

Greenhouse Industry! Role of Nursery Service in Environmental Restoration of Tezpur Town, Assam (India)

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ABSTRACT

As a managed site nursery is an area where the plants are propagated and maintained in the initial years. Mostly the horticultural crops including flowers, fruits and vegetables are raised in nurseries and then transplanted in the field. In this paper emphasis is given on the emerging trend of nursery services at Tezpur town of Assam and its role in environmental restoration. Tezpur, one of the most beautiful towns of north bank of the Brahmaputra river, is well known for its greenery and scenic beauty in which the trend of emergence of this greenhouse industry gives extra look in the aesthetic view of the town. Along with the beautification the nursery business is related with the employment opportunities too. For this purpose, an attempt to study about the distributional pattern of plant nurseries and its role on the environmental restoration of Tezpur town is made with the help of both primary and secondary data sources. With the thought of 'A green step towards a healthy future' Govt. can also promote this greenhouse industry among the people of Tezpur town and become a contributor in enriching the quality of the environment.

Key words: Aesthetic, Greenhouse Industry, Nursery, Environmental Restoration

Introduction

Nursery is a managed site in which new saplings are raised and nourished under favorable conditions to a desired age. It is a place where variety of plants are propagated and grown with care before transplanting. Nowadays, plant nursery becomes very popular for artificial plantation in which superior quality of plants are raised with right size at the right time. 'All nurseries primarily aim to produce sufficient quantities of high quality seedlings to satisfy the needs of users' (Krishnan *et al.*, 2014). As a natural factory it is the hub of various horticultural crops from which public can purchase varieties of

flowering, fruits and ornamental plants. 'The nursery site should be located in the nutrient rich/medium soil, near to water source, free from soil pathogens and insects, availability of cheap and skilled labors and has good access to the main road for easy transportation. The site of nurseries needs to be on gently sloping area that is away from other tall crops for good drainage and air circulation' (Krishnan and *et al.*, 2014). The location should be naturally (under the trees) or artificially shaded; various designs of shaded house like natural greenhouse, artificial shade net house, glass house are designed as per the need and resource availability. In order to get superior quality desired species in good and healthy con-

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ditions at a reasonable cost establishment of nurseries are important. Proper care and maintenance are original manure behind the success of a commercialized nursery for which the operator and the staff members should have technical knowledge and competency. 'Undoubtedly, tree growing provides economic and environmental benefits' (Edralin and Mercado, 2010). Along with its various environmental benefits, this greenhouse business now has great potentiality in the field of self employment especially for the small to medium land holders. In this competitive world it has now able to open the source of livelihood for the unemployed youths and bring a smile on their faces with generating satisfactory income.

In a developing country like India, opening a plant nursery can be highly profitable for unemployed ones with the increasing demand of bonsai and flowering plants. But the practices should be sustainable way in order to keep the surroundings green by avoiding the use of too much chemical fertilizers and pesticides for luxuriant growth of the plants. Assam, the land of hills, valleys, mighty river Brahmaputra, diverse flora and fauna is endowed with plentiful natural resources. Being a biodiversity hotspot this greenery state of North-East India possesses some unique varieties of plants which would be difficult to find in any other parts of the world. Hence, it has ample potentiality in the field of nursery business by conserving these unique varieties as well as maintaining the aesthetic view of the state. Tezpur the 'Cultural Capital of Assam', is well-known for its natural and scenic beauty where the trend of emergence of nursery services is flourishing day by day; it's a good step towards keeping the town clean and green with strengthening the local economy by providing employment opportunities to technical, skilled, semi-skilled and unskilled labour. With the thought of 'Gardening, a step towards healthy tomorrow' this paper is an attempt to study about the role of nursery business in achieving the theme of World Environment Day, 2021 in the region of Tezpur town.

The Study Area

Tezpur, one of the most beautiful towns on the north bank of the river Brahmaputra, is located in 26°38" north latitude and 92°48" east longitude. With an area of about 40 km² this region lies between the Himalayan foothills on the north and the river

Brahmaputra on the south. The Himalayan foothills have a clear cut east west alignment where the Himalayan falls abruptly to the plain of the region and is gently sloping towards south of the Brahmaputra. Physiographically, this beautiful town of Assam is decorated with a range of lower hills and hillocks and luxuriant growth of ever-green and semi-deciduous forests. Climatically, with 1836 mm of annual rainfall Tezpur town experiences average 36 °C (97°F) and 13 °C (55°F) temperature during summer and winter respectively. From demographic point of view, with 1,02,505 population and 2,600 persons /km² population density it is the largest growing north bank town of the Brahmaputra river in Assam (according to Census, 2011).

Objectives

The main objectives of this study are as follows:

- To analysis the spatial distribution of nursery services in the study area.
- To study about the socio-economic conditions of the owners of the nurseries.
- To assess the role of nursery on environmental restoration in the study area.

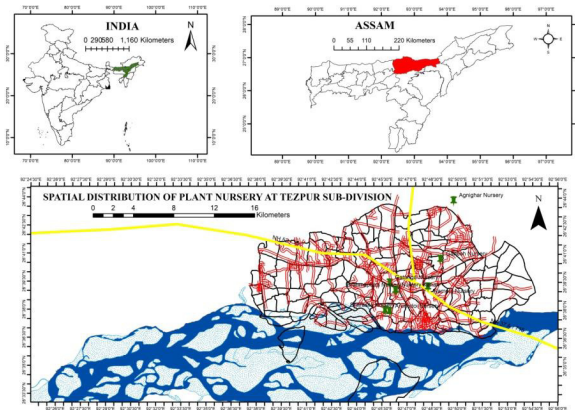


Fig. 1. Locationa Map of the Study Area

Methodology

As far as practicable this study is attempted on the basis of both primary field data and secondary sources. The base map of the study area has been delineated from the SOI (Survey of India), Toposheet at the scale 1:50,000. In order to collect primary data a total of 8 randomly selected nurseries have been surveyed through a well-structured questionnaire and self observation. Along with the field visit GPS points are also collected to know the

ground truth. Similarly, Population Census data of 2011, various published and unpublished journals, magazines and books are consulted for getting secondary information. The collected field data are tabulated, analyzed and presented through various cartograms by using necessary statistical methods.

Analysis and Findings

Spatial Distribution of Nursery Services in the Study Area

A place where plants are grown commercially, either for sale direct to the public or to other retailers is commonly known as nursery. Nursery service has developed rapidly in this beautiful town of Assam in the recent years due to its high demand for plants in various purposes including home decoration, gardening, medicinal purpose, plantation etc. (Fig. 2).

In Tezpur, a variety of privately run nurseries have spotted in the recent years which play a vital role to enhance its natural beauty by maintaining the

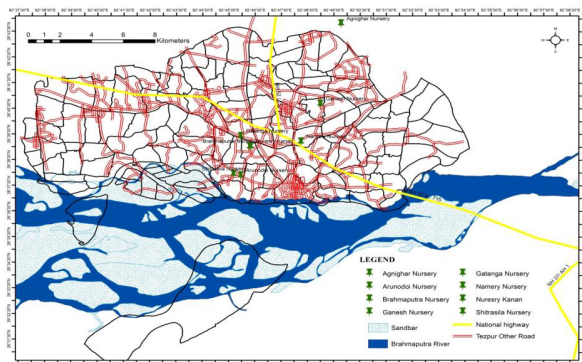


Fig. 2(a). Spatial Distribution of Nurseries at Tezpur Town

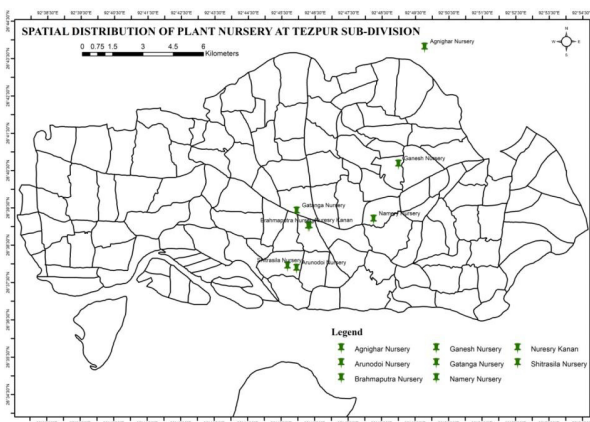
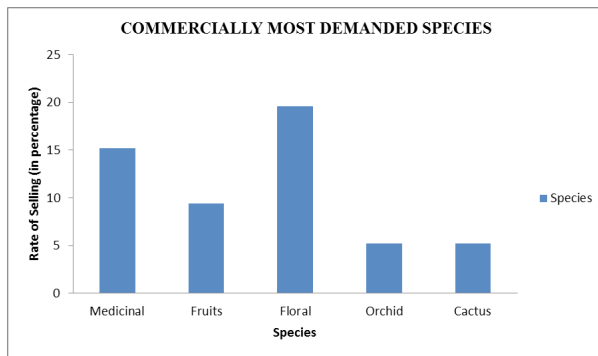


Fig. 2(b). Spatial Distribution of Nurseries at Tezpur Town

ecological balance. Most of the nurseries including Gatanga, Arunodoi, Shitrasila, Kanan and Brahmaputra are located in the southern most part of the study area i.e. in the area of Da-Parbatia, Gatanga and Da-AtiGaon. According to field survey, Arunodoi nursery is the largest nursery in the study region by covering an area of about 10 bigha. It is an agricultural as well as floral type nursery in which Rose, Daisy, Night angle, Marigold, and various types of vegetables are the major species. Similarly, the Brahmaputra nursery is the highest selling nursery within the study region with more than 200 species, in which Aloe Vera (*Aloe barbadensis* miller liquid), various types of Cactus, Gomari (*Gmelina arborea*), Sal (*Shorea robusta*) and variety of fruits are highest selling species. The Kanan and Gatanga nurseries are well-known for medicinal, cactus, floral and evergreen plant species. The Shitrasila nursery of Tezpur town is the hub of variety of orchids along with the state flower the Foxtail orchid (*Rhynchosstylis retusa*) where 200 plants of orchid are found with more than 8 species. Moreover, the nurseries of easternmost part including Nameri, Ganesh and Agnigarh have great significance in the field of flower, medicinal and fruit species.

Species of Seedling raised in Plant Nurseries in the Study Area

'At present, the demand for the ornamental and indoor plants have increased manifold among the dwellers of cities and towns and there is a need for mass production of such plants to meet the growing demand' (<https://kkhsou.ac.in>eslm>). In this context, growing of nursery industry with small and medium sized planthouse in the region of Tezpur is like a boon for enhancing its natural beauty. A total of twenty nine (29) species of tree seedlings are raised in the above mentioned eight (8) nurseries for commercial purposes; fruits (9.4%), medicinal (15.2%), floral (19.6), cactus (5.2%) and orchid (5.2%) are commercially most demanded species (Fig. 3). The species like Neem (*Azadirachta indica*), Tulsi (*Ocimum tenuiflorum*) and Aloe Vera have a great demand among the people of Tezpur town due to their rich medicinal value. Along with these medicinal species some floral species like Daisy (*Bellis perennis*), Rose (*Rosa*), Sun flower (*Helianthus*), Marigold (*Tagetes*), Dahlia (*Dahlia pinnata*) and Barberton daisy (*Gerbera jamesonii*) are most demanded species for gardening, event decoration etc.



Source: Field Survey

Fig. 3. Commercially most demanded Species in the Nurseries of Tezpur

Socio-Economic Profile of the Nursery Owners / Operators

Nursery business has now become an important income generating process for small to medium land holders due to its ample scope in the field of self employment and minimum capital investment. Though the success of any nursery depends upon several factors but technical, scientific knowledge, competency and a professional attitude of the owners along with its staff members are must behind the establishment and systematic management of a commercially run nursery. Within the study region the plant nursery business is mainly concentrated in the hands of youths and few adults, i.e. around 87% owners are at the aged between 26-60 years. This newly emerged business of plantation is not popular among the women folks as most of the nursery operators are male in the study region with minimum education of qualification up to 12th standard. Around 75% owners had attained the educational qualification of above 12th standard but unable to complete their graduation. With this minimum educational qualifications they enter into this tertiary sector; may be due to little or non-availability of job opportunities in the state. Now, the increasing demand of various horticultural crops among the dwellers of Tezpur town this eco-friendly business has become a profitable income generating source for the unemployed youths which not only help to boost up a substantial number of employment but also income for the owners. Around 37% nursery owners' average monthly income varies from 40,000 - 60,000 in the above mentioned nurseries. About 80% owners' main occupation is nursery business and the remaining 20% are engaged in

nursery business along with other alternative economic activities. In the case of their experience on nursery business most of the owners' experience is above 5 – 7 years and they are satisfied with their current status of lifestyles. About 70% operators started their business on their own lands and 30% on leased land. Moreover, they also believe the use of locally available organic manure including cow dung, goat manure etc. instead of chemical fertilizers for healthier growth of the plants. The field study revealed that low price of sapling and seedling, damage of seedling by insects and diseases, lack of technical know-how are some major challenges faced by the owners. Besides, inability to access adequate land for nursery purpose is another major barrier; thus, the owners choose the option of leased land with high levy on them which indirectly affects their path of income generation.

Role of Nursery on Environmental Restoration in the Study Area

Nursery is the foundation stone of a healthy environment. 'Forest and land degradation is a worldwide crisis and requires multiple approaches to mitigate, nearly all of which call for some level of plant establishment' (Hasse and Davis, 2017). In this context forest restoration is a suitable way to overcome the problem of environment degradation. Growing of nursery is a vital requirement for successfully implementing forest restoration programme in order to enrich the quality of the environment. The region of Tezpur is well-known for its rich natural scenic beauty. But, now, on the demand of urbanization and mushrooming growth of population most of the natural low-lying areas of this beautiful town are being converted in to built up areas in which growing of nurseries play vital role to enhance its natural charm by introducing green lawns, gardens, parks, urban forestry in both of the residential and commercial areas. Under nursery it's possible to grow and maintain a large number of plants per unit area with better care and management; off-season sowing of seeds becomes also possible which help to amplify its greenery of the area. Nursery, the hub of saplings and seedlings, is an important source to meet the demand of fruits, flowers and ornamental plants; helps to save the time, money and efforts of the users to raise seedlings as the planting materials are available at the beginning of the planting season. It also serves as the bank of some rare species, genetically improved

quality planting material and local plant expertise. Moreover, a healthy nursery can contribute significantly to the economic well-being of the local community by providing environment-friendly, sustainable and gainful employment and improving their livelihood pattern. Thus, planting and conservation of more trees through expanding nursery business might be an appreciable step towards achieving the theme of World Environment Day, 2021.

Conclusion

With the growing demand of plants for gardening, medicinal purpose, beautification, home decoration and plantation a variety of privately run nurseries have spotted within the region of Tezpur town. Most of the nurseries including Gatanga, Arunodoi, Shitrasila, Kanan and Brahmaputra are decorated with various floral, fruits, vegetables and medicinal species. The Shitrasila nursery is the bank of variety of orchids with 200 plants of more than 8 species. At present, the demand for the medicinal (Neem, Tulsi and Aloe Vera), ornamental and indoor plants have increased manifold among the dwellers of the study region is like a boon for enhancing the natural beauty of the town. By opening up a new source of income this greenhouse industry has been able to bring smile on the faces of unemployed youths of the town. As a result, along with the owners' the staffs are also satisfied with their current status of living. Despite having different problems nursery service always holds the key to heal the nature by maintaining the ecological balance. Thus, it's high time for the Govt. to keep the surroundings 'Clean and Green' by promoting this greenhouse industry among the people of the study area which would also act like a strong weapon as against unemployment.

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