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Apple Farming: Emerging as a Diversified Horticulture Farming in Kamjong District of Manipur (A Case study of Shingkap Village)

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Abstract

In India, varieties of fruits and vegetable are grown in different region according to the suitability of its climatic conditions enabling us to avail all kinds of fruits and vegetables of different season at the same time throughout the year. Horticulture is one of the key factors providing employment, raw materials to food industries and nutritional requirements in our body. Manipur climatic conditions and the fertility of the soil varies from one region to another, endowing us with all kind of fruits and vegetables throughout the year. Apple farming in Manipur is one of the emerging diversified horticulture farming in Kamjong District which will boost the strength of the horticulture crops in Manipur. Shingkap village in Kamjong district is said to have become a model village for apple cultivation by integrated farming, planting low chilling variety of apple namely Anna, HRMN-99, Golden Dorsett on their community land along with other horticulture crops like banana, papaya, strawberry, avocado, pomegranate in their farm.

Keywords: *Horticulture Farming, Apple Farming, Apple Growers, Shingkap Village.*

Introduction

Horticulture is the art and science of growing fruits, vegetables, flowers, trees and shrubs, resulting in the development of the minds and emotions of individuals, the enrichment and health of communities, and the integration of the garden in the breadth of modern civilization (HortTechnology 1992).

In India, varieties of fruits and vegetables can be grown in different region according to the suitability of its climatic conditions. For instance, due to the seasonal variations in different places both tropical fruits like mango and sub-tropical fruits like guava as well as temperate fruits like apple can be produce at the same season in a year. India is the second largest producers of horticulture products next to China which is a plausible achievement. Horticulture is one of the key factors providing employment, raw materials to food industries and nutritional requirements in our body.

Agriculture is the backbone of the Indian economy, so does for the state of Manipur. The climatic conditions and the fertility of the soil varies from one region to another endowing us with all kinds of fruits and vegetables throughout the year. Under horticulture farming in Manipur, banana, pineapple, orange, avocado, kiwi, kachai lemon etc can me mentioned. However, there is a huge gap to tie up with those of the advance states that have successful story in horticulture farming. The potential of horticulture farming is narrowing due to lack of investment in horticultural activities, bad transportion facilities in rural areas, systematic marketing facilities, pre and post-harvest management for better production

and storing of horticultural crops, unaffordable inputs for better farming and management are few of the important factors blocking as a great hindrance for the improvement in the fields of horticulture. A collaborating survey conducted by Department of Horticulture and Soil Conservation with National Board identify and indicates that 12 per cent of the total geographical area of the state are available for horticulture farming and other allied activities. However, only 14 percent of the potential areas have been brought underutilization (Dept of Horticulture and Soil Conservation Government of Manipur). Thus, there is a wide scope for expansion and development of horticulture farming in Manipur.

Apple is a temperate pome fruit cultivated worldwide which is very nutritious and a healthful component in our balanced diet. It is considered as one of the most important and widely grown fruit in the temperate zones of the world due to its acreage, production, economic returns, nutritive value and popularity (Arvind et al.,2023). China tops apple production in the world. In India, apple is mostly grown in the states of Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Arunachal Pradesh. Apple production plays an imperative role in humanizing the standard of living, per capita income and employment generation. The income per acre in apple cultivation is much higher than any other horticulture crops, if done in a systematic way. Apple are the key ingredients of manufacturing sectors by adding value such as sauce, jam, dried apple, juice, etc., scoring a high market demand both in domestic and abroad (Ripin et al;2024)

Recently, Manipur is witnessing Apple farming as one of the emerging diversified horticulture farming which will enable to boost the strength of the horticulture crops in the state of Manipur. Apple farming is practice in Ukhrul District, Senapati District, Kamjong District, Chandel District, kakching District, Bishnupur District in a very limited areas and the farming is at initial stage. Among these places, Shingkap Village in Kamjong District has undertaken a step in apple farming at the larger areas in their community land. Kamjong District is one of the hill districts of Manipur created in the year 2016 from the Ukhrul District which previously was a sub-division of Ukhrul. The climatic conditions as well as the fertility of the soil are found favourable for the cultivation of low chilling varieties of Apple namely Anna, HRMN-99, Golden Dorsett. Gala, Fiji and Golden Dorsett are grown in Ukhrul District of Manipur.

The HRMN-99 variety of apple was largely planted by the apple growers in Manipur. This variety can successfully grow in high temperature as 40°C to 45°C during summer and above 700 sea level. It was successfully grow in the lower Himachal Pradesh, Karnataka and Manipur. HRMN-99 is a self-pollinating variety that can grow in tropical, sub-tropical, and plain areas. It does not require long chilling hours for flowering and fruit setting. The variety is said to be tolerant to scap disease and starts fruiting after 3(three) years of planting.

Objectives of the Study

Objectives of the study are to:

1. Indicate the importance of horticulture farming.
2. Analyse apple farming as a diversified horticulture farming in Manipur.

Review of literature

Jiang at el (2022) in their article, "Multi-objective optimization of smallholder Apple Production: Lessons from the Bohai Bay Region" states that China objectives on the perspective of apple production is to yield high economic benefit with low environmental impact by improving the efficiency of P-use. The study finds that the potential for multi-objective improvement for small holders and corresponding implications for horticultural practices are not fully appreciated. One of the challenges face by China in apple production is that the growers are predominated by smallholder. The input of P-use chemical in the production of apple is said to be three times more than that of the developed countries which will result to a bad condition for the water bodies as most of the orchards are cultivated in the sloping fields and thus have a high risk of water entrophication due to soil erosion. The excessive P-use supply reduce the quantity of apple which further result in deteriorating the economic benefits of apple production. Surveys found that small holder apple growers (90%) were primarily concerned about economic benefits and yield, contrastingly the society is concern in sustainable apple production with high produce quality and low environmental damage. The study states that for smallholder growers, an integrated, systematic and holistic approach rather than a single technology is needed to achieve multi-objective apple production. The study recommend the need for more research to improve P use in apple production with robust and urgent cooperation and between scientists, entrepreneurs and policy makers inorder to achieve effective solutions to achieve sustainable apple production from the grassroot level.

Sharatchandra and Mukhara (2018) in their article titled, "Prospects of Rural and Urban Horticulture in Manipur" emphasize the role of male and female farmers from the local or rural areas of Manipur in the diversification of horticultural activities. The paper highlight the prospects of horticulture in both the rural and urban areas for self reliant nutrition, job creation and environmental concern.

The study states that horticulture has two main goals that is providing food and impacting the environment. Majority of the horticulturists of Manipur are unaware of the assistance extended by the government either due to lack of knowledge cause by inefficient awareness programmes, improper implementation of the scheme and other factors. There is an urgent need for the establishment of training centre to improve the skills of the farmers, upgrade the used of improved modern inputs, promotion of appropriate market infrastructures and promoting awareness of environmental pollution.

Shah at el (2022) in their article, "Sustainable Fruit Growing : An analysis of differences in Apple productivity in the Indian states of Jammu & Kashmir" analyse the importance of apple as a temperate fruits and as the most produced fruits contributing in employment, nutrition and environmental impact in both the developed and developing countries. Almost 89% of Kashmir horticulture land is under apple cultivation. Despite the huge contribution made by the apple growers, the industry still faced a major challenges and constraints from establishing apple orchards to marketing of the fruits. The study found that age, farming experience, level of education, annual income and adoption of technologies have direct impact in the level of apple production. This article states the different constraints encountered by the farmers that cause low productivity and yield gap in apple and therefore recommends the improvement in research technologies and pull the interest of the policy makers to help the farmers in every possible way.

Basannagari and Kala (2023) in their article, "Climate change and Apple farming in Indian Himalayas : A study of local perceptions and responses" states that the important activity of the Himalayan farmers is engaging in traditional apple farming. Their study was undertaken to examine the effects of the climate change in the cultivation and production of apple along the altitudinal gradient. It aims to understand the causes of reducing apple farming in the state despite the high preference of the local people to continue the apple farming with reducing productivity. Through their survey it was reportedly found that there is an increase in the atmospheric temperature resulting to the declination of quality, fruit size and late harvest. Another challenges faced by the farmers at mid hills and low hills are apple scab and pest attack respectively and therefore the apple farming was involuntarily replaced by the coarse grains, seasonal vegetables and other horticulture species.

Singh & Meitei (2013) in their article titled, "Marketing of Horticultural Produce in Manipur" highlights the important issues of marketing the horticultural produce as well as the main sectors of marketing system which remain unorganised that ultimately uplift the economic development of the state in particular and country in general. This article pointed out that the unsystematic marketing system hoarded a large share of consumers' money by innumerable middlemen working in between the producer and the ultimate consumers. The various problems and challenges for marketing of horticultural crops are lack of organization among farmers, forced sales of the produce right after harvesting crops, lack of financial assistance, etc. Their article have suggested that a good marketing system will helps in giving price signals, development of non-agricultural sectors in the economy. Moreover, agriculture production and marketing must develop hand in hand to have progress.

Ucar at el (2017) in their article, "Analysis of changes in Apple Production in Turkey" highlight the changes in the trend of apple production in Turkey by evaluating the prevailing conditions between the year 1995-2015. Between the period of 1995-2015, the apple trees increased from 38.61 million to 52.27 million as well as estimate the rate of increase in apple trees upto 69.60 million in 2025. Likewise it also forecast that the production of apples will reach a whopping harvest of 2.22 million tonnes by 2025. However, the study found that number of apple trees and harvested area are increased in Turkey but the production and yield increased for the last five years and would remain constant in the next ten years contrasting to the estimation. The study further states that the success of the apple farming depend upon the cooperation given among the farmers and moreover on the support of the government.

Analysis

There is a factor underlying diversification in favour of fruits and vegetables as they are about five times more productive compare to other crops (Chand Ramesh et al.2008). Majority of the population living in hilly areas grow horticulture crops as subsistance crops and does not further expand or promote for sale. In Kamong District, there are varieties of fruits found abundantly throughout the year. For instance, fruits like mango, guava, pomelo, gooseberry, pineapple, passion fruits, jackfruits etc. are found abundantly during their fruit bearing and harvesting season. However, the local does not inculcate the value of market price as it was overshadowed by their generosity for consumption purposes rather than commercial purposes. This becomes one of the factors for market failure from grassroot level in horticulture products despite the probable potential for producing in large-scale.

In Kamjong district, apple farming being one of the emerging pilot project initiated by the Government, Shingkap village is said to have become a model village

for apple cultivation by adopting organic practices. The apple growers developed their own organic compost and liquid pesticides from smoke by burning herbs, grasses and wood chips called as wood vinegar for using in their apple orchard and for other purposes. Using the wood vinegar has improves the quality of the soil serving as an excellent pesticides and fertilizer. Unfortunately the wood vinegar is unable to produce in sufficient quantity in order to meet the demand of the apple growers within the village itself. As the farming is at initial stage, the farmers are still in lack of know how in order to undertake the farming in organic methods. Making of manure from unwanted weeds, animal wastes and affording of organic based pesticides and insecticides and manures may also be mention as a challenges faced by the apple growers. For instance, one particular farmer from Poi Village of Ukhrul district used animal waste as a manure in their small farm however, in the long run there arise a problem as there is insufficient animal waste to supply the farm. Comparing to Poi Village, Shingkap Village is undertaking in a large scale and indeed the largest area of apple farm in Manipur, thus it is impossible to depend on the few available livestock wastes for manure.

Shingkap apple farming is practiced in integrated farming method on their community land. Banana, papaya, strawberry, avocado, pineapple and pulses are planted along with the apple. The villages as of now depend heavily in shifting cultivation for their immediate consumption. Various types of vegetables are grown richly in their fertile land such as cabbage, cauliflower, brinjal, mustard leaf, potato, tomato, chayote, pumpkin, ash gourd, maize, bitter brinjal, etc. Both men and women are very hardworking. As the farmers slowly diversified their farming from shifting to horticulture, they have started acknowledging the benefits of horticulture farming. The apple growers are having a great prospect in their farming. However, there is a need of room for improvement in farming by adopting modern farming technologies, better irrigation facilities, nursery for proper maintenance and growing of the apple saplings, attending more training programmes related to apple farming and better input knowledge system. Among all the different challenges faced by the farmers, irrigation facilities is the most urgently needed area for improvement since apple farming needs utmost care at the initial stage and proper irrigation of the plants is necessary for the apple plant to grow and nourish.

The people living in hilly areas are directly engage in agriculture even though their marginal productivity of labour is zero. For the urban population it acts as a beautification in their small holding environment to grow in the process of gardening or setting up of small nurseries (Sharatchandra and Mukhara 2018). Horticulture farming can uplift the economic conditions of the farmers as it can provides job opportunities through farming and other allied activities such as exports of the products, advancing to entrepreneurship through food processing, upgrading the rural market products and what not. Manipur favours for the cultivation of all horticultural crops as the hills of the state are well defined for temperate fruits and the valley for sub-tropical fruit however, the cultivation of horticulture crops in Manipur is largely practiced as non-commercial by farmers in their homestead and orchard and thus, hardly helps in development of proper market of horticulture crops (Singh & Meitei 2013). Since majority of the cultivators are illiterate, they tend to stick to the traditional methods of farming by giving importance to food crops for subsistence purposes. The fruits and vegetables grown by them were mostly shared among themselves for immediate consumption, thus, hardly reaching to the markets for sale. Moreover, the farmers do not cultivate their crops in large area due to lack of capital, modern machineries and inputs and lack of technical know-how. However, in a steady transformation, we can witness the changing pattern of cultivation into larger area of farm or orchards. Pineapple, orange, banana, kiwi, avocado, kachai lemon are some suitable example to be mentioned which are grown in large area. In recent years, we saw farmers started planting and cultivating apple in some parts of Ukhrul, Senapati, Kamjong districts. Among the hill districts of Manipur, Ukhrul District perform better in case of fruits production and the reason behind was that the farmers practiced their farming in integrated methods using quality and disease free materials and inputs as well as better management practices (Ansari et.al 2013). The integrated farming system are now practice in apple farming of Shingkap Village and thus the farmers are yielding the benefits to a greater extend and was encourage to continue in a proper improved farming management system. These start-up cultivation and production is a plausible achievement. In Manipur, apples are only imported from other states/countries therefore it is hardly available at affordable prices converting into luxurious goods for the people living with their daily earnings especially from the rural areas.

In Kashmir, after changing the traditional system of crops cultivation to horticulture, the farmers economic scenario has change. The farmers were able to afford new machines and other agricultural inputs. This upgradation relatively improves the welfare of the people in other fields such as education, infrastructure, employment, health, business and other basic necessities (Lone Aadil Altaf 2019). The exporting amount of Indian apples are worth USD 10 million annually out of which half was contributed by the apples from Jammu & Kashmir

states providing jobs to 1.2 million people directly and indirectly with their allied activities (Shah et al 2022). Similarly, if horticulture farming were undertaken to a great possible extend in Kamjong district, the economic well-being of the people might escalate. The employment opportunity will increase along with their allied sector. The apple growers are having a great prospects in their farm and was more interesting to know that they are planning for their children future. Since unemployment and underemployment rate was rising, the farmers thought that they could make a space for their children to return to their apple farm and execute their learned knowledge in different allied activities of apple farming so that it will help in improving the farming at the best level and create or provide more job opportunities for other unemployed youth. This type of basic steps in rural or hilly areas can further escalate and contribute to the economy of individuals as well as reduce the problem of unemployment. There is a great potential for improving the horticulture farming as presently the resources are under utilised. Since the climatic conditions and other environmental factors are favourable for cultivation of horticulture farming in Kamjong District, it will be a wise decision to practice horticulture farming which is more closely related to sustainable farming rather than practicing Jhum cultivation which harm the environment to a great extent. Thus, this study would like to stress the needs for improvement in horticulture farming for economic development of the state as well as the farmers.

Material and Method

The study was conducted based on Shingkap Village of Manipur. Materials were collected using primary and secondary data. Field visit of the village and through the methods of personal interview to the farmers vague idea of the current farming methods prevailing in the village could be known. Secondary data was gathered from published research articles, reports, newspapers, journals, etc.

Conclusion

There is a positive change in the field of agricultural activities by diverting and giving equal importance to horticultural crops along with the staple food crops. The central government and the state government undertake immense measures to uplift the quality and quantity of horticultural crops under different departments by giving various types of assistance since India's horticulture crops are in great demand at world market. Despite all the efforts put in by the government, still there are more ways to channel the needs for upgradation as there is a great potential for development since the resources are underutilized. Thus, this study chalk out the problems faced by the farmers such as lack of proper market facilities, lack of provisions of credit facilities, lack of training, transportation, proper irrigation facilities for the farm, storage facilities and other basic inputs require for the farm to flourish which serves as the major factors for underutilizing the area of cultivation for horticulture purposes. With all the arising problem faced in the farm, the apple growers are holding on with their available resources to keep the farming alive at their possible level. As of now there in no proper assistance from the government therefore, it is really necessary for the concerned authority to look into this matter and encourage the apple growers of Manipur. Improved horticulture farming can play a significant role in increasing production, remunerative returns and nutrition requirements as well as employment opportunities for the tribal population.

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