

## Socioeconomic Status of Plum Cultivators: A Case study of Enhulumi Village of Nagaland

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### Publication Info

#### Article history:

Received: 12.11.2018

Accepted: 11.01.2019

DOI: 10.35210/jhssi.1.1.5

#### Keywords:

Horticulture, Marketing,  
Plum cultivation, Storage.

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### Abstract

Nagaland is a rich state in various natural resources, especially in agricultural resource. The economy of the state mainly depends on agriculture and tourism. Horticulture have a dominating role in the state economy. A small village Enhulumi village in Phek district of Nagaland, is known for its specialization in terrace rice cultivation, this village have taken a good initiative in plum cultivation to support their growing population to meet the financial need. All most all the villagers are engaged in plum cultivation in small or large scale. This paper intends to highlight the socio-economic status of the people of the village and the income generated from plum cultivation in the area.

### INTRODUCTION

Horticulture is a science and art of cultivating, processing, and marketing of fruits, vegetables, nuts, and ornamental plants. The term horticulture is derived from the Latin word Hortus 'garden' and cultura 'cultivation' which means garden cultivation.

Plum fruit has a high nutritive value. It is one of the richest sources of vitamin B1 and vitamin A. The plum fruit is known for its cooling effect and is considered best to overcome the effect of Jaundice. The plum fruit can be utilized profitably for the preparation of various kinds of products like jam, jelly and chutney, juice, squash. Certain varieties of plums are consumed dried to make prunes.

### Plum Cultivation

At present plum is cultivated in all temperate climate countries of the world. According to the report shown in 2015, India is the second largest producer of plum next to China. The perishable fruits available as seasonal surpluses during certain parts of the year are wasted in large quantities due to absence of facilities and know-how for proper handling, distribution, marketing and storage.

In the north western India plum are grown in hilly areas of Himachal Pradesh, Jammu and Kashmir, Uttaranchal and Uttar Pradesh. In the plains low chilling requiring plum cultivators are cultivated throughout Punjab, Haryana. In north eastern hill region the states of Arunachal Pradesh, Nagaland, Meghalaya, Manipur and Sikkim are good producer of plum. Commercial plum varieties yield in India are Kala Amritsari, Satluj purple, Jamuni Meeruti, Titron Kataru Chak, Alu Bokhara, Howe, Alpha, Late yellow, Alucha Black, Peshawari Kala, Damson Plum.

Plum requires less chilling hours that is temperature below 7.2 celsius. Plum is performing very well in soils with high PH. For good performance of trees well drained sandy loam to medium loam soils are most suited. Root stock plays a major role

in the preference of soil. Plum should be thinned immediately after natural fruit drop in April. Hand thinning is usually done from top of the shoot to bottom.

### Horticultural Scenario in Nagaland

The horticulture farming is seen to be given importance by the farmers in the state. The plantation and horticulture sector plays an important role in the development of the rural economy of the state. The diverse agro climatic conditions, varied soil types and abundant rainfall prevailing in the state enables the cultivation of several plantation and horticultural crops covering fruits, vegetables, spices, flowers, mushrooms and medicinal and aromatic plants. The geographical conditions offer tremendous scope for horticulture development in the state.

Some of the major fruits farming in Nagaland are orange, banana, pineapple and passion fruits. During 2011 to 2012, the total area under horticulture farming was 33,033 hectares. Among the major fruit items, the area under cultivation was highest in pineapple with 8,140 hectares, followed by passion fruits, banana, and orange with 7570, 6180 and 4620 hectares respectively.

Production: During 2011 to 2012, the fruits production in the state stood at 2,09,548 metric tones which was about 20 percent of the production of major agricultural crops. Among varieties of fruits, the production of pineapple was highest, followed by orange, passion fruits and banana. The highest producing district of pineapple was Dimapur, while that of orange was Mokokchung, passion fruit and banana was Kohima. The productivity of fruits production in Nagaland is higher than that of the other agricultural crops like cereals, pulses, etc.

It may be stated that the fruits of orange, banana, pineapple, passion fruit together cover about 58% of the area under fruit crops and contribute 70% of total fruit production in the state. With the thrust of the state government on promotion of these crops, more areas are being brought under systematic cultivation of fruit crops especially pineapple and passion fruit. Production

of these crops has also increased tremendously over the past few years. The department should take the initiative in working out tie up arrangements with these industrial houses to ensure proper market linkage for the produce.

### Profile of the Study Area

Enhulumi village in Phek district of Nagaland, located by the roadside of NH-29, is known for its specialization in terrace rice cultivation. It is situated 56 kms away from the district headquarters Phek. According to the VDB record, the village has 210 households and 1,370 population. In order to sustain themselves, farming households also practice Jhum or slash and burn agriculture, in which they grow diverse food crops for their consumption. However, for Enhulumi, the increase in population has put pressure on agricultural and forest lands. As a result, they had to find an alternative means to meet the food requirements of a growing population as well as the increasing need for cash. Recollecting the healthy amount that he fetched by selling plum from his backyard farm at Kohima, Neikhwelo, Head GB of Enhulumi proposed the idea of cultivating plum (*Prunus Salicina*) fruits in the village. The idea was tabled in the year 2009 during their annual village meeting. The villagers accepted the proposal, which soon translated into action. Around the same time, the Land Resource Department had also visited the village for implementation of the Integrated Watershed Management Project Officer (DPO) and staff of the department say was just a coincidence. While interacting with the villagers during the PRA exercise, the villagers disclosed that the entire village had decided to cultivate plums in the farms.

Climate and luck are on the side of Enhulumi. While plums are also available in the surrounding village, Enhulumi's plum trees bear their fruits sooner, giving the villagers the advantage of being able to supply a growing market sooner in towns like Dimapur and Kohima. The plums from the village also have better taste, shape and color.

Acquiring knowledge and experience on plum cultivation, farmers have applied local indigenous technique to increase productivity of the plums and decrease labor input. Stones are tied on the branches to weigh them down and in some cases, a branch is tied on the ground with the help of a rope. This technique enables more branches to grow, help farmers to harvest easily and also prevents the wind from destroying the fruit and flower.

Plum trees can survive for many years. A tree can bear 80-150 kilos of fruit by the time the plant attains 8-9 years, which is also the best years for a plum tree to bear maximum fruits.

### Objectives of the Study

1. Socio-Economic Profile of the people of Enhulumi village.
2. Income generation from plum cultivation in the study area.

### Research Questions

1. Is plum cultivations only a secondary source of income?
2. How far the income from plum cultivation is supporting the plum cultivator's income?

### RESEARCH METHODOLOGY

The study was undertaken in Enhulumi village under Phek District, Nagaland in the month of October, 2018. To fulfill the objectives of the study, primary data and secondary data has been collected. The research is both based on Quantitative and Qualitative analysis.

### Sampling Size

The sample size of this study is 50. The 50 respondents are from people living in Enhulumi village.

### Tools and Techniques of Data Collection

- *Primary Data:* A structured interview schedule was prepared and was distributed within Enhulumi Village, the respondent were selected by using Random Sampling Method. Data was collected by personal interview schedule and questionnaire.
- *Secondary Data:* Secondary data was collected from statistical handbooks, published and unpublished research papers and other publication from government and non- government sources. The secondary data are also collected from various reports, journals, thesis, dissertation, etc.
- *Method of Data Collection:* Questionnaire and interview schedule were used for collecting the data along with observation.
- *Statistical Tools Used:* The socio-economic condition of the respondents were studied in terms of variables- age, gender, education qualification, marital status, family size, caste, religion, occupation, total number of years engaged in plum cultivation in the production of plum. The constraint faced by the respondents are the marketing of plum, loss of fruits due to harsh wind and hailstone, lack of cold storage facilities, lack of government initiatives. Simple statistical tools like frequency and percentage are used. The collected data was tabulated and analysed using descriptive data analysis. Descriptive analysis includes frequency distribution and percentage.

### REVIEW

Goswami, Sarma and Choudhury (1993) in their research paper shows that the potentialities for development of horticulture is very great in most of the hilly areas and this is more so in the North-Eastern hills where all kinds of horticultural crops can be grown as the area has been recognized as valuable for horticultural crop improvement. They however emphasized for the qualitative improvement if variety if horticultural crops followed by adoption of post-harvest technology, storage transportation and marketing.

J.S Bal (2005) explains that earlier the fruit production was confined to the pleasure gardens of kings and nobles. However, the commercial fruit production emerged in a real sense, after the end of the Second World War and it was adopted by many enterprising farmers. Fruit cultivation is labor intensive industry and it is ideally suited to over populated countries of the world like China and India, where per capita cultivated land holding is less than one hectare.

Jitinder Singh (2007) opined that the term Horticulture first appeared in written language in the seventeenth century. Horticulture is a part of plant agriculture which is concerned with cultivation of "garden crops". The concept of culture garden is a medieval concept. Horticulture relies on growing and manipulating plants in a relatively intensive manner. The horticulture crops require very intense care planting, carrying out cultural operation, manipulating growth, harvesting, packing, marketing, storage and processing. Many horticulture crops are highly perishable, their constituent water is essential to their quality and hence mostly utilized in living stage.

M.L Roy, N Chandra, H.L Kharbikar and P Joshi (2013) in their study on the socio economic status of hill farmers opined that socio economic status is a combined measurement of economic and social position of an entity compared

to others in a society. It influences the accessibility to the resources, food and nutritional value. The socio economic status of farmers is an important subject of study as farmers in hills are dwelling in complex, diverse and risk prone situation.

I.S. Singh and Vinod Singh (2014) opined that Horticultural crops are high value commercial crops and play a unique role in country's economy, nutritional security, poverty alleviation and employment generation. Fruits and vegetables have special significance to human beings as a protective food due to their vitamins and mineral content. These crops are highly perishable commodities and soon begin to deteriorate after harvest because of their high moisture contents. Their study gives emphasis on lost harvest management of the crops, with modern scientific tools.

Preeti Birwal (2017) stated that plums are one of the most important stone fruit crops in the world. Plums also include several familiar stone fruits- apricot, cherry and peach. There are more than 2000 varieties of plums, among which relatively few are of commercial importance. Plums constitute a valuable component of our diet, both in terms of their nutritive and dietary value. These fruits are becoming an increasing popular object of nutritional studies conducted on humans and animals, assessing the effects of plum consumption on the functioning of the organization. For many decades plums have been used in Indian medicine as a component of natural drug.

### Socio-Economic Status of the People Living in Enhulumi Village

Socio-economic status of the respondents will be analyzed by looking at the gender of the respondents in the study area, age, family size, education, marital status, years engaged in plum cultivation, production of fruits in a year, size of the land, number of plum trees in the farm, occupation of the respondent.

#### Distribution of Respondent on the Basis of Gender

It have been found that out of the 50 respondents in the survey, 2 percent are female and 98 percent of the respondents are male. So it can be stated that plum cultivation is mainly dominated by male population of the area.

#### Age of the respondents

Table 1 shows the age distribution of the respondents.

Table 1: Distribution of respondents on age group

Age	Frequency	Percentage (%)
20-40	11	22
41-60	26	52
61-80	12	24
81-100	1	2
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Data collected from the field survey October 2018

The above table 1 shows the distribution of respondents in age group. It shows that out of 50 respondents 22% comprises the age group between 20 and 40, 52% comprises the age group between 41 and 60, 24% comprises the age group between 61 and 80, 2% comprises the age group between 81 and 100. Thus, it can be seen that majority of the cultivators are from the age group between 41 and 60 (52%).

Table 2: Distribution of respondents on the basis of family size

Family size	Frequency	Percentage (%)
Less than 3	9	18
4 to 7	32	64
More than 8	9	18
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Data collected from the field survey October 2018

#### 3.1.4 Distribution of respondents on the basis of family size

The table 2 shows the distribution of respondents on the basis of family size. 18% of the respondents have the family members from 3 or less than 3 members, 64% of the respondents have members between 4 to 7 members, and 18% of the respondents have members of 8 or more. The larger the size of the family more the financial burden, and make it a need to take up secondary source of income, plum cultivation in is area is a way to meet this need.

#### Distribution of the Respondent Base on Educational Qualification

The table 3 shows the distribution of educational qualification of the respondent. From the above table, we can see that 16% of the respondents are illiterate, 20% of the respondents have primary education, 56% of the respondents have attain high school, 2% of the respondents have attain Pre University or higher secondary, and 6% of the respondents have attain graduate level. Thus, we can see that most of the cultivators have attained their high school which comprises of 56% of the total population. It show that most of the respondents are educated even if not highly educated, which give a positive signal of proper growth of the plum cultivation, as education is a mean of progress. Educated people are more adaptive to modern changes and modern skill which prove to be beneficial for proper development.

Table 3: Distribution of respondents on the basis of educational qualification

Education	Frequency	Percentage (%)
Illiterate	8	16
Primary	10	20
High school	28	56
Pre university (PU)	1	2
Graduate	3	6
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Data collected from the field survey October 2018

#### Distribution of Respondent According to the Total Number of Years Engaged in Plum Cultivation

From the above figure we can see that 26% of the respondents have been cultivating the plum for 1 to 5 years, 58% for 5 to 10 years and 16% for 10 to 15 years. Thus majority of respondent are engaged in plum cultivation for 5 to 10 years (58%). It can be reveals that a good number of respondents are continuing their plum cultivation for quit a long period and are also positive to continue in the future.

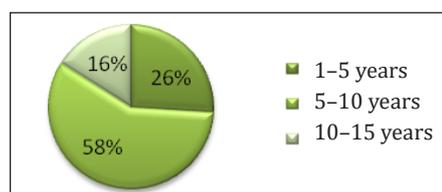


Fig. 1: Number of years involved in Plum cultivation

**Distribution of Respondents according to the Total Production of Plums from a Tree**

The table below shows the details of the yields of trees in kilogram in the study area.

**Table 4:** Production of plum fruits in the study area

Fruits yield in a tree	Frequency	Percentage (%)
20–40 kg	20	40
41–60 kg	12	24
61–80 kg	7	14
81–100 kg	6	12
101–120 kg	3	6
121–140 kg	0	0
141–160 kg	2	4
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Data collected from the field survey October 2018

The above table 4 shows the production of plum fruits in a tree in a year in Kilograms. 40% of the cultivators produce 20 to 40 kg of plum fruits in a tree, 24% of the cultivators produce 41 to 60 kg of plum, 14% of the cultivators produce 61 to 80 kgs of plum, 12% of the cultivators produce 81 to 100 kgs of plum, 6% of the cultivators produce 101 to 120 kg of plum and 4% of the cultivators produce 141 to 160 kg of plum fruits. The yielding of fruits depends on fertility of the soil, age of the plant the older the plum plant the more yielding of the fruits and vice versa, proper maintenance of the farm and climatic condition of the area.

**Distribution of Size of the Land of the Respondents for Plum Cultivation**

The above table shows the distribution of size of the land for each respondent for plum cultivation. It can be seen from the table that 70% of the respondents cultivate plum in 1 acre of land which comprises of majority of the respondents followed by 14% of the respondents cultivating 2 acres, 10% of the respondents cultivating for 3 acres, 2% of the respondents cultivating for 4 and 5 acres of land. The variation is on base of the land owned by the respondents.

**Table 5:** Distribution of size of the land of the respondents for plum cultivation in the study area

Size of land	Frequency	Percentage (%)
1 acre	35	70
2 acre	7	14
3 acre	5	10
4 acre	1	2
5 acre	1	2
6 acre	1	2
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Data collected from the field survey (2018)

**(i) Distribution of number of plum trees in the farm**

From the above table we can see the distribution of number of plum trees in the farm. The number of plum trees differ from one individual to another because of the difference in the size of the land, the larger the size of the land the more the plum trees and vice versa. However 52% of the cultivators have plum trees less than 100 trees.

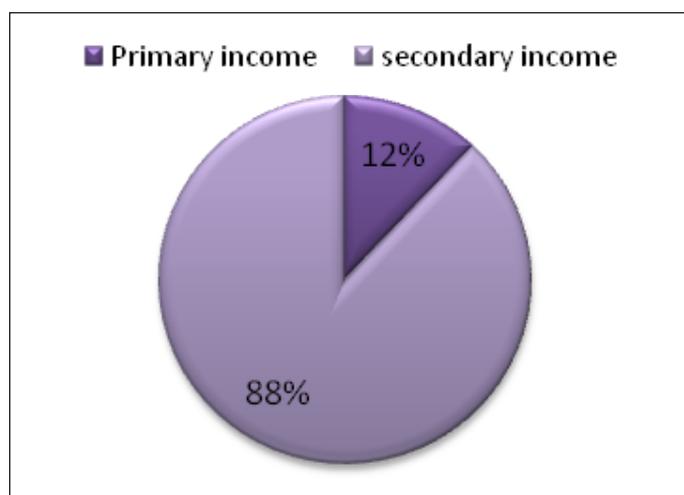
**Table 6:** Distribution of number of plum trees in the farm in the study area

Plum trees	Frequency	Percentage (%)
Less than 100	26	52
101-200	13	26
201-300	4	6
301-400	3	4
401-500	4	6
<b>Total</b>	<b>50</b>	<b>100</b>

Source: Data collected from the field survey (2018)

**Plum Cultivation as a Source of Income**

It have been observed that about 88% of respondents have taken up plum cultivation as a secondary source of income and only 12% are solely dependent on plum cultivation as their source of income.



**Fig. 2:** Primary or Secondary source of income

**Income from Plum Cultivation**

Table 7 shows that, about 64% of respondent earn pan income of `5,000 to 10,000, 22 % earn an income of `10,000 to 20,000, 4% earn about `20,000 to 30,000, 8% of the respodent earn income of `30,000 to 50,00 and 2% earn an income of `50,000 and above. The annual income earn are determine by various factor namely size of the land, duration or length of plum cultivation, maintenance of the farm etc. The larger the area of the land the more the number of plum trees which result to obtained the greater amount of plum fruits and there by more income.

**Marketing of plum**

The above figure shows the marketing of plum by the respondents. It shows that 60% of the cultivators sell their plum in the local

**Table 7:** Distribution of the respondents according to their annual income

Annual income (Rs)	Frequency	Percentage (%)
5,000-10,000	32	64
10,000-20,000	11	22
20,000-30,000	2	4
30,000-50,000	4	8
50,000 and above	1	2
<b>Total</b>	<b>50</b>	<b>100</b>



Fig. 3: Plum marketing

market and 40% of the cultivators sell their plum to the traders. So it is seen that the market for plum is still localized.

*Problems of Plum Marketing*

Figure 4 shows the various problem faced in plum marketing by the respondent. It is seen that majority of the respondent comprising of 62% faced the problem of price fluctuation. This is because almost all the respondent do not have storage facility to store the fruit for longer period and therefore they have to sell all the fruit right after the harvest where many people come for selling which leads to excess supply than demand and price of the fruit have to be kept low. 32% face the problem of storage facilities. The farmers specially in rural areas do not have enough money to by machines to store the fruits and there is lack of awareness about the technologies in the rural areas. 6% faced the problem of high transportation cost. These are faced by those person who goes to urban place to sell their produce.

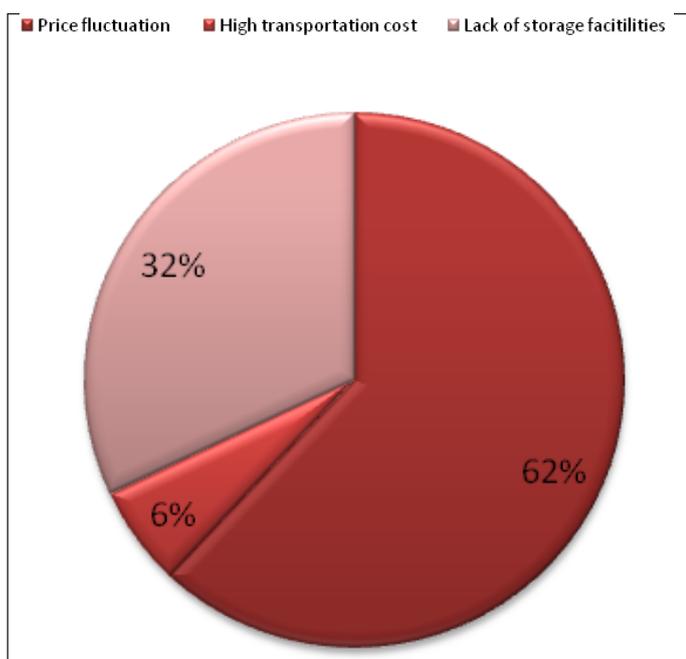


Fig. 4: Problems of marketing

*Prospects of Plum Cultivation*

A resource rich state like Nagaland has no dearth of prospect to horticultural development. It is important to install large scale cultivation in the state to build a strong economy specially in the rural areas.

Horticulture was a part of their age old traditional cultivation. However, with the growing market and commercial

viability, the horticulture farming is becoming one of the main components of cultivation. In recent years, horticulture has become the major focus of cultivation in Nagaland. Many of the local farmers are switching their effort from traditional jhum and terrace cultivation to horticulture farming than rice cultivation. It found more viability for the farmers. The amount of rainfall and favorable climatic condition for horticulture positively impacted on the growth fruits cultivation in the state.

**CONCLUSION**

Plum cultivation has been contributing as a good source of income to the people of Enhulumi village. It has helped the cultivators to finance their child education, buy household commodities, look after the families members, etc through the income generated from the plum cultivation. There is rate of growth and progress among the community from this cultivation.

Plums fruits are seasonal in nature resulting in surplus during the production period and subsequent off season shortage. Fruits are sold at a low price in the production season due to excess demand and a huge quantity of plum fruits were also wasted and spoiled at each and every step of the value chain due to improper post harvest management and lack of adequate processing. Therefore processing of fruits is an important sector of an economy to reduce post harvest losses, increasing the income of the farmers, providing employment opportunities, diversifying rural economy and earning foreign exchange. Food processing has important role in the conservation and better utilization of fruits. The utilization of resource both material and human is one of the ways of improving the economic status of a family.

**REFERENCES**

Books, journals, Articles, and related thesis: Acquah George (2004) "Horticulture principles and practices" Rekha printers private Ltd New Delhi.

Bal JS (2005). "Fruit Growing" Kalyani publishers, New Delhi.

Mebadari P (2017). "A study on the problems and prospect of plum cultivation—A case study in East Khasi hills district Meghalaya " Master level dissertation, University of Science and Technology, Meghalaya.

Pandey B.P (2008). " Angiosperms", Ram Nagar, New Delhi.

Sanjeev K, Srivastava RP. "Fruits and Vegetables Preservation" CBS publishers and distributors Pvt Ltd.

Singh IS, Singh V (2014). "Post-Harvest Handling and Processing of Fruits and Vegetables" Westville Publishing House, New Delhi.

Thamburaj S, Singh N (2014). " Vegetables, Tuber crops and Species", Directorate of knowledge management in agriculture Indian Council of agricultural research, New Delhi.

Yelhi V (2018). "Nagaland Economy—Its elementary features" Rainbow Publications, Guwahati.

**Report**

Statistical handbook of Nagaland 2017

**Websites**

<https://www.agrifarming.in/plum-varieties/> (8/11/2018)

[Shodhganga.inflibnet.ac.in>bitstream](https://shodhganga.inflibnet.ac.in/bitstream/10/11/2018) (10/11/2018)

[https://nagalandjournalwordpress.com...](https://nagalandjournal.wordpress.com...)(10/11/2018)

[Morungexpress.com.>working.](https://morungexpress.com.>working.)(12/11/2018)

<https://www.almanac.com>plants>plums> (13/11/2018)