjeeling, Kurseong, Kalimong	1500 MT	Rs 10 per Kg	Rs.150 LAKH
Watercress	Scattered all over the hills	(c)	100 MT	Darjeeling, Kurseong, Kalimong	50 MT	Rs 10 per Kg	Rs.5 LAKH
Peach, Pear, Plum	Scattered all over the hills	(c)	30 0 MT	Darjeeling, Kurseong, Kalimong	100 MT	Rs 20 per g	Rs. 20 LAKH
Kiwi	Grown in small area as new cultivation (Just introduced)						
Total							1658 Lakh

The above mentioned bio resources are mostly used as food, except Tamarke which is used as medicine.

Annexure- 3.3

List of fruits cultivated in West Bengal

Common Name	Scientific Name
<i>Amra</i>	<i>Pondias purpurea var. lutea</i>
Banana	Musa acuminata, Musa balbisiana, or Musa paradisiaca
Behi	<i>Cydonia oblonga</i> (Quince Seeds)
Bengal currant (Karamcha)	<i>Ficus carica</i>
Betgera	
Black berry (jaam)	<i>Syzygium Cumini</i>
Carambola/Starfruit (Kamranga)	<i>Averrhoa carambola</i>
Chao (Fishtail palm)	<i>Caryota urens</i>
Cherry Tomato	<i>Solanum lycopersicum</i>
Common Lime	<i>Citrus aurantifolia</i>
Custard Apple	<i>Annona reticulata</i>
Date	<i>Phoenix dactylifera</i>
Dragon fruit	<i>Hylocereus undatus</i>
Elephant apple (<i>chalta</i>)	<i>Dillenia indica</i>
Guava	<i>Psidium guajava</i>
Indian Gooseberry (Amla)	<i>Emblica officinalis</i>
Jackfruit	<i>Artocarpus heterophyllus</i>
Jujube*	<i>Ziziphus zizyphus</i>
Jujube*	<i>Ziziphus mauritiana</i>
Karanda	<i>Carissa Carandas</i>
Karonjo fruit	<i>Pongamia pinnata</i>
Kaulo	<i>Machilus sp.</i>
Kiwi	<i>Actinidia deliciosa</i>
Kodal fruit	
Lakucha	

Lapsi	<i>Choerospondias axillaris</i>
Latkan	<i>Bixa Orrelana L.</i>
Lemon	<i>Citrus limon</i>
Litchi	<i>Litchi chinensis</i>
longan (<i>aash phal</i>)	<i>Dimocarpus longan</i>
Mandarin	<i>Citrus reticulata Blanco</i>
Mango	<i>Mangifera indica</i>
Olive	<i>Olea europaea</i>
<i>Omola</i>	
Orange	<i>Citrus aurantium</i>
Palmyra Palm	<i>Borassus flabellifer</i>
<i>Paniala</i>	
Papaya	<i>Carica papaya</i>
Passion fruit	<i>Passiflora edulis</i>
Peach	<i>Prunus persica</i>
Pear	<i>Pyrus communis</i>
Pineapple	<i>Ananas comosus</i>
Plum	<i>Prunus sp.</i>
Pomegranate	<i>Punica granatum</i>
Rose apple (Jamrul)	<i>Syzygium jambos</i>
Rose berry (<i>golap jaam</i>)	
Sabeda*	<i>Achras sapota</i>
Sapodilla*	<i>Manilkara zapota</i>
Squash	<i>Cucurbita L.</i>
Strawberry	<i>Fragaria ananassa</i>
Tamarind	<i>Tamarindus indica</i>
Tamarke	<i>Stephania glabra</i>
Timbur	<i>Xanthoxylum acanthopodium</i>
Water Chestnut (Panifal)	<i>Trapa natans</i>
Water melon	<i>Citrullus lanatus</i>
Wood apple (bael)	<i>Aegle marmelos</i>
Wood apple (<i>kath bael</i>)	<i>Feronia limonia</i>

Annexure- 5.1**Production of Chhana in Hooghly District**

SN	Block	Qty (Kg)	Av. Price /Kg	Value of Trade(Rs.)
1	Sreerampur	27000	180	4860000
2	Chanditala i	45000	180	8100000
3	Do-II	13400	180	2412000
4	Tarakeswar	45000	190	8550000
5	Goghat -I	210000	140	29400000
6	Khanakul	13300	134	1868400
7	Haripal	60000	120	720000
8	Dhaniakhali	35000	140	4900000
9	Arambag	70000	150	10500000
10	Jangipara	70000	170	11900000
11	Pursura	720000	120	86400000
12	Goghat-II	75000	150	15000000
13	Khanakul-II	90000	170	15300000
14	Balagarh	21000	150	3150000
15	Dadpur	33000	160	5280000
16	Arambag	70000	150	10500000
17	Chincura Mogra	38500	170	6545000
18	Singur	70000	170	21000000
		1706200	2824	246385400

Annexure 7.1

Important NTFPS of North Bengal

- **Katha (Khair):** from *Acacia catechu* in Jalpaiguri district
- **Ful jharu (Broom stick)** - from Amlisho plant (*Thysonolaena agrostistis*) in Darjeeling hills (an important commercial plant)
- **Spices & herbs** - *Turmeric* and other herbs (Trikatu churna, Neem oil, Arjun tea and Ayurvedic shampoo) from intercrop in forest plantations, mostly in N Bengal are sold by WB Forest Dev Corporation
- Golden **mushroom**, Large capsules of Meliaceae plants like Rahara (*Dichroa febrifuga*)
- **Edible fruits** of Kanthal Am Jam from forest trees, *Calamus* (Cane) **Edible berries** of *Rhus* & *Rubus spp* (Raspberry), *Diospyros spp* (edible roots, also used for medicinal purpose)
- **Vegetable dyes** from Manjito in Darjeeling hills
- *Lycopodium* pods of Darjeeling Hills are sold for **wig glossing**
- **Barks** of *Cinnamomum cecidodaphne*, and foot-hill Kawla (*Machilus spp*) for **Cinnamon** and Dhup **incense gum** from North Bengal.
- **Medicinal Plants** like Chirata (*Swertia spp*), Chilauni (*Schima wallichii*) bark, and *Aconitum*, *Rhododendron* flowers (medicine for diarrhoea) , **also used for making wine** - from Darjeeling dist.
- Flowers, fruits and other plant **parts are collected for ornamental** purposes and sometimes exported. The important ones are **Orchid flowers** (*Dendrobium spp*, *Vanda spp*, *Cattleyaspp*, *Bulbophyllums*, *Cymbidium spp*, *Agrostophyllum spp*, *Cyrtopodium spp*, *Paphiopedium spp*, *Pleione spp.*, *Aundina spp.* etc.), ornamental leaves such as ferns as well as a large variety of other ornamental plants, oak and Katus (*Castanopsis*) **fruits**, decorative fruits of Chilauni (*Schima wallichii*).
- Handmade paper from bark of *Daphne cannabina*.
- Oil from *Citronella* grass *Calophyllum spp.*, *Gynocardia odorata*
- **Fodder** from leaves of Gogun, Nebaro from Darjeeling

- Filling Bamboo (*Cephalostachyum spp*), Gope bamboo (*Pseudostachyum sp*), Chowa bans (*D. Hamiltonii*), Maling bans (*D. maling*) from North Bengal.

Important NTFPS of Other Parts of West Bengal:

- **Edible fruits** of Karancha, Pial (*Buchnanania latifolia*), Bel, Tamarind (*Tamarindus indica*) from SW Bengal, and Kaora, Chak keora from mangroves in Sunderbans.
- **Edible nuts** from Badam (*Terminalia catappa*).
- **Oil** from *Eucalyptus spp*, Grasses like *Citronella spp*, Mahua (*Bassia latifolia*), Kusum (*Schleichera trijuga/oleosa*), Varendra (*Jatropha curcas*), Karanj (*Pongamia glabra*), Neem (*Azadirachta indica*), Sajina (*Moringa pterygosperma*), *Amoora rohituka* etc.
- **Soap substitutes** from *Sapindus spp.* (soap nut tree)
- A large variety of other **food articles** are available e.g., Sajina (*Moringa pterygosperma*) - almost all parts of the plant are edible, Kul (*Zizyphus jujuba*), etc.
- **Fish, Crustaceans** like Prawns and shrimps of all varieties, Edible crabs (*Scylla serrata*), Molluscs etc. especially in Sundarbans
- **Lac** is cultivated in SW districts, especially Purulia and Bankura, by infecting lac host trees like Palas (*Butea monosperma*), Kusum (*Schleichera trijuga*) and Kul (*Zizyphus jujuba*).
- **Fodder:** All *Ficus* species (Bat- *Ficus bengalensis*, Aswath – *Ficus religiosa*, Pakur- *Ficus rumphii*, Dumur- *Ficus glomerata*, Jaggidumur- *Ficus hispida*, *Cassia tora*, Kaora *Sonneratia apetala*, Bain (*Avicennia officinalis*) from Sundarbans,
- **Thatch materials** like ULU (*Saccharum procerum*) is available in plenty in all Central districts. Golpata (*Nypa frutescens*) thatch of Sundarban is most durable.
- **Bamboos** - Lathi Bamboo (*Dendrocalamus strictus*), Kanta Bamboo (*Bamboosa bambose*), Bhalki bamboo (*B. balcooa*), from SWn Bengal

- **Bidipata** – From Kend (*Diospyros melanoxylon*)
- **Marking nut** – From *Semecapus anacardium* fruit in SWB districts
- **Fibre** – *Agave americana* (Sisal) and Sabai grass in SWB districts
- **Tassar** from Arjun (*Terminalia arjuna*) trees in SWn Bengal.
- **Honey and bee's wax** from mangroves of Sundarban.
- **Fruits of Myrobolans** (Amlaki , Haritaki, Bahera) in South Westernparts of W. Bengal
- **Medicinal plants** like Kalmegh, Aswagandgha, Tulsi (*Ocimum sanctum*), Amlaki (*Emblica officinalis*), Haritaki *Terminalia chebula*), Bahera (*Terminalia bahera*), Maha Bhringaraj, Neem (*Azadirachta indica*) and Bel (*Aegle marmelos*) from all over the state
- **Aquatic plants** from wetlands in forest areas

Annexure 8.1

Consumption of Medicinal Plants (in kg) by different Manufacturing Unit W Bengal

Sl.No.	Plants Name	2008-2009	2009-10	2010-11	2011-12	2012-13
1.	Amla	143918349	25855.14	226932.57	176092.78	21954.97
2.	Ashok	83572.09	5808.18	64213.07	10554.72	53900.85
3.	Aswagandha	30513.058	8754.94	24848.89	92920.15	5839.615
4.	Atees	273.19	46.75	331.1	292.6	2.05
5.	Bael	15844.609	3956.243	27145.16	1988.30	7026.4
6.	Bhumiamlaki	6150.5	5755.58	2652.89	848.35	3479.51
7.	Brahmi	16229.435	3608.3	5094.64	4822.43	1821.90
8.	Safed Chandan	4573.301	3167.02	4446.20	570.90	705.798
9.	Chirata	6363.91	231.344	3881.04	757.97	246.55
10.	Giloe	13560.375	5702.97	9533.22	12933.26	14597.65
11.	Gudmar	3945.70	117.2	1440.27	1992.90	60
12.	Guggal	4510.11	1286.04	5731.80	5241.54	279.15

13. Ghridakumari	9261.795	586.495	16778.59	659.276	1621702.05
14. Indian Berberry	1013.9	389.6	1203.15	13855.38	3366.10
15. Isabgol	1,03,223.01	7580.20	95131.77	161635.00	2351.30
16. Jatamansi	4421.75	1734.538	2639.81	1083.85	1355.86
17. Kalmegh	11537.32	6339.72	8943.91	10214.58	6491.55
18. Kalihari	21.00	-	249.00	22.00	10
19. Kokum	91.9	5.00	11.0	05.00	50.16
20. Kuth	1565.8	256.534	77.39	259.20	205.55
21. Kutki	1589.03	821.074	2604.69	1182.86	2033.85
22. Liquirice (Mulethi)	4506.81	1484.50	913.89	2731.64	579.44
23. Long pepper (Pippal)	11,862.36	1482.42	8510.46	5414.26	3082.5
24. Makoy	1149.425	59.05	9.5	108.00	1242
25. Musali	638.5	51.37	543.45	876.70	20.34
26. Pashan Bheda	15.07	6.980	44.5	155.00	
27. Saffron, Kesar	205.93	6.499	121.65	137.50	
28. Sarpagandha	737.3	327.05	943 .15	1082.60	574.90
29. Senna(Senai)	30,631.96	1919.15	14407.01	3037.25	9107.05
30. Shatavari	3746.75	719.393	3487.48	3473.02	2611.16
31. Tulsi	6814.86	10224.20	2042.18	1326.04	5521.39
32. Vai Vidang	5424.42	362.602	2134.20	2685.93	1212.85
33. Vatsnabh (Vish)	187.9	15.45	195.60	281.55	4.8
34. Gambhari	3825.655	28.0	3396.90	23629.00	2056.75
35. Anantamool	12731.552	4651.147	11732.14	1603.406	4764.561
36. Neem	20860.666	14527.972	15609.32	12556.92	5388.00
37. Mint	137.8	00	34.00	3.65	1102.45
38. Arjuna	13014.03	6465.12	11732.92	7494.27	3893.54
39. Sadabahar, Nayantara	-	-	-	-	

40. Batch	1117.38	351.13	1119.87	1152.82	184.26
41. Bohera	19592.35	9278.29	22541.86	16278.87	7985.16
42. Cinnamon	1388.77	337.47	840.76	907.52	17.795
43. Haritaki	31522.47	13523.51	32480.79	31665.49	24810.77
44. Patharchur	-	-	-	-	
45. Ulatkambol	309.63	43.75	5933.60	378.10	241.70
46. Kakmachi	1238.95	1176.3	-	1.6	14.3
47. Basak	4008.04	00	3994.50	6500.80	
48. Chita mool	3.00	00	308.41	-	
49. Brihati	57.0	-	-	-	
50. Kantikari	2945.50	162.53	00	149.20	6690.71
51. Bamunhati	407.8	00	31.80	-	
52. Nishinda	1363.97	-	-	-	
53. Bhringaraj	4543.98	11290.43	00	2252.23	629.28
54. Shatamuli	1205.0	-	-	-	
55. Lata Kasturi	1.5	-	-	-	
56. Kurchi	-	471.60	-	-	
57. Chhatim	-	3.5	-	-	
58. Kulekhada	-	232.0	-	-	
59. Vasak	-	220.69	-	-	5873.67
60. Darchini	-	-	60.00	-	
61. Ayapana	-	-	115.00	6.6	3.6
62. Safed Musli				10.8	

Annexure 9.1**District wise list of Solvent Plant and Refinery**

Production Capacity (MT) indicates input capacity of Rice Bran in MT

Solvent Plant in Burdwan District			
Sl. No.	Name	Production Capacity	
		M.T.	Item Name
1	Soliel Oilex Pvt. Ltd.	150	Rice Bran
2	Dataji Food Prod. Pvt. Ltd.	150	Rice Bran
3	Bardhaman Agro Pvt. Ltd.	150	Rice Bran
4	Pragati Agri Product Pvt. Ltd.	250	Rice Bran
5	Supreme Oils Ltd	150	Rice Bran
6	Molleshwar Agro Prod. Pvt. Ltd.	150	Rice Bran
7	Utsav Agro Prod. Pvt. Ltd.	400	Rice Bran
8	Anandamoyee Solvent (Guskara)	150	Rice Bran
9	Super India Solvent (Memari)	100	Rice Bran
10	Sri Laxmi Agro Prod. Pvt. Ltd.	100	Rice Bran
11	Navyug Agro Industries Pvt. Ltd.	250	Rice Bran
12	M/S. Tara Oil Udyog	300	Rice Bran
13	Nalinaksha Agro Prod. Pvt. Ltd.	150	Rice Bran

Solvent Plant with Refinery in Burdwan District			
Sl No	Name	Solvent Plant Prod.	Refinery Prod.
		Capacity M.T.	Capacity M.T.
1	Sethia Oils Ltd.	200	50
2	Kaaiser Oils Ltd	150	50
3	Khemraj Oils	250	50
4	Bansal Oils Ltd	500	100
5	Adity Oils Ltd	500	100
6	Sukumar Solvent Pvt. Ltd.	150	30

Solvent Plant in Hooghly District			
Sl No	Name	Production Capacity	
		M.T.	Item Name
1	Joshoda Oil Udyog Pvt. Ltd.	250	Rice Bran
2	Reja Tarapada Solvent Ext. (P) Ltd	100	Rice Bran
3	Hooghly Agro Products (P) Ltd	200	Rice Bran
4	Ramgati Solvent	150	Rice Bran

Solvent Plant in Birbhum District			
Sl No	Name	Production Capacity	
		M.T.	Item Name
1	P. K. Agri Link Pvt. Ltd.	250	Rice Bran
2	Arti Agro	100	Rice Bran

Solvent Plant with Refinery in Birbhum dist			
Sl No	Name	Solvent Plant Prod.	Refinery Prod.
		Capacity M.T.	Capacity M.T.
1	Birbhum Agro	200	50

Only Refinery in Birbhum Dist			
Sl No	Name	Production Capacity	
		M.T.	
1	Bharati Tel Udyog	50	

Medinipur District-Solvent Plant			
Sl No	Name	Production Capacity	
		M.T.	Item Name
1	B. K. Agro Prod. Pvt. Ltd.	150	Rice Bran
2	Alok Oil Industries	100	Rice Bran
3	Mallikarjun Solvent (Garhbeta)	200	Rice Bran

Only Refinery IN Medinipur District		
Sl No	Name	Production Capacity
1	Mandal Agro Industries (Jhargram)	M.T.
		50

Malda - Solvent Plant			
Sl No	Name	Production Capacity	
		M.T.	Item Name
1	Pancham Marketires Pvt. Ltd.	200	Rice Bran

Dinajpur dist -Solvent Plant with Refinery			
Sl No.	Name	Solvent Plant Prod.	Refinery Prod.
		Capacity M.T.	Capacity M.T.
1	KALYANI SOLVEX PVT. LTD.	150	100

Annexure 9.2

List of Large Food Processing Industry

SL. No.	Name of the Food Processing Industries	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
1	Basukinath Food Processors Pvt Ltd	`P.S. Space';Blk-I, 4th Flr, 1/1a, Mahendra Rai Road (Topsia Road), Kolkata-700046, Ph:033-30112100/101, Fax:033-30112145, Email:Ho@Basukinath.Com	Potato Flakes-3000mt	15.75
2	Swastik Refinery Pvt Ltd	3, Pretoria St, 3rd Flr, Kolkata-700071. Ph:91-33-3008-5555, Fax:91-33-3008-1080, Email:Vanaspati2000@Rediffmail.Com	1]Hydrogenated Vegetable Oils-60000mt [2]Fatty Acid, Spent Earth-2880mt	12.70
3	Anmol Biscuits Ltd.	229, A.J.C Bose Road, Kolkata - 700020, Ph: 22801277, Fax: 22895007	Biscuits-31500mt	34.14

SL. No.	Name of the Food Processing Industries	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
4	Utsav Agro Products Pvt Ltd	'Marshall House', 25, Strand Road, 7th Floor, Room-772, Kolkata-700001, Ph:33-4005-5254	[1]Rice Bran Oil [2]Oil Cake-9000 Mt	25.42
5	Epic Agro Products Pvt Ltd.	25, Park Lane, Kolkata - 700016, Ph: 22292881, Fax: 22497567	Rusk-4800mt	17.63
6	Ifb Agro Industries Ltd	Plot No.Ind5, Sector-I, East Kolkata Township, Kolkata-700107, Ph:39849628/651, Fax:24421003, E-Mail:Rahul_Choudhary@Ifbglobal.Com	Country Spirit-9,00,00,000bottles	15.88
7	Adani Wilmar Ltd	Fortune House, Near Navrangpura Railway Crossing, Ahmedabad, Gujrat, Pin - 380009, Ph: 079-25555650, 079-25555621	Plam Product (Veg Oils & Fats Other Than Hydrogenated)-300000mt [2](3004)Distilled Fatty Acid-13500mt	34.49
8	Dalmia Tea Plantation & Industries Ltd.	Dalmia House, 392, Block-G, New Alipore, Kolkata - 700053, Ph.-03323985687	Black Tea (2131)-300000kgs	17.85
9	Nowrangroy Agro Pvt Ltd	15, Brabourne Road, Kolkata - 700001, Ph: 2242-3510, Fax: 2242-9673	Maida, Atta, Suji, Bran-100000mt	4.50
10	Mohit Bakers Pvt Ltd	Chatterjee International Centre, 33a, Chowringhee Rd. 15th Floor, Suit-9, Kolkata - 700071, Ph: 2281 5329 Fax: 2281 6711	Biscuits-9600mt	17.11
11	Uchalan S.S. Rice Mill (P) Ltd	Vill & Po:Uchalan, Raina-Ii, P.S.:Madhabdihi, Dist:Burdwan, Pin:713427, Ph.:9734762534 5/1, A.J.C. Bose Road, Kolkata-700020,	1]Rice Boiled-7200mt, 2] Rice Bran-360mt	8.5975

SL. No.	Name of the Food Processing Industries	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
12	Saj Food Products Pvt Ltd	Ph: 22818219, Fax: 22833510	Biscuit-21000mt , [2] Sandwich Biscuits- 3500mt, [3] Bread Rusk- 7000mt	27.48
13	Emami Biotech Ltd.	687, Anandapur, Em-Bypass, Kolkata, South 24 Parganas, Pin- 700107, Ph: 66136391	Edible Veg. Oils & Fats, Other Than Hydrogenated Including Palm, Soya Mustard & Sun Flower Oils-273000mt	116.85
14	V.K. Udyog Ltd	5/2, Russel Street, Poonam Building 6th Floor, Kolkata-700071, Ph: 2265-5888, Fax:22263649, Email:Contact@ Vkudyog.Com	1]Rice-25740mt, 2] Dal-33408mt, 3]Rice Bran-1950mt, 4]Dal Husk-4800mt, 5]Rice Husk-10803mt	11.87
15	Sarada Starch & Chemicals Pvt. Ltd.	P-3, New Cit Road, 2nd Floor, Kolkata - 700073, Ph-22372825, Email:Saxel@Ssepc. Com	Starch Powder-19200mt, 2]Gluten-2880mt, 3] Germ-3120mt, 4]Fiber- 7680mt	48.30
16	Kalyani Solvex (P) Ltd.	Bandar, Raiganj- 733134, Dist.:Uttar Dinajpur, Ph.03523 241795, Email : Kalyanisolvexnaroi@ Yahoo.Com	Rice Bran Oil- 3600mt 2] Refined Oil-15000mt	6.80
17	Jaya Industries Pvt Ltd	~The Millenium, 5th Floor', 235/2a,A.J.C.Bose Road, Kolkata-700020, Ph:2290-3124/25 Fax:2281-6711, Email:Jayabiscuit@ Gmail.Com	Biscuits-24.000mt	9.16
18	Ishan Snax Pvt. Ltd.	115, College Street, Kolkata-700 012 M:9830082871	Snack Food, Segment Chips Kurkure, Cheese Bolls-5000mt	13.87
20	Shree Krishan Co. Mfg Pvt Ltd.	15, Brabourne Road, Kolkata -700001, Ph: 2242-1131, Fax: 2242- 1126, Email:Skcmfg@ Gmail.Com	Potato Chips-3600mt, 2] Starch-180mt	14.58

SL. No.	Name of the Food Processing Industries	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
21	Crown Flakes Pvt Ltd	Tarakeswar Road, Mouza- Bagbari, P.O.:Baliguri, Dist:Hooghly, Pin-712410, Ph- 9830050039, Email:Flakescrown@ Gmail.Com	Potato Flakes-5000mt	13.23
22	Debraj Oil Extraction Pvt Ltd	Link Road, P.O. & P.S.:Arambagh, Dist:Hooghly, Pin:712601, Ph:9932460400	1]Rice Bran Oil- 16200mt, 2]De-Oiled Cake-73800mt	8.3489
23	Newby Teas Overseas Pvt. Ltd.	Bishnupur, South 24 Parganas-743503, Ph.- 033 24978997	Tea Packaging (2131- 276000kgs)	7.60
24	Prestige Ice Cream Pvt Ltd	238-B, A.J.C.Bose Road, Kolkata-700020, Ph:2287-9266/8503, Fax:2287-1874, Email:Info@I	Ice Cream (Frozen Dessert)-24,00,000 Ltr, 2]Ice Cream (Sticks)- 168,00,000pcs Total	12.02 551.61

List of Large Food Processing Industry/ Manufacturer of Bio-Products (Year: 1991-2010)

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
1	Aditi Oil Limited	4,Chowringhee Lane, Diamond Chamber Blii Kolkata-700016 Tel: 22521863/64, Fax:225 21862	Refined Edible Oil- 31628mt [2] Lycolecethne/Mustard- 18420mt [3] De-Oiled Ind. Fatty Acid-3600mt [4] Acid Oils-864mt [5]Gly- 17700mt	39.34
2	Bansal Oil Extraction Pvt Ltd	113 Park Street, Kolkata - 700016, Ph: 03322652119, Fax: 03322652119	Rice Bran Oil- 4500 Ton [2] (2199)De-Oild-Rice Bran-18000 Ton	57.07
3	Bengal Beverages Private Ltd	Dankuni, Dankuni-712310 Tel: 26593715 Fax:265 93714	Aerated Water Containing Added Sugar Or Other Seetening Matter Or Flavour-38000 KI [2] (2029) Fruits And Vegetable Preservations N.E.C	3.60
4	Diamond Beverages Pvt Ltd	P-41, Taratala Road Kolkata-700088 Tel: 0332401803 Fax:240 10142	Soft Drinks & Syrups- 17000kl	55.20
5	Dream Bake Pvt Ltd	296, Kalu Khan Road, P.O.Boral, Kolkata-700154, Ph.:2435-5951/52, Fax:2435-3305, E-Mail:Dbpl@ Switzindia.Com	Biscuits, Bakes, Pastries And Other Bakery Products (Exclu. Reserved For Ssi)-7800m.T.	22.53
6	Emami Biotech Ltd.	687, Anandapur .Em By Pass Kolkata-700107 Tel: 66136402 Fax:66136400	Basic Organic Chemicals Fats-100000mt 2] Glycerin-9000mt 3]Edible Oil-200000mt	42.08
7	Haldiram Bhujawala Ltd.	P - 420, Kazi Nazrul Islam Avenue, Kolkata700052, Ph: 09830011144	Mini Samosa-500mt, 2]Sweets-185mt, 3] Namkeen-3500mt, 4] Pickles-100mt	181.00
8	Mani's Baking Solutions	24,Hemanta Basu Sara Ni. Kolkata-700001 Tel: 30288326 Fax:30288340	Biscuits-36000mt	11.64

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
9	Saj Food Products Pvt Ltd	5/1, A J C Bose Road Kolkata-700020 Tel: 22818219 Fax:22833510 Bisuforn@Hotmail.Com	Biscuit 35000mt	19.00
10	Suwendu Kumar Mondal	Hospital Para, Jalpaiguri-735 101 Ph:- 03561 230714	Tea Black In Bulk 400000 Kgs	34.00
11	J.P. Flour Mills Pvt Ltd	5/2, Russel Street, Poonam Building 6th Floor, Kolkata - 700071, Ph: 40065862, Fax: 40065863	[1] Maida [2] Mill Atta [3] Sooji [4] Bran [5] Chakki Atta-[1] 64575 Ton [2]13650 Ton [3] 1575 Ton [4] 25200 Ton [5] 30000 Ton	1.40
12	Ankit India Ltd	14a, 5th Floor, 234/3a, A J C Bose Road, Kolkata-700 020 Ph:- 22871538 Fax:- 2281 0629	Rice (Raw & Parboiled) 146880 Mt	9.01
13	Gokul Refoils & Solvent Ltd.	Mouza: Debhog, J.L. No-149, Bhabanipur, Haldia, Purba Medinipur, Pin - 721657, Ph: 03224 252839, Fax: 03224 252758, Email:Grslhaldia@Gokulgroup.Com	Refined Soyabean Oil/ Palmoline-1]330000mt 2]Inter Esterified Non Hydro Fat-65000mt	29.51
14	Mukund Foods Pvt.Ltd.	229,Ajc Bose Rd,Cres Ent Tower,9th Floor Kolkata-700020 Tel: 033-22872958 Fax: 22895006	Biscuits-38400mt	90.00
15	Pampar Ovenfresh Foods Pvt Ltd	72, Nalini Sett Road; 2nd Floor, Kolkata - 700 007, Ph: 2274 9919	[1]Wet Dough, 2]Cereal Snacks Part li [1] Potato Chips, 2]Cereal Snacks-1920 Mt	55.00
16	B.D. Corporates Pvt. Ltd.	77, Netaji Subhas Road, 4th Floor, Kolkata-700 001 Ph:-2210 7990, Fax:- 2686 4430	Rice - 144400 Mt	10.54

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
17	Baljit Agrotech Ltd (Formerly Rajrani Agrifoods Ltd)	7a Pretoria Street, Kolkata - 700071, Ph: 033 2282 7018, Fax: 033-2282-7016	Rice Husk-24840mt [2]Rice Bran-6480mt [3]Co-Generation Captive Power Plant-723mw , [4] Rice Milling-73440mt	8.69
18	Diamond Beverages Pvt Ltd	P-41, Taratala Road Kolkata-700088 Tel: 24018030 Fax:24010142	Soft Drinks & Syrups	0.00
19	Emami Biotech Ltd.	6&7, Anandpur Em Bypass Kolkata-700107 Tel: 66136402	Edible Oil-200000mt	7.42
20	Emami Biotech Ltd.	Debhog, Bhabanipur, Haldia, Purba Midnapo Re-721657 Tel	Refined Edible Vegetable Oils	182.00
21	Gem Agro Products Pvt Limited	88, Burtolla Street, Kolkata-700 007 Ph: 22191288 Fax: 22194222	Whole Mill Atta Dalia & Bran 33000 Tonn	182.00
22	Kalyani Solvex (P)T Ltd	Raiganj, Bandar Uttar Dinajpur-733134 Tel: 242158 Fax:254467	Rice Bran Oil De-Oiles Rice Bran	2.90
23	Khaitan (India) Ltd	7, Red Cross Place, Wellesly House, Kolkata - 700 001, Ph: 2210 3331,	Crusing Of Sugercane-400 Tcd	10.82
24	Mohan Bakers Pvt. Ltd	305, Mangalam-A, 24, Hemanta Basu Sarani, Kolkata-700 001 Ph:- 659 0683, E-Mail: Info@Bhagbatibiscuits. Com	Biscuits 3000 Mt	0.00
25	Pancham Marketiers Pvt Ltd	19, Synagogue Street, City Centre , Room # 314., 3rd Floor, Kolkata - 700 001 Ph:- 2242 2517	Vegetable Oils & Fats Through Solvent Extraction Process 60000 Mt	2.05
26	Raja Udyog Pvt. Ltd.	267a, C.R. Avenue Kolkata-700006 Tel: 25838466 Fax:25838690	Biscuits 28000mt	6.40

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
27	Rajrani Agrifoods Ltd		Ice Milling & 2 More	12.24
28	Vinda Vashni Oils (Pvt) Ltd	Sainthia, Hariskopa, Birbhum:-731 234 Ph: 03462-262803	Rice Bran Oil	8.93
29	Anjanay Rice Mill Pvt. Ltd.	Nh2 Bypass Khudika; P.O.-:Salanpur Dist: Burdwan, Ph:0341-2514460. 9333674401, Email: Anjanay.Mill@Gmail.Com	Rice-60,000mt 2.(12801) Rice Bran-1764mt 3.(12824)Paddy Husk-24,000mt	2.80
30	Sahada Exports Ltd	Mominpore Kolkata-700023 Tel: 24496113 Fax:24481321	Processing & Preserving Fish	15.40
31	Budge Budge Refineries Ltd	23b, A. M. Ghosh Road, Budge Budge, 24 Parganas (South)-743319 Ph-22489347 Fax-22422086	Refined Vegetable Oil 180000 Mt	2.73
32	Hooghly Dairy Private Ltd	Shyambati, Dhulepur, Arambag, Hooghly-712616 Ph:-220447	Milk In Pouch 16000 Mt.	65.00
33	Nowrangroy Agro Pvt Ltd	15, Brabourne Road, Kolkata-700 001 Ph-22423510 Fax-22429673	Maida, Suji, Atta, Bran 90000 Mt	3.83
34	Pragati Agri Products Pvt Ltd	Daichanda, P.O.:Huria, Dist:Burdwan	Rice Bran Oil & 1 More	7.63
35	Shiv Durga Rice Mill Pvt Ltd	Tetraail	Rice	4.28
36	Siliguri Agro-Tech Pvt Ltd	Naya Bazar, C/O. Pawan Tea Co. Siliguri, Darjeeling -733 405 Ph-2503711 Fax-0353-2504500	Rice 19200 Mt	3.17

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
37	Sri Shyam Millers (P) Ltd	Poolara, Purulia-723 127 Ph:03252-222007 Fax:226665	Rice 14256 Mt	1.09
38	Japfa Comfeed India Ltd	125-126, Sohrab Hall, 21,Sasoon Road, Pune, Maharashtra- 411 001	Animal Feed-108000mt	0.20
39	Ankit India Ltd	14a, 5th Floor, 234/3a, A J C Bose Road, Kolkata-700 020 Ph:- 22871538 Fax:- 2281 0629	Atta,Maida,Suji & 1 More	16.57
40	Ashirvad Food Products Pvt.Ltd	Continental Chamber, 5th Floor, 15a, Hemanta Basu Sarani, Kolkata-700 001 Ph:- 22480071	Maida,Atta,Suji & 1 More	16.04
41	Dalmia Tea Plantation & Indust	130, Cotton Street, P. B. No. 6706, Kolkata-700 007 Ph-22688588 Fax- 22688587	Tea Black Leaf In Bulk 2000000 Kg	1.51
42	Diwan's Hygienic Products Pvt Ltd.	Kidderpur, 105-A, Diamond Harbour Road, Kolkata-700 023 Ph- 24399495	Sweetmeat Produc 2400000 Ltr	8.50
43	Dollon's Food Products Pvt Ltd	9, Lalbazar Street, Mercantile Building Block-B, Kolkata-700 001 Ph-22206034 Fax- 22438806	Milk 2775000 Ltr	3.76
44	Durga Tea Industries	P.O. Sakouajhora, Jalpaiguri- 735212 Ph:- 233385	Tea - 800000 Kg	4.88
45	Ganges Vally Foods Pvt. Ltd	5/1a, Hungerford Street, Kolkata-700 017 Ph-22870472 Fax- 22870472	Biscuit 960 Tons	1.66
46	Gee Pee Foods Pvt Ltd	Chakundi, Dankuni, Chanditala, Hooghly-712310 Ph:- 22830780	Potato Chips	2.67

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
47	Hare Krishna Foods Ltd	Durgapur	Wheat Prodct, Flour, Atta	7.48
48	Jogijhora Tea & Agro Pvt Ltd	Ethelbari, Alipurduar, Jalpaiguri-735204 Ph:- 266180 Fax:- 03563-266666	Green Tea(Green)- 770000 Kg	4.07
49	Maks Biscuits Pvt Ltd	203, Becharam Chatterjee Road, Kolkata-700 034 Ph-22428401 Fax- 22130378	Biscuits 4500 Mt	1.69
50	Payodhi Foods (P) Ltd	Dankuni	Butter, Cream Ghee & 1 More	4.02
51	Sayedabad Tea Co Ltd	11, Government Place (East), Kolkata-700 001 Ph:- 22485155	Tea Mfg. & Processing 1500000 Kg	2.51
52	Shree Jagannath Shilpodyog	Kalyani	Atta, Maida, Suji	2.20
53	Sukumar Solvent Pvt. Ltd	Gopalpur	Solvent Extrtd. & 1 More	2.14
54	Shalimar Pellet Feeds Pvt. Ltd	Bishnupur Indl. Gr Owth Centre Dist.:Bankura	Poultry & Cattle Feed	1.92
55	Acalmar Oils & Fats Ltd.	1,Shakespeare Sarani, (9th Flr), Kolkata-700071, Ph:2282-5400/8150	Refined Vegetabl & 5 More	2.69
56	Aditi Edible Oils Pvt Ltd	40, Weston Street, 3rd Floor, Kolkata-700 013 Ph:-2211 2857 Fax:- 2236 9554	Rice Bran Oil & 1 More	30.00
57	Anmol Biscuits Pvt. Ltd.	229, A. J. C. Bose Road, Kolkata-700 020 Ph:- 2280 1277 Fax:- 22242441	Biscuits 1300 Mt	5.60
58	B.D. Corporates Pvt. Ltd.	77, Netaji Subhas Road, 4th Floor, Kolkata-700 001 Ph:-2210 7990 Fax:- 2686 4430	Maida,Atta,Suji,Bran Etc	1.37

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
59	Capricorn Oils Ltd	Alamgunj, Burdwan-713 102 Ph: 0342-253 0390 Fax: 0342 253 0193	Refined Edible Oil(Soya, Palm, Palm Karnel Rice Bran Oil Refined) Oo Kg	2.80
60	Chengmari Tea Co Ltd	37, Shakeshpere Sarani, Kolkata-700 017 Ph-22409834 Fax:	Black Tea- 1000000 Kg	6.41
61	Dalkola Flour Mills (P) Ltd	Dalkola Dist.: Uttar Dinajpur	Atta, Maida, Suji, Bran	14.65
62	Duke Tea Pvt Ltd	Madati Dist.: Darjeeling	Tea (Ctc)	0.94
63	Dutta Agro Mills Pvt Ltd	13,Banerjee Road, Kolkata-700012, Ph:2241-8168, Fax:2270-6771	Refined Rice Oil-9000mt & 4 More	3.63
64	Jaldacca Tea Plantation Pvt Ltd	Nathua Hat Dist.:Jalpaiguri	Tea Mfg. & Processing	4.94
65	Joshoda Oil Udyog Pvt. Ltd	Naisarai, Arambagh, Dist:Hooghly, Pin:712602, Ph:03211-252393, Fax:03211-252269	Rice Bran Oil-24,000mt & 1 More	1.40
66	Kalyani Solvex Pvt Ltd	Gangarampur, Dist.:Dakshin Dinajpur	Rice Bran Oil & 1 More	3.24
67	Kanchaan View Tea Estate	C/O. Ajit Kumar Agarwal, 11, Government Place (East), Kolkata-700 069 Ph-22485111 Fax-22489182	Tea Manufacturing 100000 Kg	3.15
68	Limtex Steels Ltd	Bidhannagar Dist.:Darjeeling	Tea Ctc	1.01
69	Limtex Steels Ltd	25-A, Shakespeare Sarani, Kolkata-700 017 Ph	Tea Ctc - 3000000 Kgs	9.38
70	Potent Products Pvt Ltd	Uluberia Dist.:Howrah	Flour Maida, Att & 1 More	7.49
71	Shri Shyam Agro Biotech P Ltd	Ranigunge Dist.:Burdwan	Floor Milling By Power Ma	3.41

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
72	Supreme Oil Industries Ltd.	Alamganj Dist.:Burdwan	Rice Bran Oil & 1 More	3.68
73	Teesta Tea Company (P) Ltd	Kotwali Dist.:Jalpaiguri	Tea	1.28
74	Terai Dooars Tea Co. Pvt Ltd	Kotwali Dist.:Jalpaiguri	Tea Mfg. & Processing	2.32
75	Terai Tea Co Ltd	Karjeepara Dist.:Jalpaiguri	Tea Maf. & Blending	3.06
76	Limtex Agri Udyog Ltd	The Legacy, 2nd Floor, 25a, Shakespeare Sarani; Kolkata - 700 017, Ph: 033-40107500 Fax: 033-22809975	Mfg. Of Food Product	1.93
77	Abhijit Tea Co. Pvt. Ltd	Raja Tea Estate,	Tea Manufacture & Process	10.81
78	Bhagatpur Tea Co. Ltd.	Nagrakata	Tea-Processing & Blending	1.71
79	Diamond Beverages Pvt Ltd	P-41, Taratala Road, Kolkata-700088	Aerated Water Containing Added/ Other Sweetening Matter Or Flavoured- 45,000kl 2]Pet Bottle- 27194000pcs	3.02
80	Goodricke Group Ltd	Sailihat Dist.:Jalpaiguri	Black Tea	14.00
81	Goodricke Group Ltd	Danguajhar Dist.:Jalpaiguri	Black Tea	2.32
82	Hemraj Oils Pvt. Ltd	Chandul Dist.:Burdwan	Refined Rice Bran & 2 More	0.72
83	India Dairy Products Ltd	Joyrambati Dist.:Bankura	Dairy Products Of Milk	4.33
84	Kunj Bihari Gold Leaf Ind P Lt	Fatapukur , Dist.:Jalpaiguri	Tea (Ctc)	3.09
85	Kusum Products Ltd.	'Bombay Mutual Building', 9,Brabourne Road, Kolkata-700001, Ph:242-1546/1547	Vegetable Oil And Fats	2.63
86	Marion Barle Tea Co Ltd	Siliguri	Black Ctc Tea	8.25
87	Mohitnagar Green View Tea Co Ltd	Mohitnagar, Joredi	Black Ctc Tea	0.93

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
88	Razban Seafood Ltd	Kolkata	Processing & Canning Fish	3.42
89	Ruchi Soya Industries Ltd.	Durgachak	Vanaspati Ghee	5.00
90	Sujali Tea & Industries Ltd	Islampur Dist.:Uttar Dinajpur	Tea Processing	52.00
91	Sukhjit Starch Industries	Wbide Growth Centre Dist.:Malda	Maize Starch, 2]Liquid Glucose, 3]Dextrines & Other Modified Starch, 4]High Malto Syrup, 5] Dextrose Mono Hydrate/ Glucose	4.22
92	Terai Tea Co Ltd	Naxulbari Dist.:Darjeeling	Tea Mfg. & Processing	12.61
93	Terai Tea Co Ltd	Jalpaiguri	Tea Mfg. & Blending	2.61
94	Arambagh Hatcheries Ltd	59b, Chowringhee Road, Kolkata-700 020 Ph:- 2283 2617 Fax:- 2283 2552	Poultry & Other & 1 More	6.04
95	Arambagh Hatcheries Ltd	59b, Chowringhee Road, Kolkata-700 020 Ph:- 2283 2617 Fax:- 2283 2552	Poultry Feed	1.71
96	Shivshakti Agro(India)Ltd	Dankuni Coal Complex, Chakundi, Dist.:Hooghly	Poultry Feed	3.46
97	Abhijit Tea Company Pvt. Ltd	Raja Tea Estate, M Dist.:Jalpaiguri	Tea Manufacturing & Processing	3.73
98	Abhijit Tea Company Pvt. Ltd	Raja Tea Estate, M Dist.:Jalpaiguri	Tea Manufacturin & 1 More	2.43
99	Amicus Oil & Chemicals Pvt Ltd	Kalyani Industrial Area Dist.:Nadia	Refined Rice Bra & 1 More	1.05
100	Anmol Biscuits Pvt. Ltd.	229, A. J. C. Bose Road, Kolkata-700 020 Ph:- 2280 1277 Fax:- 22242441	Biscuits	5.76
101	Balason Tea Co. Ltd.	Bidhannagar Dist.:Darjeeling	Tea Black, Leaf In Bulk Falling Etc.	1.65

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
102	Essels Funds Management P Ltd	Ghoshpukur, Phansidewa, Dist.:Darjeling	Tea Processing & Blending	4.91
103	Eximpo Tea Ltd	Tele Para Tea Estt., Binnaguri, Dist.:Jalpaiguri	Tea Processing	4.58
104	Hemraj Oils Pvt. Ltd	Chandul Dist.:Burdwan	Rice Bran Oil & De-Oiled Bran	2.50
105	India Dairy Products Ltd	Kalachara, Chanditala, Dist.:Hooghly	Dairy Products Of Milk	5.05
106	Jaldacca Tea Plantations P.Ltd	Dhupguri, Banathat, Nathua Hat, Dist.:Jalpaiguri	Tea Manufacturing & Processing	4.41
107	Jaldacca Tea Plantations P.Ltd	Dhupguri, Banathat, Nathua Hat, Dist.:Jalpaiguri	Tea Manufacturin & 1 More	1.38
108	Kalyani Yeast	Kalyani Dist.:Nadia	Bakers Yeast	0.73
109	Kamala Tea Company Ltd.	Kamala Tea Estate, Phonsidung, Dist.:Darjeeling	Black Tea	3.09
110	Kiran Tea Estates Pvt. Ltd	Ramganj Dist.:Uttar Dinajpur	Tea (Ctc)	2.17
111	Madhya Pradesh Glychem India Ltd (Ruchi Soya Industries Ltd).	2g, Neelamber Building', 28b,Shakespeare Sarani, Kolkata-700017, Ph:2281-3266,2247-8526, Fax:2240-5187	Vanaspati, Edible Refined Oil & 8 More	4.10
112	Manakamna Tea Indus. Pvt. Ltd	Bidhannagar Dist.:Darjeeling	Black Ctc Tea	65.50
113	Mohan Bakers Pvt. Ltd	Monoharpur, Dankuni, Dist.:Hooghly	Biscuits	3.94
114	Monorch (India) Pvt Ltd	Mahestala Dist.:South 24prgs	Biscuits	3.08
115	Pioneer Tea & Exports (P) Ltd	Bidhannagar Dist.:Darjeeling	Black Tea	1.01
116	R. D. Tea Ltd	Bagdogra-Bidhannagar Dist.:Darjeeling	Black Tea Processing	5.98

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
117	Rasoi Ltd	Rasoi Court', 20, Sir R.N.Mukherjee Road, Kolkata-700001, Ph:2248-9138/39, Fax:2248-3102	Hydrogenated Oils & Vanaspati Ghee, Fatty Acid, Acid Oil, Industrial Gases, Vegetable Oils Fats Other Than Hydrogenated, Blended Edible Vegetable Oils	2.50
118	Roopacherra Tea Co. Ltd	New Champtaguri, Naxalbari, Dist.:Darjeeling	Tea-Processing & Blending	17.00
119	Roopacherra Tea Co. Ltd	Anandapur, Rajdanga, Dist.:Darjeeling	Tea-Processing & Blending	0.57
120	T&I Global Ltd	Panishala, Mekhligunj, Dist.:Cooch Behar	Tea (Green)-Processing & Blending	1.17
121	Terai Tea Co Ltd	Naxulbari, Dist.:Darjeeling	Tea Mfg. & Blending	2.61
122	Terai Tea Co Ltd	Bagdogra Dist.:Darjeeling	Tea Manufacturing	5.32
123	Terai Tea Co Ltd	Bagdogra Dist.:Darjeeling	Tea Manufacturin & 1 More	2.29
124	The Eastern Tea Company Ltd	Kalabari Tea Estate,Kalabari Bagan, Dist:Jalpaiguri	Tea Black	0.52
125	The Oodlabari Co Ltd	Oodlabari Tea Estt., Manabari, Mal, Dist.:Jalpaiguri	Tea &12 More	0.51
126	Topline Tea Co Pvt Ltd	Bidhannagar, Dist.:Darjeeling	Tea Processing	3.19
127	Topline Tea Co Pvt Ltd	Bidhannagar, P.O.Madati, Dist.:Darjeeling	Tea Processing	3.64
128	Uni Cattle Poultry Feeds P. Lt	5 Clive Row (2nd Flr), Room-46 Kolkata-700001 Tel: 220-6446/0599 Fax:2103476	Pelletised Foultry Feeds	1.65
129	Bansal Oil Extraction Pvt. Ltd	Malkita Mirjapur Dist.:Burdwan	Rice Bran Oil	2.23

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
130	Bansal Refineries Pvt. Ltd	Malkita Mirjapur Dist.:Burdwan	Refined Rice Bra & 1 More	2.67
131	Delight Dairy Ltd	Ranihati , Howrah	Milk	4.02
132	Eximpo Tea Ltd	Binnaguri Dist.:Jalpaiguri	Tea Processing	2.00
133	Farm Tea & Chemicals Pvt Ltd	Rajgang	Black Ctc Tea	2.50
134	Frigerio Conserva Allana Ltd	Maurigram Dist.:Howrah	Frozen & Canned Fruit	0.40
135	Global Acqua Pvt Ltd	6, Alipore Park Road, Kolkata-700 027 Ph:- 2479 9312 Fax:- 2479 9303	Mineral Water	8.33
136	Induss Food Products & Equip L	Gumodanga, Mollar Dist:Hooghly	Ice Cream & 2 More	3.47
137	Kharibari Tea Co. Ltd	Kharibari Dist:Darjeeling	Tea Mfg. And Processing	1.75
138	Paceman Sales Promotion P Ltd	Chanditala	Refined Vegetabl & 1 More	2.47
139	Pcm Tea Processing Pvt. Ltd	Sahudangi Dist.: Jalpaiguri	Black Tea	14.50
140	Purti Vanaspati Pvt Ltd	14,Netaji Subhas Rd, 4th Floor Kolkata-700001 Tel: 22316142 Fax:22316158	Processing Of Oilseeds/ Oilcake-90000mt [2]Solvent Extracted Oil-18000mt [3]Deoil Meal/ Extractions-72000mt	2.74
141	PURTI VANASPATI PVT LTD (Formerly Paceman Sales Promotion P Ltd.)	14, NETAJI SUBHASH ROAD, 4TH FLOOR KOLKATA-700001 Tel: 22316142 Fax:22316158	REFINED VEG OIL SOAP STOCK SPENT EARTH REFINED HYDROGENERATED OIL	14.00
142	Shree Madhav Edible Products L	11,Braborme Road, 5th Floor, Kolkata-700001, Ph:2242-9578	Refined Vegetable Oil- Phys	44.00
143	Swadist Biscuits Pvt Ltd	23 Brabourn Road Kolkata-700001 Tel: 242-5683/4687 Fax:2427624	Biscuits	5.22

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
144	Tata Tea Limited (Rungamuttee)		Tea Black	1.51
145	Bansal Oil Extraction Pvt Ltd	113, Park Street, Poddar Point, 7th Floor,Block-B, Kolkata-7000016, Ph:2265-2119, Fax:2265-2119, Email:Export. Bansal@Gmail.Com	Rice Bran Oil- 15,000mt [2]De-Oiled-Rice Bran- 60,000mt	6.34
146	Arambagh Hatcheries Ltd	59b, Chowringhee Road, Kolkata-700 020 Ph:- 2283 2617 Fax:- 2283 2552	Poltry/Othr Slaughttr Prep	8.06
147	Arambagh Hatcheries Ltd	59b, Chowringhee Road, Kolkata-700 020 Ph:- 2283 2617 Fax:- 2283 2552	Poultry Feed	8.00
148	Arambagh Hatcheries Ltd	59b, Chowringhee Road, Kolkata-700 020 Ph:- 2283 2617 Fax:- 2283 2552	Poultry Feed	0.55
149	Ankit India Ltd	14a, 5th Floor, 234/3a, A J C Bose Road, Kolkata-700 020 Ph:- 22871538 Fax:- 2281 0629	Wheat Products	2.84
150	Bengal Beverages Pvt. Ltd	Dankuni, Dankuni-712310 Tel: 26593715 Fax:26593714	Aerated Water	8.14
151	Bengal Nestors Industries Ltd	53b Mirza Galib Stre Eet Kolkata-700016 Tel: 229-4073 Fax:2171419 Jalans@Vsnl.Com	Pasturised Milk, Ghee, Paneer	0.91
152	Bharat Coca Cola Bottling		Aerated Drink	3.53
153	Chengmari Tea Co Ltd	37, Shakespeare Sarani, Kolkata-700 017 Ph- 22409834 Fax:	Black Tea	30.31
154	Dalu Holdings (P) Ltd	Saptibari & Kawada Dist.:Jalpaiguri	Tea Plantation	4.82
155	Darjeeling Dooars Plant (Tea)L	Garden Karala, Muchipara, Dist.:Jalpaiguri	Black Ctc Tea	0.85

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
156	DUARS UNION TEA CO. LTD	BELGACHI DIST.: DARJEELING	TEA	1.83
157	FRIGERIO CONSERVA ALLANA LTD	MAURIGRAM DIST.:HOWRAH	FROZEN AND CANNED MEAT	1.25
158	JAY SHREE TEA & INDUSTRIES LTD	MADARIHAT DIST.:JALPAIGURI	PROCESSING & BLE &35 more	10.00
159	JAYSHREE TEA & INDUSTRIES LTD	KALANAGIN DIST.:UTTAR DINAJPUR	TEA-PROCESSING & BLENDING	5.80
160	MUKUND FOOD PVT LTD	DANKUNI DIST.:HOOGHLY	BISCUITS	3.30
161	Pepsico India Holding Pvt Ltd	Fartabad,Sonarpur Dist.: South 24 Pgs	Non-Alcoholic Bev & 3 More	1.84
162	Putharjhora Tea Garden Pvt Ltd	Manabari Dist.: Jalpaiguri	Black Tea	52.95
163	Seeyok Tea Company Ltd	Mirik, Dist.:Darjeeling	Black Tea	1.54
164	Sethia Oils Ltd	Pemra Dist.:Burdwan	Vanaspati	0.98
165	Sethia Oils Ltd	Pemra Dist.:Burdwan	Vegetable Fats & Oils	6.70
166	Sethia Oils Ltd	2, Indian Exchange Place, Kolkata-700001, Ph:220-5055, 221-4391, Fax:220-0248	Rice Bran Oil	6.00
167	Sona Biscuits Ltd		Biscuits	6.72
168	Arambagh Hatcheries Ltd	59b, Chowringhee Road, Kolkata-700 020 Ph:- 2283 2617 Fax:- 2283 2552	Poultry Feed	1.63
169	Haldiram Bhujawala (P) Ltd	Nazrul Islam Avenu	Papad & 6 More	5.51
170	Hurdeodass Co Pvt Ltd		Tea Black Leaf In Bulk	7.28

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
171	Purty Vanaspati Pvt Ltd. (Formerly Paceman Sales Promotion P Ltd.)	Kalachhra, Chanditala, ampore, Hooghly-712702 Ph:- 03212 263755 Fax:- 03212 263756	Refined Vegetable Oils 30000 Mt	1.00
172	Rai Mohan Tea And Plantations	Debijhora	Tea Black Leaf In Bulk	10.50
173	Shree Madhav Edible Products P	11, Braborn Road, 5th Floor, Kolkata-700001, Ph:2242-9578	Refined Vegetable Oil	1.11
174	Anmol Biscuits Pvt. Ltd.	229, A. J. C. Bose Road, Kolkata-700 020 Ph:- 2280 1277 Fax:- 22242441	Biscuits	2.08
175	Bharat Margarine Ltd.	Bishnupur, D H Road, Dist.:South 24parganas	Margaring Bakery & 3 More	1.31
176	Evergreen Dooars Tea Pvt Ltd		Tea-Processing & Blending	2.52
177	Farm Tea & Chemicals Pvt Ltd	Rajgang	Tea (Ctc)	2.80
178	Limtex Tea Industries Ltd	Calcutta	Black Tea Packets	1.22
179	Supreme Oil Industries Ltd.		Solvent Extract Rice Bran Oil & 1 More	5.80
180	Terai Tea Co Ltd	Darjeeling	Tea Manufacturing	1.10
181	Skfm Ltd	Uluberia Ind.Growt	Poultry Feed	0.60
182	A.C. Paul Ariculture Co. Pvt L	Islampur	Black Tea	0.00
183	Britannia Industries Ltd	Taratolla Road, Garden Reach, Dist.:South 24parganas	Biscuit Including Wafer & 1 More	1.22
184	Cachar King Plantations P Ltd		Black Ctc Tea	25.02
185	Cachar King Plantations Pvt Ltd	Situvita Tea Factory, Bidhan Nagar, Phansidewa, Darjeeling, Pin - 734426, Ph: 03532501908	Black Ctc Tea-1000000 Kgs	1.59

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
186	Chandan Tea Industries (P)Ltd	Daspara	Black Tea	10.21
187	Kamala Tea Company Ltd.	Darjeeling	Black Tea Leaf In Bulk	3.19
188	Metro Dairy Ltd.	Barasat , Dist.:North 24parganas	Milk Of Differen & 3 More	1.47
189	Mother Dairy Calcutta	Kusigachi Dankuni	Toned Milk	47.44
190	Shree Madhav Edible Products P	11,Braborne Road, 5th Floor, Kolkata-700001, Ph:2242-9578	Hydrogenated Veg & 3 More	1122.00
191	Bengal Beverages Pvt. Ltd	Dankuni, Dankuni-712310 Tel: 26593715 Fax:26593714	Aerated Water	1.95
192	D P Agro Mills Pvt Ltd	Alamganj	Rice Bran Oil-So & 3 More	9.58
193	Pioneer Tea & Exports Ltd	Bidhannagar Dist.:Darjeeling	Tea Black	5.69
194	Potatoking Foods Ltd.	Wbiidc Growth Center, Birshibpur, Howrah-711303 Ph. 09831040200	Dehydrated Potato Flakes/ Products-5000mt	1.13
195	Kalyani Yeast		Bakers Yeast	13.76
196	Bengal Beverages Pvt. Ltd	Dankuni, Dankuni-712310 Tel: 26593715 Fax:26593714	Aerated Water -F & 1 More	300.00
197	Bharat Margarine Ltd.	Khariberia ,Dist.:South 24parganas	Bakery Compound	8.48
198	Aditi Oil Limited	4, Chowringhee Lane, Diamond Cham,BI-III Kolkata-700016 Tel: 22521863 Fax:22521862	Refined Veg Oil-36000mt [2]Blended Veg Oil-15000mt [3]Vanaspati-15000mt 15000mt	0.00
199	Darshanand Holdings Pvt Ltd (Unit Bajranga Tea)	Budharugaon, P.O. Chitalghata, Bidhannagar, Darjeeling Ph-22208597 Fax:	Tea Processing 1000000kgs	59.77
200	Norben Tea & Exports Ltd	Berubari	Tea Black, Leaf & 3 More Soyabean, Sunflower	3.19

SL. No.	Name	Office Address	Item of Manufacture With Annual Capacity	Declared Investment (Rs.Cr)
201	Ruchi Soya Industries Ltd	2g, Neelamber Building', 28b,Shakespeare Sarani, Kolkata-700017, Ph:2281-3266,2247- 8526, Fax:2240-5187	Palm Oil Cake (2179)- 150000mt 2]Refined Edible Veg Oil & Fats (2110)-450000mt, 3] Veg. Oils & Fats (2110)-150000mt 4] Food Products (2190)- 120000mt	518.18
202	Shree Madhav Edible Products P		Hydrogenated Veg & 4 More	0.00
203	Sunrise Products Ltd	Dharala Panagarh	Synthetic Syrup Mix	11.00
204	Vinda Vashni Oils (Pvt) Ltd.	Sainthia, Harishkopa, Birbhum-731234, Tele- 09434249410,	Blended Refined Oil- 12000mt	8.29

Annexure 9.3

List of Ayurvedic & Unani Medicine Manufacturing Units, West Bengal

Ayurvedic

Sl. No	Name of the Firm	Phone No	Lic. No.	Dt. Of Licence
1.	A.B.Herbals, Sree Hari Complex, Jangalpur, Arbori, Sankarial, Howrah.	9830175277	AL-839-M	03.10.02
2.	ACME Pharma Laboratory 2,Niranjan Pally, Narkel Bagan, P. O. R.Gopalpur, 24-Pgns(N), Kol-136	9433129870	AL-909-M	05.10.09
3.	A.T.Drugs & Pharmaceuticals M-79(New-39) Rishi Bankim Road, Birati, Kolkata-700051, (loan on M/S Biosyn Laboratory, Kol-51)	9749663129	AL-76-M(L)	12.05.10
4.	Adcco Ltd., Adconagar, Dist. Hooghly.	9830771708	AL-356-M	16.04.79
5.	A.G.A.Chemical ,26B/A, G.T.Rd , Kazipara, P.O.Baidyabati, Dist. Hoogly.	0983891150 9 033-32475380	AL-907-M	24.06.09
6.	A.G.A.Herb & Herbals Sitaram Market, 1st fl., Champadani, Baidyabati, Hooghly. (Loan on M/S.Indigenco Pharmaceuticals Pvt. Ltd.)	0332632524 1	AL-80-M(L)	24.11.10
7.	Akansha Hair & Skin Care Herbal Unit Pvt.Ltd. S20/1&S20/2, Kasba Industrial Estate,Phase-1,Kol.700107		AL-858-M	30.08.07
8.	Allen Laboratories Ltd.,Allen Estate, Allen Bhawan, Krishnapur Rd., Kol-700102	25717273	AL-812-M	06.01.99
9.	Amit Biotech Pvt. Ltd., 21, Ballygunge Circular Rd. 2nd. floor, R.No.21,Kol-65. (Loan on M/S Giriraj Herbals (I) Pvt. Ltd. Baruipur Ind. Estt. 24Pgns (S).	9831023844	AL-71-M(L)	06.08.09
10.	Ammlonash Churna Co., Vill.Hatibagan, P.O.Jiagung, Murshidabad.	0348325567 4 9732759826	Al-380-M	27.07.06
11.	Ammlozin Kutir,P.O+Vill. Sayestanagar, Baduria, 24-Pgns(N)	9804242538 0321724322 2	AL-374-M	26.07.09
12.	Amrawati Ayurved 49/66/5/1, Rabindra Sarani, Rishra, Hoogly.	9831068976	AL-920-M	25.10.10
13.	Angel Industries (India) ,273(New-341) , Colonel K.P.Gupta Rd., Nabanagar, Halisahar, 24-Pgns(N). (Loan on M/s.S.C.Pharmaceuticals)		AL-59-M(L)	10.04.08

14.	Anmol Health Care Pvt.Ltd., Budge Budge Trunk Rd., Old Dakghar, Maheshstala, 24-Pgns(S)	2492-2049	AL-847-M	02.01.08
15.	Anupama Ayurvedic Drug Co. 12B/13, East Mall Rd. Kol-700080 (Loan on M/S. B.D.Enterprises)	2559-3039	AL-48-M(L)	24.07.06
16.	Ascharya Malam Chemical Works Pvt. Ltd., 40/2, Lakshminarayan Chakraborty Lane, Kadamtala, Howrah.	9883205814	AL-902-M	14.01.09
17.	Ashok Chemicals, Gar Shyamnagar, (Talik-hola), P.O. Shyamnagar, 24-Pgns(N)	9883697431 8013137839	AL-688-M	26.12.03
18.	Asiatic Herbs, B. P. Rd. Amtala, 24-Pgns(S)		AL-819-M	15.06.99
19.	Asoka Life Science Ltd., 26/27, Bangur Av. Block-C, 1st.floor, Kol-700055 (Loan on M/S. Dasgupta Pharmaceutical)	9831002001	AL-60-M(L)	29.04.08
20.	Asoka Life Science Ltd. 26/27, Bangur Av. Block C, 1st floor, Kolkata-700055 (loan on M/S.Giriraj Herbals (I) Pvt Ltd. 24-Pgns (S)		AL-72-M(L)	06.08.09
21.	Ashoka Life Science Ltd. 401, Lake Town, Block- B, Kol-89 (Loan on M/S.MEGAMED, Plot -72 P.S. Bhangor, 24-Pgns (S)		AL-78-M(L)	15.06.10
22.	Ayursakti Rasayansala (Regd.), 285.Rabindra Sarani, Kol-6 (Loan on M/S.Harold Pharmaceuticals)		AL-67-M(L)	14.01.09
23.	Ayurved Bhawan Dacca, 91/B, Khalisani, Garer Dhar, P.O.Chandannagar, Hoogly(Loan on M/S. Bans Pharmaceuticals)	9830291678	AL-64-M(L)	29.08.08
24.	Ayurvedia Dacca Pharmacy, Bosepukur Rd. P.O. Rajpur, Sonarpur, 24-Pgns(S)		AL-248-M	08.09.77
25.	Ayurvedic Gabesana Kendra , Noorpur Road, Vill. Haridevpur, P.O. Sarisa, 24-Pgn(S)	9775519040	AL-903-M	21.04.09
26.	Ballygunge Health Care Pvt. Ltd. 91B, Dr. G.S.Bose Rd. Kol-700039 Loan on M/S. Harold Pharmaceuticals, Champahati, 24-Pgns (S)		AL-81-M(L)	09.12.10
27.	B.D.Enterprises, BakhrahatRd. Hanspukur, Greenpark, Joka, 24-Pgns(S)	9830128256	AL-874-M	04.05.06
28.	Baidyaraj Ayurvedic Bhavan, Vill. Ghatakpukur, P.O.Gobindapur, P.S.Bhangar, 24-Pgns(S)	0321827103 2	AL-893-M	07.08.09
29.	Ballygunge Pharmaceutical Works, 14/104, Kadamtala Lane, Pipulpatti, Hoogly (Loan on		AL-62-M(L)	17.07.08

	M/S. Deekay Pharma)			
30.	Bangshi Ayurved Research & Co. 2No, Kallighat Rd., Guriahati, Cooch- Behar		AL-853-M	06.01.04
31.	Bans Pharmaceuticals, Baikunthapur, Kalitala, Tribeni, Hoogly	9339848106	AL-852-M	09.12.03
32.	Brahma Pharmacy, P.O.+Vill. Khatra, Dist. Bankura, Pin-722140	9883224738 9231686083	AL-905-M	02.06.09
33.	Basanti Herbal Products, 4 New Panchanantala Rd. Belghoria, Kol-700055 (Loan on M/S. B.D. Enterprises, 24-Pgns(S)		AL-51-M(L)	27.02.04
34.	Butto Kristo Paul Pharmaceuticals, 80, Beniatola St. Kol-700005	9830954907 9830057948	AL-803-M	18.03.04
35.	Bengal Chemical Pharmaceuticals Ltd. , 164, Manicktala Main Rd. Kol-700054		AL-124-M	03.08.76
36.	Bengal Chemicals& Pharmaceuticals Ltd. , 164, Manicktala Main Road, Kolkata-700054, (Loan on M/S. Allen Laboratories Ltd. Krishnapur Rd. Kol-102		AL-70-M(L)	14.07.09
37.	Bengal Research and Chemical Laboratory Pvt. Ltd., Jalan Industrial Complex, Begri Gram Panchyot, Sankharidaha, Howrah	9831060714 24738007 9831241467	AL-879-M	23.06.06
38.	Beston Herbal Product. 31,Prasanna Chatterjee Rd. Ghola Bazar, Sodepur, 24-Pgns(N)	9332047757 9339103688 2563-3484	AL-694-M	27.08.08
39.	Bhabani Ausadhalay Dacca, 70, Aurobinda Rd. Naihati 24-Pgns(N)	9831904015	AL-190-M	25.06.86
40.	Bharati Ayurvedic Laboratories, East Udairajpur, Daspara, Madhyamgram, Kolkata-700129.	0624427128 8 0943048503 3	AL-881-M	23.12.09
41.	Bijoli Chemical Works, 3, Masjid Bari St. 2nd. Floor, Kol-700006		AL-771-M	06.05.93
42.	Biswambhar Saha & Sons. 15, Kali Krishna Tagore St. Kol.700007 (Loan on Deekay Pharma , Hoogly)		AL-66-M(L)	18.12.08
43.	Biosyn Laboratory, 38, Kalyan Co.op. Society, M.B.Rd., Birati, Kol-700051	9903954296 2350-7324	AL-83-M	20.04.76
44.	BMPS Pharmaceuticals, 153/4, Becharam Chatterjee Rd, Behala, Kol-700034	983158858	AL-884-M	01.12.06
45.	Botany Pharmaceutical, NPR Park, Vill.Chapurria, P.O. Nilgunj Bazar,24-Pgns(N)	9903930408		

46.	Brahmachari Ayurvedia Gabesan Kendra Ved Aved Dham, Panchanantala Rd. Sukchar, Kol-700115	25351032 2534-3865	AL-838-M AL-900-M	13.09.02 24.12.08
47.	Branolia Chemical Works , Kasba Industrial Estate, PhaseII, Plot-31, E.M.Bypass, Kol-700078	2442-7407	AL-817-M	24.05.99
48.	Burnet Pharmaceuticals Pvt. Ltd. 85,Tiljola Rd. Kol-700039 (Loan onM/S.Indian National Drugs Co. Pvt. Ltd)	4012-1919 9433015592 9830574612	AL-31-M(L)	27.06.03
49.	C.M.Amlogin Churna Co.Pvt. Ltd. P.O+Vill. Sayestanagar, P.S.Baduria, 24-Pgns(N)		AL-38-M	11.11.08
50.	Care Drugs(India), 68/D. Dr.S.P.Mukherjee St. Hoogly.	9883207262	AL-567-M	29.11.05
51.	Central Research Institute (Ayurved), 4,C.N.Block, Sec.V, Bidhannagar, Kolkata-700091		AL-901-M	07.01.09
52.	Chemico Laboratory, Madhyamgram, Bidhanpally, 24Pgns(N)	2538-6233	AL-760-M	22.06.05
53.	Chyavan Ayurvedic Research Laboratory, 5A, Khali- sakota Pally, Birati, Kol-700051	9830819862	AL-836-M	04.07.02
54.	Cure Pharmaceuticals, P, 170, C.I.T. Scheme No.V11M, Kolkata-700054. (Loan on M/S. Harold Pharmaceuticals)	9874788206	AL-32-M(L)	01.01.10
55.	D.Fenil& Co., 215/1, S.N.Roy Road, Kol-700038	2400-6211	AL-208-M	16.05.77
56.	Dabur India Ltd., N.S.Basu Rd. Narendrapur, Kol-700103		AL-529-M	13.10.86
57.	Dacca Ausadhalaya Pvt.Ltd. 424,Nagendra Nath Rd. (Old: 58,Satgachi Rd), Dum Dum, Kol-28		AL-708-M	06.05.88
58.	Dasgupta Pharmaceuticals, Moynagarh, P.O.Roypur, P.S.Maheshtala, 24-Pgns(S)	2472-5858 9432580357	AL-895-M	14.01.08
59.	Dass Labs. 193/4,G.T.Rd. East End, Sripally, Burd- wan	9332220917 0342255087 6	AL-654-M	26.02.04
60.	Deekay Pharma, Pearsa Bagan , Dist.Hoogly	2680- 2231/3483	AL-698-M	26.11.87
61.	Deep Pharmaceutical Ayurvedic, 64,J.C.Khan Rd. Mankundu, Hoogly (Loan on M/s.Indigenco Pharma- ceutical Pvt.Ltd)	2363-0131 2685-2835	AL-37-M(L)	31.10.06
62.	Delta Chemical Industries(P) Ltd, 235/A/2, N.S.Bose Rd. Kol-700047		AL-223-M	06.01.83
63.	Dey's Medical Stores (Mfg) Ltd. 62, Bondel Rd. Kolkata-700019	22871381	AL-535-M	28.02.83

64.	Dipan Herbal Pharmacy ,Surja Sen Sarani, Banipur, P.S.Habra, 24-Pgns (N)	9832132815 0321623376 4	AL-913-M	17.03.10
65.	Divisional Forest Office , NTFP Divn, NTFP Beat, Govt. of West Bengal, Taipu, Darjeeling	0353243553 1 9832042165	AL-908-M	22.09.09
66.	Dr.P.Mazumder's Antibactrin, 4/70, Chanditala Lane, Kol-700040	9830064075 9830978794	AL-322-M	27.09.88
67.	Drug Land , 63/14,P.Majumder Rd Kol-kata-700078	9051642057	AL-16-M	14.05.09
68.	Durjodhan Herbal Home, 8, Ganga Prasad Mukherjee Rd. Kol-700025	2424-3790 9163230464	AL-197-M	15.04.77
69.	East India Pharmaceutical Works Ltd. 119, Biren Roy Rd.(W), Kol- 61		AL-888-M	01.02.07
70.	Emami Ltd., 13,B.T.Road, Kolkata-700056	6622- 3300/3180 9830024116	AL-511-M	01.09.06
71.	ESS Pharma, 45,Bhola Nath Street. Kol-kata-700036	2578-5643 9831928122	AL-103-M	02.06.76
72.	Eucon Pharmaceuticals, 99A, Natun Pukur,Barasat, 24-Pgns(N)	9830401734	AL-318-M	06.01.83
73.	Eureka Company, 137,J.P.Road, Word No.6, Kolkata-700081		AL-890-M	18.04.07
74.	Everest Herbal Research, 316,Chak Garia, Sreenagar Main Rd. Kol-94	2432-0651 9433077899	AL-752-M	18.06.01
75.	Food&Drug Corporation, Ealias Rd. Agarpara,Kolkata-700058		AL-595-M	23.11.84
76.	G.A.Research Corporation, Santinagar, P.O.Madanpur, Nadia.		AL-31-M	30.01.76
77.	Gan Laboratory (P) Ltd., Barrackpur Rd. P.o.Noapara, Barasat, Kol-125	9433373513	AL-891-M	19.04.07
78.	Giriraj Herbals(India) Pvt.Ltd., Shed No. S/2, Baruipur Industrial Estate, Fultala, Baruipur, 24-Pgns(S)	9830475325 2433- 5156/5700	AL-875-M	16.05.06
79.	Glamour World Ayurvedic Co. Pvt Ltd. 29, North Nowdapara Rd. Kol.-57	32989750	AL-867-M	07.05.08
80.	Glamour World Ayurvedic Co Pvt.Ltd. 29/3A, North Nowdapara Road,Kolkata-700057 (Loan on M/S. Herbs-N-Drugs, Sukantanagar, Barasat, 24-Pgns(N)	- Do-	AL-79-M(L)	19.11.10

81.	Goodcare Pharma Pvt. Ltd. Bagi, Bishnupur-1, 24-Pgns(S)		AL-104-M	14.10.99
82.	Goodman Pharmaceuticals (India) Pvt.Ltd 95, Shyamnagar Rd. Kolkata-700055		AL-551-M	21.06.83
83.	Gorachand Peer Laboratory, Kamdevpur, P.O.Mirhati, Amdanga, 24-Pgns(N)	9830851490	AL-761-M	02.05.92
84.	Gupta Shitrag Karyalay, 47/50, Girish Ghosh Lane, Ghusuri, Howrah		AL-582-M	27.08.84
85.	H.L.Slimming Point Pvt.Ltd., 100, Aurobinda Sarani, Kol-6 (Loan on M/S. Herbs-N-Drugs)	2554-4325	AL-46-M(L)	08.06.06
86.	H.S.B.Ayurvedic Products, Lane No. 4, Road No.3, Jalan Industrial Complex, Sankrail, Domjur, Howrah	9831215317	AL-878-M	23.06.06
87.	Hahnemann Herbal Limited , Vill.Shyampur, P.O. Beliatore, P.S.Borjora, Bankura	91336613/6214	AL-897-M	18.03.09
88.	Harold Pharmaceuticals, P.O+Vill. Champahati, Church Road , 24-Pgns(S).	9433123514	AL-550-M	10.06.83
89.	Herbaid, P.O. Narayanpur, Via.R.Gopalpur, Dum Dum Airport, Monikhola, 24-Pgns(N).	9331848108	AL-833-M	04.06.04
90.	Herbal Research Institute,178, Netaji Subhas Av., Sreerampur, Dist. Hoogly	2662-0350 2212-1866	AL-179-M	07.08.09
91.	Hebicare (Pvt) Ltd., Metro Garden City, Chakrajumolla, P.S. Bishnupur, 24-Pgns(S)	9831245011 9831245099 2247-8033/34	AL-828-M	16.02.01
92.	Herbid (India) Pvt.Ltd. 2/5A, Biharilal Ghosh Rd . P.O. Ariadaha, Kol-57	9830481574	AL-22-M	28.02.08
93.	Herbochem Remedies India (P) Ltd. 10, Musalmanpara Rd., Elachi, Narendrapur, 24-Pgns(S)	2477-3654 9831191166-64	AL-816-M	19.05.99
94.	Herbo-Med (P) Ltd. 237/C, S.D.Chatterjee Rd. P.O+P.S. Baruipur, 24-Pgns(S)	9831023181 2370-7365	AL-880-M	29.06.06
95.	Herbs Era Pharmaceuticals (P) Ltd., Udairajpur, 24-Pgns(N)	25267577 9433025365	AL-88-M	05.05.76
96.	Herbs India, 1,Gupta Lane, Kolkata-700006		AL-789-M	08.02.95
97.	Herbs-N-Drugs, Nutanpukur Rd. Sukantanagar, Barasat, 24-Pgns(N)	2562-4621	AL-844-M	03.04.03
98.	Herb-N-Herbs, Vill. Chakchata, P.O.Roypur, P.S. Maheshtala, 24-Pgns(S)	9830548131	AL-813-M	25.01.99

99.	Himalay Herbal Products, Khudirampally, Sitalpur Rd., Islampur, Uttar Dinajpur		AL-842-M	22.10.02
100.	Indian Ayurved Udyog, Saktigarh Rd. No.3, Siliguri, Darjeeling. (Loan on M/S. Harold Pharmaceuticals)		AL-36-M(L)	14.06.04
101.	Indian Drug Laboratories, 58, Maharaja Nandakumar Rd. Kolkata-700051	25144268 9883241741	AL-678-M	17.03.82
102.	Indian National Drug Co. (P) Ltd., 5/2, Dr.S.C.Banerjee Rd. Kol-700085	9830040835	AL-830-M	16.07.01
103.	Indigenco Pharmaceuticals (P) Ltd. Morepukur, Dakshinpara, Rishra, Hoogly	9433442016	AL-728-M	03.02.89
104.	Indigenous Pharma Remedies, 37, West Kamalpur, Dum Dum, Kol-700028	9433180388	AL-800-M	21.11.96
105.	J & S Ayurveda Products Pvt. Ltd. Plot No. 7/1, Nonadanga Industrial Area, 759, Anandapur, Kol-700107.	2440-4244	AL-904-M	12.05.09
106.	Jivan Sambridhi Medical Marketing Ltd., 137, Canel Street, Sribhumi, Kolkata-700048. (Loan on M/S. Lalmoohan Aushadhalaya, Goipur, Gobar-danga, 24-Pgns(N)	033-3221-6061 9830014893	AL-82-M(L)	09.12.10
107.	Jivak Ayurved, 14, Ramkrishna Rd. Rishra, Hoogly.	2672-3605 9830152166	AL-295-M	29.03.78
108.	Joy Herbal House, 55, Ealias Rd, Kolkata-700058	2553-7190	AL-130-M	12.08.10
109.	Jupiter Pharmaceuticals Ltd., 620, D.H.Rd., Behala Industrial Estate, Kolkata-700034		AL-606-M	23.12.03
110.	Jupiter Pharmaceuticals Ltd., Behala Industrial Estate, 620, D.H.Rd. Kol-34 (Loan on M/S. Allen Labs.Ltd.)		AL-43-M(L)	27.05.05
111.	Kalyan Ayurved Pvt. Ltd. NH-6, Mansadanga, P.O. Bankra, P.S. Domjur, Howrah.	9331027801 033-26426380	AL-919-M	21.07.10
112.	Karunamoyee Pharmaceuticals, P.O.+Vill. Dostipur, UstiRd., P.S. Falta, 24-Pgns(S)	9732545911	AL-894-M	06.12.07
113.	Kaviraj N.C.Chakraborty & Co., Gokulpur, Katagunji, Kalyani, Nadia		AL-801-M	26.06.02
114.	Kaviraj N.N.Sen & Co. Pvt. Ltd., P-73, Amritlal Mukherjee Rd. Kol-63	2496-2580	AL-831-M	18.07.01
115.	Kohinoor Ayurvedic Works 69/1, East Ghoshpara Road, P.O. Jagaddal,	9332221903 9339698444	AL-68-M(L)	25.01.11

	24-Pgns(N) (Loan on M/S.Walton & Co, 4Pathak Para Lane, P.O. Nalta, Kol-28.)			
116.	Lalmohan Ausadhalay, Vill.Goipur, P.O. Gobardanga, 24-Pgns(N)	0321624977 7	AL-655-M	16.10.07
117.	Lama Pharmaceuticals, Sukantanagar, P.O.Michael Nagar, 24-Pgns(N)	2235-9808	AL-522-M	03.12.82
118.	Liods Herbal. 107,Mitrapara 2nd Lane, P.O.Harinavi P.S.Sonarpur, Kolkata-700148	9903813195 9903963426	AL_892-M	27.06.07
119.	Livoplex & Co. 14,Vivekananda Rd. Bansberia, Hoogly	9748869715 9836482396	AL-175-M	21.12.10
120.	Lokochem Pharma. 68, Bagjola Link Road, Kol-700065		AL-780-M	27.11.08
121.	Loren Beautifier (P) Ltd., Nazrul Islam Av., Teghoria, Hatiara, Kolkata-700059		AL-611-M	29.04.85
122.	M.M.Ayurvedic Pvt.Ltd. 35/32, P.K.Biwash Rd. Khardah, 24-Pgns(N)	2583-9513	AL-837-M	25.08.06
123.	Madona Pharmaceutical Research Pvt.Ltd., Narayanpur, P.O. R.Gopalpur, 24-Pgns(N)	25515909 9831513539	AL-899-M	12.12.08
124.	Mascot Drugs India. 793/613 Kailas NagarBandel, Hoogly (Loan on M/S.Bans Pharmaceuticals)		AL-52-M(L)	18.07.07
125.	Masolin Herbal (P) Ltd. Palm Village Complex, Vill. Bhasa (Bagi), P.O.+P.S. Bishnupur. 24-Pgns (S)		AL-918-M	23.06.10
126.	M/S. Masolin Herbal Pvt. Ltd. 1,British Indian St.Mez. Floor, Room No.21, Kolkata 700069 (Loan on M/S. Indigenco Pharmaceuticals Pvt. Ltd.)	9433018197	AL-69-M(L)	24.03.09
127.	Maya Ayurved Bhawan, Sainpala, Natunpukur, Basirhat, 24-Pgns(N)	9903383535 2533-3382 9434826639	AL-815-M	08.06.07
128.	Mc Nroe Chemicals (Ayv Divn), 12,Biswambhar Mallick Lane, Kol-700005	32500005	AL-793-M	15.04.98
129.	Medas Pharmaceuticals, 98,M.M.Ghosh Road, Kolkata-700074	65101687	AL-915-M	05.05.10
130.	MEGAMED Plot-72, Kolkata- Basanti Road, P.S. Bhangar, 24-Pgns (S)	9831047597	AL-917-M	31.05.10
131.	Medico Pharmaceuticals Research, 2, Bijoy Ch.Majumder Rd. (Old), 383/1,Sarat Bose Rd. South Subhas Nagar , Kol.-700065	9434743002	AL-658-M	08.07.86

132.	Mendine Pharmaceuticals Pvt.Ltd. 6A&B,Alipore Rd. Kol-27 (Loan on M/S. Indian National Drug Co. Pvt. Ltd.)	9830268556	AL-63-M(L)	17.07.08
133.	Micro Laboratory, P.O+Vill. Asurali,Bankura	2663-6833 03244247095 9433503287	AL-98-M	18.04.07
134.	Monson International, 140,Stream Laundry More, Kol-700096	9903830914	AL-829-M	02.07.01
135.	Musuru Vaidya Ayurvedic Medicine Industries, Nalangi Bari, Nisigunj, Mathabhanga , Cooch Behar	03583266382 9434136651	AL-882-M	29.11.07
136.	N.C.P.Works, 98, G.T.Road, Sakher Bazar, Bhadrakali, Hoogly.	9830082253 9433113809	AL-784-M	08.12.97
137.	Nagarjun Ayurvedic Pharmacy, Purba Vidyadharpur, Via. Shyamnagar. 24-Pgns(N)		AL-377-M	30.07.79
138.	Natural Herb, 20, Kustia Road, P.O. Tijjala, Kolkata-700039	9831116674	AL-912-M	23.12.09
139.	Natural Remedies, Hari Mohan Dalal Rd.,Basirhat, 24-Pgns(N)	03217265627	AL-471-M	16.12.04
140.	Nature & Cure, Ambagan, Nabapally, Barasat, 24-Pgns(N)		AL-657-M	24.06.86
141.	Neolab Biotech Industries 36/2, Phase I, Industrial Estate, Kalyani, Nadia.	9433457988	AL-617-M	19.02.10
142.	Niranjan Ayurved Bhawan. Plot No .1943, J.L.No.154, Bajkul Kismat, Midnapur(E)		AL-108-M	12.06.76
143.	Nutrit Products. 41,Tiwari Para Lane, Dist. Hoogly	9433883935	AL-267-M	19.11.77
144.	Ojas Research Centre Pvt. Ltd., RAA/16,Raghunathpur,Deshbandhu- nagar, Rajarhat, Kol-700059	9830015735	AL-845-M	24.04.03
145.	Orchido Labs. (Ayurvedic Divn), P.O+Vill. Chowberia, 24-Pgns(N)		AL-778-M	18.11.94
146.	Paharpur Ousadhalaya (P) Ltd., 98,M.M. Ghosh Road, Dum Dum, Kolkata-700074	2529-0419	AL-369-M	11.10.06
147.	Palchem Pharmacon, Holding No.67, Ward No4, Rishi Aurobinda Rd., Madhyamgram. 24-Pgns(N)		AL-628-M	08.08.85
148.	Pandit Ramchandra Sharma, 15, Daspara Rd. (K.B.M.Rd), Ultadanga, Kol-700067		AL-85-M	20.11.07

149.	Parampara Ayurveda. 451/4 G.T.Rd (S), Sibpur, Howrah. (Loan on M/S. Herbs-N-Drugs)	9831601017	AL-49-M(L)	22.05.09
150.	Parampara Ayurved, 234, M.G.Road, Thakurpukur, Kolkata-700063	9831601017	AL-914-M	08.04.10
151.	Paschim Banga Rajya Pratibandhi Sammilani , 499/1,Anandapur, Local; P-58, Phase II, 1st. Floor, Kol-700107. (Loan on M/S. Hahnemann Herbal Ltd. Vill Shyampur, P.O.Beliatore, P.S.Borjora, Bankura)	9830262246	AL-74-M(L)	09.10.09
152.	Patrochem Pharma ,100 (71), M.P.Sarani, Kolkata-700049.	9831146737	AL-910-M	23.12.09
153.	People's Research Laboratory, 24, Kalimuddin Sarkar Lane, Kolkata-700010	9830372910 23510034	AL-870-M	11.07.05
154.	Prafulla Chandra Pharmaceutical Laboratory, 52, Bagiota Link Rd. South Subhasnagar, Kol.-700065.	2566-5583 3433933325	AL-861-M	08.10.04
155.	Prova Products. College Para, Raigunj, Uttar Dinajpur		AL-873-M	28.04.06
156.	Raja Ayurved Kendra 7, B.T.Road, Sukchar (Girja), Kolkata-700115	2583-8466 9432392813	AL-911-M	10.02.10
157.	R.A.Pharmaceutical, 19/1, Srimanipara Lane, Kol-36 (Loan on M/S. S.C. Pharmaceuticals Pvt.Ltd.)	9239393847 6417-7228	AL-56-M(L)	08.11.07
158.	Re-Life Pharmaceuticals, Vill. Chanditala , P.O.Khantura, 24-Pgns (N)	9732570771	AL-785-M	12.07.94
159.	Reliable Laboratories India. 29/28, Kasimpur Rd. Pearabagan, Hoogly. (Loan on M/S Bans Pharmaceuticals		AL-53-M(L)	18.07.07
160.	Rozy Ointment Mfg.Co., Kholapota, Mothurapur Colony, 24-Pgns(N)		AL-507-M	07.07.82
161.	Sadhana Ausadhalaya-Dacca 36, Sadhana Ausadha- lay Road, Kolkata-700048	2241-4688	AL-169-M	24.06.09
162.	SANTON BIOTEK 1667/1/1&1667/1/2 , Masjid Bari Rd. Nabapally, Barasat, 24-Pgns(N), (Kol-126)	9331884889	AL-921-M	23.11.10
163.	Sarada Ausadhalay –Dacca Rathtala, P.O. Fingapara, 24-Pgns(N)		AL-775-M AL-521-M	22.10.09 30.11.82
164.	S.A.Drug Enterprises, 359, Thakurpukur Rd. Bakhrahat, Kol-63			

165.	S.C.Chemicals, P-942, Lake Town, Block-A, Kolkata-700089	9339329828 2521-5559	AL-72-M	27.02.07
166.	S.C.Pharmaceuticals (P) Ltd. Nagdah, Kampa, 24-Pgns(N)	2587-1966 9748981052	AL-806-M	02.04.98
167.	S.D.Pharmaceuticals, Gurdah Natun Pally, Shyamnagar, 24-Pgns(N).	9433905105	AL-167-M	24.11.08
168.	S.K.Dass 2, Beadon Row ,Kolkata-700006		AL-906-M	15.06.09
169.	S.K.Pharma, Budge Budge Road, Rampur 24-Pgns(N)	2401-1138 9831318945	AL-336-M	13.10.78
170.	Sahul India Ltd. Bombay Rd. NH-6, Mouja: Chamrail, P.S. Liluah, Howrah.	2242-4159/0624	AL-868-M	25.05.05
171.	Sanjivak Ayurvedic Pharma, P.O.+Vill. Akaipur, P.S. Gopalnagar, 24-Pgns(N)		AL-856-M	07.04.04
172.	Santi Ousadhalaya Hoogly Dacca, Sahebbagan, Chandannagar, Hoogly.	9830191588	AL-312-M	05.03.10
173.	Sharma Ayurved Pvt. Ltd., 35, R.B.S. Rd, Angus, Hoogly	9830050522	AL-520-M	09.08.99
174.	Shaw Chemo Herbals, 3/1A, N.C. Das Road, Kolkata-700034, (Loan on M/S. Harold Pharmaceuticals, 24-Pgns(S)		AL-73-M(L)	05.10.09
175.	Shree Baidyanath Ayurved Bhawan Pvt. Ltd., P-83, Benaras Rd. Howrah.	2259-2625 / 1016/1017	AL-17-M	29.12.03
176.	Shree Dhanwantari Laboratories (Calcutta), 80C/1/1D, Jyogadyan Lane, Kolkata-700054	9831473832	AL-381-M	07.05.82
177.	Sri Mayapur Ayurvedic Research & Development Trust. P.O. Sri Mayapur. Dist. Nadia	9432530888	AL-916-M	12.05.10
178.	Sisupali Pharmachem (P) Ltd., Saktigar, Birati, Kolkata-700051	9007328691	AL-716-M	02.11.93
179.	Solace Herbals Pvt. Ltd. Plot No 153, WIIDC, Cooch Behar Industrial Growth Centre, Chakchaka, Kotwali, Cooch Behar.	03582-223562 9434743622	AL-863-M	04.02.05
180.	Southern Health Improvement Samity, Nalpukur, Jagulgachi, Bhangor, 24-Pgns(S)		AL-872-M	10.03.06
181.	Stafford Pharmaceuticals, Nalta, Kolkata-28 (Loan On M/S. Walton &Co)		AL-10-M(L)	30.12.82

182.	Standard Pharmaceuticals Ltd., 1D' Cruze Garden Lane, Sreerampur, Hoogly	9830951092	AL-518-M	01.04.02
183.	State Pharmacopoeial Laboratory & Pharmacy For Indian Medicine, Kalyani, Nadia.	2589-6281	AL-865-M	16.03.05
184.	Sunshine Pharmaceuticals, 502, Khaihata, P.O. Mangal Bari, Malda	9609758628	AL-886-M	07.12.06
185.	Surya Universal Pvt. Ltd. Nilgunj Rd., P.O. Agarpara, 24-Pgns(N)		AL-848-M	14.05.03
186.	Susruta Laboratories P. Ltd., Champahati, 24-Pgns(S)		AL-742-M	24.07.90
187.	Swasti Sevak Kutir Silpam. Satsang Swasti Sibir, Kalinagar, Krishnanagar, Nadia	9434165557	AL-722-M	07.09.88
188.	Swastik Ayurved Home. 507/2, Jessore Rd. Kol-700074 (Loan on M/S.Deekay Pharma)	9007459202	AL-65-M(L)	15.10.08
189.	Tarak Nath Chemical Works, P.O.+Vill. Jangal- para, Tarekeswar, Hoogly		AL-302-M	29.04.78
190.	The Dacca Ayurvedia Pharmacy Ltd. Daliahouse, Srijanpally, Dattapur, 24-Pgns(N)		AL-862-M	09.12.04
191.	The Life Medicine (P) Ltd. 14, Sarat Bose Rd. Rajbari Colony, Birati , Kolkata-700081		AL-667-M	31.08.94
192.	The Pahar Pharmaceuticals, P.O. +Vill. Dogachi, Krishnanagar, Nadia	9434105265	AL-885-M	01.12.06
193.	Tofa Ayurved Complex , Charghatbazar, Swarupnagar, 24Pgns(N)	9434379334 9830744512	AL-799-M	17.01.96
194.	Triochem Laboratories, Nabagram, Panchpota, 24-Pgns(S)		AL-408-M	11.02.80
195.	Triskand Ayurved. Roypara, Vill. Domjur, Howrah-711405	9231481229	AL-846-M	24.04.03
196.	Vaidya Nandaram Gigraj Chamaria, 51, Ramlochan Shire St. Belur, Howrah.	2654-6509 9339503796	AL-822-M	16.09.09
197.	Vetmed Pvt. Ltd., 19/B, M.M.Feeder Rd Kolkata-700057	2564-7058 9432110270	AL-747-M	18.05.04
198.	Walton & Co., 4, Pathakpara Lane, Dum Dum, Nalta, Kol-28	9331209280	AL-73-M	27.05.96
199.	Woyoso Herbal , A119, Survey Park, Kolkata-75 (Loan on M/S. Giriraj Herbals (India) Pvt. Ltd.)		AL-75-M(L)	18.12.09
200.	Zen Pharmaceuticals. Binpara, Satgachi, P.O.Anulia , (Ranaghat), Nadia.	9232139890	AL-821-M	06.08.99

Unani

Sl.No	Name of the Firms	Licence No.	Date	G.M.P. No.	Date
1	A.K.A.Chemicals , Vill.+P.O. +MouzaHariharpara, Plot No.1247/1503 Kh.No.1643, Mur- shidabad.	UL-27-M	19.02.01	AYV/GMP-57-08	22.07.08
2.	Ahsan Chemical (Unani Dawakhana) 9 ,Gopal Chandra Lane Kolkata-700073	UL-28-M	04.03.04		
3.	Delhi Dawakhana ,8/3,Nilmadhab Sen Lane ,Kolkata -700007	UL-18-M	11.02.80		
4.	Ejaz Dawakhana, 6/2, Madan Street, Kolkata 700013	UL-5-M	26.12.75		
5.	General Dawakhana ,112/5, Lower Chitpur Road Kolkata-700073	UL-24-M	11.05.06		
6.	Haziq Dawakhana , Hutton Road, Asansol ,Burdwan.	UL-10-M	20.10.76		
7.	Qadri Dawakhana, B/35/1,Iron Gate Road, Garden Reach ,Kol- 700024	UL-15-M	16.07.08	AYV/GMP-86-08	14.01.09
8.	Rafique Dawakhana , F-79,Garden Reach,Kolkata-700024	UL-19-M	03.05.80		
9.	Rekha Dawakhana , Islampur, Murshidabad	UL-30-M	17.03.05		
10.	S.A.B.Bakshi & Co, 32,Maulana Saukat Ali Street ,Kolkata-700073	UL-12-M	28.05.87	AYV/GMP-90-09	10.02.09
11.	Salemia Dawakhana ,Hamadama Bazar Hadipur,24-Pgns. (N)	UL-20-M	09.10.80		
12.	Susanta Drugs (U) ,Vill. Dhakaipa- ra , Palasi, 24-Pgns (N)	UL-29-M	04.03.04		

Annexure 9.4

Jute Industry in West Bengal

SL. No.	Name of Industries/Mills	Address
1	Agarpara Jute Mills,	“Banerjee Bhavan”, 15, Brabourne Road, (5 Floor), Calcutta-700001, Ph. No.: 2421807/1607
2	Alliance Mills Ltd.,	18, Netaji Subhas Road Calcutta~700001, Ph. No.2203401/2/3
3	Anglo-India Jute Mills Co.Ltd.,	18, Netaji Subhas Road (North), Calcutta~700001 Ph.No.2205811/2
4	Angus Jute Works	9, India Exch. Place(3rd Floor) Calcutta-700001, Ph.No.248-3190/5579
5	Auckland International Ltd.	6, Little Russel Street Calcutta- 700071, Ph.No.248-3190/5579
6	The Baranagore Jute Factory PLC	284, Maharaja Nanda Kumar Road(N) Alambazar, Calcutta- 700035, Ph. No: 5578248/8103/7139/5497
7	West Bengal Agro Textiles Corpn. Ltd	Chatterjee International Center 33A, J.L.Nehru Rd., Calcutta-1, Ph. No.: 293722/23
8	Birla Corporation Ltd.	Birla Building 9/1 R.N.Mukherjee Road, Calcutta-1, Ph. No: 2201680/2380
9	Ambica Multifibres Ltd. (Bally Mills)	3 Haren Mukherjee Road, Belur Math, Howrah-711202, Ph. No: 6546224/6730
10	Soorah Jute Mills	Birla Building, 9/1 R.N.Mukherjee Road, Calcutta-1, Ph. No: 2201680/2380
11	Budge Budge Co. Ltd.	16a, Brabourne Road, 9th Floor, Calcutta-1, Ph. No: 255637/5781
12	The Calcutta Jute Mfg. Co. Ltd.	20, Old Court House St., Calcutta- 700001, Ph. No: 2483960

SL. No.	Name of Industries/Mills	Address
13	Loomtex Engineering (Private) Ltd. Licencee of Caledonion Jute & Industries	64, K.B.M. Road, Champdany, Hooghly-712222, Ph. No: 2424666/4607/9609
14	Cheviot Company Ltd.	Magma House, 9th Floor, 24 Park Street, Calcutta- 700016, Ph. No: 292503/6870/6871
15	Dalhousie Jute company	27, R.N.Mukherjee Road, Calcutta- 700001, Ph. No: 2480166
16	Delta Industries Ltd.	4, Council House Street, Calcutta-700001, Ph. No: 2485301/9828/3150
17	The Eastern Mfg.Co.Ltd (Union General Company Ltd.)	21A, Shakespeare Sarani(3rd Floor), Calcutta- 700071, Ph. No: 2476454/0075/1464
18	The Empire Jute Co. Ltd.	21A, Shakespeare Sarani(3rd Floor) Calcutta- 700071, Ph. No: 2476454/0075/1464
19	Gloster Jute Mills Ltd.	21, Strand Road, Calcutta- 700001, Ph. No: 2209601
20	Fort William Jute Division (Vijai Shree Ltd.)	10, Clive Row, Calcutta-700071 Ph. No: 2204211/8783/9376
21	The Ganges Mfg. Co. Ltd.	Chatterjee International Center. 6th Floor, Flat No. A1, 33A, J.L.Nehru Road, Calcutta-700071 Ph.No: 2470881/0882/0883
22	The Gourepore Co. Ltd.	Mukti Chamber, 4A, Clive Row, 5th Floor, Room No. 408, Calcutta- 700001, Ph. No: 2214614/15/51
23	Hastings Jute Mills (A Div. of Murlidhar Ratanlal Exports Ltd.)	15B, Hemanta Basu Sarani, Calcutta-700001, Ph. No: 2482091/8581/4934
24	The Hooghly Mills Ltd.	10, Clive Row, 3rd Floor, Calcutta- 700001, Ph. No: 257520/7295
25	Bowreah Jute Mill	10, Clive Row, Calcutta- 700001

SL. No.	Name of Industries/Mills	Address
26	Gondalpara Jute Mill	10, Clive Row, Calcutta- 700001
27	Waverly Jute Mill	10, Clive Row, Calcutta- 700001
28	Hukumchand Jute Mill (Hooghly Mills 24 Parganas Projects Ltd.)	10, Clive Row, Calcutta- 700001, Ph.No: 2429842/6064
29	Howrah Mills Co. Ltd.	10, Dr.Rajendra Prasad Sarani, Calcutta- 700001 Ph. No: 2422556/4390
30	India Jute Mills (The Hooghly Mills Company Ltd.)	10, Clive Row, Calcutta- 700001, Ph. No: 2426064/9790
31	Jagatdal Jute & Industries Pvt. Ltd.	23A, Netaji Subhas Rd.Calcutta- 700001 Ph. No: 2200351/2818/2428
32	Kamarhatty Co.Ltd.	16A, Brabourne Road Calcutta- 700001 Ph. No: 261305
33	Kanknarrah Co. Ltd.	29/1, Stephen House(2nd Floor 4, B.B.D Bag East) Calcutta- 700001, Ph. No: 2200477/1397
34	Kanoria Jute & Industries Ltd.	44/1, Red Cross Place Calcutta- 700001 Ph. No: 2430768/69 2482253/7411
35	The Kelvin Jute Co. Ltd.	6,Old Post Office St.(1st Floor) Calcutta- 700001, Ph. No: 2487783 2430074/0283
36	Ludlow Jute Mills (Prop. AEKTA Ltd.)	71, Park Street Calcutta- 700016 Ph. No: 2473202/2911
37	Mahadeo Jute & Industries Ltd.	23, Netaji Subhas Rd. Calcutta- 700001
38	Megna Jute Mills, Divya Drsthi Traders & Commercial(P) Ltd.	11, Clive Row Calcutta- 700001 Ph.No: 2211995
39	Naffarchandra Jute Mills Ltd.	2, Cooper Lane Calcutta- 700001 Ph. No: 2485558/1034/9868

SL. No	Name of Industries/Mills	Address
40	The Naihati Jute Mills Comp. Ltd.	7, Hare St.(7th Floor Calcutta- 700001) Ph. No: 2489904/18/73/74
41	Tirupati Jute Industries Pvt. Ltd	545, G.T. road(South) Howrah- 711101
42	National Jute Mill	18A, Brabourne Road PNB House Calcutta-700001 Ph. No: 265190
43	Alexandra Jute Mill	Chartered Bank Building 4, Netaji Subhas Rd. Calcutta- 700001, Ph. No: 220235
44	Khardah Jute Mill	7, Red Cross Place Calcutta- 700001 Ph.No: 2482866
45	Kinnison Jute Mill	Chartered Bank Building, 4, Netaji Subhas Road, Calcutta- 700001, Ph. No: 2202351
46	Union Jute Mill	Chartered Bank Building, 4, Netaji Subhas Road, Calcutta- 700001, Ph. NO: 2202351
47	New Central Jute Mills Co. Ltd.	18A, Brabourne Rd. Calcutta- 700001
48	Northbrook Jute Mill Co. Ltd	14B, Clive Row Calcutta- 700001 Ph. No: 2434158/4159
49	Nuddea Industries Ltd (Formerly HMP Jute Mill Ltd.)	Regd. Office: Nuddea Jute Mills P.O. & P.S. Naihati Dist.- 24 Parganas(North)Ph. No: 812077/3557
50	Prabartak Jute Mills Ltd.	5, Synagouge St., 5th Floor, Calcutta- 700001 Ph. No: 2428984
51	The Premchand Jute Mills Ltd.	81, Sovabazar St., Calcutta- 700005, Ph. No:5543005
52	Reliance Jute & Industries Ltd.	VNSS Business Center, Ideal Plaza(S) Block, 11/1, Sarat Bose Rd. Calcutta- 700020, Ph. No: 2407017/7018/7019
53	The Samnuggar Jute Factory Co. Ltd.	9, India Exchange Place, Calcutta- 700001 Ph. No: 2203158
54	Shree Ambica Multifibres Ltd. (Ambica Mills)	6, Little Russel St., Calcutta- 700071, Ph. NO: 2479921/7998

SL. No.	Name of Industries/Mills	Address
55	Shree Gourishankar Jute Mills Ltd.	67, Park Street, Calcutta- 700016, Ph. No: 292896/0614
56	TEPCON International(India) Ltd. Unit: Shree Hanuman Jute Mills	70, Nalini Seth Rd., Calcutta- 700007, Ph.No: 2311841/2975
57	The Titaghur Jute Factory PLC	16, Ganesh Chandra Avenue,3rd Floor, Calcutta- 700001, Ph. No: 2205801
58	The Victoria Jute Company Limited RDB Textiles ITD.	8/1, Lalbazar Street, Calcutta- 700001
59	Wellington Jute Mill (The Champdany Ind. Ltd)	25, Princep Street, Calcutta- 700072, Ph. No: 277880/7913/7288
60	Chitvalsah Jute Mills (Div. of Williard India Ltd.)	3, Netaji Subhas Rd., Calcutta- 700001, Ph. No: 2487476/8954
61	Nellimarla Jute Mills Co. Ltd.	3A, Shakespeare Sarani Calcutta- 700017 Ph. No: 24243/7571
62	Shree Bajrang Jute Mills Ltd.	1&2, Old Court House Corner Calcutta- 700001 Ph. No: 2206320/6337
63	East India Commercial Co. Pvt. Ltd (Shree Krishna Jute Mills)	1, Old Court House Cr. Calcutta- 700001 Ph. No: 2206320/6337
64	Mahabir Jute Mills Ltd.	9, Jagmohan Mullic Lane Calcutta- 700007
65	Mohan Jute Mills Ltd.	1, Kyd Street 164, Palace Court(2nd Floor) Calcutta- 700016
66	Winsome International (Rameswara Jute Mills)	28/1, Shakespeare Sarani, Kolkata- 700017, Ph. No: 2472373/77
67	Ambica Multifibers Ltd. (Unit - Ambica Mills)	Kankaria Estate (7th Floor), 6, Little Russell Street , Kolkata - 700071

SL. No.	Name of Industries/Mills	Address
68	Barnagore Jute Factory Ltd.	5, Synagogue Street, Kolkata-700001
69	Caledonian Jute Mill	Unit: Loomtex Engg. Pvt. Ltd. 7, Brabourne Road, Kolkata- 700001
70	The Champdany Industries Ltd.	25,Princep Street, Kolkata- 700072
71	Cheviot Co. Ltd.	24, Park St., Magma House, (9th Floor),Kolkata- 700016.
72	Chitavalsah Jute Mills Co. Ltd.	McLeod House, 3, N.S Road, Kolkata-700001
73	Gourishankar Jute Mills Ltd.	67, Park Street, Kolkata- 700016
74	Hooghly Mills Projects Ltd.	(Unit : Hukumchand Jute Mill & India Jute Mill) 10, DR. Rajendra Prasad Sarani, Kolkata - 700 001
75	Howrah Mills co. Ltd. Unit- Howrah	Unit- Tirupati Howrah House, 135, Foreshore Rd. (Upper), Howrah- 711102
76	National Jute Mfg. Corpn. Ltd.	Chartered Bank Building, 4, N.S. Road,Kolkata-700001
77	Prabartak Jute Ltd.	5, Synagogue St.,Kolkata-700001
78	Union General Co. Ltd. Unit-Eastern Mfg. Co. Ltd.	21A, Shakespeare sarani, Kolkata- 700017
79	Vijoyshree Ltd.	10, Clive Row, Kolkata-700001
80	Victoria Jute Co. Ltd. (RDB Textiles)	1&2 Old Court House Street, 5th Floor, Kolkata- 70000
81	Wellington Jute Mills	G.P.O Box – 543, 25, Princep Street, Kolkata - 700072
82	Kaliagunj Agro Trading	Pvt.Ltd. P-4 New Howrah Bridge Approach Road, 10th Floor. R.N.1022, Kolkata 700001. W.B PH. 91-33-22381686

Source: Based on data from Jute Commission, Ministry of Textile, Govt. of India; Jute Mill Directory, worldjute.com;

Annexure 9.5

LEATHER INDUSTRY IN WEST BENGAL

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
1	Top Leathers & Footwears Pvt. Ltd.	Shakil Ahmed 8/2, Dr. Bires Guha Street Kolkata700 017 W.B Ph:+91 33 2287-9196 topleathersindia@gmail.com	Cow Leather
2	D2 International	Rajiv Bhatia, P-78, Kasba Industrial Estatephase Ii, Kolkata 700107 W.B Ph:+91 33 4001-5537 info@d2international.com /www.d2international.com	Cow Leather
3	Canton Tannery Pvt. Ltd.	Md. Khalid Shamim, 9/H,Rd.Topsia bansbagan Kolkata 700039 W.B, Phone:+91 9831131641 /khldshamim@yahoo.co.in	Buff Leather
4	Tarway Exports, Ajoy Kumar Tarway	33, Dr.Rajendra Road Kolkata 700 020, W.B Ph:+91 33 2486-9928 tarway@vsnl.com /www.tarway.com	Cow Leather
5	Ahmed Tannery	Mohammed Ahmed, 10/1/1a, Topsia Road (South)Kolkata700046w.B Phone:+91 33 2344-8683 / 8684 / 8685 atcalcutta@vsnl.net www.ahmedtannery.com	Cow Leather
6	Shee Sen Leather Pvt. Ltd.	Theresa Lie Shan Liu, 114/C, Matheswartolla Rd Kolkata700 046 W.B Phone:+91 33 2329-6809 theresa@sheesenleather.com	Cow Leather
7	Khimjee Hunsraj	T. Suraiya / R. J. Suraiya, 9, Rabindra Sarani Kolkata700 073 W.B Phone:+91 33 2235-4486/ 87/ 88 /office@khimjee.com/www.khimjee.com	Cow Leather
8	Osman Shariff	Osman Shariff, 10, Teretta Bazar Street Kolkata700073 W.B. Phone:+91 33 4065-9132 oshareiff@vsnl.net	Cow Leather
9	C. P. L. Tannery	Indranil Ghosh, 119/1, Matheswartala Road Kolkata700046 W.B Phone:+91 9830023659 cpltannery@sify.com	Cow Leather
10	C. P. L. Tannery	Indranil Ghosh, 119/1, Matheswartala Road Kolkata700046 W.B Phone:+91 9830023659 cpltannery@sify.com	Cow Leather
11	Scarlet Impex	Sohail Jabbar, 37, Ratu Sarkar Lane Kolkata700 073 W.B Phone:+91 33 2345-7399 /accounts@scarletimpex.com	Cow Leather

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
12	Grace Craft Pvt. Ltd.	Adhar Sahni, 5b, Stephen Court 18a, Park Street Kolkata700 016 W.B Phone:+91 9051613855 /info@huntbags.com/www.huntbags.com	Cow Leather
13	Taj Leather Works	Shafique Abedin, 30/1, Alimuddin Street Kolkata700 016 W.B Phone:+91 33 2217-5078 / 2264-0593 /tajleather@gmail.com	Cow Calf Leather
14	Rita's Creation Pvt. Ltd.	Bidyut Ghosh, Noapara Old Kalibari Road,P.O. & P.S. Barasatnorth 24-Parganas Kolkata700124 W.B Phone:+91 33 2542-5527 /ritasleather@gmail.com www.ritasleather.com	Buff Calf Leather
15	Star Hide Company	Shahnawaz Akhtar, P-17, Phase - Likasba Industrial Estate Kolkata700107 W.B Phone:+91 33 2442-8096 /starhide@vsnl.com /www.starhide.com	Cow Leather
16	Ah Yin Tannery	Lee Yu Hsien, 111/1a, Matheswartala Road Kolkata700 046 W.B Phone:+91 9775589197 /ahyin_tannery@vsnl.com	Cow Leather
17	H. M. Enterprises	Fahim Alam Chowdhury, 1y, Sapgachi 1st Lane Kolkata700039 W.B Phone:+91 33 2343-5407 /hmenterprises@vsnl.net	Cow Leather, Cow Calf Leather
18	Deva International Exim Pvt. Ltd.	Aditya Vikram Tekriwal, 206, Picnic Garden Roadkolkata700 039 W.B Phone:+91 33 2343-6864 Deva@Devainternational.Com	Cow Leather
19	J C International Ltd.	Kevin Juneja, 44, Matheswartalla Road Kolkata700046 W.B Phone:+91 33 4017-0000/ 0011 , jcintl@jcgroup.in	Goat Leather
20	Rama Overseas Limited	Saurav Soni, 5/1d, Tiljala Road Kolkata 700 039, W.B Phone:+91 33 2343-8118 / 2213 / soni@ramaoverseasltd.com / www.ramaoverseasltd.com	Cow Leather
21	A. K. Exporters	Anil Kumar Lakhotia, Kasba Industrial Estatephase - Iplot No. - 3, Kolkata 700 107 W.B Phone:+91 33 2443-0663 / 0664 /akexport@cal3.vsnl.net.in	Cow Leather
22	Oxford Tanners. 93/4, Karaya Road Kolkata700019 W.B	Kamal Ahmed/Phone:+91 33 2287-9643 / oxtan@cal.vsnl.net.in	Sheep Leather, Cow Leather, Buff Leather, Goat Leather

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
23	Planet Inc. 38/1a, G. J. Khan Road Kolkata700 039 W.B	Wakil Ahmed/Phone:+91 33 4007-6073 / wakilahmed@hotmail.com	Cow Leather, Buff Leather, Goat Leather
24	N.J. Leather Enterprise,45 A, Shamsul Huda Road Kolkata700 017 W.B	Rehan Ahmed Phone:+91 33 2287-5396 /office@njleather.com	Sheep Leather, Cow Leather, Goat Leather
25	Alam Tannery Pvt. Ltd. 187, Park Street Kolkata700 017w W.B	Alok Adhikari, Phone:+91 33 4022-6900/Fax:+91 33 4022-6901/atc@grupalam.com	Upholstery Leather
26	Sadia International/62l, Topsia Roadkolkata700039 W.B	Shahzad Ahmed, Phone:+91 9830112746/sadiainter@gmail.com	Goat Leather
27	Mow Chong Leather Products Pvt. Ltd. 47, South Tangra Road Kolkata700046 W.B	Chiu Teh Chee, Phone:+91 33 2329-2990/ mclpleather@gmail.com	Cow Leather, Cow Calf Leather
28	Nafis Tanning Industries 55, Ghulam Jilani Khan Road Kolkata700039 W.B	Md. Salim, Phone:+91 33 2290-3734 / Fax:+91 33 2287-4327 nafistanning@yahoo.com	Goat Leather
29	Jaffs International, 70, Topsia Road (South)Kolkata700046 W.B	Jahangir Alam Farooqui, Phone:+91 33 2343-8664 jaffs@vsnl.com	Cow Leather
30	Chang Hing Tannery 77, Matheswartala Road Kolkata700 046 W.B	Joseph Chen, Phone:+91 33 2329-9919 changhingtannery@hotmail.com	Buff Leather, Upholstery Leather
31	Shana Leather Corporation 71, Topsia Road (South) Kokata700046 W.B	Hamza Ali, Phone:+91 9830077698/ 4394 slchamzaali786@gmail.com	Goat Leather
32	Kim India Exim Pvt. Ltd. 32, Free School Street(Mirza Ghalib Street)Kolkata700016 W.B	Wu Liu Mei Lin, Phone:+91 33 6530-7788 kimindiaeximp@yahoo.co.in	Buff Calf Leather
33	Allied International 45/1c, Old Ballygunge 1st Lane Kolkata700019 W.B	Mehtab Alam, Phone:+91 9830188043 alnkhn@rediffmail.com	Goat Leather
34	Nvent Leather Exports 2, Ghulam Jilani Khan Roadkolkata700039 W.B	Faiz Ahmed Khan Phone:+91 33 2343-9956 / 4064-6103 Fax:+91 33 2290-5623 nventleatherexports@Gmail.Com	Goat Leather
35	Classic Tanners 64, Ripon Street Kolkata700016 W.B	Sarim Misbah, Phone:+91 33 2226-3816 ctans@vsnl.net	Cow Leather, Goat Leather
36	Universal Leather Agency 114d, Matheswartala Road Kolkata700 046 W.B	Ying Wah Chu, Phone:+91 8444944409 ula@cal2.vsnl.net.in	Cow Leather

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
37	Kanungoe Leathers Pvt. Ltd. 70/D, Abinash Chandra Banerjee Lane Kolkata700 010 WB	N. K. Deb Kanungoe, Phone:+91 33 2373-0399 kanu_974608@bsnl.in	Sheep Leather, Goat Leather
38	Global Tanning Industries 4a, 4th Floor50, Lower Range Kolkata700019	Dilshad Elahi Phone:+91 9831081089 /info@globaltanningindustries.com/ www.globaltanningindustries.com	Buff Leather
39	Wing Sung Tannery 104d/3, Matheswartala Road Kolkata700046 W.B	Lee Yao Sien, Phone:+91 9830405188/ leeyaosien@gmail.com	Cow Leather
40	A.N.S. Leather Company 166, Tiljala Road Kolkata700046 W.B	Nehal Zafar Phone:+91 9331075014 ans_gloves@hotmail.com	Cow Leather, Buff Leather, Goat Leather
41	Ula Leathers, 114 H, Matheswartala Road Kolkata700 046 W.B	Victor Kuo Chiang Chu, Phone:+91 9184449444, ula@cal2.vsnl.net.in	Cow Leather
42	Park International, 42/1, Shamsul Huda Roadkolkata700 017, W.B	Indrani Maitra Phone:+91 9239639803 abhishekmoitra123@gmail.com	Cow Leather
43	How Fa Tannery, 48, Zakaria Street2nd Floor Kolkata700073 W.B	Tanveer Ahmed, Phone:+91 33 2215- 0210 / 2235-2841 /howfatannery@ gmail.com	Goat Leather
44	Leder Fashion Company 2, Suhrawardy Avenue Kolkata700 017 W.B	Rehan Misbah, Phone:+91 33 2286- 5854 misbahul.hauqe@vsnl.net	Cow Leather
45	Srimani Silpayan (India) Pvt. Ltd. 79, Lenin Saraniunit No.214, 2nd Floor Kolkata700013 W.B	Niten Srimani, Phone:+91 33 2265- 8345 srimani@cal2.vsnl.net.in /www. srimanisilpayan.com	Cow Leather
46	Abdin Leather Conceria Pvt. Ltd. 8, Bolai Dutta Street Kolkata700 073 W.B	Bahauddin Phone:+91 33 2235-3567 abdin_leather@yahoo.co.in	Cow Leather Goat Leather
47	Ecotan, 93/1D, Tiljala Road Kolkata700 046W.B	Shamshad Alam, Phone:+91 33 3291- 5197 , ecotan99@yahoo.in	Cow Leather, Buff Calf Leather
48	Chien Hsing Tannery Plot No. 424, Zone Scalcutta Leather Complexbantala24 Parganas (South)743502 WB	Naresh Kumar Juneja, Phone:+91 33 2443-1711 Fax:+91 33 2443-6464 , chtleather@ gmail.com www.chienhsingtannery.com	Cow Leather, Buff Leather
49	Bharat Tanneries, 22/2, C. N. Roy Roadkolkata700039w.B	Irfan Ahmed, Phone:+91 9831018215, Irfan@Btleathers.Com Www.Btleathers.Com	Cow Leather

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
50	Titan Leathers Pvt. Ltd 2a, Golam Jilani Khan Roadkolkata700 039w.B	Srinivasan Kanan, Phone:+91 33 2464-0124 /Fax:+91 33 2464-4508 / titanleathers@Gmail.Com	Cow Leather
51	Ciria Tanning Company Pvt. Ltd. 6f, Keyatala Road Kolkata700029 W.B	Rahul Gupta, Phone:+91 33 2345- 2076 , ciria_tanning@yahoo.co.in, www.ciriatanning.com	Cow Leather
52	Tulsyan Impex Pvt. Ltd. 1/1a, Mahendra Rai Laneblock 14th Floor Kolkata700046 W.B	S. K. Halder, Phone:+91 33 3011- 2100, ptimpex@hotmail.com	Cow Leather
53	Trident Leather, 41/1, Shamsul Huda Road Kolkata700017 W.B	Tahir Khurshid, Phone:+91 33 2290- 7668, trident.leather@gmail.com	Cow Leather
54	Unique International Pvt. Ltd.30, Jawaharlal Nehru Rd Chowringhee Mansion ground Floor Kolkata700 016 W.B	Santosh Kumar Agarwal/Phone:+91 9830232048 santosh@uniqueinternational.com	Cow Leather
55	Winsome Leathers 48/53, Swiss Park Kolkata700033 W.B	Supran Chaudhuri, Phone:+91 33 2442-3475 winsome@vsnl.net	Cow Leather
56	Orbit Leathers Pvt. Ltd., 34b, Debendra Chandra Dey Road Kolkata700015 W.B	Samir Roy Chowdhury, Ph:+91 33 2285-2262/ 63/ 64 /office@orbit- leathers.com/ www.orbit-leathers.com	Cow Leather
57	Champion Tannery Pvt. Ltd./62, Matheswartala Road Kolkata700 046 W.B	Andrew Liu, Phone:+91 33- 2329- 0177 liu@championtannery.net	Cow Leather
58	New Horizons Ltd., 41, Shakespeare Sarani Kolkata700 017WB	Gopal Kumar Naredi, Phone:+91 33 2287-7679 info@newhorizonsltd.in /www.nhltd. com	Cow Leather
59	S. M. Exports 259/2, Rajarhat Main Roadathghora Check Postdistrict 24 Parganas (North)Kolkata700136 W.B	Pawan Kumar Roongta, Phone:+91 33 2519-6827 sme@vsnl.com /www.smexports.com	Buff Leather
60	Trio Trend Exports Pvt. Ltd. P-37, C.I.T. Roadscheme - 52,Kolkata700 014 W.B	Priyankur Kulkarni, Phone:+91 33 2265-5151 / 2372 Office@triotrendexports.com	Other Leather Goods, Pass- port Holders/Credit Card Holders, Purses, Ladies Handbags Other Bags
61	Yamai Fashions Pvt. Ltd. 6, Dover Lane1st Floor Kolkata700029 W.B	Arjun Kulkarni, Phone:+91 33 4003- 1065 / 1066 office@yamaifashions.com	Other Leather Goods , Ladies Handbags And Other Bags

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
62	Creative Ltd. 12, Dargah Rd Kolkata700017 W.B	Phone:+91 33 2287-1690 /hq@creative-limited.com	Goods , Leather Belts, Caps & Ties, Passport Holders/Credit Card Holders, Etc, Ladies Handbags And Other Bags, Pouches, Purses, Wallets, Portfolio/ Briefcases
63	Crescent Export Syndicate, S-55, Phase-Iiikasba Industrial Estate Kolkata700107 W.B	Mohammed Azhar, Phone:+91 33 2442-7732 / 7510 info@crescentexp.com	Ladies Handbags And Other Bags, Wallets
64	Metropoli Fashions Pvt Ltd 5, Tiljala Road Kolkata700 039 W.B	Mayukh Guha Sarkar, Phone:+91 33 6606-7000 accounts@metropolifashions.com www.metropolifashions.com	Other Leather Goods Handcrafted Leather Items, Passport Holders/Credit Card Holders, Ladies Handbags ,Other Bags, Purses, Wallets
65	Maple Exports Pvt. Ltd., 83/2/1, Topsia Road (South) Continental Building, 9th Flr, Kolkata700046 W.B	Bijay Kumar Singh, Phone:+91 33 2283-6366 / 67 maple.exports@vsnl.com	Other Leather Goods Passport Holders/Credit Card HoldersLadies Handbags, Other Bags, Pouches, Purses, Wallets
66	Lbi Export Private Limited Plot No. 540, Zone Vikolkata Leather Complex.O. Bhojerhat, Karaidanga South 24 Parganas743502 W.B	Tanuj Malhotra, Phone:+91 33 3241-8078 sudip@lbiexport.co.in	Other Leather Goods , Diary Covers/Cheque Book Covers,
67	Shivmani Exports Pvt. Ltd. 45/2, Tiljala Road Kolkata700046 W.B	Darshan Singh Sabharwal, Phone:+91 33 2344-5642 , debashis@shivmani.com www.shivmani.com	Other Leather Goods Passport Holders/Credit Card Holders
68	Asian Leather Private Limited, Asian Housee.M. Bypass, Kasba Kolkata700 107 W.B	Mr. Nari Kalwani, Phone:+91 33 2443-4000 /mail@asianleather.com /www.asian-leather.com	Other Leather Goods Handcrafted Leather Items, Covers For Camera, Calculator
69	D2 International, P-78, Kasba Industrial Estatephase Ii Kolkata700107 W.B	Rajiv Bhatia, Phone:+91 33 4001-5537 info@d2international.com /www.d2international.com	Other Leather Goods , Ladies Handbags And Other Bags, Wallets, Portfolio/Briefcases
70	Maple Accessories Pvt. Ltd. Ecospace Business Park, Block 4a, 8th Floorunit 801, Action Area 2new Town, Rajarhat Kolkata700156 W.B	Gaurav Bhalotia, Phone:+91 33 4422-4422 accounts@maple-accessories.com www.maple-accessories.com	Other Leather Goods, Leather Belts, Caps & Ties, Ladies, Handbags

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
71	Stichwell Exports Pvt. Ltd. Nilhat House 7th Floor 11, R. N. Mukherjee Road Kolkata 700001 W.B	Lalit Kanoi, Phone: +91 33 2248-8837 / counts@Stichwell.Com www.Stichwell.Com	Ladies Handbags And Other Bags, Wallets
72	S P International, 162b, A.J.C. Bose Road Kolkata 700 014 W.B	Ashru Basu Chaudhury/ Phone: +91 33 2265-5585 info@spintl.com	Travel/Luggage ware, Other Leather Goods, Desktop Materials, Diary
73	Alam Tannery Pvt. Ltd., 187, Park Street Kolkata 700 017 W.B	Alok Adhikari, Phone: +91 33 4022- 6900, atc@grupalam.com /www. grupalam.com	Other Leather Goods , Sofa/Chair/Car Seat Covers (Upholstery)
74	Stc International, 1b, Syed Amir Ali Avenue Kolkata 700019 W.B	Apaar Arora, Phone: + 91 33 2281-2269 / chmindia3@gmail.com	Ladies Handbags And Other Bags
75	A. K. Exporters, Kasba Industrial Estate phase - I plot No 3 Kolkata 700 107 W.B	Anil Kumar Lakhota, Phone: +91 33 2443-0663 / 0664 akexport@cal3.vsnl.net.in	Ladies Handbags And Other Bags, Wallets
76	Balaji Export Corporation, P-66, Kasba Industrial Estate phase-II Kolkata 700107 W.B	Sandeep Kumar Rungta, Phone: +91 33 2443 -0377 / 0576 /sandeep@balajiex- port.com, www.balajiexport.com	Other Leather Goods, Handcrafted Leather Items, Covers For Camera, Calculator,
77	Farinni Leather Pvt. Ltd. 37, Shakespeare Sarani Kolkata 700 017 W.B	Anup Chakraborty, Phone: +91 33 2287-7755 contact@farinni.com /www.farinni.com	Other Leather Goods, Handcrafted Leather Items, Covers For Camera, Calculator,
78	Edcons Exports Private Limited Edcons Chambers 7/1a, Hazra Road, Kolkata 700 026 W.B	Sanjay Chakrabarti/Phone: +91 33 2474-0544 info@edconsexports.com	Other Leather Goods , Handcrafted Leather Items, Covers For Camera, Calculator
79	J C International Ltd. /44, Matheswartalla Road Kolkata 700046 W.B	Kevin Juneja, Phone: +91 33 4017-0000/ 0011 jcintl@jcggroup.in	Other Leather Goods , Handcrafted Leather Items, Covers For Camera, Calculator
80	Om Leather Artdeco Pvt. Ltd. 258/17, A. P. C. Road Kolkata 700006 W.B	Satyabrata mitra/ phone: +91 33 2351- 0537 ideco@cal2.vsnl.net.in	Other Leather Goods , Handcrafted Leather Items, Covers For Camera, Calculator,
81	Orbit Leathers Pvt. Ltd. 34b, Debendra Chandra Dey Road Kolkata 700015 W.B	Samir Roy Chowdhury/ Phone: +91 33 2285-2262/ 63/ 64 office@orbit-leathers. com/ www.orbit-leathers.com	Other Leather Goods , Handcrafted Leather Items, Covers For Cam- era, Calculator, Etc

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
82	Pragati Vinimay Pvt. Ltd. Zone-10, Plot No. 907 Kolkata Leather Complexkaraidanga Kolkata743502 W.B	Syed Askari Imam/Phone:+91 33 3242-8843 pragativinimay@gmail.com/www. pragativinimay.com	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
83	Tulsyan Impex Pvt. Ltd. 1/1a, Mahendra Rai Laneblock 14th Floor Kolkata700046 W.B	S. K. Halder/ Phone:+91 33 3011- 2100 ptimpex@hotmail.com	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
84	Elrich International/ 3, Elliot Road Kolkata700 016 W.B	Shahid Akhtar/ Phone:+91 33 2343- 8519 elrich-international@hotmail.com	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
85	Ajanta Leather Fashions (P) Ltd. Rajarhat Gopalpurnorth 24 Parganas Kolkata700 136 W.B	Ashok Kumar Mohanty/Phone:+91 33 2519-5206 mail@ajantaleather.com /www.ajanta- leather.com	Other Leather Goods , Handcrafted Leather Items, Passport Hold- ers/Credit Card Hold- ers, Ladies Handbags Other Bags, Purses, Wallets
86	Khimjee Hunsraj 9, Rabindra Sarani Kolkata700 073 W.B	T. Suraiya / R. J. Suraiya/Phone:+91 33 2235-4486/ 87/ 88 office@ khimjee.com www.khimjee.com	Goods , Leather Belts, Caps & Ties, Passport Holders/Credit Card Holders, Etc, Ladies Handbags And Other Bags, Pouches, Purses, Wallets, Portfolio/ Briefcases
87	Chrometan Exports Private Limited 204, A. J. C. Bose Road Kolkata700017 W.B	Sanjay Kumar Jain/ Phone:+91 33 4060-3066 chrome@cal.vsnl.net.in	Other Leather Goods , Handcrafted Leather Items, Passport Holders/Credit Card Holders, Etc, Ladies Handbags And Other Bags, Purses, Wallets
88	Nadeem Impex 8/1, Topsia Road (South) Kolkata700046 W.B	Nadeem Sarwar/Phone:+91 33 3251- 6215 nadeemimpex@vsnl.com/www. lethernadeem.com	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
89	Shilpa Overseas (Pvt) Ltd. 51, Mahanirban Road Kolkata700 029 W.B	Anurupa Sengupta/Phone:+91 33 4003-1411/ 1412 anurupa.sengupta@shilpaoverseas. com	Goods , Leather Belts, Caps & Ties, Passport Holders/Credit Card Holders, Etc, Ladies Handbags And Other Bags, Pouches, Purses, Wallets, Portfolio/ Briefcases

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
90	Talwar Enterprises 8, Dover Park Kolkata700 019 W.B	S.C.Talwar, Phone:+9133 2210-5881/ 5882/ 5883/ 5884 /talwar@cal2.vsnl.net. in www.talwarenterprises.com	
91	Leather Trend 44d/1, Topsia Road (South) Kolkata700 046 W.B	Mahmood Alam/ Phone:+91 33 3252- 3841 mahmood@leathertrend.in	
92	Vogue N Hyde Pvt. Ltd. 2, Corporation Place2nd Floorsociety Cinema Building Kolkata700087 W.B	Vivek Goyal/ Phone:+91 33 2265-8208 /vivek.goyal@voguenhyde.com www.voguenhyde.com	
93	Sheffield International/20/11, East Topsia Road Kolkata700046 W.B	Kishan M Agarwal. Phone:+91 33 2285-4444 sales@sheffieldintl.in	
94	Unileather India Pvt. Ltd. Ba-24/1, Deshbandhu Nagarbaguihati Kolkata700 059 W.B	Kuntal Dass, Phone:+91 33 2323-4593 email: uni@cal2.vsnl.net.in	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
95	Unique International Pvt. Ltd. 30, Jawaharlal Nehru Roadchowringhee Mansionground Floor Kolkata700 016 W.B	Santosh Kumar Agarwal, Phone:+91 9830232048 santosh@uniqueinternational.com	Other Leather Goods . Passport Holders/Credit Card Holders,
96	Harsha Leather Goods Pvt. Ltd. 52 D, G. J. Khan Road Kolkata700 039 W.B	Hadi Hussain, Phone:+91 33 3293-4329 info@hlgl.com /www.hlgl.com	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
97	B.G. Services/ Block-Iii, Behala Industrial Estate2nd Floor620, D. H. Road Kolkata700 034 W.B	Santanu Ganguly/ Phone:+91 33 2447- 9504 bgs.behala@gmail.com	Travel/Luggageware, Other Leather Goods , Passport
98	Pinnacle Overseas/42, Dilkhusa Street Kolkata700 017 W.B	Gautam Dalmia/ Phone:+91 33 2280- 3369 accounts@pinnacleoverseas.com www.pinnacleoverseas.com	Other Leather Goods , Ladies Handbags And Other Bags, Wallets
99	Sunili Leathern Private Ltd./ 54, Mandir Roaddum Dum Cantonment Kolkata700028 W.B	Subrata Sen/ Phone:+91 33 2551-8596 suni8596@yahoo.com	Other Leather Goods , Ladies Handbags And Other Bags, Wallets
100	Industrial Safety Products Pvt. Ltd. P-33, C.I.T. Roadscheme Vi M(S)Kolkata700054 W.B	Gopal Kumar Naredi/ Phone:+91 33 2343-0913 Fax:+91 33 2343-0914 /exim@isp- gloves.com /www.ispgloves.com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
101	Acknit Industries Limited 817, Krishna Building 224, A. J. C. Bose Road Kolkata 700 017 W.B	D. K. Saraf/ Phone:+91 33 2287-8293 calcutta@acknitindia.com www.acknitindia.com	Industrial Leather Garments, Leather Aprons
102	B. S. Arora And Sons Huf 11, Short Street Kolkata 700 016 W.B	A . S. Arora/ Phone:+91 33 2229-2657 / 0617 Fax:+91 33 2229-1137 /Bsaindus@Cal. Vsnl.Net.In	Industrial Leather Garments
103	Ramesh Kumar & Co. Pvt. Ltd./12, Government Placeregent House 1st Floor Kolkata 700069 W.B	Mrs. Niharika Agarwal/Phone:+91 33 2226-5368 / 5369 niharika@rkcl.biz / www.rkcl.biz	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)
104	J C International Ltd./44, Matheswartalla Rd. Kolkata 700046 W.B	Kevin Juneja/Phone:+91 33 4017-0000/ 0011 jcintl@jcgroupp.in	Leather Jackets (Gents)
105	Rajda Industries & Exports Pvt. Ltd. 1702, Chatterjee International Centre 33a, Jawaharlal Nehru Road Kolkata 700071 W.B	Nausher Ali/ Phone:+91 33 2226-1916 nausher.ali@rajda.in/www.rajda.in	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
106	Leather Choice/ 36a & B, Sir Syed Ahmed Road Kolkata 700 014 W.B	Siraj Ahmed/Phone:+91 33 3293-2692 leatherchoicesiraj@yahoo.com / www.indiamart.leatherchoice.com	
107	Arbeits (India)/8/1, Middleton Row 5th Floor, Room No. 4, Kolkata 700 071 W.B	Sanjib Bothra/Phone:+91 33 2229-6256 / 8730 / 1029 /arbeits@vsnl.com www.arbeitsindia.org	Other Leather Goods , Leather Belts, Caps & Ties, Ladies Handbags
108	New Horizons Ltd./41, Shakespeare Sarani Kolkata 700 017 W.B	Gopal Kumar Naredi/Phone:+91 33 2287-7679 info@newhorizonsltd.in www.nhltd.com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)
109	Tulsyan Impex Pvt. Ltd. 1/1a, Mahendra Rai Lane block 14th Floor Kolkata 700046 W.B	S. K. Halder/Phone:+91 33 3011-2100 ptimpex@hotmail.com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)
110	Tarway Exports 33, Dr. Rajendra Road Kolkata 700 020 W.B	Ajoy Kumar Tarway/Phone:+91 33 2486-9928 tarway@vsnl.com /www.tarway.com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)
111	Labbaik International 11/H, East Topsia Road Kolkata 700 046 W.B	Parvez Ahmed/ Phone:+91 33 2285- 3502/ 3503 sales@labbaikint.com /www.labbaikint. com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
112	Overseas Leather Goods Co. Pvt. Ltd. 61a/14, Beliaghata Main Road Kolkata700 010 W.B	Anup Kumar Chattopadhyaya/Phone:+91 33 2370-6122 / 8535 /olgc2004@gmail.com www.overseasleather.com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)
113	Masood Alam & Co./ 108, Park Street Kolkata700 017 W.B	Jamshed Alam/Phone:+91 33 2290-6681 / jamshed@macgloves.com	Industrial Leather Garments, Leather Aprons, Others (Leather Garments)
114	Singhvi International/505, Vasundhara, 5th Floor2/7, Sarat Bose /Oad Kolkata700020 W.B	Virendra Singhvi/Phone:+91 33 2475-0866 / 0625 / 0697 singhvi_intl@eth.net /www.singhvi.com	Leather Jackets (Gents), Leather
115	G. D. Enterprise/1/H/1, Raja Janmenjoy Road Kolkata700 010 W.B	Balai Dey/Phone:+91 33 2370-6362 / Fax:+91 33 2370-6362/ gde032@gmail.com	Aprons, Others (Leather Garments)
116	Arbeits Exports (India) Pvt. Ltd. 8/1, Middleton Row5th Floorroom No. 4 Kolkata700071 W.B	Sanjib Bothra/ Phone:+91 33 2229-8730 / 6256 / 1029 /arbeits@vsnl.com/www.arbeitsindia.org	Industrial Leather Garments, Leather Aprons
117	Ahmed Tannery/10/1/1a, Topsia Road (South) Kolkata700046 W.B	Mohammed Ahmed/ Phone:+91 33 2344-8683 / 8684 / 8685 /atcalcutta@vsnl.net / www.ahmedtannery.com	Leather Aprons
118	Jpm Exports Pvt. Ltd. 1, British Indian Street6th Floorroom No. 612Kolkata700069 W.B	Nabin Kumar/Phone:+91 33 2262-4998 / info@jpmexports.com/www.jpmexports.com	Leather Jackets (Gents), Leather Pant/Shorts (Gents), Leather Aprons
119	Rama Overseas Limited 5/1 d, Tiljala Road Kolkata700 039 W.B	Saurav Soni, Phone:+91 33 2343-8118 / 2213 soni@ramaoverseasltd.com/www.ramao-verseasltd.com	Leather Jackets (Gents), Leather Pant/Shorts (Gents), Leather Aprons
120	Top Leathers & Footwears Pvt. Ltd. 8/2, Dr. Biresh Guha Street Kolkata700 017 W.B	Shakil Ahmed, Phone:+91 33 2287-9196 topleathersindia@gmail.com	
121	Pioneer Safety Products (India) Pvt. Ltd 105, Matheswartala Road Kolkata700 046 W.B	Rajib Bothra, Phone:+91 33 3298-5431 pspindia@yahoo.com /www.pspindia.tradeindia.com	Leather Aprons, Others (Leather Garments)
122	Balaji Impex Pvt. Ltd./2b, Raja Janmenjoy Road Beliaghata Kolkata700010 W.B	Mrityunjoy Ghosh/ Phone:+91 33 2442-0350 bala@cal.vsnl.net.in /www.balajigloves.com	Leather Aprons, Others (Leather Garments)

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
123	Indus Valley Export & Import (Pvt.) Ltd. 11/3, Bijoygarh3rd Floor Kolkata700032 W.B	Amitavo Sengupta/Phone:+91 33 2499-3134 ind_valley@yahoo.in	Leather Aprons
124	Lumens India 38/39, Chawal Patty Road Kolkata700010 WB	Mahesh Kumar Bagaria/Phone:+91 33 2370-5406 / 2353-9097/mitesh@lumens-india.com www.lumens-india.com	Leather Aprons
125	Luminous International, 41, Bangur Avenueblock C Kolkata700 055 WB	Rajendra Kumar Bagaria, Phone:+91 33 2574-3868 /luminousintl@gmail.com /www.luminousintl.com	Leather Aprons
126	Raag Exports Pvt. Ltd./ 32/3k, Gariahat Road(South) Kolkata700 031 W.B	Gora Chand Chatterjee, Phone:+91 33 2413-9767 raagexports@airtelmail.in	Leather Aprons
127	Crescent Tannery 81/1, Tiljala Road Kolkata700046 WB	Shahid Ali, Phone:+91 33 2343-4210 / 2344-8923 oceanoverseas.export@gmail.com www.crescenttannery.com	Leather Jackets (Gents)
128	Taj Leather Works, 30/1, Alimuddin Street, Kolkata700 016 WB	Shafique Abedin, Phone:+91 33 2217-5078 / 2264-0593 tajleather@gmail.com	Leather Aprons
129	B.T. Exim Private Limited 48/13, Jessore Road Kolkata700055 W.B	Sameer Bhotika, Phone:+91 33 2574-1364 btexim@gmail.com/www.btexim.com	Leather Jackets (Gents), Leather Aprons
130	Global Tanning Industries/ 4a, 4th Floor50, Lower Range Kolkata700019 WB	Dilshad Elahi/Phone:+91 9831081089 info@globaltanningindustries.com www.globaltanningindustries.com	Industrial Leather Garments
131	Vinit Gloves Manufacturing Pvt LT. Avenue Commerce House, 4th Floorroom no. 7 Kolkata700013 WB	vinit kumar khetan/ phone:+91 33 2323-4400 / 4401 vinit@vinitgloves.com /www.vinitgloves.com	Leather aprons
132	Dolphin Leathers 2h, Tiljala Lane Kolkata700019 W.B	Shahid Jamal, Phone:+91 33 2329-9638 , accounts@dolphinleathers.com/ www.dolphinleathers.com	Leather Aprons
133	Plaza Enterprise 41/C, Chaul Patty Road Kolkata700010 W.B	Gobinda Chandra Das,Phone:+91 33 2373-1417 , plaza@plazaenterprise.com/ www.plazaenterprise.com	Leather Aprons
134	Suraj (India) Pvt. Ltd. 5/1d, Tiljala Road Kolkata700039 W.B	Debabrata Lahiri, Phone:+91 33 2226-1962 debu.lahiri@rajda.in	

SL. No.	Company Details	CEO Name/Contact Details	DESCRIPTION
135	1947 Inc, 2-142, Chinna Avutapalli Villagegannavaram Mandalkrishna	L. Swamy Venkat, Ph:+91 8676 252097 sales@1947inc.com, vswamy@1947inc.com	
136	3d Creation, 736 D Pace City-2 Sector -37, Gurgaon 122001 Har	Vikash Kumar Dubey, Ph:+91 124 4084696 account@3dcreation.in	
137	4 Star Leathers, No.5/1, M. Mirthin Street Amburpetvaniyambadi 635751 T.N	M. Ateeq Ahmmed, Phone:+91 94433271444 sikandar.vnb@gmail.com	
138	8 V Shoes, 703/704, Palm Court Complexlink Road Malad(W)Mumbai- 400064	Ashishh Kejriwal, Phone:+91 22 40037755 sunita.a.kejriwal@gmail.com 8vindia@8vshoes.com	
139	A & Z Exports, 105/437, Aghajaan Buldingchamanganj,Kanpur 208001U.P	Mohd. Atif Zamir, Phone:+91 9935034991 azexports@gmail.com , www.azex-ports.com	
140	Reliance Leather, Mr. Debashis Chakraborty (Proprietor)	20, College Road, P.O.- Nabagram, Konnargar, Hooghly - 712246, West Bengal, India, Ph: +919432135923	
141	XI Enterprises Limited	8/1a/1, Keyatala Road, Kokata – 700029 Tel – 03324428006/24428005/24420294 Mob: 09831408444 email - mdxl@exelfashions.com, sales@exelfashions.com	

Annexure- 9.6

List of Plywood and Veneer sheet manufacturers in North 24 Parganas

Sl. No.	Name of the Enterprise (unit)	Address of Communication	Major Activity	Products	Annual Turnover (Rs. in Lakh)
1	M/s. United Ply Pesting	Kansona, Mediahat, Gopalnagar, Bongaon-743262. Mobile No.: 9434119994	Ply wood & Veneer Sheet	Ply wood, Seasonal Wood	30
2	M/s. Swadesh Plywood P. Ltd.	Kansona, Mediahat, Gopalnagar, Bongaon-743262. Mobile No.: 9434119994	Ply wood & Veneer Sheet	Ply wood, Vblocks wooden (Black Board), Wooden frame (Door) Flash Door, Veneered Article board (Core Veneer)	140
3	M/s. A. Haque Plywood Centre	M/s. A. Haque Plywood Centre, Balisha, Hab-II. Mobile No.: 9800175773	Ply Board	Ply Board	60
4	M/s Royel Wood Product	M/s Royel Wood Product. Noapara, Junglepur, Baduria-743438. Mobile No.: 9434830657	Plywood & Veneer Sheet	Plywood	8
5	Indian Plywood Industries	SonaliMajumder. Tangra, Talsa, Habra-II, 743234	Mfg of Plywood	Plywood board	25
6	R.B.Enterprise	Abdul AdutMondal. Vill-Balisha, PO-balisha, PS-ashokenagar, Habra-II, Pin-743702. Mobile No.: 9830345520	Plywood	Plywood	18
7	M/S J.M.plywood	Jakirhossain. Vill-Balisha, PO-Balisha, PS-Ashokenagar, habra-II, Pin-743702. Mobile No.: 9775123818	Plywood	Plywood	50
8	M/s. royel Pilling furniture	Nur Mohammad Khan. Noapara, Jangalpur, Baduria, 743438. Mobile No.: 9434830657	Ply wood veneer sheet	Ply wood	7.6
9	M/s. madinaPata Mill	HasanurjamatMondal. Rajberia, masunda, Amdanga, 743711. Mobile No.: 9635446728	Ply wood	Plywood	144
10	M/s. Chowdhury Enterprise	Samir Chowdhury. Arsula, Baduria, 743401. Mobile No.: 9830273305	Plywood veneer sheet	Plywood, Block Door, Flush Door	90

UNEP - GEF-MoEF & C C Access Benefit Sharing project

About the Project :

The objective of the UNEP-GEF-MoEF & C C project on Access and Benefit Sharing (ABS) is to increase the institutional, individual and systemic capacities of stakeholders to effectively implement the Biological Diversity Act, 2002 and the Rules 2004 to achieve biodiversity conservation through implementing Access and Benefit Sharing Agreements in India.

This project is being implemented in 5 states of India namely Andhra Pradesh, Gujrat, West Bengal, Himachal Pradesh and Sikkim, The executing organisation includes NBA in collaboration with the 5 SBBs, Botanical Survey of India (BSI), Zoological Survey of India (ZSI), United Nations Development Programme (UNDP), United Nations Environment Programme - Division of Environmental Law and Conventions (UNEP/DELIC), United Nations University - Institute of Advanced studies (UNU-IAS) and Global Environment Facility (GEF).

The main components of the project are:

- ◆ Identification of biodiversity with potential for ABS and its valuation in selected ecosystems such as forests, agriculture and wetlands.
- ◆ Development of tools, methodologies, guidelines, frameworks for implementing the ABS provisions of the Biological Diversity Act.
- ◆ Piloting agreements on ABS.
- ◆ Implementation of policy and regulatory frameworks relating to the ABS provisions at the national level and thereby contribute to international ABS policy issues.
- ◆ Capacity building for strengthening implementation of the ABS provisions of the BD Act.
- ◆ Increasing public awareness and education programmes.