PROSPECTS OF NURSURY BUSINESS IN DHAKA SOUTH CITY CORPORATION (DSCC)

A THESIS

BY

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DEPARTMENT OF

AGROFORESTRY AND ENVIRONMENTAL SCIENCE

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CERTIFICATE

This is to certify that the thesis entitled "Prospects of Nursery Business in Dhaka South City Corporation (DSCC)" submitted to the Faculty of Agriculture, Sher-e-Bangla Agricultural University (SAU), Dhaka in partial fulfillment of the requirements for the degree of Masters of Science (MS) in Agroforestry and Environmental Science, embodies the results of a piece of bona fide research work carried out by Md. Moazzem Hossain, Registration no. 15-06971 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that such help or source of information, as has been availed of during the course of this investigation has duly been acknowledged.

Dated:

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DEDICATED TO

MY

BELOVED FAMILY

and

Department of Agroforestry and Environmntal Science

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ABSTRACT

The study was conducted in some selected plant nurseries in Dhaka South City Corporation (DSCC) to assess the socio-economic characteristics, plants species composition, profitability analysis, problems faced by the nursery owners and prospects in their business. 32 nurseries were selected as the random basis from five zones of DSCC. Most of the nursery owners (78%) were found to operate their nursery business in the road side without any legal approval. A total of 184 plant species of different families were identified from the study area. Among them there was identified 41 species of fruits, 44 species of flower, 66 species of ornamental, 9 species of timber, 10 species of medicinal and 14 species of spices & vegetable plants. Ornamental plants species were the most preferred species or demandable species in DSCC. The nursery owners of DSCC were involved with plants production, distribution (sale), landscaping and gardening, roof top gardening, rental services, sale of nursery equipment like- spray machine, secateurs, irrigation instruments, fertilizer & hormone, garden soil, shade net, seedling tray, seeds, books etc. In this analysis it was observed that the demand for ornamental plants has relatively high than compared to any other species present in the studied area in terms of both sale volume (36%) as well as number of plants (47.22%). Ranking of species according to sale volume it was found that in case of fruits, flower, ornamental, timber, medicinal and vegetable plants found that Piyara, Bougainvillea, Aricha palm, Lambu, Neem and Chili respectively. The sampled nurseries owners yearly averagely sold of 21,25,822 seedlings which average sale value were TK. 20,68,90,016.00. Moreover, the average cost of production of a sapling is amounted Tk. 37.93 per unit and the average selling price is Tk. 120.30 per unit. Benefit cost ratio was calculated as 2.98 of the nursery business in DSCC that is higher than 1. Thus, the present finding revealed that nursery business is a profitable business in the studied area. Permanent nursery market was the main constraint for the nursery owners of DSCC.

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CHAPTER I
INTRODUCTION

A healthy and liveable city should have 25 percent greeneries of its total area, but capital Dhaka has it nearly five percent for lack of regular plantation, maintenance of the existing ones and rapid urbanisation (Greeneries in Dhaka disappearing fast- The New Nation, 6 June 2016). A project initiated by Dhaka South City Corporation (DSCC) to make Dhaka a green city. It is added that 22,000-pound Carbon dioxide (CO2) emitted only some 10 lakhs transports running in Dhaka city. Temperature in the capital is always 2 to 4 degrees Celsius higher than that of the neighboring districts (Green Dhaka' aimed to make a green city starts, Green Watch, 24 March 2016). Dhaka is turning gradually into an urban heat island (UHI). The DSCC will rejuvenate their existing parks and beautify footbridges and main thoroughfares with tress and flowering plants. Besides, they are focusing on bringing most houses under rooftop gardening by encouraging people with holding tax rebate and providing logistic supports like soil, pots, and fertilisers etc. Both the South and North CityCorporations will also launch drives to motivate people to plant trees at their open spaces.

Not only Dhaka, all the cities are witnessing the disappearance of vegetation coverage due to unplanned urbanisation, and economic expansion and population boom. There is a good scope for increasing it by planting trees on the many fellow lands in the city. Housing companies are now mushrooming in Dhaka and other cities who built new buildings cutting down trees without keeping necessary spaces for planting trees, causing the depletion of greeneries. Tress on footpaths of the city is also dying for unplanned pavement of the walkways. The old city areas have still some greenery, but most areas in new city like Mirpur and Uttara are barren. Ramna Park remained unchanged while Suhrawardy Udyan is degrading gradually for lack of proper care and maintenance. The environmentalist complained that the National Baldha Garden, which has the collection of thousands of rare trees, is now under threat, for the construction of high rise buildings blocking the sunlight essential for the survival of its trees. Not only we are not planting enough trees but also, we are failing to protect the existing ones. We need to prioritise on greenery for a truly sustainable Dhaka City.

In this respect, we would do well to follow the example of Singapore, a leading global city that has exhibited tremendous economic growth in the past decades, but has never neglected the importance of planting trees around the city. The solution is to make it a priority to plant trees everywhere — these trees will help residents of Dhaka in countless ways, from soaking up the air pollution to reducing temperature, to preventing floodingetc (Make Dhaka a garden city- Dhaka Tribune, 12 April 2017).

Today plant nurseries are emerging as a vibrant enterprise activity and many units are arising in and around two city corporations to urban and sub urban household indoor gardens and landscaping purposes. It also increases attention and patronage as more people plant trees, shrubs and grasses around their buildings. Users include the nursery operator themselves, individuals, community organizations, farmer groups, government agencies, nongovernment organizations, corporate or private customers (Nelson, 2013). This plays a very important role in income generation to the nursery operators as well as generating employment for both urban and rural dwellers directly or indirectly (Usman *et al.,* 2002, NESG, 2009).

Nursery is a growing enterprise that produces billions of plants every year and making major contribution to the forestry, vegetable, fruit, landscape, cut-flowers and horticulture. Nursery can be defined as a branch of science that deals with the growing of flowers, fruits and vegetables (Williams, 2005). It is also a management site developed for producing seedling under favourable conditions. A plant nursery can be formal or informal or it can be a large commercial or small-scale enterprise, it can be varied in seedlings, operations, size and facilities. (WAC, 2010).

In Dhaka city there is a huge demand of seedling/sapling to elite and middle-class people. Nurseryman can grow plants or saplings to keep the environment pure and look attractive. The DSCC is forming a special cell to make Dhaka a green city. Both government and local citizen have been more attentive for plantation activities. As a result, the demand of seedling is increasing.

Nursery owners are produced various types of seedlings for plantation. Besides of sale of seedlings, nurseries are making money from sale of nursery accessories like garden soil, fertilizers, hormones, pesticides, instruments etc and doing service from rent of plants, gardening and landscaping job. The nurseries are providing employment

opportunity. There is a great scope to export of nursery products and earn foreign currency.

The programme “Beautification of Dhaka City” was launched in 2004. This beautification work was carried out under DCC with the help of public organizations. The government was taken initiative for the beautification and greening of Dhaka city through tree and flower plantation. Beside plantation of trees and flowering shrubs, water fountains and sculptures have been constructed at various intersections/ roads in the city. The living conditions in Dhaka city has improved considerably despite the high density of people. Both private and government organizations have to be given credit for their role in the beautification of the city. The past year has indicated a new look for Dhaka city which is now more aesthetically agreeable and environmentally sound. Apart form the city beautification programme, most of the avenue should be taken under huge tree plantation. At present, all most every avenue has some trees; proper maintenance with additional planting efforts should also be given for future greening process.

There was a 67-year-old government nursery in Bailey Road area of the city, which had the capacity to distribute lakhs of saplings a year, was shut down in June 2015 as its land was given to the CHT Affairs Ministry for construction of a building. Around 1,500 big and small private nurseries are currently operating in Dhaka, its outskirts and neighboring areas. Where as before independance of Bangladesh there were a few nurseries in Dhaka City. The nurseries are providing employment for a huge number of people migrating from all over the country to the city in search of livelihood. New jobs like plantsuppliers and caretakers have been created in offices and apartments buildings. Educated young people are joining in the business. Plants in pots and floriculture are now a popular trade in Dhaka city.

Though the trend started in 2005, the problem is that the nursery business has come a long way without any support from the government. Another problem is that nurseries do not have any protection against natural calamities as most nurseries are developed in the open areawith a small investment. When acalamity ruins the production, owners cannot get monetary support from any side. Therefore, establishment of nursery in cities as well as in outskirts including Gazipur, Savar and Ashulia are not satisfactory. However, nursery could be a part of development in Bangladesh especially in Dhaka

city. It can, in one way, accelerate the greening process, in other wayprovide economic benefits for the poor.

Commercial nurseries of DSCC play a vital role in producing planting materials and making it accessible to the metropolitan areas. The nursery owners contribute in the production of planting materials and provide extension services to demonstrate plating trees and aftercare. This enterprisehelps the poor to create resources for themselves and ameliorate physical environment.

Government of Bangladesh has adopted plantation as a nationally important program for its importance in poverty alleviation, employment generation and socio-economic developments. To best of our knowledge, a few research works have been undertaken to assess the socio-economic condition of nursery owners, plant compositions, and profitability of their business, problems and prospects of nursery business at Dhaka North City Corporation (DNCC) (Amin, 2016). However, there is no information of nursery business at DSCC. Therefore, the present study has been undertaken to fulfill the following objecties—

Objectives:

i. To know the socio-economic conditions of nursery owners.
ii. To document the species composition of planting materials in the nurseries in DSCC.
iii. To assess the profitability of nursery business in the study area.
iv. To document the problems and prospects of nursery business in DSCC.

CHAPTER II
REVIEW OF LITERATURE

Nursery is and establishment of area for propgation, production and distribution of different types of plants, plantlets or seedlings/ saplings for transplanting or for sale. The term nursery originally specified a place where saplings of valuable forest trees, fruit trees etc were produced. But as the interest for horticultural and ornamental plants grew, the concept of nursery has been extended (Pasha, 2006).

Amin (2016) stated recently a study was conducted on socio-economic status and economic analysis of nurserybusinessin Dhaka North City Corporation (DNCC). Fourty eight private plant nurseries were selected for the study. The results of the study revealed that 93.7% nursery owners were educated where as 33.34% of nursery owners had S.S.C level of education and 73% owner had no own land for their nursery business. About fourty percent (39.58%) nursery owners had 11 - 15 years of experiences in this business. Benefit cost ratio was calculated at 3.11 in DNCC area, that is higher than 1. It was observed that nursery business is profitable.

Ahmed (2003) reported that nursery is one of the most important income based activities in Bangladesh. It is concerned with poverty reduction and socio-economic uplifment of poor section of the population. He reported that plant nusrery has direct impact in improving the living condition of the respondents and showed that it had significant relationship with their socio-economic effect.

FAO/ UNDP (1995) defined a permanent nursery as a nursery that is used to grow seedling for many years, often requires highly trained workers, serves many types of planting needs, requires permanent facilities (such as seed stroage shed, water systems, office, green bouse and staff quarters) and has the advantage of having carefully chosen site, better supervision, more developed facilities and producing seedlings of higher quality. On the contrary, the tempoary nursery is established for one or two planting seasons only. These nurseies often raise a few species for one area only and are usually set up near nursery plantation site for easy transport of seedlings. Sometimes two or more nurseries are put up for big plantations and normally abandoned once the planting areas is filled up or fully established.

Banik and Hardon (1972) defined nursery as seedling raising place where seedlings are raised and conserve here until planting. Nursery is classified into various categories depending on various paramenters such as: a) durability (e.g. pemanent nursery, temporary nursery); b) media (e.g. polybag nursery, bed nursery); c) species; d) economic consideration (homestead nursery, commercial nursery) and e) use (e.g. fruit, flower, timber and vegetable nursery).

Agricultural development schemes in Mexico, Brazil, and Indonesia (transmigration program) moved large populations into the rainforest zone for further increasing deforestation trates, onefifith of the world's tropical rainforest was destroyed between 1960 and 1990. Estimates of deforestation of tropical forest for the 1990s range from about 55,630 to 120,000 square kilometers each year. At this rate, all tropical forestes may be gone by the year 2090 (Ahmed, 2008). According to British environmentalist Norman Myeres, 5% of deforestatin is due to cattle ranching, 19% to over-heavy logging, 22% to the growing palm oil plantations, and 54% due to slash and burn farming (Wikipedia, 2008).

Haque*et al.* (2007) conducted a study in Jessore and Gazipur districts during 2002-2003 to assess the socio-economic status of plant nursery business in Bangladesh. A total of 40 private plant nurseries, four government nurseries (BADC) and six NGO nurseries (BRAC) were selected for the study. The study revealed that 60% of the private nursery owners on leased land. More than 55% owners had 6-10 years of experience in nursery business. This business has vast potentials of generating employmenet and income of the owners. The yearly net returns per hectare for private, government and NGO nursery were Tk. 215766, Tk. 120140 and Tk. 535961 respectively. The rates of returns over full cost were found to be 1.43 for private, 1.37 for goverment and 1.50 for NGO nurseries. Non-availability of improved seeds/ seedlings was the main constraint for private and NGO nurseries, whereas lack of adequate fund was the crucial problem for government nurseries.

Alam*et al.* (2007) conducted a study of selected nurseres in and around greater Dhaka district. Regarding products and services, a good magnitude of diversity prevailed in the nurseries investigated. Only 9% nurseries had packaging for their product; but the packaging was found not to bear anything meaningful for advertisement. Only 14% nurseries had provision for plant labeling and 19% had price list with catalogues. For

promoting business 42.24% nurseries adopted the strategy to participate in fair, 14% conducted publicity in locality, 11.21% gave advertisement/features in the news paper/Magazine, 25.86% published poster/banners etc. Only 0.86% nurseries were found to use Radio-TV for advertisement. In 91% cases transport of sold items were the concerns of the buyer.

Ahmed *et al.* (2003) conducted a study on urban nursery in Bangladesh from the north estern region. The state of urban seedling nurseries in the north-eastern region of Bangladesh is examined with a focus on production and profitability of the enter-prises. Twenty-eight sample nurseries out of the 97 nursery enterprises in Sylhet town were selected at random, and operators personally interviewed. It was found that the entrepreneurs are not highly educated though they believed that a basic level of education is required to understand the management of young nursery stock. Labourers of various employment categories work in the enterprises and their wage is determined by their skill, gender and efficiency. Capital and operating costs vary among the enterprises according to land value, production capacity, and infrastructure type and workforce size. Production capacity ranges from 10,000 to 5 M seedlings/year with an average 836,000, though actual average production is only 341,000 seedlings/year. The production cost per seedling ranges from Tk. 4 to 50 while sale value ranges from Tk. 10 to 60. The most frequently sold species are Acacia mangium, Swieteniamacrophylla, Tectonagrandis, Mangiferaindica, Litchi chin- ensis and Cocos nucifera. Nursery techniques and cultural practices adopted by nursery operators depend on the type of species and its silvicultural requirement. Despite some problems, including lack of suitable land fornursery establishment and inadequate level of technical knowledge for high quality seedling management, it seems that production of tree seedlings is apromising profitable small-scale business in the study area.

Roy (2003) stated that the nursery has a vast role on plant conservation different nursedry produce seedlings by using different techniques and materials by the increase of population. The needs of fruit, fuel, and fodderand timber wood demand are increaseing in the equal ratio. To meet their demands, people dstroy different tree species at random. Now a day popularity of herbal medicinal is increasing day by day. This creates a great demand of differet medicinal plants to prepare herbal medicinel.

Nursery particularly herbal medicine creats a great opportunity to earn foreign exchange by exporting different medicinal raw material.

Ullah *et al.* (2005) listed some environmental benefits from nursery saplings: i) conservation and increasing of forest biodiversity, ii) safety for wild life, iii) controlling natural disaster, such as cyclone, drought, acid rain etc., iv) increase of rainfall, v) conservation of soil fertility and productivity, vi) decreases of land degradation and soil pollution, vii) decreases of environment degradatin, viii) controlling of global warming i.e., climate changes, which affect the biodiversity of the locality and ix) save the earth from the harmfull effect of ozone layer depletion.

Alam (2008) in his field research on study of nursery plants, their management strategy and socio-economics in the greater Dhaka district of Bangladesh, carried out an experiment on floristic composition of nursery plants and found the number of fruit yielding plants 57, timber yielding plants 27, ornamental plants 79 and medicinal plants 36.

Khan (1991) reported more than 500 species of medicinal plant have been listed from the undergrowth vegetation of the forests and village groves. Many of them are used by the villagers and the tribal communities for human and animal treatments but this valuable medicinal plants species has been reported to be disappearing rapidly in Bangladesh. Hug and Khan (1992) reported that the cost of a nursery of 10 decimals was Tk.15,000 to produce 50,000 seedlings per year. The obtained cost benefit analysis suggested that if each of the seedlings was sold to Tk. 1.00, a yearly profit of Tk. 10,700 could be obtained from each of the nurseries. This profit however did not consider cost of labor.

Haque*et al.,* (2007) in this study on an economic study of plant nursery business in Jessore and Gazipur districts during 2002-2003 to assess the socio-economic status of plant nursery business in Bangladesh. A total of 40 private plant nurseries, four government nurseries (BADC) and six NGO nurseries (BRAC) were selected for the study. Study revealed that 60% of the private nursery owners had secondary level of education and 50% owners performed their business on leased land. More than 55% owners had 6-10 years of experience in nursery business. This business has vast

potentials of generating employment and income of the owners. The yearly net returns per ha for private, government, and NGO nursery were Tk. 215766, Tk. 120149, and Tk. 535961, respectively. The rates of returns over full-cost were found to be 1.43 for private, 1.37 for government, and 1.50 for NGO nurseries. Non-availability of improved seeds/seedlings was the main constraint for private and NGO nurseries, whereas lack of adequate fund was the crucial problem for government nurseries.

CHAPTER III
MATERIALS AND METHODS

In any scientific research, methodology plays an important role. Appropriate methodology enables the researcher to collect valid and reliable information to analyze that information properly to arrive at correct conclusion. The methods and procedures followed in this study have been discussed in this chapter.

3.1 Location of the study

The study was conducted in Dhaka South City Corporation. Dhaka is the capital of Bangladesh. Dhaka is situated almost at the middle place of country; it lies between 23°33' and 24°41 north latitudes and 90˚11' and 90°37' east longitudes. The district is bounded on the north by Gazipur, on the east by Narayanganj, on the west by Manikganj and on the south by Munshiganj. The total area of the Dhaka zila is 1463.60 sq. km of which 45.92 sq. km is reverie and 0.28 sq. km is under forest.

Dhaka gained city status in 1947 when it was made the capital of East Pakistan and by that time stretched over an area of about 40 sq. km. The importance of Dhaka increased exponentially after 1971, when it became the capital of independent Bangladesh. As a result, the city expanded phenomenally and according to the census of 1991 the area and population of Dhaka Megacity or Dhaka Statistical Metropolitan Area (DSMA) were 1,600 sq km and 6.83 million respectively. According to the same census the area under the Dhaka City Corporation (DCC) was 360 sq km, with a population of 3.39 million. The present population of DSMA is about 125.0 million (Banglapedia, 2014).

29 November 2011 dissolved the Dhaka City Corporation by the Local Government (City Corporation) Amendment Bill 2011 passed by the Parliament of Bangladesh. The city corporation will be split into two corporations: North and South.

DSCC consists of 57 wards covering the thanas of Azimpur, Maghbazar, Malibagh, Motijheel, Jatrabari, Kotwali, Sutrapur,Bangsal, Wari, Gendaria, Lalbagh, Hazaribagh, Dhanmondi, Shahbagh, New Market, Khilgaon, Kamrangirchar and some others. A map of DSCC showing zone and nurseries in the study area have been presented in Figure 1.

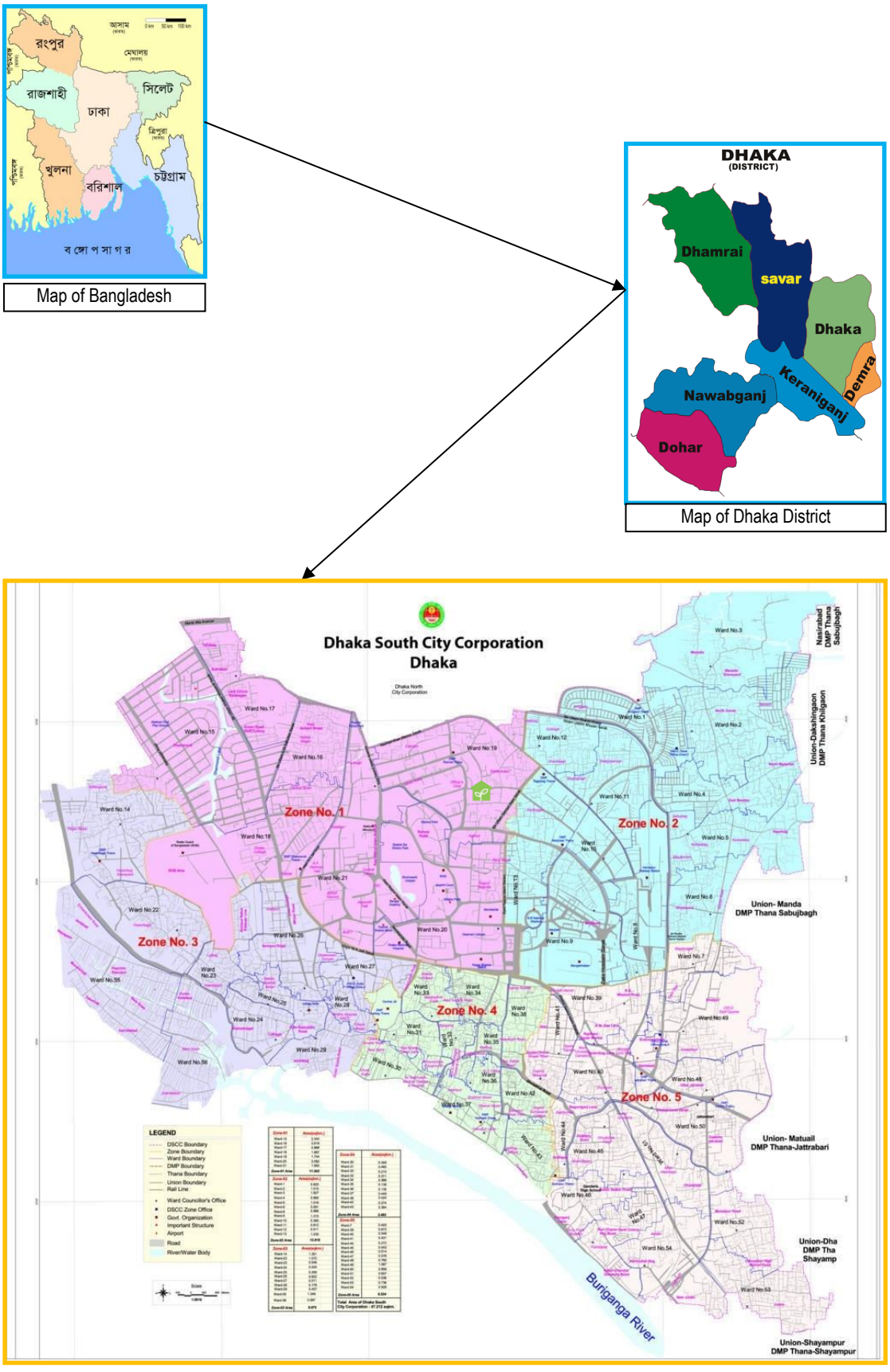

Figure 3.1 A map of the study area DSCC mention with five zones

3.2 Climate

DSCC has three distinct seasons: winter (November-February) dry with temperature 10° to 20°C; the pre-monsoon season (March-May) sometimes rain and hot with temperature reaching up to 40°C; and the monsoon (June-October) very wet with temperatures around 30°C. Dhaka experiences about 2,000 mm rain annually, of which about 80% falls during the monsoon (Banglapedia, 2014).

3.3 Sampling technique and selection of nursery owners

There are 5 zones with 57 wards in DSCC. A sampling frame was constructed in consultation with the leaders of Nursery Malik Samity and relevant persons before final sample selection. All the nurseries of DSCC were selected 32 private nurseries as random basis.

3.4 Preparation of the survey schedule

In order to collect relevant information, an interview schedule was carefully designed keeping objectives of the study in view. The English version of interview schedule is given in Appendix- I.

The interview schedule was pre-tested with 8 nursery owners and then final shape was given. The pre-testing facilitated the researcher to examine the suitability of different questions and status of the instrument in general. The final version of the instrument was done on the basis of pre-testing experiences regarding the validity, suggestions, corrections and comments of the research supervisor and experts.

3.5 Methods of data collection

This study followed the survey method. The author himself conducted the survey. Primary data were collected from nursery owners using pre-tested semi-structured questionnaire. The author collected data and related information through direct interview from the selected nursery owners. Collecting of accurate and reliable data and information was not an easy work. Because most of the nursery owners didn’t keep accurate written records of their nursery activities. For this reason, it was very difficult to collect actual data and the researcher had to rely on the memory of the respondents. The interviews were normally conducted early in the morning as they were not busy at that time. Some of interviews conducted at noon also.

(a) Haque Nursery

(b)Yeamin Nursery

(c)Kashboan Nursery

(d) Barisal Nursery

(e) Cactus Nursery

(f) Green Nursery

(g) Nahar Nursery

(h) Hossain Nursery

Plate 3.1 Photographs shows the interviewing with nursery owners in the study area.

3.6 Period of survey (Collection of data)

Data collection was started in 1stApril 2017 and completed 15 July 2017. After the questionnaire was finalized primary data were collected through personal interview with the nursery owners. Before beginning the interview, each respondent was given a brief description about the nature and purpose of the study. Then the questions were asked in a simple manner with explanation wherever necessary. The information supplied by the nursery grower was recorded directly on the interviewed questionnaire. Interviewers were requested to provide correct information as far as possible. The information was checked carefully before leaving the study area.

3.7 Processing and analysis of data

Collected data were checked and cross-checked before transferring to Excel sheets. Then the information was tabulated and analyzed for achieving the objectives of the study as far as possible. Tabular analysis was used to classify the collected data and to derive relevant findings.

3.8 Benefit Cost Ratio (BCR)

Benefit cost ratio was calculated by dividing the gross return / total return by the total cost. Benefit cost ratio (undiscounted method) is a measure to see the efficiency of resource use which were in the present study area based on total cost and cash cost.

$$\text{BCR} = \frac{\text{Gross return}}{\text{Total cost}}$$

CHAPTER IV
RESULTS AND DISCUSSION

This results and findings of the study have been presented and discussed in the following heads keeping the objectives of the study in mind.

4.1.1 Socio-economic characteristics of nursery owners

The aim of this chapter is to present a brief description of the socio-economic characteristics of the nursery owners in the studied area. It was not possible to collect all the information regarding the socio-economic characteristics of the respondents. In order to get a complete picture of nursery business in the studied area, it is essential to know the socio-economic characteristics of the nursery owners. Socio-economic characteristics of the plant producers and traders affect their production patterns and technology use. For this reason, it is essential to know their socio-economic characteristics.

People differ from one to another in many aspects. Behavior of an individual is largely determined by his or her characteristics. The following socio-economic characteristics have been considered in the study, viz., gender, age, educational level, marital status, family size, occupation, income etc.

The socio-economic characteristics of the nursery owners revealed that the male and female entrepreneur was involved in nursery business in the study area were96.88% and 3.12% respecively. However, in most of the nurseries, the women and children were involved in various nursery activities such as preparing soil mixture, filling poly bag with soil, seed bed preparation, mulching, cow dung collection and processing, weeding, watering etc.

The age structure of the sample nursery owners was explained by the classifying into three age groups: (i) Young aged (18 to 30 years), (ii) Middle aged (31-50 years) and (iii) Old aged (above 50 years). Distribution of respondents according to their age category is shown in Table 4.1. The result showed that about 12.50%, 78.13% and 9.38% of the respondents in the study area belonged to the age category of 18-30, 31-

50 and above 51 years, respectively. The present finding revealed that about 57.78 % nursery owners in the age category of 31-50 years were engaged in nursery business.

The educational level of nursery owners ranged from no schooling to above graduate. The respondents were grouped into six categories as shown in Table 4.1. It indicated that 93.75% nursery owners were educated and 6.25% were illiterate. It appeared that about 31.25% nursery owners were SSC level of education followed by 28.13% were HSC, 16.66% were graduate, 9.38% were above and 18.75% were primary level of education. The present finding revealed that SSC level of education was relatively more involved in nursery business. 6.25% of the respondents were above graduate degrees. It indicates that nursery business is an economic activity for the respondents that created alternative employment opportunity.

Table 4.1 Socio-economic characteristics of nursery owners

Characteristics	No of respondents	Percent
Sex		
Male	31	96.88
Female	1	3.12
Age Category		
Young aged (18- 30)	4	12.50
Middle aged (31- 50)	25	78.13
Old aged (51 and Above)	3	9.38
Educational level		
No Schooling	2	6.25
Primary	6	18.75
SSC	10	31.25
HSC	9	28.13
Graduate	3	9.38
Above	2	6.25
Marital Status		
Married	28	87.50
Unmarried	4	12.50
Family size		
Small (up to 4)	19	59.38
Medium (5 – 6)	12	37.50
Large (7 and above)	1	3.13

Characteristics	No of respondents	Percent
Occupation		
Agriculture	1	3.13
Service holder	3	9.38
Nursery	21	65.63
Other Business	7	21.87
Nursery size (in decimal)		
Small (Below 10 decimal)	21	65.62
Medium (10 – 30 decimal)	9	28.13
Large (above 30 decimal)	2	6.25
Year of establishment		
0-10	17	53.12
11-20	8	25.00
21-30	4	12.50
31 and above	3	9.38

Experience innursery business (Years)		
0-5	4	12.50
6-10	7	21.88
11-15	16	50.00
16-20	2	6.25
above 20	3	9.37
Participation in tree fair		
One times	3	9.38
More than one times	8	25.00
None	21	65.62
Yearly income level		
Low income (under 60 lac)	12	38.00
Medium income (61 to 80 lac)	15	47.00
High income (above 80 lac)	5	16.00

It was observed that overall 87.50% of nursery owners in the study area were married where 12.50% were unmarried. The present finding revealed that relatively married nursery owners were involved more with nursery business than unmarried nursery owners.

It was shows that 37.50% families had 5-6 members where 3.13% families had 7 and above members and 59.38% had up to 4 members of family while as the average family members were 4.16. The present findings revealed that more than half of the respondents were 5-6 members of family.

It was observed that there were mostly four categories of occupation of the respondents in the study area. Among them 65.63% respondents were nursery as a primary occupation followed by 21.87% was other business, 9.38% was service holder and3.13% were agriculture.

The area of the nursery (decimal) is an important factor for nursery business. The size of nurseries of the respondents classified into three categories.

a) Small size nursery: below 10 decimals
b) Medium size nursery: 10 - 30 decimal and
c) Large size nursery: above 30 decimals

The study showed that the highest number of nursery (65.62%) was found small size of nursery which is below 10 decimals, followed by 28.13% nursery was medium size and 6.25% nursery size was above 30 decimals.

The establishment period of the nurseries was categorized into less than one year to over 31 years. It was found that the highest number of (53.12%) respondents had established their nursery within 0-10 years, closely followed by 25% respondents within 11-20 years, 12.50% respondents had established their nursery 21-30 years and only 9.38% of nursery owners had established their nurseries above 31 years.

The experience means the year of involvement of the nursery owners with nursery business. Study showed that the experience of the respondents was categorized into less than one year to over twenty years. It is found that most of the nursery owners (50%) had 11-15 years' experience followed by 21.88% nursery owners had 6-10 years' experience, 6.25% nursery owners had 16-20 years' experience, 9.37% had well experience over 20 years of involvement, while 12.50% nursery owners were found to have less experience of 0-5 years.

Participation of tree fair is very important in terms of advertisement of the nursery and builds awareness and motivates the local people for plantation. In the present study it was remarked that maximum nursery owners participated in National Tree Fair more than one time. It was revealed that three nurseries out of 32 nurseries participated in National Tree Fair once a time, 25% of nursery owners participated in fair more than one time and 65.62% nursery didn't participated any fair.

The annual income of the respondent is an important indication of how much he can invest in his nursery business. Usually, the person who had more income can invest more in nursery business. The annual income or gross profit of the respondents of the studied nurseries categorized into three phases: (i) under 60 lac (ii) 61 to 80 lac and (iii) above 80 lacs. Data from Table 4.12 revealed that 38% of nursery owner's yearly income was low (under 60 lac), 47% of nursery owner's yearly income is 61 to 80 lacs and 16% of nursery owners were high level of income i.e., above 80 lacs.

4.2.1 Ownership of nursery land

Most of the nursery owners (78%) were found to operate their nurseries in Govt. khas land in the study area in DSCC, followed by 18% nursery owners operate their nursery business on leased or rent land. Only 4% of nursery owners established their nursery on own land.

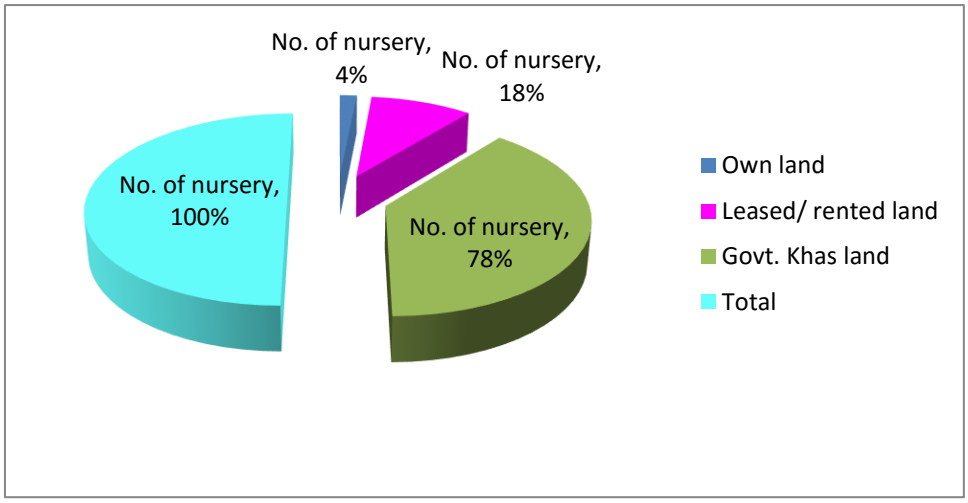

Figure 4.1: Distribution of thenursery owners according to the ownership of land

4.2.2 Use of communication tools

Business used to rely on communication for almost every aspect of their operations. In this study, four types of modern communication tools were found to use in nursery business. The tools were mobile phone, land phone, internet (e-mail), and facebook services. Among the modern communication tools on an average cent percent of the respondents had mobile phone, 48% respondents use facebook, 36% had land telephone and 18% nursery owner use internet (e-mail).

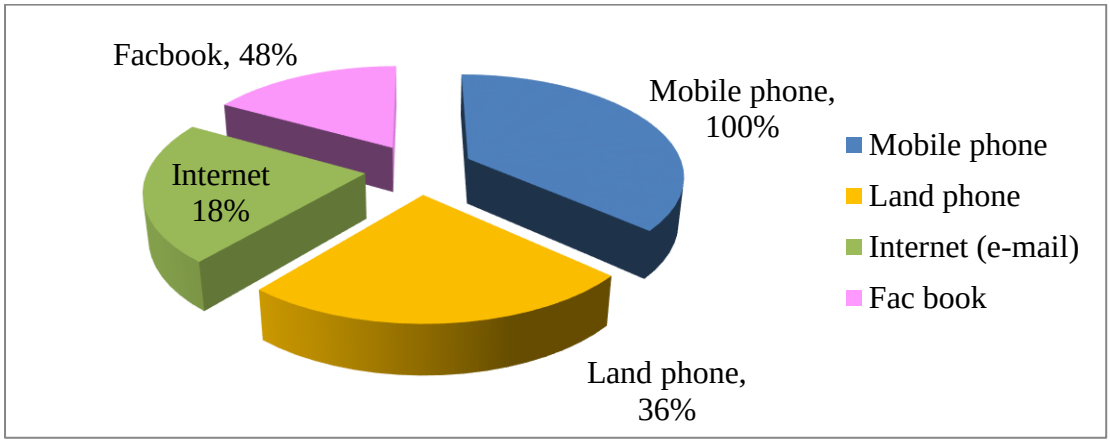

Figure 4.2: Use of communication tools by the respondents.

4.2.3 Source of capital

Nursery owners of DSCC highly interested to take the bank loan facilities. But a minimum respondent has taken this facilities from bank and others organization. It was found that 81.25% of respondents didn't take any loan from any financial organization. Only 3.13% of respondents took loan from bank, 6.25% of respondents took loan from NGO and 9.38% nursery owners took loan from local money lenders or their associations. This finding indicated that the nursery owners like to take loan from local money lenders or their own association or syndicate because of much easy to take loan compared to other sources.

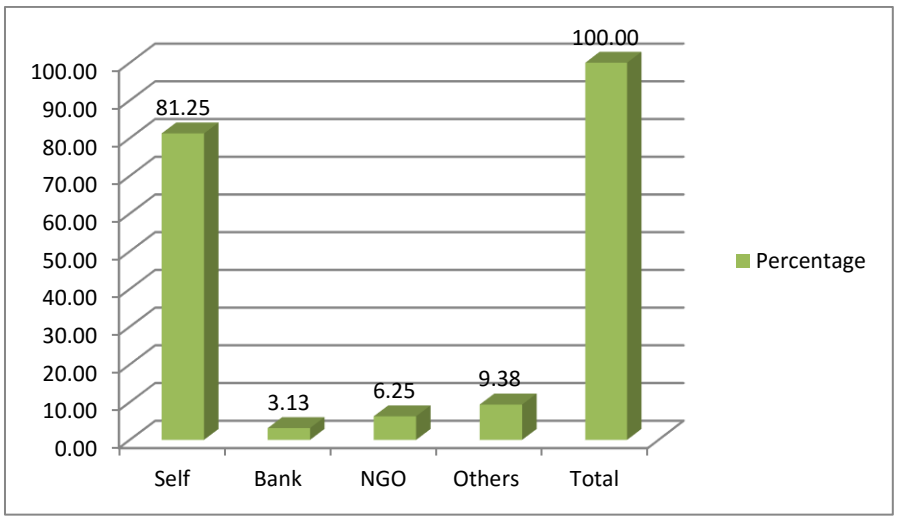

Figure 4.3 Distribution of the nursery owners according to their source of capital

4.3 Species composition and planting materials produced at studied area.

4.3.1 Species composition

Wide variation in species composition of planting materials at different nurseries was observed during study (Table 4.2). The distribution of plant species might have influenced by the local environment, place and demand of the locality. Therefore, species composition varied from place to place. On an average, a total of 184 species were identified in the nurseries of the study area of DSCC which divided in six categories. They are (i) Fruit, (ii) Flower, (iii) Ornamental, (iv) Timber, (v) Medicinal, (vi) Spices & vegetable.

Among the species ornamental species was dominated over all other species. In regard to species richness, the highest number of ornamental species (34.65%) was found in study area, followed by flower species (24.62%), Fruit species (18.24%), Medicinal

species (7.29%), Timber species (6.08%), vegetable species (5.17%)and Spice species (3.95%) at the study area.

Table 4.2 Species composition in the nursery in the study area

Catagory	No. of Species	Species Composition (%)
Fruit	41	22.28
Flower	44	23.91
Ornamental	66	35.87
Timber	9	4.89
Medicinal	10	5.43
Spices & vegetable	14	7.61
Total	**184**	**100.00**

4.3.2 Cost effectiveness and distribution of sale of the different species

This study attempts to identify species composition and pricing of cost items of different species which are involved in nursery business. The nursery owners incurred certain costs for the use of different inputs in the process of nursery business. Therefore, it is very essential to explain all the cost items to find out the benefit cost ratio under different management. For analytical advantages, the cost items were classified under the following heads.

4.3.3 Fruit species

The distribution of sale according to fruit species in the study area is presented in Table 4.3. It was observed that about 4,19,460 number of fruit plants were found in the nurseries at the study area where the number of sold species were 2,85,233 which comprises 68% of total number of fruit species. The average production price per seedling was TK.84.44 where average selling price per seedling was TK.236.46. So, there was a difference of TK.152.02 between the average production price and average selling price per seedling.

It was observed that, among the indigenous fruits varieties Khajur was found to be the highest average selling price (TK. 300.00) while kalojam were found to be the lowest average selling price (TK. 20.00).

In exotic fruits it was found that the highest average selling price was foundin Durian (Tk. 1800) and the lowest selling price was observed in Dumur (Tk.120.00).

Total sales value of fruit species was TK.4,29,02,526.00 where mango was ranked in the highest (21.08%) followed by Piyara (19.41%), Lebu (18.31%). The present findings revealed that the maximum share of sales come from Mango.But in consideration of numberit was found that, the maximum sale number of fruit species was Piyara (22.46%) followed by Lebu (18.36%) and Aam (12.68%)and the minimum number of fruit species sold (below 0.05%) was durian.

Table 4.3 Distribution of fruit plant according to their total number, cost and sale price, percentage of total sale value and percentage of total number of plants

Bangla Name	Total no. of plants	Ave. cost price per seedling (Tk)	Ave. sale price per seedling (Tk)	Total no. of sold plants	Total sales (Tk)	Total sale (%) value	Total no. on total sale (%)
Aam	53200	45	250	36176	9044000	21.08	12.68
Alubokhara	1120	150	250	762	190400	0.44	0.27
Amloki	5050	12	30	3434	103020	0.24	1.20
Amra	4270	35	180	2904	522648	1.22	1.02
Angur	4200	25	80	2856	228480	0.53	1.00
Ata	1700	10	25	1156	28900	0.07	0.41
Avacado	290	500	1200	197	236640	0.55	0.07
Beal	4570	20	80	3108	248608	0.58	1.09
Bilombi	1650	10	30	1122	33660	0.08	0.39
Chalta	3300	10	50	2244	112200	0.26	0.79
Dalim	4950	15	40	3366	134640	0.31	1.18
Dawa	1370	20	80	932	74528	0.17	0.33
Dragon	9400	80	300	6392	1917600	4.47	2.24
Dumur	1120	50	120	762	91392	0.21	0.27
Durian	230	900	1800	156	281520	0.66	0.05
Jambura	6600	35	150	4488	673200	1.57	1.57
Jamrul	6700	30	70	4556	318920	0.74	1.60
Jolpai	6550	25	120	4454	534480	1.25	1.56
Kajubadam	3200	80	220	2176	478720	1.12	0.76
Kalo Jam	3600	10	20	2448	48960	0.11	0.86
Kamranga	8100	20	75	5508	413100	0.96	1.93
Kathal	10400	12	40	7072	282880	0.66	2.48
Kathbadam	4000	15	40	2720	108800	0.25	0.95
Khejur	1500	100	**300**	1020	306000	0.71	0.36

Bangla Name	Total no. of plants	Ave. cost price per seedling (Tk)	Ave. sale price per seedling (Tk)	Total no. of sold plants	Total sales (Tk)	Total sale (%) value	Total no. on total sale (%)
Kodbel	5080	20	80	3454	276352	0.64	1.21
Kola	1700	30	100	1156	115600	0.27	0.41
Komola	9550	40	180	6494	1168920	2.72	2.28
Koromcha	2940	30	80	1999	159936	0.37	0.70
Kul	8100	15	40	5508	220320	0.51	1.93
Lebu	77000	20	150	52360	7854000	18.31	18.36
Litchi	39500	25	150	26860	4029000	9.39	9.42
Lotkon	3400	40	120	2312	277440	0.65	0.81
Malta	6550	30	130	4454	579020	1.35	1.56
Narikel	10850	70	225	7378	1660050	3.87	2.59
Orbori	1650	10	30	1122	33660	0.08	0.39
Piyara	94200	18	130	64056	8327280	19.41	22.46
Rabmutan	520	500	1500	354	530400	1.24	0.12
Sharifa	4850	40	150	3298	494700	1.15	1.16
Sofeda	5050	35	120	3434	412080	0.96	1.20
Tangfal	940	30	60	639	38352	0.09	0.22
Thai Longan	510	300	900	347	312120	0.73	0.12
Total	**419460**	**3462**	**9695**	**285233**	**42902526**	**100.00**	**100.00**

4.3.4 Flower species

The distribution of sale according to flower species in study area is presented in Table 4.4. It is observed that6,52,560 number of flower plants were found in the nurseries at the study area where the number of sold species were 5,35,099 which comprises 82% of total number of flower plant species.

The average production price per seedling was TK.25.59 whereas average selling price per seedling was TK.92.39. So, there was a difference of TK.66.80 between the average production price and average selling price per seedling.

The highest average selling price was found in the Bougainvillea (TK.550.00) while Gashful was found to be the lowest average selling price (TK. 20.00). Total sales value of flower plant species was TK. 4,28,20,400.00 where Bougainvillea was ranked in the highest (17.38%) followed by Gadha (10.31%), Golap (9.35%) and Oparajita (0.30%) were found to be the lowest in terms of sales. It was revealed that the maximum share of sales come from Bougainvillea in the studied area.

But in terms of number of flower species soldGhadha (13.75%) was ranked in the highest and Ticoma (0.49%) was ranked in the lowest.

Table 4.4 Distribution of flower plant according to their total number, cost and sale price, percentage of total sale value and percentage of total number of plants

Bangla Name	**Total no. of plants**	**Ave. cost per seedling (Tk)**	**Ave. sale per seedling (Tk)**	**Total no. of sold plants**	**Total sales (Tk)**	**Total sale in valu (%)**	**Total no. on total sale (%)**
Alamonda	12400	15	50	10168	508400	1.19	1.90
Anthorium	3250	40	250	2665	666250	1.56	0.50
Aster	6400	10	30	5248	157440	0.37	0.98
Bakul	6500	12	50	5330	266500	0.62	1.00
Beli	55900	12	75	45838	3437850	8.03	8.57
Bougainvillea	16500	100	**550**	13530	7441500	**17.38**	2.53
Calendula	16000	10	30	13120	393600	0.92	2.45
Chondramollika	6400	30	80	5248	419840	0.98	0.98
Cosmos	6400	10	40	5248	209920	0.49	0.98
Dianthus	16000	15	50	13120	656000	1.53	2.45
Euphorbia	9800	40	85	8036	683060	1.60	1.50
Gashful	32000	8	**20**	26240	524800	1.23	4.90
Ghada	89700	20	60	73554	4413240	10.31	**13.75**
Golap	48800	20	100	40016	4001600	9.35	7.48
Gondhoraj	10200	15	40	8364	334560	0.78	1.56
Hesnahena	37400	10	50	30668	1533400	3.58	5.73
Hydrenga	9100	35	150	7462	1119300	2.61	1.39
Jhumkalota	3150	20	100	2583	258300	0.60	0.48
Joba	11700	15	50	9594	479700	1.12	1.79
Jui	9400	15	50	7708	385400	0.90	1.44
Kamini	22200	15	50	18204	910200	2.13	3.40
Kata mehedi	18000	15	40	14760	590400	1.38	2.76
Kodom	3400	12	50	2788	139400	0.33	0.52

Bangla Name	**Total no. of plants**	**Ave. cost per seedling (Tk)**	**Ave. sale per seedling (Tk)**	**Total no. of sold plants**	**Total sales (Tk)**	**Total sale in valu (%)**	**Total no. on total sale (%)**
Krishnachura	6700	25	80	5494	439520	1.03	1.03
Lantana	17900	10	30	14678	440340	1.03	2.74
Lily	19300	25	80	15826	1266080	2.96	2.96
Lipistic	3720	50	150	3050	457560	1.07	0.57
Madhobilota	3250	25	80	2665	213200	0.50	0.50
Meghnolia	1400	50	160	1148	183680	0.43	**0.21**
Musanda	10500	25	150	8610	1291500	3.02	1.61
Noyontara	9300	9	30	7626	228780	0.53	1.43
Oparajita	3150	10	50	2583	129150	**0.30**	0.48
Orchid	5540	150	350	4543	1589980	3.71	0.85
Petunia	16000	35	100	13120	1312000	3.06	2.45
Poinsettia	4900	50	115	4018	462070	1.08	0.75
Radha chura	6400	25	80	5248	419840	0.98	0.98
Rongon	14700	20	100	12054	1205400	2.82	2.25
Salvia	16000	15	50	13120	656000	1.53	2.45
Shafali	6500	8	50	5330	266500	0.62	1.00
Sonalu	10100	20	50	8282	414100	0.97	1.55
Spathiphullum	5600	30	130	4592	596960	1.39	0.86
Tikoma	3200	20	100	2624	262400	0.61	0.49
Togor	5800	15	30	4756	142680	0.33	0.89
Zinia	32000	15	50	26240	1312000	3.06	4.90
Total	**652560**	**1126**	**4065**	**535099**	**42820400**	**100**	**100**

4.3.5 Ornamental species

The distribution of ornamental plant according to sale, number, production & sale price, total sale value analyzed in the study area in DSCC is presented in Table 4.5. In the study area it was observed that the most demandable species is the ornamental plants other than fruits and flower species.

It was observed that about 9,11,140 number of ornamental plants were found in the nurseries of the study area where the number of sold species was 7,65,358 which comprises 84% of total number of ornamental plant species.

The average production price was TK. 74.59 where average selling pricewas TK. 259.39 per seedling. So, there was a difference of TK. 184.80 between the average production price and average selling price per seedling. Bonsai was found to be the highest average selling price (TK. 3,5000.00) while carpet grass and border plants were found to be the lowest average selling price (TK. 10.00).

Total sales value of ornamental species was TK. 9,76,87,800.00 where Aricha palm was ranked in the highest (16.99%) followed by, Foxtail palm (9.10) and Thuja (7.30) and Casava was found to be the lowest (0.14%) in terms of sales. In case of number of sold species Border plants (13.52%) was ranked in highest while Gold dust dracaena was in lowest (0.18%).

Table 4.5 Distribution of ornamental plant species according to their total number, cost and sale price, percentage of total sale value and percentage of total number of plants

Bangla Name	Total no. of plants	Ave. cost per seedling (Tk)	Ave. sale per seedling (Tk)	Total no. of sold plants	Total sales value(Tk)	Total sale (%)	Total no. on total sale (%)
Agave	1430	50	150	1201	180180	0.18	0.16
Aglaonema	24800	20	130	20832	2708160	2.77	2.72
Air plants	2300	80	200	1932	386400	0.40	0.25
Areacha Palm	109800	50	180	92232	16601760	**16.99**	12.05
Arealia	10300	20	50	8652	432600	0.44	1.13
Augishor	9000	30	80	7560	604800	0.62	0.99
Baby's tears	6400	50	150	5376	806400	0.83	0.70
Bashpata Dracaena	28500	20	50	23940	1197000	1.23	3.13
Bhutta Dracaena	16500	50	100	13860	1386000	1.42	1.81
Bird nest Fern	1910	400	800	1604	1283520	1.31	0.21
Birds of paradise	3250	50	265	2730	723450	0.74	0.36
Bleeding-heart	6400	35	100	5376	537600	0.55	0.70
Bonsai	7250	500	**3500**	6090	441000	0.45	0.80
Border plant	123200	5	**10**	103488	1034880	1.06	**13.52**
Bot	4500	40	80	3780	302400	0.31	0.49
Bottle brush	6600	30	90	5544	498960	0.51	0.72
Bottle Palm	9900	30	80	8316	665280	0.68	1.09
Cactus	18400	50	550	15456	8500800	8.70	2.02
Caladium	6100	15	50	5124	256200	0.26	0.67
Carmona	7700	35	150	6468	970200	0.99	0.85
Carpet grass	55100	5	**10**	46284	462840	0.47	6.05
Cassava	3200	20	50	2688	134400	**0.14**	0.35
Chinese grass	9600	20	50	8064	403200	0.41	1.05
Chinese Palm	3200	25	100	2688	268800	0.28	0.35
Christmas tree	6700	500	1200	5628	6753600	6.91	0.74
Coleus	3200	7	20	2688	53760	0.06	0.35
Croton	71200	15	50	59808	2990400	3.06	7.81
Crystal Bamboo	9100	40	100	7644	764400	0.78	1.00
Cycus Palm	3300	300	1500	2772	4158000	4.26	0.36
Diphenbachia	4700	15	75	3948	296100	0.30	0.52
Ficus	59900	25	70	50316	3522120	3.61	6.57
Fishtail Palm	6400	40	150	5376	806400	0.83	0.70
Forkoria	1600	65	250	1344	336000	0.34	0.18
Foxtail Fern	3200	80	200	2688	537600	0.55	0.35

Bangla Name	Total no. of plants	Ave. cost per seedling (Tk)	Ave. sale per seedling (Tk)	Total no. of sold plants	Total sales value(Tk)	Total sale (%)	Total no. on total sale (%)
Foxtail Palm	5800	500	1500	4872	7308000	7.48	0.64
Gold dust dracaena	1650	30	75	1386	103950	0.11	**0.18**
Golden Bamboo	2200	100	300	1848	554400	0.57	0.24
Hoya	6400	90	250	5376	1344000	1.38	0.70
Ivy Lota	4550	7	15	3822	57330	0.06	0.50
Jade Plant	2250	50	125	1890	236250	0.24	0.25
Kalathia	3200	10	50	2688	134400	0.14	0.35
Kentina Palm	16000	25	150	13440	2016000	2.06	1.76
Kolaboti	10300	10	30	8652	259560	0.27	1.13
Marginata	3200	20	40	2688	107520	0.11	0.35
Money Plant	9800	10	30	8232	246960	0.25	1.08
Monosteria	13800	50	150	11592	1738800	1.78	1.51
Nolina	3200	145	300	2688	806400	0.83	0.35
Philadendron	9800	50	250	8232	2058000	2.11	1.08
Phonix Palm	6400	100	250	5376	1344000	1.38	0.70
Pichutia Palm	3200	30	125	2688	336000	0.34	0.35
Pine	6400	50	150	5376	806400	0.83	0.70
Pobonjhaw	4800	65	225	4032	907200	0.93	0.53
Rhapis Palm	1650	100	300	1386	415800	0.43	0.18
Ribon Dracaena	7900	30	70	6636	464520	0.48	0.87
Rubber	7700	35	155	6468	1002540	1.03	0.85
Sansevieria	9600	20	50	8064	403200	0.41	1.05
Scheffelara	5800	100	250	4872	1218000	1.25	0.64
Singunium	6550	9	20	5502	110040	0.11	0.72
Song of India	3200	30	100	2688	268800	0.28	0.35
Spider	11600	10	30	9744	292320	0.30	1.27
Supari	9300	30	80	7812	624960	0.64	1.02
Thuja	56600	50	150	47544	7131600	7.30	6.21
Victoria Dracaena	4700	150	350	3948	1381800	1.41	0.52
Weeping debdaru	20700	20	80	17388	1391040	1.42	2.27
Wh. money plant	6500	30	80	5460	436800	0.45	0.71
Zamia Palm	1750	250	800	1470	1176000	1.20	0.19
Total	**911140**	**4923**	**17120**	**765358**	**97687800**	**100**	**100**

4.3.6 Timber species

The distribution of sale according to timber plant species in the study area is presented in Table 4.6. It was observed that about 3,44,200 timber plants were found in the nursery of the study area where the number of sold plants were 2,68,476 which comprises 78% of total number of timber species. The average production price was TK.12.67 where average selling price was TK.43.33per seedling. The Lambuand Segun were found to be the highest average selling price (TK.60.00) while Akashmoniwere found to be the lowest (TK 20). Total sales value of timber species was TK 1,23,61,440.00 where Lambuwas ranked in the highest (33.13%) followed by Mehogoni (26.66%), Debdaru (16.82%) and Segun (2.61%) was found to be the lowest in terms of sales.

Table 4.6 Distribution of timber species according to their total number, cost and sale price, percentage of total sale value and percentage of total number of plants

Bangla Name	**Total no. of plants**	**Ave. cost per seedling (Tk)**	**Ave. sale per seedling (Tk)**	**Total no. of sold plants**	**Total sales (Tk)**	**Total sale (%)**	**Total no. on total sale (%)**
Akashmoni	57100	13.5	**20**	44538	890760	7.21	16.59
Debdaru	57900	11.5	50	45162	2258100	18.27	16.82
Eucalyptus	16000	9	40	12480	499200	4.04	4.65
Kori	15000	9	35	11700	409500	3.31	4.36
Lambu	87500	20	**60**	68250	4095000	**33.13**	**25.42**
Mehogoni	84500	11.5	50	65910	3295500	26.66	24.55
Rain tree	11400	9	35	8892	311220	2.52	3.31
Shegun	9000	21.5	60	7020	421200	3.41	2.61
Sisso	5800	9	40	4524	180960	**1.46**	**1.69**
Total	**344200**	**114**	**390**	**268476**	**12361440**	**100**	**100**

4.3.7 Medicinal species

The distribution of sale according to medicinal plant species in the study area is presented in Table 4.7. It was observed that about 1,65,450 number of medicinal plants were found in the nursery of the study area, where the number of sold plants was 1,38,978 which comprises 84% of total number of medicinal plant species. The average production price per seedling was TK. 14.10 where average selling price per seedling was TK.42.00

Neem, Gritokumari, Mehedi and Satomuli were found to be the highest average selling price (TK.50.00) while Pudian was found to be the lowest average selling price (TK. 25.00). Total sales value of medicinal plant species was TK.6,129,060.00 where Neem was ranked in the highest (23.20%) followed by Mehedi (37.60%), Gritokumari (10.64%) were found to be the lowest in terms of sales. It was revealed that the maximum share of sales and maximum number come from Neem.

Table 4.7 Distribution of medicinal plant species according to their total number, cost and sale price, percentage of total sale value and percentage of total number of plants.

Bangla Name	**Total no. of plants**	**Ave. cost per seedling(Tk)**	**Ave. sale per seedling (Tk)**	**Total no. of sold plants**	**Total sales value(Tk)**	**Total sale (%)**	**Total no. on total sale (%)**
Aurjun	15900	20	45	13356	601020	9.81	9.61
Bashok	9300	11.5	45	7812	351540	5.74	5.62
Bohera	9200	11.5	35	7728	270480	4.41	5.56
Gritokumari	17600	11.5	**50**	14784	739200	12.06	10.64
Horitoki	15500	17.5	35	13020	455700	7.44	9.37
Mehedi	22500	17.5	**50**	18900	945000	15.42	13.60
Neem	46300	15	**50**	38892	1944600	**31.73**	**27.98**
Pudina	8800	9	**25**	7392	184800	3.02	5.32
Satomuli	3050	15	**50**	2562	128100	**2.09**	**1.84**
Tulshi	17300	12.5	35	14532	508620	8.30	10.46
Total	**165450**	**141**	**420**	**138978**	**6129060**	**100**	**100**

4.3.8 Spices & vegetable

The distribution of sale according to spices plant species in the nurseries of the study area is presented in Table 4.8. It was observed that about 93,150 number of spices plant species were found in the nursery of the study area, where the number of sold species was 1,32,678 which comprises 78% of total number of spices species.

The average production price per seedling was TK.16.21 where average selling price per seedling was TK.48.21. The Daruchini, Tejpata&Lobongowere found to be the highest average selling price (TK.100.00) while Tomato was found to be the lowest (TK. 15.00).

Total sales value of spices plant species was TK 49,88,790.00 where Chili was ranked in the highest (24.15%) followed by Papaya (21.53%), Tajpata (10.23%), Daruchini (9.90%) in terms of sales. It was found from the Table maximum share of sales come from Chili as its number was the highest.

Table 4.8 Distribution of spices& vegetable species according to their total number, cost and sale price, percentage of total sale value and percentage of total number of plants.

Bangla Name	**Total no. of plants**	**Ave. cost per seedling (Tk)**	**Ave. sale per seedling (Tk)**	**Total no. of sold plants**	**Total sales (Tk)**	**Total sale (%)**	**Total no. on total sale (%)**
Brinjal	9300	9	20	7533	150660	3.02	5.68
Capsicum	6200	10	30	5022	150660	3.02	3.79
Chili	29700	16	50	24057	1202850	**24.11**	18.13
Daruchini	6100	35	**100**	4941	494100	9.90	3.72
Gol moric	1550	22.5	80	1256	100440	2.01	0.95
Karipata	3100	13.5	50	2511	125550	2.52	1.89
Law	15500	10	30	12555	376650	7.55	9.46
Lemon grass	6200	12.5	25	5022	125550	2.52	3.79
Letuce	15500	10	20	12555	251100	5.03	9.46
Lobogo	1550	25	**100**	1256	125550	2.52	0.95
Papaya	44200	10.5	30	35802	1074060	21.53	**26.98**
Squash	9300	10	25	7533	188325	3.77	5.68
Tajpata	6300	35	**100**	5103	510300	10.23	3.85
Tomato	9300	8	15	7533	112995	2.26	5.68
Total	**163800**	**227**	**675**	**132678**	**4988790**	**100.00**	**100.00**

4.4.1 Percent share of different types of plant

Percent share of different types of plant species sold in the selected nurseries are presented in Table 4.9. It was found that total number of plants sold was 21,25,822 where fruit plants were 2,85,233 flower plants were 5,35,099, ornamental plants were 7,65,358, timber plants were 2,68,476, medicinal plants were 1,38,978 and Spices& vegetable plants were 1,32,678 in number, respectively.

On the other hand, total sales value in the study area was TK. 20,68,90,016.00 where fruit plants sale was TK. 42902526.00, flower plants sale was TK. 4,28,20,400.00, ornamental plants sale was TK.9,76,87,800.00, timber plants sale was TK.1,23,61,440.00, medicinal plants sale was TK.61,29,060.00 and spices &vegetable plants sale were 49,88,790.00. The present finding revealed that the demand for ornamental plants has relatively skyrocketed than compared to any other plants present in terms of both sale volume (47.22%) as well as number of plants (36%).

Table 4.9 Total number of sold plants with percentage and total sale value (Tk.) with percentage of different categories of plants

Catagory	Total sold plant	Sold species (%)	Total sale (Tk)	Total sale (%)
Fruit	285233	13.42	42902526	20.74
Flower	535099	25.17	42820400	20.70
Ornamental	765358	36.00	97687800	47.22
Timber	268476	12.63	12361440	5.97
Medicinal	138978	6.54	6129060	2.96
Spices & veg.	132678	6.24	4988790	2.41
Total	**2125822**	**100.00**	**206890016**	**100.00**

4.4.2 Species ranking based on number of sold plants

In the study area, there was a huge demand of different species but among them ranking of species according to number of sold species is presented in Table 4.10. It was found that in case of fruit plant species Piyara (22.46%) was attained the 1st position where Lebu (18.36%)&Aam (12.68%), were attained 2nd and 3rd position, respectively in terms of public demand. On the other hand, in case of flower plant species Ghada (13.75%), Beli (8.57%)&Golap (7.48%) were archived 1st, 2nd & 3rd position, respectively in terms of public demand. In case of ornamental plant species, Border Plants (13.52%), Arecha Palm (12.05%) &Croton (7.81%) were archived1st, 2nd & 3rd position, respectively.

In case of timber plant species, Lambu (25.42%), Mehogoni1 (24.55%) &Deddaru (16.82%) werearchived1st, 2nd& 3rd position, respectively. In case of medicinal species, Neem (27.98%), Mehedi (13.60) & Gritokumari (10.64%)were ranked 1st, 2nd& 3rd position, respectively. In case of spices& vegetable plant, Papaya (26.9%), Chili (18.13%)&Laow/bottle gourd (9.46%) were ranked 1st, 2nd & 3rd position, respectively.

Table 4.10 Ranking of different species according to number of sold species

Catagory	**Ranking based on number of sold species**					
	1st	**%**	**2nd**	**%**	**3rd**	**%**
Fruit	Piyara	22.46	Lebu	18.36	Aam	12.68
Flower	Ghada	13.75	Beli	8.57	Golap	7.48
Ornamental	Border Plants	13.52	Aricha palm	12.05	Croton	7.81
Timber	Lambu	25.42	Mehogoni	24.55	Debdaru	16.82
Medicinal	Neem	27.98	Mehedi	13.60	Gritokumari	10.64
Spices&veg.	Papaya	26.98	Chili	18.13	Law	9.46

4.4.3 Species ranking based on sale value of plants

Ranking of species according to sale volume is presented in Table 4.11. It was found that in case of fruit plant species Aam (21.08%), Piyara (19.41%) &Lebu (18.31%) were ranked 1st, 2nd& 3rd position, respectively in terms of sale value. In case of flower plant species Bougainvillea (17.38%), Gadha (10.31%) &Golap (9.35%) were achived1st, 2nd& 3rd position, respectively. In case of ornamental plant species, Areacha Palm (16.99%), Foxtail Palm (7.48%) and Thuja (7.30%) were ranked 1st, 2nd& 3rd position, respectively. In case of timber plant species, Lambu (33.13%), Mehogoni (26.66%) and Debdaru (18.27) were achived 1st, 2nd& 3rd position, respectively. In case of medicinal plant species, Neem (31.13%), Mehedi (15.42%) and Gritokumari (12.06%)were ranked 1st, 2nd& 3rd position, respectively. In case of spices& vegetable plant Chili (24.11%), Papaya (21.53%) and Tajpata (10.23) were achived1st, 2nd & 3rd position, respectively.

Table 4.11 Ranking of different species according to sale value

Catagory of plant	**Ranking based on sale value**					
	1st	**%**	**2nd**	**%**	**3rd**	**%**
Fruit	Aam	21.08	Piyara	19.41	Lebu	18.31
Flower	Bougainvellia	17.38	Ghada	10.31	Golap	9.35
Ornamental	Aricha palm	16.99	Foxtail palm	7.48	Thuja	7.30
Timber	Lambu	33.13	Mehogoni	26.66	Debdaru	18.27
Medicinal	Neem	31.73	Mehedi	15.42	Gritokumari	12.06
Spices & veg	Chili	24.11	Papaya	21.53	Tajpata	10.23

4.5.1 Source of income at the nursery business in the study area

The findings of the study revealed that various products and services were available and sold at the nurseries of study area in DSCC. Cent percent nurseries had seedlings/saplings of different species of plants in the nursery. Pot-pottery was present 68.75% nurseries, followed by seed 56.25%, garden soil 65.63%, pesticide 43.75%, nursery instrument 34.38% and books was present in 3.13% of nurseries. Among the service, landscape and gardening service was found in 90.63% nursery, followed by advocacy 78.13% and rental service of plants was 40.63% of nurseries in the studied area in DSCC (Table 4.12).

Table 4.12 Source of income at the nursery business in the study area

No	Sale of products &service	No. of nursery	Ave. percent
1	Seedling/ sapling	32	100.00
2	Seed	18	56.25
3	Fertilizer & Hormone	26	81.25
4	Pesticide	14	43.75
5	Garden Soil	21	65.63
6	Pot-Pottery	22	68.75
7	Nursery Instrument	11	34.38
8	Books	1	3.13
9	Landscaping & Gardening	32	90.63
10	Rental Service of Plants	13	40.63
11	Advocacy	25	78.13

4.5.2 Comparative sale analysis of last 3 years in the nurseries in the studied area

Comparative sale analysis of last 3 years in the nurseries of the studied area is presented in Table 4.13. It was found that the demand of tree in public is increasing day by day. The sales of 2014 were TK.18,12,48,720.00 where 2015 sale was TK.19,53,81,360.00 and 2016 sale was TK.21,49,98,516.00. The present findings revealed that the sale of plants this year has surpassed that of any previous years. There were tremendous sales growths in 2016 in compared to any other previous years.

Table 4.13 Comparative total sale value of last 3 years

Sale value in last 3 Years (Tk)		
2014	**2015**	**2016**
18,12,48,720	19,53,81,360	21,49,98,516

4.6.1 Fixed cost of nursery business

Fixed cost is those which do not change in magnitude as the amount of output of the production process changes and are incurred even when production is not undertaken. Fixed costs are those costs which do not increase (or decrease) from selling one more unit of product or service. Fixed cost includes land/position rent; family labour and depreciation cost of tools & equipment.

4.6.2 Variable cost of nursery business

The variable costs are the costs of using the variable inputs. These costs vary with the level of production. Higher the production more will be the variable costs; lower the production, lower will be the variable costs (Johl and Kapur, 1956). The variable cost of plant nursery included the cost of human labour, seeds/ seedlings, organic manures, chemical fertilizers, soil, earthen top, poly bag, polythene, irrigation, insecticides and interest on operating capital.

Distribution of total costing of the nursery owners in the studied area of DSCC is presented in Table 4.14

The present findings revealed that, the highest cost of nursery owners (91.71%) was incurred by seeds/ seedling purchased and minimum (0.02%) cost was incurred by interest on operating capital.

Table 4.14 Distribution of total costing of the nursery owners in the studied area

Items	Cost (Tk)	Total cost	Cost (%)	Mean (Tk)	Mean (%)
Gross Revenue (GR)		**214998516**			
A. Total Variable Cost (TVC)		**70266305**			
Seeds/Seedlings	66204805		91.71	2068900.16	92.53
Fertilizer & hormone	267500		0.37	8359.38	0.37
Soil	340000		0.47	10625.00	0.48
Pesticide	120000		0.17	3750.00	0.17
Tob& Poly bag	380000		0.53	11875.00	0.53
Irrigation	110000		0.15	3437.50	0.15
Labour owned	384000		0.53	12000.00	0.54
Hired labour	225000		0.31	7031.25	0.31
Electric bill	60000		0.08	1875.00	0.08
Marketing/ Transport	560000		0.78	17500.00	0.78
Int. on operating capital	15000		0.02	468.75	0.02
Miscellaneous	1600000		2.22	50000.00	2.24
B. Total fixed cost		**1920000**			
Less rent on land	1800000		2.49	37500.00	1.68
Less Dep. on equipments	120000		0.17	2500.00	0.11
Total cost (A+B)	**72186305**		**100**	**2235822.04**	**100**

4.6.3 Benefit Cost Ratio (BCR)

Benefit cost ratio was calculated by dividing the gross return or total return by the total cost, Benefit cost ratio (undiscounted method) is a measure to see the efficiency of resource use on the basis of total cost and cash cost.

$$\text{BCR} = \frac{\text{Gross return}}{\text{Total cost}}$$

$$\text{BCR} = \frac{214998516}{72186305}$$

$$\text{BCR} = 2.98$$

Benefit cost ratio was calculated as 2.98 of the nursery business in the study area of DSCC that is higher than 1. Thus, the present finding revealed that nursery owners were benefited in terms of benefit cost ratio in the studied area as well as it was observed that nursery business is profitable.

4.7.1 Factors affecting in nursery business in the study area

During data collection, the beneficiaries were asked about the problems they faced regarding the nursery production, management and marketing. The problem mentioned by the respondents were scored and ranked according to the number obtained by the respondents. A problem index was calculated, and ranking was done accordingly.

It was observed that 97.92% respondents were found to the lack of sales centre in the studied area followed by 91.67% were capital crisis problem, 81.25% were lack of proper technical training, 77.08% were in problem of restriction of poly bag collection, 72.92% were lack of skilled manpower, 70.83% were lack of water source in their nursery area, 64.584% Lack of quality seeds, seedlings, scion or any other planting materials, 58.33% were high cost of nursery input (Soil, fertilizer & hormone, cow dung, technical expert etc.), 47.92% were marketing problem, and 45.83% were lack of roads and parking space, 35.42% were the problem of natural calamities, 35.42% were in Variability in the pricing of produce, 31.25% were in damage of seedlings, 29.17% were in lack of improved variety, 25% were in infestation of diseases and insects, 22.92% were in problem of stolen by the neighboring people, 18.75% were in Lack of export knowledge respectively.

Problem-1: Land/ Permanent sale centre problem

It is the prime problems for nursery owners in the study area. Public land should be given on lease basis to the real nursery entrepreneurs. Govt. khas land should provide in the nursery owners for operating nursery business in the city corporation area.

Problem-2: Lack of capital or economic problem

Most of the nurseries in Dhaka City are small or medium size owned by poor farmers. They sometimes do not receive bank loans at a moderate rate of interest. They usually borrow money from another source at a higher rate of interst. Government should release adequate fund for the plant nursery so that private nursery owners improved their nursery business.

Problem-3: Restriction on collection poly bag (Police harassment)

Restriction should be withdrawn to use poly bag in nursery sector until any alternate.

Problem-4: Lack of skilled worker

Technical training should be given to the nursery owners and workers regularly.

Problem-: Lack of technical know-how

Government should provide training to the private nursery owners and NGO personnel on improved 5nursery management techniques.

Problem-6: High cost of nursery input (Soil, fertilizer & hormone, cow dung, technical expert etc.)

Provide financial support to overcome this problem by the Government and NGOs.

Problem-8: Low price of sapling and seedling

Most important problem faced by all nursery owners was low price of sapling and seedling. Practices like cooperative farming need to be promoted among the nursery owners.

Problem-9: Lack of roads and parking space near nursery

Dhaka City Corporation should repair and manage the roads and parking space for nursery entrepreneurs.

Problem-10: Variability in the pricing of produce.

Nursery owners can solve this problem with their association.

Problem-11: Lack of water sources for irrigation

Available water is a regular crisis in Dhaka City Corporation area. Knowledge of irrigation management should be developed and WASA can give support in the crisis of water in the studied area.

Problem-12: Marketing problem

Have to strengthen infrastructure facilities for marketing and export of nursery products.

Problem-13: Lack of export knowledge

Enhance production of high value and low volume horticultural products for exports. Expert should be appointed by the Govt. to seeking buyer and produce quality seedlings. Govt. and NGO can provide support in this regard.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

SUMMARY

A nursery is a place where plants are propagated and grown to usable size. The soil, water and environment of Dhaka City are best suited for Nursery. Nurseries are engaged with commercial growing of flowers, ornamental plants and beautification of surroundings. Nurseries often grow plants in green house, a building of glass or in plastic tunnels designed to protect young plants from harsh weather. Most nurseries remain highly labor-intensive.

Nursery business is highly seasonal, concentrated in spring and autumn. There is no guarantee that there will be demand for the product- this will be affected by temperature, draught, cheaper foreign competition, fashion etc. A nursery carries there risks and fluctuation. Nurseries grow annuals, perennials and woody plants (trees and shrubs). These have varieties of use: decorative plants for flower gardening and landscaping,

The horticulture scenario of the country is rapidly changing. The production and productivity of horticultural corps have increased manifold. Production of fruits and vegetables has tripled in the last few years.

The study was conducted in the nursery in DSCC, covering 32 respondents. In the study an attempt was made to document socioeconomic characteristics of nursery owners, determine the species composition and cost effectiveness of plant/ tree species. To achieve the objectives of the study a simple random sampling technique was adopted to collect the necessary information through a structured questionnaire. Necessary information was collected during 1st April 2017 and completed 15 July 2017, through direct interview of the selected respondents. Collected data were compiled, coded, tabulated for processing and analyzed in accordance with the objective of the study. The study encompassed mostly the following issues.

The socio-economic characteristics of the respondents revealed that middle aged group respondents (31-50 years) were involved more in nursery business (78.13%) where 9.38% respondents were old aged group and 12.50% were young aged group. Majority of the respondents (37.50%)) had medium family size (5-6) and (31.25%) had secondary (S.S.C.) level of education. However, nursery was the primary occupation for more than half of the respondents (65.63%). Majority of the respondents (87.50%))

were married in the study area. Majority of the nurseries (53.12%) of the studied areas were established within ten years back. 12.50% nurseries established before 20 to 30 years and 9.38% nurseries were established above 31 years back. Most of the nursery owners (87.50%) operating their nursery business in the road side (Govt. khas land) without any legal papers and 9.38% nursery owners do their business in rented land.

In case of fruit species, total no. of sold plants were 2,85,233 that's sale values in TK 4,29,02,526.00 where as Khajur was highest selling species. In case of flower, total no. of sold species were 5,35,099 that's sale values in TK 4,28,20,400.00 where as Bougainvillea was highest selling species.

In case of ornamental, total no. of sold species were 7,65,358 that's sale values in TK9,76,87,800.00 that is surpassed in any other species whereas Bonsai was highest selling species. In case of timber, total no. of sold species were 2,68,476that's sale values in TK 1,23,61,440.00 where as Lambu & Segun is highest selling species.

In case of medicinal, total no. of sold species were 1,38,978 that's sale values in TK 61,29,060.00 where as Neem, Gritokumari, Mehedi and Satomuliwere highest selling species. In case of spices& vegetable, total no. of sold species were 1,32,678 that's sale values in TK49,88,790.00 where as Daruchini, Tejpata&Lobongo is highest selling species.

Total plants sale vales of the sampled 32 nurseries was TK 20,68,90,016.00 whereas 20.74% of total sale comes from fruit species, 20.70% from flower species, 47.22% from ornamental species, 5.97% from timber species, 2.96% from medicinal species, 2.41% from spices&vegegable plants. Benefit cost ratio was calculated at 2.98 of the sampled nursery business in DSCC that is higher than 1. Thus, the present finding revealed that nursery owners were highly benefited in terms benefit cost ratio in the studied area as well as it was observed that nursery business is highly profitable.

It was observed that (100%) nursery owners faced lack of Land/ Sale Centre, 94% was lack of capital, 81.25% nursery owners claim lack of proper technical training, 97% nursery owner's harassment by the police to collecting poly bag for produce seedlings, 88% nursery owners in crisis due to lack of skilled manpower.

CONCLUSION

From analysis it was found that middle age, secondary level, medium family size, main occupation, male, high training and high knowledge factors were better than other categories. The findings of the study reveal that, the nursery business found to be a profitable business in the study areas. The findings of the study also reveal that various socioeconomic problems, to some extent, hamper the nursery business in the studied areas.

1. Nursery business improved the nursery owner's socioeconomic condition and showed positive result. It is a productive and income generating activates, create employment opportunity which is potential tool for poverty alleviation in urban and rural areas.

2. On an average, a total of 184 species were identified in the nurseries of studied area of DSCC.

3. Benefit Cost Ratio (BCR) was calculated at 2.98 of the nursery business in the studied area, which is higher than 1. So that the nursery business is highly profitable in the study area.

4. Permanent nursery market was the main constraint for the nursery owners of DSCC. To overcome the problems nursery owners will be a business as a real profession and can earn foreign money by export of nursery products.

RECOMMENDATION

Based on findings, the present study is made the following recommendations are made:

1. There is no permanent nursery market in the studied area. City Corporation may take necessary steps to establish a nursery market and easy credit facilities.
2. Proper technical training should be providing for the nursery development by the Govt. and NGO's.
3. Quality planting materials should be developed and make a coordination and co-relation between research institutions, universities, Government agencies, NGO's and nursery representatives. There should be a proper supply chain of quality planting materials.
4. Nursery industry Bangladesh and encourage new entrepreneurs to come up with new ventures in the expoort business with nursery products. Like live plants, cuttings, foliage etc. This study would also open up further research avenues for both government research and private sector research works.

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APPENDIX I: List of fruits plant with their local name, scientific name and family

Sl.No.	Local Name	Scientific Name	Family
1.	Aam	*Mangifera indica*	Anacardiaceae
2.	Alubokhara	*Prunus bokharensis*	Rosaceae
3.	Amloki	*Emblica officinalis*	Euphorbiaceae
4.	Amra	*Spondias dulcis*	*Anacardiaceae*
5.	Angur	*Vitis Vinifera*	Vitaceae
6.	Ata	*Annona squamosa*	Annonaceae
7.	Avacado	*Persea americana*	Lauraceae
8.	Beal	*Aegle marmelos*	Rutaceae
9.	Bilombi	*Averrhoa bilimbi*	Oxalidaceae
10.	Chalta	*Dillenia indica*	*Dilleniaceae*
11.	Dalim	*Punica granatum*	Punicaceae
12.	Dawa	*Macrocarpa phaleria*	Thymelaeaceae
13.	Dragon	*Hylocereus undatus*	Cactaceae
14.	Dumur	*Ficus benjamina*	Moraceae
15.	Durian	*Durio zibethinus*	Malvaceae
16.	Jambura	*Citrus maxima*	Rutaceae
17.	Jamrul	*Syzygium samarangense*	Myrtaceae
18.	Jolpai	*Elaeocarpus serratus*	Annonaceae
19.	Kajubadam	*Anacardium occidentale*	Anacardiaceae
20.	Kalo Jam	*Syzygium cumini*	Myrtaceae
21.	Kamranga	*Averrhoa carambola*	Oxalidaceae
22.	Kathal	*Artocarpus heterophyllus*	Moraceae
23.	Kathbadam	*Terminalia catappa*	Combretaceae
24.	Khejur	*Phoenix dactylifera*	Arecaceae
25.	Kodbel	*Aegle marmelos*	Rutaceae
26.	Kola	*Musa paradisicum*	Musaceae
27.	Komola	*Citrus sinensis*	Rutaceae

Sl.No.	Local Name	Scientific Name	Family
28.	Koromcha	*Carissa carandas*	Apocynaceae
29.	Kul	*Ziziphus jujuba*	Rhamnaceae
30.	Lebu	*Citrus spp*	Rutaceae
31.	Litchi	*Litchi* chinensis	apindaceae
32.	Lotkon	*Baccaurea ramiflora*	Phyllanthaceae
33.	Malta	*Citrus sinensis*	Rutaceae
34.	Narikel	*Cocos nucifera*	Arecaceae
35.	Piyara	*Psidium guava*	*Myrtaceae*
36.	Rabmutan	*Nephelium lappaceum*	Sapindaceae
37.	Sharifa	*Annona reticulata*	Annonaceae
38.	Sofeda	*Manilkara zapota*	Sapotaceae
39.	Thai Longan	*Dimocarpus longan*	Sapindaceae

APPENDIX II: List of ornamental plants with their local name, Scientific name and family

Sl. No.	Local Name	Scientific Name	Family
1.	Alamonda	*Allamanda cathertica*	Apocynaceae
2.	Anthorium	*Anthurium andraeanum*	Araceae
3.	Aster	*Callistephus hortensis*	Compositae
4.	Bakul	*Sesbania grandiflora*	Leguminoseae
5.	Beli	*Jasminum duplex*	Oleaceae
6.	Bougainvillea	*Bougainvillea spp.*	Nyctagineae
7.	Calendula	*Calendula officinalis*	Compositae
8.	Chondra mollika	*Chrysanthemum sinense*	Compositae
9.	Cosmos	*Cosmos bipinnatus*	Compositae
10.	Dianthus	*Dianthus chinensis*	Caryoplyllaceae
11.	Euphorbia	*Euphorbia milii*	Euphorbiaceae
12.	Gashful	*Sisyrinchium rosulatum*	Poaceae
13.	Ghada	*Tagetes spp.*	Compositae
14.	Golap	*Rosa spp*	Rosaceae
15.	Gondhoraj	*Gardernia florida*	Rubiaceae
16.	Hesna hena	*Cestrum nocturnum*	Solanaceae
17.	Hydrenga	*Hydrangea macrophylla*	Hydrangeaceae
18.	Jhumkalota	*Passiflora quadrangularis*	Passiflorae
19.	Joba	*Hibiscus rosasinensis*	Malvaceae
20.	Jui	*Jasminum auriculatum*	Oleaceae
21.	Kamini	*Murraya exotica*	Rutaceae
22.	Kata mehedi	*Lawsonia alba*	Lythraceae
23.	Kodom	*Neolamarckia cadamba*	Rubiaceae
24.	Krishnachura	*Delonix regia*	Leguminoseae
25.	Lantana	*Lantana camara*	Verbenaceae
26.	Lily	*Nymphaea nouchali*	Nymphaceae
27.	Madhobilota	*Hiptage madablata*	Malpighiacea
28.	Meghnolia	*Magnolia grandiflora*	Magnoliaceae

Sl. No.	Local Name	Scientific Name	Family
29.	Musanda	*Mussaenda spp.*	Rubiaceae
30.	Noyontara	*Catharanthus roseus*	Apocynaceae
31.	Oparajita	*Clitoria ternatea*	Fabaceae
32.	Orchid	*Epiphyllum spp.*	Cacteaceae
33.	Petunia	*Petunia atkinsiana*	Solanaceae
34.	Poinsettia	*Poinsettia pulcherrima*	Euphorbiaceae
35.	Radha chura	*Delonix regia*	Fabaceae
36.	Rongon	*Ixora spp.*	Rubiaceae
37.	Salvia	*Salvia divinorum*	Lamiaceae
38.	Shafali	*Nyctanthes Arbortristis*	Anacardiaceae
39.	Sonalu	*Cassia fistula*	Leguminoseae
40.	Spathiphullum	*Spathiphyllum wallisii*	Araceae
41.	Tikoma	*Cape honeysuckle*	Bignoniaceae
42.	Togor	*Tabernaemontana divaricata*	Apocynaceae
43.	Zinia	*Zinnia elegans*	Compositae

APPENDIX-III

Prospects of nursery business in Dhaka South City Corporation (DSCC)

Baseline Survey Questionnaire

Objectives:

i. To know the socio-economic conditions of nursery owners.
ii. To document the species composition of planting materials in the nurseries in DSCC.
iii. To examine the profitability of nursery business in the study area.
iv. Document the prospects and problems in nursery business in DSCC.

Please answer the following questions

Date of data collection: ..... *Serial number: .....*

SECTION-A: Socio-economic Information of nursery owners

1. Name of the nursery:
2. Category of the nursery (√): i) Government : DAE / FOREST / BADC ii) Private iii) Others
3. Classes of Nursery (√): i) Fruits ii) Timber iii) Medicinal iv) Ornamental v) Flowers vi) Mixed
4. Name of the nursery owners:
5. Respondent (√): Nursery owners / Other person

   If other person:

(a) Name:

(b) Designation:

(c) Relationship with nursery owner:

6. Address:

   a. Plot: …… b. Word/Village:…… c. PS/Union:……..

   d. District:…… Mobile No.: ……

7. Age: 1) 18-30 years (Young) 2) 31-50 years (Middle age) 3) 51 and above (Old age)
8. Gender: 1) Male 2) Female
9. Marital Status: 1) Married 2) Single
10. Religion: 1) Muslim 2) Hindu 3) Christian 4) Buddhist
11. Educational Background:

    1) Below SSC 2) Below HSC 3) Below Degree 4) Degree 5) Above Degree

12. Family information :

No	Family Member	No. of Family Member
1.	Male	
2.	Female	
3.	Male Child	
4.	Female Child	

13. Occupation:

No	Occupation of head of Family	Primary	Secondary
1.	service holder		
2.	Business		
3.	Others		

14. Year of first established: .....
15. How long have you been involved with nursery? .....years

16. Area of the nursery (land): .....dec.

i) Own land .....dec. ii) Leased land.....dec. iii) Others.....

17. No. of participation in National Tree Fair (√): one / two / three / four / five times

Year of participation:

20. Do you receive training on nursery development (√): Yes / No

a) If Yes from where, i) DAE ii) Others (……..)

b) How long : ……....

Section-B: Information on Species Composition, production & sales

1. Fruits:

No.	Types of Plants	No. of production for 2016	Average price per seedling	Ave. selling price per seedling	No. of sold in the year of 2016	Total Sold (TK) (5x7)	%
1	2	3	4	5	6	7	8
1							
2							
3							
	Total						

2. Flowers:

Sl. No.	Types of Plants	No. of Plants	Average price per seedling	Ave. selling price per seedling	No. of production for 2016	No. of sold in the year of 2016	Total Sold (TK) (5x7)
1	2	3	4	5	6	7	8
1							
2							
3							
	Total						

3. Ornamental:

Sl. No.	Types of Plants	No. of Plants	Average price per seedling	Ave. selling price per seedling	No. of production for 2016	No. of sold in the year of 2016	Total Sold (TK) (5x7)
1	2	3	4	5	6	7	8
1							
2							
3							
	Total						

4. Timber:

Sl. No.	Types of Plants	No. of Plants	Average price per seedling	Ave. selling price per seedling	No. of production for 2016	No. of sold in the year of 2016	Total Sold (TK) (5x7)
1	2	3	4	5	6	7	8
1							
2							
3							
	Total						

5. Medicinal:

Sl. No.	Types of Plants	No. of Plants	Average price per seedling	Ave. selling price per seedling	No. of production for 2016	No. of sold in the year of 2016	Total Sold (TK) (5x7)
1	2	3	4	5	6	7	8
1							
2							
3							
	Total						

6. Spices & Vegetable:

Sl. No.	Types of Plants	No. of Plants	Average price per seedling	Ave. selling price per seedling	No. of production for 2016	No. of sold in the year of 2016	Total Sold (TK) (5x7)
1	2	3	4	5	6	7	8
1							
2							
3							
	Total						

8. Identify the best-selling species in your nursery

No.	Type of plant species	Selling category (1^{st}, 2^{nd}, 3^{rd}etc)	Percent of the total sold items
01	Fruit species		
02	Flower		
03	Ornamental species		
04	Timber species		
05	Medicinal species		
06	Spices& Vegetable		

9. Information about sale/ Income from different item of nursery per year

Items	Amt. of Sale	Percentage
Plants		
Seeds		
Fertilizer & hormone		
Garden soil		
Nursery Instruments		
Landscape & gardening service		
Rental service of plants		
Others		
Total		

10. Comparative output/income in previous two Years

Sl No.	Year	Total cost	Total sale	Profit/ Income
1	2014			
2	2015			
3	2016			

Section-C: Profitability study of nursery business

a) Input use pattern and cost of different categories of plant nursery

Sl. No.	Name of the items	Quantity	Cost per unit item	Total cost	Remarks
Fixed Cost					
✓	Position rent				
✓	Construction of office & Shade				
Variable Cost					
1.	Family labour				
2.	Regular staff				
3.	Contact labour				
4.	Own seeds				
5.	Seed purchase				
6.	Total seeds (4+5)				
7.	Own seedlings				
8.	Purchased seedlings				
9.	Total seedlings (7+8)				
10.	Cow dung (kg)				
11.	Poultry litter				
12.	Oilcake (kg)				
13.	Total manures (10-12)				
14.	Chemical fertilizer				
15.	Cost of soil				
16.	Cost of earthen pot/tray				
17.	Cost of polythene (bag and sheet)				
18.	Cost of chat pack				
19.	Drum (Plastic / Steel)				
20.	Cost of plastic pot/tray				
21.	Total pot cost (21-25))				
22.	Irrigation charge				
23.	Cost of Insecticide				
24.	Cost of fungicide				
25.	Cost of hormone				
26.	Total pesticide and hormone cost (28-30)				
27.	Cost of electricity bill				
28.	Cost of WASA bill				
29.	Int. operating capital				
30.	Land use cost				
31.	Temporary shed				
32.	Permanent shed Depreciation cost				
33.	Equipment cost				
34.	Loading/unloading cost				
35.	Transportation cost				
	Total				
36.	Cash cost basis				
37.	Full cost basis (100%)				
	Total cost (all above)				

Section-D: Factor affecting or problems in nursery business

No	Problems	Suggestions to Overcome
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

(Sign)
Name of Data Collector

Verified by the Authority

Thank You Very Much for Your Kind Co-operation.