

CHAPTER ONE

INTRODUCTION

1.1 Background

Agriculture has played an important role in the economic growth of nations and as they moved into the take off stage towards maturity in development. It is also pre-condition of the industrialization. Even though, the over dependency in agriculture as a symptom of poverty and it is mostly unproductive in the economy of the least developed country like Nepal in particular and in the economy of under developed countries in general.

Nepal is an agrarian and a landlocked country which is full of geographical diversity with variety of climates and other physical features. In Nepal, about 80 percent of labour force is engaged in agriculture occupation and about 39 percent of GDP is contributed by this sector. Most of the export goods are agricultural products. Thus, Nepal is basically an agricultural country. But this sector has not been geared up yet. Traditional system of farming is still in existence with subsistence in nature. Domination of agriculture occupation is one of the characteristics of the developing countries. So, agriculture sector is very important to uplift the socio-economic status of the people. It is also the major source of livelihood for the people and backbone of the national economy of underdeveloped countries (UDCs) like Nepal.

"Being the backbone of the Nepalese economy, it is very necessary to exploit agricultural potentialities to improve the living standard of the people at large. This sector needs to have a change from subsistence state to an industrial and profitable business so that productive employment and income are generated from this sector for the benefit of the poor people and may serve the objective of alleviating poverty". (Acharya, 2002)

In fact, our socio-economic position is based on agriculture sector. In the context of our country, agriculture is a precondition to boost up overall development especially, in economic sector. But the state of the agriculture in Nepal has still critically bottlenecked its development. Consequently,

agriculture in Nepal couldn't fluently lead on its growth path because of domination of cereal crops and very primitive practice.

The full potentiality of agriculture sector certainly plays a significant role in attaining self sufficiency in food supply by promoting export and supplies of raw materials for agro-based industries. For the desired changes in agriculture system, adequate supply of chemical fertilizer, high yielding variety of seeds, improved animal breed, access to agriculture credit, technical knowledge, training for farmers, irrigation facilities etc. are the primary factors. So, this sector deserves high priority in the public sector development programme. This priority sector can help to overcome the economic problems of the country.

Nepal is a mountainous country. Most of the land is not plain and not suitable for growing food grain crops. But its agro-climatic condition and geographical location is favourable for growing a variety of fruit species. That requires tropical, sub-tropical to temperate climate, thus different fruit crops have been planted, in the country since many decades.

Generally, citrus fruits are cultivated in hilly areas. Among them, *Junar* is a kind of citrus fruit. It is round in shape orange like colour, tasty and juicy. The word "*Junar* " is derived from "*Jyunar* " i.e. to eat. Its English name is "Citrus Sinensis". It is called sweet orange or tight orange too. Its botanical name is "*Citrus sinensis osbeck*" (HDP, 1998). Now, it has become one of the most important fruit in Nepal. Citrus orchards are generally seen in poor and unirrigated land where even hard cereals fail to give good crops. However, citrus fruits are yielding a high income per unit area because of the following reasons:

- The climate is favourable
- Citrus fruits can be kept on trees for longer period in the ripen stage and harvested as needed.
- The life of tree is long. Once planted the tree can remain productive for 10-20 years.
- Citrus fruits are cash crops.

Sindhuli is one of the six districts of Janakpur zone. It is famous for *Junar* production. *Junar* is grown on a limited scale in some parts of Dhankuta, Ramechhap and Dolakha district too. It was introduced during the regime of Rana Prime Minister Chandra Samser in his palace for the first time. Then, it was brought to Sindhuli as a gift by a man who worked in his place.

The *Junar* cultivation is found in the topography having altitude of 800 m. to 1300m. The appropriate temperature is 5° to 35° Celsius which is found in Sindhuli district.

The development of *Junar* cultivation in Sindhuli rapidly took off after 2030 B.S. Then, late king Birendra declared the district as “*Junar Pocket Zone*” when he visited in 2042 B.S. Commercial *Junar* farming is done more or less in 42 VDCs covering 12465 hectars area of land. About 3000 households depend on it. The total production of *Junar* in Sindhuli is about 15,000 metric tons per year. The farmers of '*Junar pocket zone*' were interested to cultivate *Junar* because of profitable cash crop. The role of government agency (Agriculture office) to encourage the farmers in *Junar* farming was crucial in the beginning. Likewise, the contribution of Japanese volunteer Tomiyashu in this field is very appreciable. Specially, 5 VDCs (Basheshwore, Tinkanya, Ratanchura, Bitijor and Jalakanya) are major ones for *Junar* production. Now a days, *Junar* has become the identity of Sindhuli district.

Junar farming is not connected only with economic growth but also connected with ecology and health. *Junar* trees can play significant role by balancing the decaling environmental condition due to deforestation and also help the environment by checking landslide and land degradation and another important role is growing appreciation of the dietary value of citrus fruits. *Junar* is the rich source of vitamin 'C' (*Ascorbic acid*), phosphorus, sugar, citric acid, iron and salts etc. and also provides vitamin 'A'. Fruit plants provide food security through the increase of purchasing capacity from the income generated by high value crop *Junar* .

Being leading sector in agriculture, it has been given priority in the most of the periodic plans of Nepal. Without it, economic development is

impossible. That's why, the *Junar* cultivation can play a vital role to increase agriculture production and can be a means to uplift the socio-economic status of farmers in our case.

2.1 Statement of problems

As an agro-based and developing country the government of Nepal has given higher priority is agriculture. Government involvement in agriculture sector in Nepal started from 1937 with the establishment of the agriculture council. Since then, several steps were taken for the agriculture development in the country. In tenth five year plan, this sector is taken a major tool to alleviate poverty.

Nepal being rich in its natural resources, it is still poor from economic aspect. So many development efforts have been made, but the results have not been as expected. Being an agricultural country, agriculture production is determined by monsoon. Thus, due to low productivity as well as low capital formation the balance of trade is also unfavorable.

Our agriculture system is not modern. The highly illiterate people are engaged in agriculture sector. The population growth has increased rapidly. The agriculture productivity has not increased in proportion to the population. The inefficient traditional method of cultivation and the production of food grain cannot cope with the increasing population. Therefore, for solving their problems of unemployment, the people of hilly region must cultivate high value crops like citrus fruits. In view of geographical and great climatic diversities of Nepal, there exists a great prospect of the production of seasonal fruits. Due to the population growth, the concern for nutritious food increases in the number of foreign tourists and the fast growing urbanization have necessitated to increase the products of horticulture crops in order to meet the increasing demand. Fruit production can contribute stable income generation for rural farmers. It can assist in transforming the traditional cereal crops oriented farming system to a commercial and appropriate agricultural activities.

Sindhuli has a great variety of topography which is reflected in the diversity of weather and climate. This direct experiences tropical, sub-tropical and measothermal types of climates which is suitable for *Junar* farming, Most of the farmers of five VDCs (Ratnachura, Jalkanya, Tinkanya, Bashashwore and Bitijor) are involved in *Junar* farming with a view of commercial aspects.

At present, farmers are attracted to grow the *Junar* . In many parts of the district, farmers are cultivating *Junar* for the commercial purposes. Instate of the profitable fruit production, there are many problems in the way of *Junar* cultivation such as lack of proper modern techniques, lack of transportation facility, lack of proper market and cold storage. Even them the *Junar* production has helped the farmers' socio-economic condition to rise up.

The main attention of the study is to focus on socio-economic impact of *Junar* on growers in the study area. It is a study of “*Junar* Pocket Zone” in Sindhuli district.

1.3 Significance of the study

There is no opportunity for increasing land area to increase agricultural production in Nepal. Regarding this, the main basis of increasing agricultural production is to increase productivity and cropping intensity. Thus, it is important to give priority to agricultural research activities which can contribute to the long term need and reality.

There is a suitable climate for *Junar* production in the study area. Though, it is still dominated by food grains. It cannot fulfill the entire basic needs of the people. *Junar* is newly prevalent fruits in Nepal. Most of the people in the study area are engaged in agriculture occupation and have some trees of *Junar* but they don't play a significant role in national production. People selling it in the local markets and the rest are used for the household consumption. Being an interestingly developing fruit and cash crop, *Junar* can contribute to strengthen the rural economy by exporting *Junar* to the foreign countries and reduce the foreign dependency on fruits.

The study area is facing the problems of landslide and soil erosion. Fruit plantation can help to prevent landslide and soil erosion besides helping to balance the eco-system. This research will be helpful for the improvement and betterment of the present condition of farmers who are facing a lot of problems like lack of transportation, lack of irrigation, fruit diseases, lack of proper market, lack of cold storages etc.

This research is based on field survey. The information has generated a new concept with its own nature. Hence, the research has been an additional written document for future scholars, researchers, students and readers in the related field. It will be a precious assets for the District Development Committee (DDC) of Sindhuli and *Junar* Vikash Sangh, Sindhuli which are working for the development and promotion of *Junar* farming and other NGOs and INGs as well as for policy makers for formulating more effective and practical plans and policies.

1.4 Objectives of the Study

The general objective of the study is to examine the socio-economic impact of *Junar* on farmers in research area. In order to achieve this objective, the study has the following specific objectives:

- i) To analyze the present status of *Junar* cultivation in the study area.
- ii) To show the importance of *Junar* cultivation as an indicator to progress the socio-economic condition of farmers.
- iii) To find out the problems faced by *Junar* farmers and suggest the measures.

1.5 Limitation of the Study

This study undergoes the following limitations.

- This study has been limited to the area of *Junar* farmers of '*Junar* Pocket Zone' in Sindhuli district and the threeVDCs Ratanchura, Basheshwor and Tinkanya have been taken as sample from the district.

It is representative to some extent only for hilly region regarding citrus production.

- The study has concerned only with the particular problems entitled "Socio-economic Impact of *Junar* on Farmers" according to afore-stated research objectives.
- The main constraints were time factor as well as finance, due to which limited members of respondents have only been included to the study.
- The study has been limited to local figure only. The national and international figures have not been included.
- The study of food and other cash crops have not been made.
- This research will be prepared as a project work report to be submitted in the partial fulfilment of the requirement for M. A. degree in Rural Development.

1.6 Organization of the Study

The first chapter is the introductory chapter, which discusses about the background information, statement of the problem, objectives etc. Literatures related to *Junar* and citrus fruits and its impact on farmers have been reviewed on the second chapter under the heading of 'Literature Review'. Third chapter is all about the research methodology applied for this research. Chapter four, five and six are the analysis of data. Chapter four is about the description of the study area, chapter five discusses about the impact of *Junar* on farmers and chapter six is the summary, conclusion and recommendations.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Literature Related to Citrus and *Junar* Cultivation

There are very limited literatures found on *Junar* cultivation. So, some of relevant literatures of citrus are reviewed here along with *Junar* .

A study about horticulture was conducted by S. Chaudhari in 1975 entitled “A Brief Outline Plan for Horticultural Research and Development in Nepal”. In this study, it is indicated that although, topographically and climatically, Nepal is an ideal horticultural country, in actual practice, horticulture plays very insignificant role in the agricultural economy of the country. The study shows the prospect of horticultural crops of commercial importance even without irrigation in steep slopes which can protect watersheds to soil erosion and help to preserve ecosystem.

Another study was made by Lumle Agricultural Centre in 1989 entitled “Production Constraints of Mandarin in Western Development Region”. The study was based on the potential citrus growing areas of Syanga, Kaski, Tanahun, Gorkha and Lumjung which indicates that the Mid-hills are largely characterized by terraced upland and food grain crops like maize, millet, wheat and barley which are mostly grown under rainfall conditions, whereas it is experienced that mandarin farming is economically more profitable than cereal crops under similar conditions. Thus, citrus farming is able to provide a good source of cash income for poor farmers of the hilly region of our country of Nepal which protects the environmental degradation.

Since the objectives of the study were to identify the problems associated with citrus farming and fulfill the objectives. A survey team consisting of two horticulturists, one is plant protectionist and another is *Junar* technician. The study was mainly concerned with technical type of problems specially of diseases. So many types of diseases were found as the problems of *Junar* production such as greening, root rot due to phytophthora, pink disease, fruit fly , fruit dropping due to green stink bug, gummosis etc.

A study on “Fruit production in Kaski and Syangja” was conducted by Food and Agriculture Marketing Services Department /HMG in 1996. This study has indicated that fruit production can be enhanced through intensive (by the increase of land) cultivation practices. Similarly the study has indicated that many types of fruits, tropical to temperate are adopted to the varied soil and climatic conditions of Nepal. However, looking into the ecological endowments the hilly regions have been emphatically designated for various types of fruits productions.

The study was based on following objectives:

- To estimate the cost of cultivation of major fruits grown in the two districts.
- To estimate the total production and existing number of different fruit in general and those of citrus trees in particular.

The study has confirmed that due to the favorable climate and soil conditions, hilly areas have attracted framers for producing fruits and suggested to provide various support services programmes are necessary for providing supplementary means for increasing and additional income to framers. But some deficiencies as observed in those districts by the study areas were categorized in the production problems and marketing problems.

Some recommendations were about research station development and substation cum-nurseries on the basis of climatic and soil characteristics. Some tentative technical programmes, good organized, domestic marketing facilities, structures of research and development division are made and also pattern of commercial fruit development is suggested in this study.

Bhairab Raj Kainy published a book entitled “*Junar* production and protection” (written in Nepali), which was published by HMG Horticulture Project, Kirtipur in the year 2043 B.S. This study has focused on the method of *Junar* cultivation in Ramechhap and Sindhuli district. The writer has confirmed that the favorable climatic and soil condition of these areas have attracted farmers for the *Junar* cultivation .In this book, the writer has discussed on various aspect of *Junar* cultivation such as origin of *Junar* ,

method of plant product, orchard establishment, techniques of protection and idea of general storage. Likewise, he has also mentioned the description of production cost and revenue. Problems of various diseases and barriers for the *Junar* cultivation are suggested to remove and protect them from various problems. The writer has given more emphasis on cultivation aspects and its techniques.

Suresh kumar Verma has published an article “*Junar* Kheti Ek Parichaya”(An Introduction to *Junar* Farming) on KISAN Quarterly publication of Community Welfare and Development Society Balaju. In this published article. He has stated that *Junar* production plays an important role to the hilly farmers to some extent. *Junar* farming provides more income per unit area as compared to the cultivation of cereal crops. Introduction of *Junar* cultivation covers the following matters:

- Importance of *Junar* cultivation
- Sampling of *Junar*
- Establishment of *Junar* orchard
- Measurement of production

This study has come up similar conclusion to that of Bhairab Raj Kainy. Both writers have not focused on the production of *Junar* in the relationship between inputs and outputs.

HMG/FAO has jointly sponsored a training workshop entitled proceeding of “Small Farmers Marketing Extension Training Workshop” at Pokhara in 1987. In this training workshop D.N. Manandhar presented a paper on “Production of Fruit and Marketing Needs of the Farmers in Nepal.” The paper focused that fruit production plays a vital role to fulfill the basic needs of the people. Fruits are valuable sources of nutrients particularly vitamins and minerals required for a balanced diet. Fruit growing provides more income per unit area as compared to food grains. He has also mentioned about the main strategies to achieve the needs. There are so many constraints in fruit production and marketing such as lack of financial investment, highly perishable nature, lack of technical knowledge and shortage facilities.

Similarly, there is lack of processing industries, grading, packing and prompt marketing information. Thus, for removing these problems, this study has recommended the following measures:

- * There should be conducted a fruit production and marketing survey.
- * There should be developed the total market Haat, Bazars and fruit collection centre,
- * Wholesale market should be established.
- * Grading and packing system should be developed.
- * Well organized marketing system should be developed.

A study made by Bed Raj Neupane(1995) on “Marketing of *Junar* Cultivation: Ac case study of Ratanchura VDC of Sindhuli District:”. He has emphasized on the marketing sector of the *Junar* of Particular area. The major objectives of his study were

- To get acquainted with general trend of *Junar* production
- To analyze the present marketing situation of *Junar* Production of the Study area
- To identify the problems and prospects of *Junar* marketing

Regarding the above mentioned objectives Mr. Neupane, on his study, has concluded that the study area is climatically suitable for *Junar* cultivation recently started in more beneficial than single *Junar* cultivation in their farms. So far as the present study is concerned, it is also not significantly different from the reviewed empirical studies; previously, its area is also limited to Cobb-Douglas Production function taking five inputs as capital, plant, fertilizer, labor and insecticide.

The hilly part of Sindhuli district (3 VDCs) is the study area for research. The available materials, related to citrus production and socio-economic impact have been reviewed in the below.

Ghosh and Singh in their book deal with the citrus production in south Asia in present condition. The authors have been made to review the current status of citrus production, constraints management, research and trade in different countries of South Asia. In depth analysis made in their directions

clearly shows some commonalities of problem and prospects among the countries of South Asia.

The authors reveal that in South Asia, citrus does a very important crop comprise the six countries namely India, Pakistan, Bangladesh, Nepal and Sri Lanka. In South Asia two countries India and Pakistan shares 95 % of the total citrus production. Only in certain parts of India and Pakistan commercial sericulture exists and Bhutan and Nepal have traditional but expanding citrus industry.

Orange cultivation in Nepal is not considered as main occupation and small orchards mainly in the Home stead Act as secondary sources of income to most of the growers. In order to develop the citrus industry in country, it is necessary to give commercial touch to the citrus business. The studies have shown that with transfer of sound production technology and its adoption orange industry in Nepal should grow will and the Nepalese orange can make good in roads in India, Bangladesh and Chinese town lying near the border even after meeting the needs of growing domestic market (Gosh and Singh1992).

FAO in its report focused on the citrus fruit Juice. The purpose of the report was to review the major d developments which have been taken place in1984 to 1988 in production and consumption of citrus Juice in particular concentrated juice and to analyze the underlying factor responsible for the domestic growth of international trade in these items. Finally, in view of the very fast expansion in output of citrus for processing and processing capacity in some areas especially attention is given to the outlook for international trade and possible market problems which could arise in the future.

According to the study about 20million tons of citrus are processed annually. This amount represents almost 40 percent of world output of citrus. Two countries the United States and Brazil, account for over three quarters of the volume processed with a share of almost 80 percent, orange account for the largest part of all citrus fruit processed concentrated orange juice, mostly in the form of FCOJ is by for the most important item in the international trade

in citrus juice. It accounts for almost 85 percent of exports of all types concentrated orange juice increased dramatically during the last two decades (FAO1988).

Citrus crops Development Branch Kirtipur, Kathmandu has published annual progressive report of fiscal year 059/2060. According to the report citrus fruit covers 23663 hector area and the production amount is 1319110 metric tons in Nepal. Among that eastern development region covers 5830 hectors central development region covers 6720 hectors Western development region covers 2896 hectors and Far western development region covers 1932 hectors in comparison with previous fiscal year 058/059. The citrus fruit has increased 1240 hectors in this fiscal year 059/060.

The government and private sector distributed 370036 of citrus plants in the fiscal year 059/060. Out of which 9.97 percent of citrus plants were distributed by government and left of that were distributed by private sectors. LARC has published working paper written by shrestha Eatal . This paper states that mandarin. (*Citrus reticulate Blanco*) is one of the most important sub-tropical crops in the middle hill (650m.-1400m.) of Nepal. This paper results that during the harvesting season (November –January) there is glut in the market leading to the low price as well as spoilage where as during the period of shortage, price goes up (LARC, 1997). As a result, the economy benefit of this crop is not reaching to the farmers. So the LARC, founded by department for international development (DFID) of the British government for storing designed and tested a low cost cellar store as a post harvest technology at Tapu village in 1991. This research paper suggests that mandarin could be safety stored for three to four months without lost in quality and quantity of the stored mandarins. From this research, it is fact that the cellar storage is serially acceptable and economically profitable to the people (shrestha, B, Subedi P.P., Thapa, J. J, 1998)

A research project entitled "A Study of Mandarin Orange Farming "in Manakamana village Development committee, Gorkha district was carried out by Ashok Rajbashi in 1997.

In this mini research project the researcher has stated that in Manakamana VDC, orange plantation is one of the important agricultural activities but in spite of many efforts of different institutions of GON then HMG and other organizations, it is still true that the return to the mandarin growers have been limited and enhanced the level of income of the farmers to a desired level. This apparent reason for this situation is the assurance of diseases and pests and the existence of marketing problems when the production is good. Identification of crucial determining factors related to production, distribution and processing of mandarins must have been starting point to devise ways to resolve the existing problems. (Ashok rajbanshi, 1997).

G.K.Shrestha has written a book entitled "Fruit Development in Nepal" deal with the importance of fruit production in Nepal because of its agro-climatic condition and geophysical location.

In the book, the writer says that in recent past, the government, semi government and private organizations working on agricultural development in Nepal has realized that fruits are very important on human nutrition as well as for improving the rural economy.

They have also agreed that fruit tree plants help in the preservation of ecology of fragile hills and mountains provided the trees are planted scientifically. Lately more and more emphasis on improving fruits trees culture and care has emerged in government and private sector to narrow the gap between the demand for fruits and their supply. (G.Shrestha, 1990)

NARC has published annual report. According to the report, the citrus is one of the most important and popular fruit crops grown in the hills of Nepal. It is grown commercially in different climatic condition like; tropical and sub-tropical and even in some favorable parts of temperate regions. This reports focus that the core problem is the low production and low marketing price in harvesting time. It is caused mainly due to the small area under citrus, lack of suitable varieties for growing in different seasons (Early medium and late) and

poor management practices. Poor fruit quality and lack of suitable storage methods are the main reasons for low market price at harvest. (NARC, 1999)

HMG/Department of Food Agriculture and Market Service (DAFM) has conducted a study on topic "A Socio-economic Study on the Area Around Prithivi High Way in 1979. In this study five VDCs viz Manakamana from Gorkha, Sisuwa from Kaski district, chhang VDC from Tanahun district and Jivanpur and Benighat from Dhading district were taken as sample VDCs. In the report presented, it was stated that in some regions, the facilities of transportations encouraged to some extent the cultivation of cash crops and fruit.

In conclusion of the report it was remarked that roads have a remarkable effect on the development of production forces of agriculture. Road provides the opportunities for increasing income and boosting the socio-economic condition to the people. (HMG/DFAM, 1979)

Kantipur daily, newspaper has published an article written by Prabhakar Grimire. The article was focused on the orange production and its impact. The writer says that most of the Nepalese people expected governmental help even for small piece of work. But in contrast to the citizen of east northern part of Chitwan demonstrate their power and become an example of country.

According to writer, around thousand plants were planted in 40 Bigha and more than 50% plants are giving their product now. The orange of this area is not only quantitatively productive, people of these area are earning around 18 lakhs rupees per year from orange farming and the main market of the orange of this area is Mugling Bazar. (Prabhakar Ghimire, 2004).

A thesis entitled "Orange Production and Socio Economic Change in Syanga: A case study of Karandnasa" was carried out by Netra Narayan Poudel in 1997. In this study the researcher has stated that the orange production has become one of the most important alternative economic activities in Karendanda. The main objective of the research was to throw some light on the orange production and socio economic change in Karandana VDC of Syangja district.

The conclusion of the research was that the people of Karendnanda have produced more oranges and they have earned many rupees from it. The income from the orange production has helped to improve the socio economic condition of the people in Karnddada. The attitude of the people towards education has become positive and they have started sending their children to modern school. They have changed their food habit and housing structures. The perceptions of the people on primary health care and sanitation have been increasing year after year. Because of the accelerated economic growth due to the orange production, the people of Karenddanda have undergone a significant socio economic change.

The research has shown the major problems of the farming in the region, which related to technical supports and serves, agriculture inputs, irrigation and storage facilities and markets. Similarly in study, researcher recommended to the governmental and non-governmental organization to establish the industries so as to solve the problem related with orange cultivation of the Karendanda VDC (Poudel: 1997)

A thesis entitled "Role of Fruit Production in Rural Development, A case study of Mandarin orange Production in Babgkok VDC of Gorkaha District" was written by Buddhiman Shrestha in 1995.

The study started agriculture as the major sources of income of that VDC and because of that, the fruit farming have been expanded. Mandarin orange is leading crop of the community, which average cost of production is Rs. 1.55 KG. Based on the data benefit cost ratio is calculated Rs2.65 and indicates that if farmers invest Re1. During the productive stage he could receive worth Rs2.65. Thus the orange farming is beneficial one.

Besides direct benefit from the production, it also beneficial in other different purpose when trees get old it can meet the demand of timber and Fire wood. So its farming should be extended in the locality. The marginal price of the fruit crops becomes acceptable due to the highest productivity (Shreshta, 1995)

A thesis paper entitled 'A Study of Orange Cultivation in Eastern hilly Region: A Case Study of **Chhintang** VDC of Dhankuta District was written by Sundar Kumar Rai in 1998.

In that thesis paper the writer has stated that Agriculture plays significant role in the entire economy of Nepal. There are several types of agriculture in Nepal. There are several types of agriculture in Nepal i.e. cereal crop farming, cash crop farming, livestock, rearing, horticulture etc. Among of there citrus is the dominate horticulture crops and orange is an important items which especially in the hilly region of country.

In the study area, after analyzing the different socio economic parameters of farmers the study concluded that the socio economic status of orange growers is higher than non growers. In terms of literacy status occupation, land holding size and food sufficiency the orange growers has better position than non growers.

The orange cultivation is facing a lot of problems such as unsystematic care and management in orange cultivation lacked commercialization and modernization lack of irrigation facility, improved sampling, chemical fertilizer, agred chemical, insecticide, pesticide, Instead of problem, farmers in the study are still optimistic for the future prospect orange(Rai:1998).

A thesis entitled orange cultivation in Sikkim, A case study of Sakyong Revenue Block of West Sikkim was written by Nar Bahadur Chhetri in 2002.

In that thesis the writer has stated the trend in area and production of orange is increasing, but sometime fluctuation due to physical condition such as hailstone, high rainfall etc.

The conclusion of the research is that the orange cultivation has a positive impact in rural economy. The socio-economy status of this study area is upgraded by orange production; But people are not adopting the orange cultivation from commercial point of view. The impact of development doesnt seems to be encouraging. If the farmers develop in an organized manner, it will remove their backwardness, poverty and illiteracy (Chhetri, 2002).

2.2 An Interpretation of Schultz's Transformation of Traditional Agriculture.

Agriculture is an important segment of traditional (feudal) economy, the transformation from feudalism to capitalism necessary implies a transformation of agriculture. Prof. Walter Theodore Schultz has given comprehensive and brilliant explanation of this question in this book "Transformation of Traditional Agriculture". In this characterization of traditional agriculture is being oldest production activity of the society Schultz stated that traditional agriculture is niggardly; this niggardliness is not a function of unique set of preferences related to work and thrift; it is predominately a consequence of farmers having exhausted the profitability of the techniques of production at their disposal; there is little or no incentive to save and invest in order to increase the stock of the forms of reproducible capital farmers are employing.

The doctrine of Prof. Schultz' states in his own words: "The man who is bounded by traditional agriculture, cannot produce much food no matter how rich the land. Thrift and work are enough to overcome the niggardliness of this type of agriculture. To produce in abundance of farm products requires that the farmers has access to land and has the skill and knowledge to use what science knows about soils plants animals and machines. To command farmers to increase production is doomed to failure even though they have access to knowledge. Instead an approach that provides incentives and rewards to farmers is required. The knowledge that makes the transformation possible is a form of capital, which entails investment. This investment is required not only in material inputs in which a part of this knowledge is embedded but importantly also investment in farm people."

To conclude Schultz's model of transforming a traditional agriculture into modern agriculture, is a brilliant success as it can be applied in most of the developing countries specially in adoption of the strategy of green revaluation. This model can be considered outstanding as it emphasized on agriculture as an engine of growth and acceptance of modern inputs for the

promotion of agriculture and the uplift of lifestyle of farmers. In the context of hilly country like Nepal *Junar* cultivation can be the relevant example of this doctrine.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Selection of the Study Area

The present research has been concerned in three VDCs viz as Ratanchura, Tinkanya and Basheshewor, which are considered as core area for *Junar* production in Sindhuli district. The following reasons are there behind the selection of the study area.

- So far no previous studies have been carried out in this area on the similar topic.
- The domination of *Junar* farming is found in the three VDCs.
- Sindhuli is researcher's own home district; the familiarity of various aspects of the area will be accessible and appropriate to collect required information for the study.

3.2 Research Design

The study has basically followed descriptive method. Using the descriptive method, the acquired data and information have been analyzed and result has been derived.

3.3 Nature of the Data

The study will basically be based on primary as well as secondary data. The primary data have been collected from the study area by direct contact with the people applying data collection instruments. On the other hand, the secondary data have been collected through different sources such as Central Bureau of Statistics (CBS), agricultural booklets and annual reports published by the agricultural communication section.

3.4 Sampling Technique

A set of questionnaire has been prepared and the purposive sampling method has been applied. Seventy five households have been taken from the

three VDCs and twenty five households have been picked up from each VDC and all of the sampled households are familiar to the *Junar* cultivation or cultivate *Junar* from the commercial point of view.

3.5 Instrument of Data Collection

Primary data have been collected by structured as well as unstructured questionnaire and FGD. Many information like religion, caste/ethnic, family size, income source etc. have been obtained from set up questionnaire and face to face interview, members of *Junar* Vikash Sangh and DDC. Sindhuli were also visited to seek additional information. Secondary data have been obtained from different published and unpublished literatures.

3.6 Observation

Information has been collected on the basis of participant observation during the field survey. Participant observation was made to know the life style, dress and food habits of the farmers and other activities which are related to the socio-economic aspects.

3.7 Method of Data Analysis

The gathered data and information have been processed by grouping them into various groups. Then, they have been manipulated in tabular forms and various diagrams or charts so that the real situation can be mirrored. The collected data and information have finally been analyzed to draw the conclusion and to fulfil the afore-mentioned objectives.

CHAPTER FOUR

INTRODUCTION OF THE STUDY AREA

4.1 Introduction of Sindhuli District

Sindhuli is one of the six districts of Janakpur zone situated in the inner Terai of Nepal. It is famous for the historical for Sindhuligadhi and it touches other ten districts as well. It consists of one Municipality (Kamalamai) and other 53 VDCs. Sindhuli district covers an area of 2,491 sq. kilometres and approximately half of the portion of it lies in hilly region and rest in inner Terai.

4.2 Physical Facilities of the District

4.2.1 Transportation

There is an all weathered motorable road from Bardias-Sindhulimadhi to Khaniyakharka (37km+23km). Which links it with east-west Mahendra Highway and Terai region as well and the famous B.P. Highway passing through it is under construction. Other seasonal roads such as Sindhulimadhi to Chakmake and Sindhulimadhi to Kapilakot are major ones, which serve the rural people during dry season.

4.2.2 Education Status

About 39.28% people are literate in the district on which male shares 52.4% and female 26.4%. There are 366 schools in total where as the number of higher secondary schools is 12 secondary schools is 34, lower secondary schools is 43 and primary schools is 278. There are also 14 private English medium schools and other many educational institutions.

4.2.3 Communication and Electricity

Electrification is going on in rapid race in the district. The electricity facility is available partially in Kamalamai Municipality and few number VDCs. LAN line telephone service and cordless are available in the district.

4.3 Distribution of Land (In Hector)

Table 4.1: Distribution of Land (In Hector)

Geographical Condition	Cultivable	Non-cultivable	Grazing Land	Forest	Other	total
High Land	0	0	0	70	0	70
Middle Hill	17116	13349	1110	62043	1409	95027
Churia	22369	6012	304	116017	7910	152612
Total	39485	19361	1414	178130	9319	247709

Source : District Development. Profile of Nepal, 2004

4.4 Population

Table 4.2: Population

Particular	Census 2038	Census 2048	Census 2058	2062 (Projected)
Total Population	183705	223900	279821	302850
Male	93251	111409	139280	150786
Female	90454	112491	140541	152064
Sex Ratio	103	99	99	99
Total Household	29956	38351	48758	51113
Average Household size	6.1	5.8	5.74	6.27
Literacy Rate	19.4	31.6	50.13	50.13
Population Density	73.7	89.9	112	123

Source : District Development Profile of Nepal, 2004

Table 4.3: Economically Active and Passive Population (Above 10 yrs)

Particular	Census 2048		Census 2058		2062 (Projected)	
	Total	Female	Total	Female	Total	Female
Active Population	93935	38724	128442	56834	140288	62076
Passive Population	58963	38000	69153	42726	75531	46667

Source : District Development Profiled Nepal, 2004

Table 4.4 : Population Distribution According to Caste/Ethnic

Caste	Census 2058	Percentage
Tamang	70938	25.36
Chetri	40294	14.40
Magar	39675	14.18
Brahman	25509	9.12
Newar	18164	6.49
Kami	12317	4.40
Danuwar	12244	4.38
Majhi	9345	3.34
Sharki	8960	3.20
Damai	7540	2.69
Sanuwar	7103	2.54

4.7 Profile of the Study of Area

The selected VDCs for the study are Ratanclura, Baneshwor and Tinkanya where *Junar* is cultivated in large scale. They are situated in north east side of sindhuli district. They lie behind the Mahabharat range.

4.7.1 Population of the Study Area.

The table 4.5 shows the area number of household distance from the district headquarters and total population of male and female in three selected VDC of study site.

Table 4.5: Population, Area and Distance of the Study Area

S.No.	Name of VDC	Area (Km ²)	Distance from Headquarter	No. of HHs	Population in 2061		
					Male	Female	Total
1	Ratanchura	22.40	4 <i>Kosh</i>	533	1392	1502	2894
2	Basheshwor	25.80	10 <i>Kosh</i>	644	1885	1853	3638
3	Tinkanya	86.20	10 <i>Kosh</i>	838	2475	2527	5002

Source : District Development Profile of Nepal, 2004

4.7.2 Development Infrastructure of Study Area

Basic infrastructures are need for the development of the country, some development activities have been started on the study site. Transport facilities are the most important to deliver the agricultural products in market. The B.P Highway which is under construction passing via '*Junar Pocket Zone*' will be the backbone to promote *Junar* cultivation in future.

Electricity facility is available partially in some words of the study area by Central Transmission line and micro hydropower. The people of '*Junar Pocket Zone*' are provided with the postal service, schools agriculture office, cold storages and health service (Sub-health posts). So, for drinking water is concerned satisfactory condition is found within the area.

4.7.3 Economic Activities

The focus group discussion conducted in Ratanchura, Basheshwor and Tinkanya separately suggested that most of the villages are engaged in agriculture. Adult literacy is low but most of the youths have completed primary school few of them have finished high school too.

4.7.4 Demographic Characteristics

Demography is the statistical study of human population, primarily with respect to their size, their structure and their development (UN 1958:3) . And demographic characteristics mean those activities which are concerned with population. Different types of population characteristics are included in demographic of the population characteristics. Total population, compositions of the population are included in demographic characteristics. Thus, it shows the population characteristics mathematically.

4.7.4.1 Total Population of the sampled Households

The total population of the sampled households is 527 and it presents as the basis of different population composition.

4.7.4.2 Population Composition by Age

Population composition by age is one of most important characteristics in demography analysis. Although, age is a personal characteristics of a person in formation and age can normally by obtained without difficulty. Age composition is a process of studying the population because the total population is divided into different age groups. Children, young and adults form the major age groups of the population in any society. The age composition of the sample households in study area is presented the table.

Table 4.6: Population Composition on the Basis of Age of the Study Area

S.NO.	Age Group	No. of Population	Percentage
1	0-14	177	33.59
2	15-59	291	55.22
3	60+	59	11.19
Total		527	100.00

Source: Field Survey, 2006

The table 4.8.1 depicts that the structure of population of study area. It shows that the economically active population (age group 15-59) is the highest

number, which consists of 55.22 percent. The age group of 0-14 years consisting of 33.59 percent and that of 60 years and above consisting of 11.19 percent.

4.7.4.3 Population Composition by Sex

The sex composition of the sampled households in '*Junar Pocket Zone*' is presented in the table.

Table 4.7: Population on the Basis of Sex

S.No.	Sex	NO. of Population	Percentage
1.	Male	257	48.77
2.	Female	270	51.23
	Total	527	100.00

Source : Field Survey, 2006

The table 4.8.2 shows the sex structure of the population of the study area. The male population comprises 48.77 percent female 51.23 percent.

Table 4.8: Ethnic/ Caste Composition of Respondents

S.No.	Ethnic Group	No of Households	Percentage
1	Magar	44	58.67
2.	Chhetri	13	17.34
3.	Kami/Sharki	6	8.0
4.	Damai	3	4.0
5.	Thakuri	6	8.0
6.	Brahamin	2	2.66
7.	Bhujel 1	1	1.34
	Total	75	100.00

Source : Field Survey, 2006.

Out of 75 Households (HH) the highest number of respondents belong to Magar (65.34%) the second highest (17.34%) belong to Chhetri.

Table 4.9: Educational Status

S.No.	Level of Education	No. of Population	Percentage
1	Illiterate	146	27.70
2	Literate	353	66.99
3	SLC & Above	28	5.31
	Total	527	100.00

Source: Field Survey, 2006.

The table reports that 146 (27.70%) of the total population are illiterate, 353 (66.99%) people are literate and 28 (5.31%) people are S.L.C and above.

CHAPTER FIVE

STATUS AND IMPACT OF *JUNAR* ON FARMERS

5.1. Land Holding Size and Land Used for *Junar*

Land ownership is still the most important index of wealth in Nepal but the system of division of property, land is divided into smaller and smaller pieces. Thus, the land holding capacity is also decreasing generation to generation. However, the possession of land is greatly valued among the people of the study area. It also depicts the economic and social status of the people living in the rural area. It is valued not simply as a factor of production but as continuous source of income and security. In the other hand, it is an index of social status and prestige also. The composition of land holding size and land covered by *Junar* farming of the sampled households in the study site is presented in table.

Table 5.1: Land Holding Size & Land Covered by *Junar*

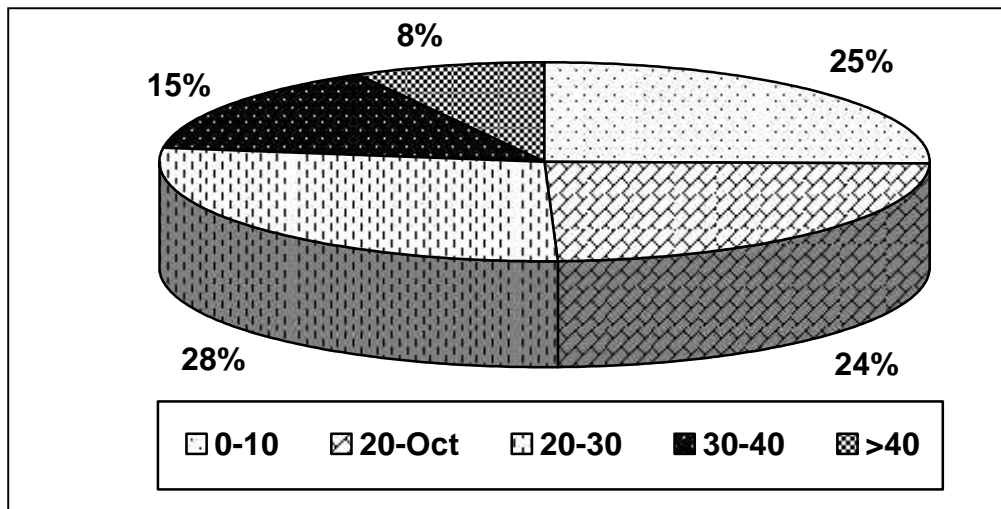
Land Holding				Land Covered by <i>Junar</i>	
SN	Size(In <i>Ropani</i>)	No of HHs	Percentage	No. of HHs	Percentage
1.	0-10	19	25.34	31	41.34
2.	10-20	18	24	24	32.00
3.	20-30	21	28	12	16
4.	30-40	11	14.66	6	8
5.	>40	6	8	2	2.66
	Total :	75	100	75	100.00

Source: Field survey, 2006

Table 5.1 depicts the distribution of land holding size of households in study area. The households of people having 20-30 ropani are the highest which is equal to 28 percent. The table also shows that the respondents having 0-10 ropani, 10-20 ropani, 30-40 ropani and more than 40 ropani and land holding size are equal to 25.34% ,24%, 14.66% and 8% respectively.

Figure No: 1

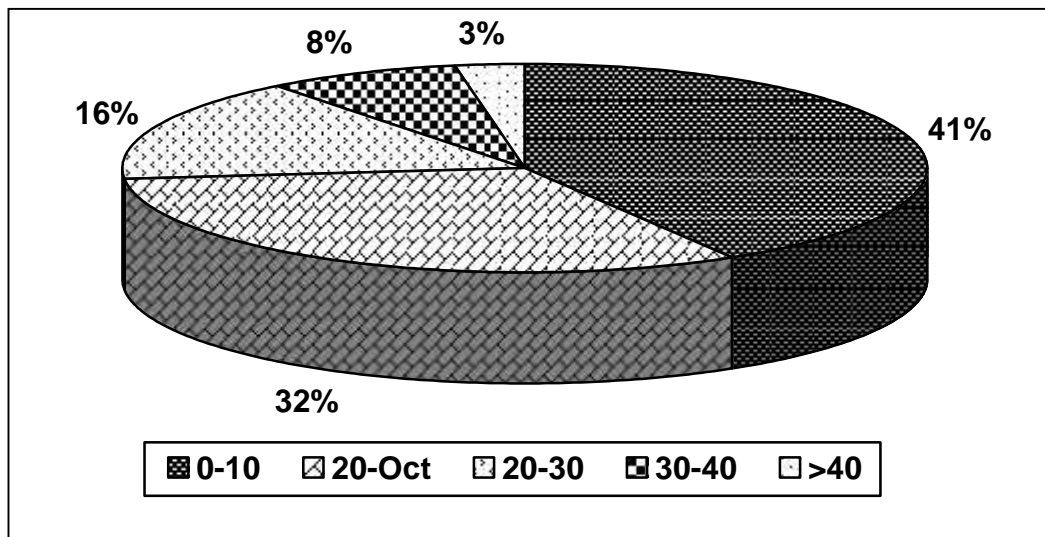
Land Holding Size (In Ropani)



Similarly, table 5.1 also reveals that the most of the households (31) have used their 41% of total land as *Junar* farming likewise, 24 respondents having 10-20 ropani, 6 household having 30-40 ropani and 2 households having more than 40 ropani have used their 32%, 16%, 8%, and 2.66% respectively of the total land for *Junar* farming.

Figure No: 2

Land used for *Junar* (In Ropani)



Those who have no *Khet* (Irrigated land) they have use their most of the portion of land for *Junar* farming.

Table 5.2: Status of Land covered by *Junar* on the basis of

Caste / Ethnicity

S.No.	Land Coverd by Junar (in Rapti)	Magar	Chhetri	Kami/ Sharki	Damai	Thakuri	Brahmin	Bhujel
1	0-10	15	5	6	3	2	-	-
2	10-20	19	4	-	-	1	-	-
3.	20-30	7	3	-	-	1	1	-
4.	30-40	2	1	-	-	1	1	1
5	>40	1	-	-	-	1	-	-

Source : Field Survey, 2006

Table 5.2 reveals the information about the status of land covered by Junar on the basis of caste / ethnicity. All households of Dalits have used 0-10 ropani of land for Junar farming because they own less size of land.

5.2 Junar Cultivation and Types of Land

Physical feature of Nepal is diversified where hill, mountain and Terai characterize the country.

Junar production area lies in hilly region. So the land is up landed. The different types of land and where the *Junar* is cultivated by respondents is shown below:

Table 5.3: Junar Cultivation and Types of Land

S.NO.	Land Types	No of HH	Percentage
1.	<i>Khet</i>	0	-
2.	Upland (<i>Bari</i>)	63	84
3.	<i>Pakho</i>	10	13.34
4.	Near Forest	2	20.6
	Total	75	100.00

Source: Field Survey, 2004

Most of the respondents (63) have used their upland (*Bari*) for *Junar* and 10 HHs have used. *Pakho* and 2 HHs have used near forest.

5.3 Income and Expenditure

The economic condition of *Junar* farmers was extremely low before starting *Junar* cultivation. They grew maize and millet on the land for self consumption. Agriculture is the main occupation and the cheap source of income. In addition this, animal husbandry, service, wage labour are also the subsidiary sources of income. There is not enough irrigation facility. So they depend on the monsoon for the irrigation.

The major source of cash income in the study site is *Junar*. Besides this, the people earn money by working in different cities of Nepal and India. The number of people having government service in this area is negligible figure. Thus, these sources of income are also supposed to contribute substantially to the economy of the area.

Most of the people of selected households depend on agriculture. The main income source by agriculture sector is from *Junar* cultivation where the share of income contributed by *Junar* is very high.

5.3.1 Main Income Sources

Majority people of the study area depend on agriculture sector. The main income source of them is *Junar*. The following table shows the distribution of sampled households by main income source.

Table 5.4: Status of Sampled HHs by Main Income Sources

S.No.	Income Source	No. of HHs	Percentage
1.	Agriculture	64	85.34
2.	Service	1	1.33
3.	Agriculture + Others	10	13.33
	Total	75	100.00

Source: Field Survey, 2006.

Majority of households (85.34%) said that agriculture is their main source of income. *Junar* shares the highest amount of income of them. 10 (13.33%) of the total households reported that they have others sources of

income along with agriculture and 1 (1.33%) respondent has government job as main source of income.

5.3.2 Annual Income by *Junar*

The annual income of respondents by *Junar* is presented in table.

Table 5.5: Annual Income By *Junar* (Average : Rs. 24500)

S.No.	Income (In Rs.)	No. of HHs	Percentage
1.	0-9000	9	12.00
2.	10000-190000	21	28.0
3.	20000-29000	16	21.34
4.	30000-39000	18	24.00
5.	40000-49000	5	6.6
6.	50000-59000	2	2.66
7.	60000 Plus	4	5.33
	Total	75	100.00

Source : Field Survey, 2006

The table 5.5 indicates information about the total income of selected household by *Junar* in the study area. It shows that 9 (12.0%) households earn Rs. 0-9000, 21 (28%) respondents earn Rs. 10000-19000, 16 (21.34%) households earn Rs. 20000-29000, 18 (24.0%) households earn Rs. 30000-39000, 5 (6.6%) households earn Rs. 40000-59000, 2 (2.66%) households earn 50000-59000, 4 (5.34%) households earn 60000 and more by *Junar* annually.

Figure: 3

Annual Income of Selected Households by Junar

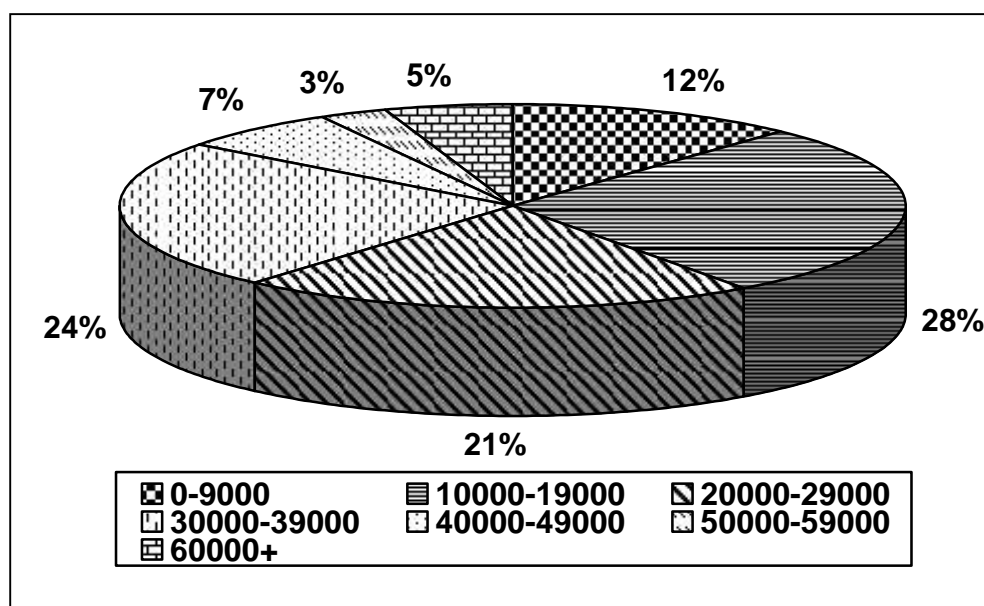


Table 5.6: Annual Income by Junar on the Basis of Caste/ Ethnicity

S.No.	Income (in Rs.)	Magar	Chhetri	Kami/ Sharki	Damai	Thakuri	Brahmin	Bhujel
1	0-9000	3	-	4	-	2	-	-
2	10000-19000	11	4	2	3	1	-	-
3.	20,000-29000	13	3	-	-	-	-	-
4.	3000-39000	12	4	-	-	1	1	-
5	40000-49000	13	1	-	-	1	-	-
6.	50000-59000	1	-	-	-	-	-	1
7.	60000 >	1	1	-	-	1	1	-

Source: Field Survey, 2006.

Above table 5.6 depicts the annual income of farmers by junar according to caste/ethnicity. Most of the dalits share the low income by Junar. Whereas, non dalits castes get higher income by Junar.

5.3.3 Saving

Saving is income not consumed is one of the most important and perhaps the chief source of investment. Saving has a great significance as a capital formulation to develop the country. The saving condition of selected households before and after *Junar* farming is shown below:

Table 5.7: Saving Before & After *Junar* Farming

S.No.	Description	Before		After	
		No. of HHs	%	No of HHs	%
1.	Saving	8	10.67	62	82.67
2.	No Saving	67	89.33	13	17.33
	Total	75	100.00	75	100.00

Source: Field Survey, 2006.

The saving condition of respondents before *Junar* cultivation was very low. Only 8 (10.67%) respondents used to save money due to the low income, lack of financial institutions. These days, 62 (82.67%) households save money in banks, local cooperatives and give money on lending and 13 (17.13%) households spend their income without saving.

From above table, it can be concluded that *Junar* cultivation has become an indicator to make able the people in saving.

5.3.4 Expenditure

All the people who produce something want more profit and want to save much money. But all of them are not succeed to save. The farmers who produce in minimum cost and sell in maximum price only success to save money. The persons who are able to save money don't hold money idles as classical economists' assumption.

After *Junar* cultivation the farmers have able to save some money and they spend in various items like food & clothing, education, medicine, ceremony festival, marriage, fixed assets.

Table 5.8: Expenditure Patterns in Different Items

S.No.	Priority Items	No. of HHs	Percentage
1.	Food & Clothing	47	62.67
2.	Education	13	17.33
3.	Medicine	5	6.67
4.	Ceremony, Festivals, Marriage	6	8
5.	Fixed Assets	4	5.33
	Total	75	100.00

Source : Field Survey, 2006.

Majority of the households (62.67%) spend the money from *Junar* on fooding and clothing because they have farmed *Junar* on the land where they used to grow cereal crops. Although, they make inter-cropping and multi-cropping on *Junar* garden as well. 13 (17.33%) respondents incur expenditure on education, 5 (6.67%) households spend their income on medicine or treatment of family members, 6 (8%) households incur on ceremony, festivals, marriage of daughter or sons, and 4 (5.33%) households incur expenditure on fixed assets like land houses etc.

5.4 *Junar* Production

Junar production is the most profitable occupation of '*Junar* Pocket Zone' in Sindhuli. At present, *Junar* cultivation has increased by the point of commercial view. This chapter deals about the related activities of *Junar* farming and production in sampled households in the study area.

5.4.1 Major Crops before *Junar* Cultivation

During the study period, it was tried to find out whether other crop dominate *Junar* cultivation or not. Before *Junar* cultivation, maize and millet were the major crops.

Table 5.9: Major Crops Before *Junar* Cultivation

S.No.	Description	No. of Households	Percentage
1.	Maize	31	41.34
2.	Millet	5	6.66
3.	Paddy	2	2.66
4.	Maize + Millet	37	49.34
5.	Vegetable	0	0
	Total	75	100.00

Source: Field Survey, 2006.

This table shows that 31 (41.34%) households had maize as major crop before *Junar* farming. Likewise, 37 (49.34%) households had both maize and millet, 5 (6.66%) households had millet and 2 (2.66%) had paddy as major crops.

5.4.2 Factors for Encouraging *Junar* Cultivation

When Sindhuli was declared as '*Junar* Pocket Zone' after construction of Bardibas-Sindhulimadhi road, people were interested to cultivate *Junar* from the professional point of view.

Table 5.10: Factors for Encouraging *Junar* Cultivation

S.N.	Description	No. of HHs	Percentage
1.	Self motivation	12	16
2.	Demonstration	0	0
3.	Government Agencies	53	70.67
4.	NGOs/ INGOs	6	8
5.	Others	4	5.33
	Total	75	100

Source: Field Survey, 2006.

Household saying that the agriculture office encouraged them to cultivate *Junar* comprises 70.67%, 12 (16%) households have been encouraged by self motivation, 6 (8%) by NGOs/ INGOs, and 4 (5.5%) by other factors.

5.4.3. Reasons for *Junar* Cultivation

Farmers have been increasing plantation of *Junar*. Most of the sampled farmers have started *Junar* cultivation from the commercial point of view and they depend on *Junar* production.

Table 5.11: Reasons for *Junar* Cultivation

S.N	Description	No. of HHs	Percentage
1.	Attractive market price.	8	10.66
2.	High production.	45	60.00
3.	Employment.	0	0
4.	Low Cost	9	12.00
5.	Loan	2	2.67
6.	Others & more than one.	11	14.67

Source: Field survey, 2006.

45 (10.66%) respondents said high production, 8 (10.66%) households said attractive market price, 9 (12%) households said low cost and labour, 2 (2.67%) households said loan and 11 (14.67%) households said other and more than one reasons mentioned above for the reasons of *Junar* cultivation.

5.4.4 Starting of *Junar* Cultivation

Most of the farmers have been cultivating *Junar* since the period of declaration as ‘*Junar* Pocket Zone’.

**Table No. 5.4.4
Starting of *Junar* Cultivation in SHH**

S.N.	Description	No. of HHs.	Percentage (%)
1.	Before 5 Years	2	2.66

2.	Before 10 Years	19	25.34
3.	Before 15 Years	15	20
4.	More than 15 Years	39	52
	Total	75	100

Source: Field Survey, 2006

39 (52%) households started Junar cultivation from the view of commercial in before more than 15 years, 19 (25.34%) before 10 years, 15 (20%) households before 10 years and so on.

5.4.5 Selling and pricing of Last Three Years

Junar is a cash crop nowadays. Junar has being a famous fruit in Nepal. Junar production has increased year per year in Sindhuli.

Table No.5.4.5

Junar production and Selling of Sampled Households of Study Area

S.N.	Year	Total Selling in Pieces	Average price per piece	Income (Rs.)
1.	2060	17, 90, 000	Re. 1	17, 90,000
2.	2061	18, 02, 000	Re. 1	18, 02, 000
3.	2062	18, 93, 000	Re. 1	18, 93,000

Figure : 3
Production and Selling of Junar in the Last Three Years

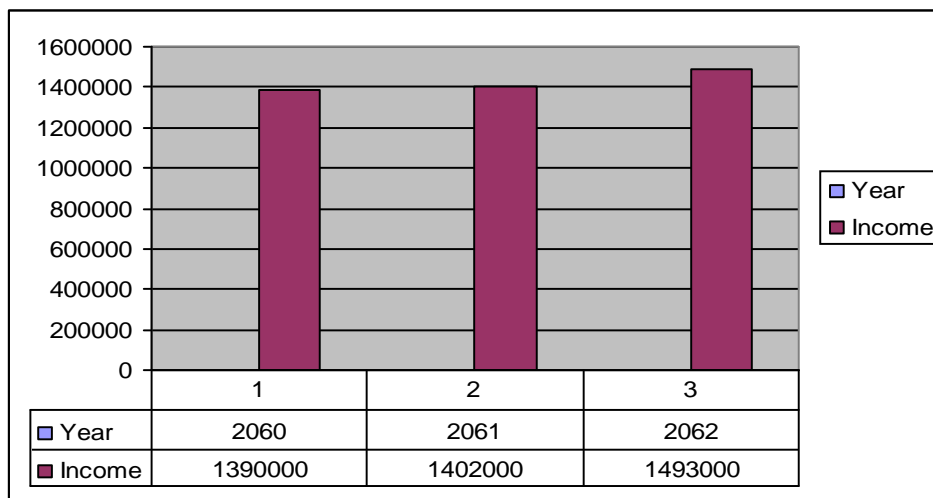
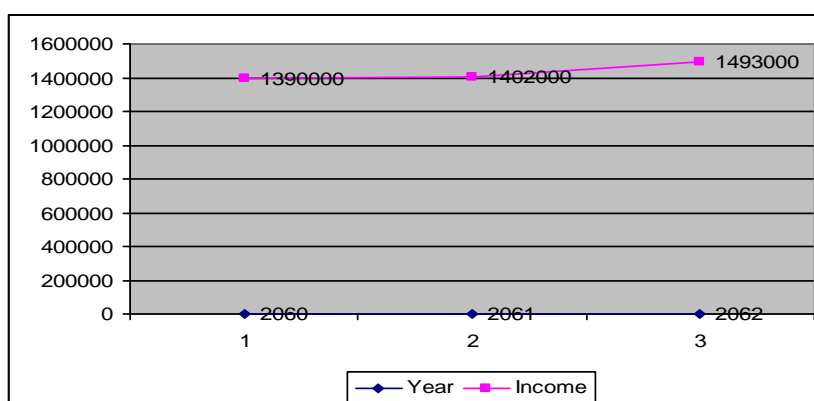


Figure : 4
Average price Trend of Junar of Three Years in Rs.



Based on the table no 5.4.5

The table depicts the information regarding the selling and pricing of Junar during the last three years. From the above figure no. 3 and 4, the selling and average price per piece of Junar of three years can be conceived. It shows that the selling has increased due to higher production because most of the farmers have growing stage of Junar trees. They reported that if there is favorable weather and less chances of natural calamities like hailstone, storm, diseases etc, the Junar trees yield higher production until maturity.

The average selling price per piece of Junar is constant for the last three years which is equal to Re.1. The respondents complained that they have not been getting reasonable price due to the lack of transportation because the intermediaries make double profit from them.

5.4.6 Other Socio-Economic Change After Junar Cultivation

Change in the law of nature. What is today shall be different from what it would be tomorrow. Our needs keep on changing. To satisfy our desire for change and our changing needs, social change becomes a necessity. Society's change is automatically determined by economic factors and economic change and social changes are co-related (Bhusan: 1994)

Social change is universal phenomenon. It occurs in all societies. Social change is community change. Every activity in the society influences everyone is society and also causes social change. Technological innovation, better education, modernity in lifestyle leads to social change. Modernization is the result of technological innovation which a society avoids the conservative and traditional things and adopts new things. It is the result of social change through better education, change in social behavior, political awareness and co-operation.

Table no. 5.8
Socio-Economic status before and After Junar cultivation.

S.N.	Description	Before Junar Cultivation							After Junar Cultivation						
		Poor	%	Moderate	%	Good	%	Total	Poor	%	Moderate	%	Good	%	Total
1.	Tiffin/ food	47	62.67	16	21.34	12	16	75	11	14.67	21	28	43	57.33	75
2.	Drinking water	51	68	17	22.66	7	9.4	75	17	22.66	35	46.7	23	30.67	75
3.	Health/ hygiene	32	42.67	30	40	13	17.34	75	13	17.34	37	49.34	25	33.34	75
4.	Cloth & ornaments	33	44	27	36	15	20.	75	14	18.66	24	32	37	49.34	75
5.	Housing	30	40	25	33.34	20	27	75	11	14.66	21	28	43	57.34	75
6.	Education	38	50.6	31	41.34	6	8	75	18	24	39	52	18	24	75

Source: Field Survey, 2006

Note:

S N	Description	Poor	Moderate	Good.
1.	Tiffin/ Food	not plenty of nutrition and delicious	made in home having nutrition	balanced
2.	Drinking water	not pipe water	seasonal pipe water	pipe water and safe
3.	Health and Hygiene	Not latrine and so on.	having pit latrine	Having latrine with knowledge about common diseases
4.	Cloth and Ornaments	not getting clothes according to weather season	having all seasonal clothes	sufficient
5.	Housing	old with straw roof	so and so	newly built with tin tiles slate roof
6.	Education	majority of F.M. under illiteracy	half of the F.M. literate	most of the FM. literate

Junar cultivation in study area is the most favorable, profitable fruit production. It has helped to improve the economic condition of farmers by increasing their real income. After Junar farming, farmers are able to fulfill their basic needs (food, cloth and shelter). They have become able to send their children to the school/college to improve housing condition. The condition of drinking water, health and hygiene and political awareness has been better than before. They are able to save money for the future security in their own co-operatives. Few of them have also bought fixed assets.

Nowadays, Junar farmers take part in agricultural exhibition, trainings, seminar related to Junar farming as well as taking part in social work. To cope with the problems of Junar farming, they share their knowledge and experience each other. Their interest to read newspaper, agricultural bulletins and listen to radio programs proves that the socio-economic status has risen-up than before.

5.5 Problems of Farmers

The Junar farmers are facing lot of problems, although it is highly profitable occupation, which have been discussed below.

5.9.1 Transportation and Market of Junar

Efficient marketing system and transportation are very important for agricultural producer. It plays a vital role to develop the Junar production sector also. Producers sell Junar mainly by two ways i.e. local market (Sindhuli Bazar) and intermediaries. There is no transport facility in production area. Porters are one and only means of transportation for Junar, that is why, school students also work as porters on holidays.

Table no. 5.5.1
Transportation and Marketing of Junar

S.N.	Description	No. of Households	Percentages
1.	Self	7	9.34
2.	Porters	19	25.33
3.	Intermediaries	49	65.33
	Total	75	100

Source: Field Survey, 2006

5.9.2 Technical Know-how

Technical know how or training is one of the most necessary components in any work for its success.

Table No. 5.5.2
Distribution of sampled households by training

S.N.	Description	No of HHs	Percentage
1	Trained	41	54.67
2.	Not up to date	23	30.66
3.	Untrained	11	14.67
	Total	75	100

Source: Field Survey, 2006

41 (54.67%) respondents are trained, 23 (30.66%) respondents are not up to date and 11 (14.67%) are untrained.

Although majority are trained, they have made unscientific inter-cropping on their gardens. Due to this, common diseases like gummosis, root rot etc. may attack the junar trees being a shallow rooted tree.

5.5.3 Loan

Loan is one of the factors for the investment. More investment gives us more profit. So, loan is a source for the capital.

Table No. 5.9.3

Distribution of loan practices

S.N.	Description	No. of HHs	Percentage
1.	Loan from Agriculture Development Bank	48	64
2.	Loan from local money lenders	6	8
3.	Other financial institutions	7	9.34
4.	No loan	14	18.66
	Total	75	100

Source: Field Survey, 2006

Majority of the households have loan from Agriculture Development Bank for Junar cultivation, which is equal to 64%.

5.5.4 Availability of Chemical Fertilizer, Pesticide and Improved Saplings in the SHHs

Chemical fertilizer, pesticides, improved variety of saplings and agricultural tools are very important for Junar production. These components play major role in agriculture. Majority of respondents reported that they feel difficult to get these inputs in time.

5.5.5 Cold Storage Facility

Cold storage facility is very important for the Junar cultivation. Because of the availability of cold storage, Junar can be preserved for a long time and delivered in market during off-seasons too. Thus, it helps to get more profit.

There is no large scaled cold storage facility in production area and few of the farmers have small scaled private cold storage made by their own effort based on the indigenous technology. So, farmers are compelled to sell their Junar immediately after harvesting it at the rate of average price Re. 1 per piece.

5.6 Current Efforts in Junar Farming

Banepa-Sindhuli-Bardibas Road (B.P. Highway)

It is a strategic highway of national importance passing via Junar production area. It is helping to reduce the transportation cost and distance to carry inputs for Junar farming. It will also help to extend production area in the catchments areas wherever feasible.

Green Roads

Green Roads from Aad-Sindhuligadhi-Chapauli and from Khaniyakharka-Ratanchura-Nakajoli-Tinkanya by D.D.C. Sindhuli with the support of D.R.S.P for the promotion of Junar farming are under construction.

Juice Factory

A Juice factory has been established in Madhibazar with share of farmers where only liquid is brought by crushing from the production area. It is helping to minimize the problem of transportation and market.

Cold storage

A large scaled advanced cold storage is going to be constructed in Dhungrebas, Sindhulimadi with the financial assistance of Government of Japan. It will help to solve the problem of market.

One Village One Product

Junar farming has been incorporated in the Budget Speech 2063 as 'One Village One Product' for the shake of promoting it.

5.9.1 Transportation and Market of *Junar*

Efficient marketing system and transportation are very important for agricultural producers. It plays a vital role to develop the *Junar* production sector also. Producers sell *Junar* mainly by two ways i.e. local market (Sindhuli Bazar) and intermediaries. There is no transport facility in production area. Porters are one and only means of transportation for *Junar*, that is why, school students also work as porters on holidays.

Table 5.15: Transportation and Market of *Junar*

S.N.	Description	No. of Households	Percentages
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	Total	75	100

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Table 5.16: Distribution of Sampled Households by Training

S.N.	Description	No of HHs	Percentage
1	Trained	41	54.67
2.	No up to date	23	30.66
3.	Untrained	11	14.67
	Total	75	100

Source: Field Survey, 2006

41 (54.67%) respondents are trained, 23 (30.66%) respondents are not up to date and 11 (14.67%) are untrained.

Although majorities are trained, they have made unscientific inter-cropping on their gardens. Due to this, common diseases like gummosis; root rot etc. may attack the *Junar* trees being a shallow rooted tree.

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Table 5.17: Distribution of Loan Practices

S.N.	Description	No. of HHs	Percentage
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There is no large scaled cold storage facility in production area and few of the farmers have small scaled private cold storage made by their own effort based on the indigenous technology. So, farmers are compelled to sell their *Junar* immediately after harvesting it at the rate of average price Rs. 5 per kg.

5.6 Supportive Efforts to *Junar* Farming of Sindhuli District

Banepa-Sindhuli-Bardibas Road (B.P. Highway)

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Juice Factory

A Juice factory has been established in Madhibazar with share of farmers where only liquid is brought by crushing from the production area. Its role in minimizing the problem of transportation and market have been vital.

Cold Storage

A large scale advanced cold storage is going to be constructed in Dhungrebas, Sindhulimadi with the financial assistance of Government of Japan. It will help to solve the problem of market.

One Village One Product

Junar farming has been incorporated in the Budget Speech 2063 as ‘One Village One Product’ for the shake of promoting it. Shindhuli for this propose has been associated with *Junar*.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

Nepal is basically an agricultural country. As an agro based country agriculture sector is very important factor to improve socio-economic condition of Nepalese people. Agriculture is the major source of livelihood for the people and backbone of country. Most of the land in Nepal lies in hilly region. So, the hilly part of the country is suitable for the high value crop like citrus fruit that can generate good income to the farmers and be helpful in uplifting their socio-economic status.

Junar has become one of the most important fruit that is cultivated from the commercial point of view in '*Junar* Pocket Zone' in Sindhuli. Farmers are interested to invest money in *Junar* cultivation. So, this study has focused *Junar* cultivation in Sindhuli as a major factor to get positive change in living standard of the farmers. The main objective of this research was to show the importance of *Junar* cultivation as a major indicator to progress socio-economic condition of the farmers.

In the study, data and information were collected through structured, unstructured questionnaire, face to face interview, informal taking, participant observation and case studies. The project work report entitled "Socio-economic Impact of *Junar* on Farmers" is an exploratory as well as descriptive research. Both primary and secondary sources of data have been used in the study. Seventy five households have been taken from three VDCs as of purposive sampling technique. The total population of sampled households is 527, where 48.77% is male and 51.23% female.

Majority of the households (60%) said that higher production in comparison to other cereal crops has the main reason for *Junar* cultivation and the government agency (Agriculture Office) encouraged them to cultivate *Junar*. 52% of the respondents have been growing *Junar* for 15 years ago.

Most of the households (84%) have used their upland (*Bari*) for *Junar* farming. Dalit respondents have used 0-10 *ropanis* of their land for it. Maize and millet were the major crops before *Junar*. 83.34% of households reported that agriculture is the main income source of them on which *Junar* shares the highest amount.

The farmers were found interested to increase *Junar* cultivation because of higher production and cash crop. *Junar* production has helped to boost up the socio-economic status of farmers of the study area. Their income has increased, which helped them to save surplus money. After *Junar* cultivation, 82.67% of selected households are able to save surplus money in different financial institutions for the purpose of future uses. The average income of the farmers by *Junar* is 24500. They have been selling their *Junar* for Rs. 5 per kg for the last three years. Their priority items of expenditures are fulfillment of food and cloths, education, ceremony, festivals, marriage etc. Their fooding, clothing, housing, health and hygiene, education status etc. have changed after *Junar* farming. This scenario shows the improvement of socio-economic condition of the farmers in relation with their status prior to adopting it.

The *Junar* farmers are facing a lot of problems such as transportation to market, different diseases of *Junar* etc. Most of the farmers (54.67%) have got training in regard to *Junar* farming but they have not applied the knowledge in a proper manner. Similarly, 64% of the farmers have got loan from the Agriculture Development Bank. Different agricultural inputs for *Junar* farming are not available in time.

6.2 Conclusion

From the commercial point of view, it came to know that the *Junar* cultivation is the most outstanding occupation of the *Junar* farmers in Sindhuli.

Based on the objective of the study and research questionnaire, the outcome of the study can be concluded as follows:

Present Status of *Junar* Production

1. Most of the farmers have produced *Junar* Commercially.
2. Majority of farmers have cultivated *Junar* on upland (*Bari*) and interested to extend *Junar* garden, if the problems to the regarding to the *Junar* cultivation are mitigated.
3. *Junar* has been taken as a main occupation by the farmers.

Socio-Economic Impact of *Junar*

1. The large amount of farmers income is shared by *Junar*.
2. The income of farmers has increased than before, which led them to fulfill their basic needs.
3. The overall socio-economic status of farmers has changed because of *Junar*.

Problems of Farmers

1. Transportation to market
2. Unavailability of different agricultural inputs in time
3. Lack of refreshment trainings and advice
4. Lack of cold storage
5. Different diseases of *Junar* like gummosis, root rot, fruit fly, etc.

6.3 Recommendations

The *Junar* cultivation is very profitable agricultural practice in Sindhuli district from the point of commercial view. Based on field survey, the outcomes show that the socio-economic status has changed in positive way. The climatic condition and soil characteristics are very much appropriate for *Junar* production in Sindhuli. Besides the positive points, some of the recommendations suggested for the improvement of *Junar* cultivation and farmers status are as follows:

- a) The *Junar* farmers need to pay attention to the following points:
 - * The farmers should cultivate *Junar* in scientific way adopting modern technologies.

- * The loan to *Junar* farming should be used properly and paid timely with high priority.
 - * Most of the farmers have planted *Junar* saplings from their own nursery and locally available nursery. Farmers are suggested to plant improved variety of saplings for the better production.
 - * The *Junar* farmers need to pay more attention to control insects pests diseases and from goats.
 - * The practice of unscientific inter-cropping and multi-cropping were found in horticulture farm which invites different diseases like gummosis, root rot etc. *Junar* being a shallow- rooted tree. Such practice should be strictly avoided.
- b) The Government Agencies, NGOs, INGOs, needs to pay more attention in the following:
- * The *Junar* cultivators have been suffering from a lot of problems like transportation, diseases of *Junar*, irrigation. Being the '*Junar* Pocket Zone' it is very necessary to solve these problems as soon as possible. If so, *Junar* production will increase up.
 - * There is no facility of cold storage. So, cold storages are necessary for storing *Junar* that could be sold during off-season and it helps to minimize the problem of selling *Junar* immediately after harvesting.
 - * Most of the farmers have not applied their knowledge in practice, although they are acquainted with trainings. So, it is necessary to make monitoring by concerned agencies to overcome the negligence of farmers.

Literature Related to Junar

There are very limited literatures found on Junar cultivation. So, some of relevant literatures of citrus are reviewed here along with Junar.

A study about horticulture was conducted by S.D. Chadhuari in 1975 entitled “A Brief Outline Plan for Horticultural Research and Development in Nepal”. In this study, it is indicated that although topographically and climatically Nepal is an ideal horticultural country, in actual practice, horticulture plays very insignificant role in the agricultural economy of the country. The study shows the prospect of horticultural crops of commercial importance even without irrigation in steep slopes which can protect watersheds to soil erosion and help to preserve ecosystem.

Another study was made by Lumle Agriculture Centre in 1989 entitled “Production Constraints of Mandarin in Western Development Region”. The study was based on the potential citrus growing areas of Syanga, Kaski, Tanahu, Gorkha and Lumjung which indicates that the Mid-hills are largely characterized by terraced upland and food grain crops like maize, millet, wheat and barley which are mostly grown under rainfall conditions, whereas it is experienced that mandarin farming is economically more profitable than cereal crops under similar conditions. Thus, citrus farming is able to provide a good source of cash income for poor farmers of the hilly region of our country of Nepal which protect the environmental degradation.

Since the objectives of the study were to identify the problems associated with citrus farming and fulfill the objectives a survey team consisting of two horticulturists, one is plant protectionist and another is Junar technician. The study was mainly concerned with technical type of problems specially of diseases. So many types of diseases were found as the problems of junar production such as greening, root rot due to phytophthora, pink disease, fruit fly, fruit dropping due to green stink bug, gummosis etc.

A study on “Fruit production in Kaski and Syangja” was conducted by food and agriculture marketing services Department /HMG in 1996. This study has indicated that fruit production can be enhanced through intensive (by the increase of land) cultivation practices. Similarly the study has indicated that many types of fruits, tropical to temperate

are adopted to the varied soil and climatic conditions of Nepal. However, looking into the ecological endowments the hill regions have been emphatically designated for various types of fruits productions.

The study was based on following objectives:

- To estimate the cost of cultivation of major fruits grown in the two districts.
- To estimate the total production and existing number of different fruit in general and those of citrus trees in particular.

The study has confirmed that due to the favorable climate and soil conditions, hill areas have attracted framers for producing fruits and suggested to provide various support services programmes are necessary for providing supplementary means for increasing and additional income to framers. But some deficiencies as observed in those districts by the study areas were categorized in the production problems and marketing problems.

Some recommendations were about research station development and substation cum-nurseries on the basis climatic and soil characteristics. Some tentative technical programmes, good organized, domestic marketing facilities, structures of research and development division are made and also pattern of commercial fruit development is suggested in this study.

Bhairab Raj Kainy published a book entitled “Junar production and protection” (written in Nepali), which was published by HMG Horticulture Project Kirtipur in the year 2043 B.S. This study has focused on the method of junar cultivation in Ramechhap and Sindhuli district. The writer has confirmed that the favorable climatic and soil condition of these areas have attracted farmers for the Junar cultivation. In this book the writer has discussed on various aspect of Junar cultivation such as origin of Junar method of plant product, orchard establishment, techniques of protection and idea of general storage. Likewise, he has also mentioned the description of production cost and revenue. Problems of various disease and barriers for the Junar cultivation are suggested to remove and protect them from various problems. The writer has given more emphasis on cultivation aspects and its techniques.

Duresh kumar Verma has published an article “Junar Kheti Ek Parichaya”(An Introduction to Junar Farming) on KISAN Quarterly publication of community welfare and development society Balaju. In this published article has stated that Junar production

plays an important role to the hilly farmers to some extent. Junar farming provides more income per unit area as compared to the cultivation of cereal crops. Introduction of junar cultivation covers the following matters:

- Importance of Junar cultivation
- Sampling of Junar
- Establishment of Junar orchard
- Measurement of production

This study has come up with similar conclusion to that of Bhairab Raj Kainy. Both writers have not focused on the production of Junar in the relationship between inputs and outputs.

HMG/FAO has jointly sponsored a training workshop entitled proceeding of “Small Farmer Marketing Extension Training Workshop” at Pokhara in 1987. In this training workshop D. Manandhar presented a paper on “Production of Fruit and Marketing Needs of the Farmers in Nepal”. The paper focused that fruit production plays a vital role to fulfill the basic needs of the people. Fruits are valuable sources of nutrients particularly vitamins and minerals required for a balanced diet. Fruit growing provides more income per unit area as compared to food grains. He has also mentioned about the main strategies to achieve the needs. There are so many constraints in fruit production and marketing such as lack of financial investment, highly perishable nature, lack of technical knowledge and shortage facilities. Similarly, there is lack of processing industries, grading, packing and prompt marketing information. Thus, for removing these problems, this study has recommended the following measures

There should be conducted a fruit production and marketing survey.

There should be developed the total market Haat, Bazars and fruit collection centre, Wholesale market should be established.

Grading and packing system should be developed.

Well organized marketing system should be developed.

A study made by Bed Raj Neupane(1995) on “Marketing of Junar Cultivation: A case study Ratanchura VDC of Sindhuli District.”. He has emphasized on the marketing sector of the Junar Particular area. The major objectives of his study were

- To get acquainted with general trend of Junar production
- To analyze the present marketing situation of Junar Production of Study area

- To identify the problems and prospects of Junar marketing

Regarding the above mentioned objectives Mr. Neupane, on his study, has concluded that the study area is climatically suitable for Junar cultivation recently started in more beneficial than single Junar cultivation in their farms.

So far as the present study is concerned, it is also not significantly different from the reviewed empirical studies; previously, its area is also limited to Cob-Douglas Production function taking five inputs as capital, plant, fertilizer, labor and insecticide.

The hilly part of Sinduli district (5 VDCs) is the study area for research. The available materials related to citrus production and socio-economic impact have been reviewed in the below.

Ghosh and Singh in their book deal with the citrus production in south Asia in present condition. The authors have been made to review the current status of citrus production, constraints management research and trade in different countries of South Asia. In depth analysis made in their direction clearly shows some commonalities of problem and prospects among the countries of South Asia.

The authors reveal that in South Asia, citrus does a very important crop comprise the six countries namely India, Pakistan, Bangladesh, Nepal and Sri Lanka. In South Asia two countries India and Pakistan shares 95 % of the total citrus production. Only in certain parts of India and Pakistan commercial sericulture exists and Bhutan and Nepal have traditional but expanding citrus industry.

Orange cultivation in Nepal is not considered as main occupation and small orchards mainly in the Home stead Act as secondary sources of income to most of the growers. In order to develop the citrus industry in country, it is necessary to give commercial touch to the citrus business. The studies have shown that with transfer of sound production technology and its adoption orange industry in Nepal should grow well and the Nepalese orange can make good in roads in India, Bangladesh and China town lying near the border even after meeting the needs of growing domestic market (Gosh and Singh1992).

FAO in its report focused on the citrus fruit Juice. The purpose of the report was to review the major developments which have been taken place in 1984 to 1988 in production and consumption of citrus Juice in particular concentrated juice and to analyze the underlying factor responsible for the domestic growth of international trade in these items. Finally, in view of the very fast expansion in output of citrus for processing and processing capacity in some areas especially attention is given to the outlook for international trade and possible market problems which could arise in the future.

According to the study about 20million tons of citrus are processed annually. This amount represents almost 40 percent of world output of citrus.

Two countries the United States and Brazil, account for over three quarters of the volume processed with a share of almost 80 percent, orange account for the largest part of all citrus fruit processed. Concentrated orange juice, mostly in the form of FCOJ is by far the most important item in the international trade in citrus juice. It accounts for almost 85 percent of exports of all types of concentrated orange juice increased dramatically during the last two decades (FAO1988).

Citrus crops Development Branch Kirtipur, Kathmandu has published annual progressive report for the fiscal year 059/2060. According to the report citrus fruit covers 23663 hectares and the production amount is 1319110 metric tons in Nepal. Among that eastern development region covers 5830 hectares, central development region covers 6720 hectares, Western development region covers 2896 hectares and Far western development region covers 1932 hectares in comparison with previous fiscal year 058/059. The citrus fruit has increased 1240 hectares in this fiscal year 059/060.

The government and private sector distributed 370036 of citrus plants in the fiscal year 059/060. Of which 9.97 percent of citrus plants were distributed by government and left of that were distributed by private sectors.

LARC has published working paper written by Shrestha Eatal. This paper states that mandarin (Citrus reticulata Blanco) is one of the most important sub-tropical crops in the middle hill (650m-1400m) of Nepal. This paper results that during the harvesting season (November –January) there is a glut in the market leading to the low price as well as spoilage whereas during the period of shortage, price goes up (LARC 1997). As a result, the economy benefit of this crop is not reaching the farmers. So the LARC, funded by department for international development (DFID) of the British government for storage designed and tested a low cost cellar store as a post harvest technology at Tapu village in 1991. This research paper suggests that mandarin could be safely stored for three to four months without loss in quality and quantity of the stored mandarins. From this research, it is found that the cellar storage is serially acceptable and economically profitable to the people (Shrestha, Subedi P.P., Thapa, J. J, 1998)

A research project entitled "A Study of Mandarin Orange Farming" in Manakamana village, Development committee, Gorkha district was carried out by Ashok Rajbashi in 1997.

In this mini research project the researcher has stated that in Manakamana VDC orange plantation is one of the important agricultural activities but in spite of many efforts of different institutions of GO then HMG and other organizations, it is still true that the return to the mandarin growers has been limited and enhance the level of income of the farmers to a desired level. This apparent reason for the situation is the assurance of diseases and pests and the existence of marketing problems when the production is good. Identification of crucial determining factors related to production, distribution

and processing of mandarins must have been starting point to devise ways to resolve the existing problems. (Ashok rajbanshi,1997).

G.K.Shrestha published a book entitled Fruit development in Nepal deal with the importance of fruit production in Nepal because of its agro-climatic condition and geophysical location.

In the book the writer says that in recent past, the government, semi government and private organizations working on agricultural development in Nepal has realized that fruits are very important on human nutrition as well as for improving the rural economy.

They have also agreed that fruit tree plants help in the preservation of ecology of fragile hills and mountains provided the trees are planted scientifically. Lately more and more emphasis on improving fruits trees culture and care has emerged between government and private sector to narrow the gap between the demand for fruits and their supply. (G.Shrestha, 1990)

NARC has published annual report. According to the report, the citrus is one of the most important and popular fruit crops grown in the hills of Nepal. It is grown commercially in different climatic condition like; tropical and sub-tropical and even in some favorable parts of temperate regions. The reports focus that the core problem is the low production and low marketing price in harvesting time. It is caused mainly due to the small area under citrus, lack of suitable varieties for growing in different seasons (Early medium and late) and poor management practices. Poor fruit quality and lack of suitable storage methods are the main reasons for low market price at harvest. (NARC, 1999)

HMG/department of food Agriculture and Market Service (DAFM) has conducted a study on topic Socio-economic Study on the area around Prithvi highway in 1979. In this study five VDCs were taken: Manakamana from Gorkha, Sisuwa from Kaski district, Chhang VDC from Tanahun district and Jivanpur and Benighat from Dhading district were taken as sample VDCs. In the report presented it was stated that in some regions, the facilities of transportations encouraged to some extent the cultivation of cash crops and fruits.

In conclusion of the report it was remarked that roads have a remarkable effect on the development of the production forces of agriculture. Road provides the opportunities for increasing income and boosting the socio-economic condition to the people. (HMG/DFAM, 1979)

Kantipur daily newspaper has published an article written by Prabhakar Grimire. The article was focused on the orange production and its impact. The writer says that most of the Nepalese people

expected governmental help even for small piece of work. But in contrast to the citizen of eastern part of Chitwan demonstrate their power and become an example of country.

According to writer, around thousand plants are planted in 40 Bigha and more than 50% plants are giving their product now the orange of this area is not only quantitatively productive, people of the area are earning around 18 lakhs rupees per year from orange farming and the main market of the orange of this area is Mugling Bazar. (Prabhakar Ghimire, 2004).

A thesis entitled orange production and socio economic change in Syangya. A case study of Karandanda was written by Netra Narayan Poudel in 1997. In this study the researcher has stated that the orange production has become one of the most important alternative economic activities in Karandanda. The main objective of the research was to throw some light on the orange production and socio economic change in Karandanda VDC of the Syangya district.

The conclusion of the research was that the people of Karandanda have produced more oranges and they have earned many rupees from it. The income from the orange production has helped to improve the socio economic condition of the people in Karandanda. The attitude of the people towards education has become positive and they have started sending their children to modern schools. Their ornament and dressing. They have changed their food habit and housing structures. The perceptions of the people on primary health care and sanitation have been increasing year after year. Because of the accelerated economic growth due to the orange production, the people of Karandanda have undergone a significant socio economic change.

The research has shown the major problems of the farming in the region, which related to technical supports and services, agriculture inputs, irrigation and storage facilities and markets. Similarly in study the researcher recommended to the governmental and non-governmental organization to establish the agro-industries so as to solve the problem related with orange cultivation of the Karandanda VDC (Poudel 1997)

A thesis entitled the role of fruit production in Rural Development, A case study of Mandarin orange Production in Babgok VDC of Gorkaha district was written by Buddhiman Shrestha in 1995

The study started agriculture as the major sources of income of that VDC and because of that the fruit farming have been expanded. Mandarin orange is leading crop of the community, which average cost of production is 1.55 KG. Based on the data benefit cost ratio is calculated Rs2.65 and indicates that if farmers invest Re1. During the productive stage he could receive worth Rs2.65. Thus the orange farming is beneficial one.

Besides direct benefit from the production, it also beneficial in other different purpose when trees grow old it can meet the demand of timber and Fire wood. So its farming should be extended in the locality.

The marginal price of the fruit crops becomes acceptable due to the highest productivity (Shreshth 1995)

A thesis paper entitled A Study of Orange Cultivation in Eastern hilly Region A case study **Chhintang** VDC of Dhankutta District was written by Sundar Kumar Rai in 1998.

In that thesis paper the writer has stated that Agriculture plays significant role in the entire economy of Nepal. There are several types of agriculture in Nepal. There are several types of agriculture in Nepal i.e. cereal crop farming, cash crop farming, livestock, rearing, horticulture etc. Among of the citrus is the dominate horticulture crops and orange is an important items which especially in the hilly region of country.

In the study area, after analyzing the different socio economic parameters of farmers the study concluded that the socio economic status of orange growers is higher than non growers. In terms of literacy status occupation, land holding size and food sufficiency the orange growers has better position those non growers.

The orange cultivation is facing a lot of problems such as unsystematic care and management orange cultivation lacked commercialization and modernization lack of irrigation facility, improved sampling, chemical fertilizer, agro chemical, insecticide, pesticide, Instead of problem farmers in the study are still optimistic for the future prospect orange (Rai:1998).

A thesis entitled orange cultivation in Sikkim, A case study of Sakyong Revenue Block of western Sikkim was written by Nar Bahadur Chhetri in 2002.

In that thesis the writer has stated the trend in area and production of orange is increasing, but sometime fluctuation due to physical condition such as hailstone, high rainfall etc.

The conclusion of the research is that the orange cultivation has a positive impact in rural economy. The socio-economy status of this study area is upgraded by orange production; but people are not adopting the orange cultivation from commercial point of views. The impact of development doesn't seem to be encouraging. If the farmers develop in an organized manner, it will remove the backwardness, poverty and illiteracy (Chhetri, 2002).

An Interpretation of Schultz's Transformation of Traditional Agriculture.

Agriculture is an important segment of traditional (feudal) economy, the transformation from feudalism to capitalism necessary implies a transformation of agriculture. Prof. Walter Theodor Schultz has given comprehensive and brilliant explanation of this question in his book "Transformation of Traditional Agriculture". In this characterization of traditional agriculture being oldest production activity of the society Schultz stated that traditional agriculture is niggardly this niggardliness is not a function of unique set of preferences related to work and thrift; it

predominately a consequence of farmers having exhausted the profitability of the techniques of production at their disposal; there is little or no incentive to save and invest in order to increase the stock of the forms of reproducible capital farmers are employing.

The doctrine of Prof. Schultz's states in his own words: "The man who is bounded by tradition in agriculture, cannot produce much food no matter how rich the land. Thrift and work are enough to overcome the niggardliness of this type of agriculture. To produce in abundance of farm products requires that the farmer has access to land and has the skill and knowledge to use what science knows about soils plants animals and machines. To command farmers to increase production is doomed to failure even though they have access to knowledge. Instead an approach that provides incentives and rewards to farmers is required. The knowledge that makes the transformation possible is a form of human capital, which entails investment. This investment is required not only in material inputs in which a part of this knowledge is embedded but importantly also investment in farm people."

To conclude Schultz's model of transforming a traditional agriculture into modern agriculture, is a brilliant success as it can be applied in most of the developing countries specially in adoption of the strategy of green revolution. This model can be considered outstanding as it emphasized modern agriculture as an engine of growth and acceptance of modern inputs for the promotion of agricultural production and the uplift of lifestyle of farmers. In the context of hilly country like Nepal Junar cultivation can be the relevant example of this doctrine.

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Appendix 1

Map of the Research Area

Appendix 2

Photos From the Field

Photo 1: *Junar* Cultivation in Nakajoli, Bhasheshor; 2006

Photo 2: Researcher with a Respondent, 2006

Photo 3: A private cooling house based on Traditional Technology, 2006

Photo 4: A farmer working in his *Junar* garden, 2006

Photo 5: Who cares..... *Junar* Vikash Sangh is then and there!, 2006

Photo 6: *Junar* Juice in the Market

(Photo courtesy: *Junar* Vikash Sangh, Sindhuli)

Photo 7: A *Junar* Tree with Fruits.

(Photo courtesy: *Junar* Vikash Sangh, Sindhuli)

Photo 8: Under Construction New Road (B.P. Highway) Crossing through 'Junar Pocket Zone', 2006

Appendix 3
QUESTIONNAIRE
M.A. In Rural Development

Socio-economic Impact of *Junar* on Farmers
(A study of '*Junar Pocket Zone*' in Sindhuli)

1. General information

Name of the household head:

District :..... VDC: Ward No.
.....
Age : Sex : Education
:.....

Occupation :

Total No. of the Family members:

2. Composition of the family on the basis of sex age education and occupation

S.N.	Sex		Age			Education				Occupation			
	M	F	<14	15-59	>59	Illiterate	C.I.	X-XII	College	G.S.	Business	Agri	Un
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

C.L. = Common Literate.
Agriculture
Unemp = Unemployment

G.S. = Government Service.

Agri =

- 3. How much land have you got? (in *Ropani*)**
- a) 0-10 b) 10-20
c) 20-30 d) 30-40 e) more than 40
- 4. What is the main income source of your family?**
- a) Agriculture b) Business/ Trade
c) Service d) Others
- 5. How much money do you earn from the agricultural product in each year ? (in Rupees)**
- a) < 10 thousand b) <20 thousand
c) < 30 thousand d) <40 thousand
e) > 40 thousand
- 6. How much money do you earn except agricultural product in each year ? (in rupees)**
- a) <10 thousand b) <20 thousand
c) <30 thousand d) <40 thousand
e) >40 thousand
- 7. From which crop do you earn more money ?**
- a) Paddy b) Maize
c) Millet d) Vegetable
e) *Junar* g) Others
- 8. How much land have you used for *Junar* cultivation? (In *Ropani*)**
- a) 0-10 b) 10-20
c) 20-30 d) 30-40 e) >40
- 9. When did you commercially start to cultivate *Junar* ?**
- a) Before less than 5 years b) Before 5-10 years
c) Before 10-15 years d) Before 15 years
- 10. Which was the major crop before cultivating the *Junar* ?**
- a) Paddy b) Maize
c) Millet d) Vegetable
e) Others.

11. Why were you motivated to *Junar* cultivation?

- a) Employment b) Attractive market price
 c) Low cost d) Higher Productivity
 e) Loan. f) Others

12. Who encouraged you for *Junar* cultivation in the beginning ?

- a) Government Agency b) Self motivation
 c) Demonstration d) Motivated by NGOs
 e) Other institutional help

13. In what types of land is *Junar* cultivated?

- a) *Khet* b) Upland (*Bari*)
 c) *Pakho* d) Near forest
 e) Others

14. Production, selling price and income from *Junar* in the last 3years?

Year	production in kg	Selling price per kg	Total Income
2060			
2061			
2062			

15. Cost of production of major crops (per *Ropani*)

S.No.		Paddy	Millet	Maize	Vegetable	others
1	Land preparation					
2	Seed					
3	Sowing					
4	Manu ring					
5	Weeding					
6	Pesticides					
7	Harvesting					
8	Others					
	Total					

16. Cost of production of *Junar* (per *Ropani*)

Land Preparation	plant	Sowing	Manuring	Weeding	Pesticides	Harvesting	Others

17. Have you been helped?

- a) by government b) by NGOs c) by VDC
d) by businessmen e) by others

18. Have you got training about *Junar* cultivation ?

- a) Yes b) No c) No up to date

19. Have you got any loan?

S. No.	Name of the institution	Loan rupees	Interest rate	Date of return	remarks
1	Agriculture Development Bank				
2	Nepal Bank				
3	Commercial Bank				
4	Cooperative				
5	Local money lenders				
6	Others				

20. Do you have any difficulties to get loan?

- a) High interest rate b) slow process
c) Far d) Ignorance
e) Others

21. Have you benefited from loan ?

- a) Yes b) No. c) So and So

22. Where do you sell your *Junar* ?

- a) Local market b) Intermediaries
c) Self business in the city d) Others

23. Is there any problem of transporting of *Junar* ?

- a) Yes b) No

24. How do your transport your *Junar* to reach market?

- a) Self b) Porters c) Others

- 25. Do you store *Junar*?**
a) Yes b) No
- 26. If you don't store why?**
a) No facility of cold store b) No knowledge about storage
c) Very far d) Others
- 27. Is there irrigation facility necessary?**
a) Yes b) No
- 28. Do you use pesticide to control harmful insect or diseases and chemical fertilizers?**
a) Yes b) No
- 29. Have you realized any difficulties to get fertilizer and pesticides?**
a) Difficulty to get b) Difficulty to get in time
c) Not sufficient d) Easy to get
e) Others
- 30. Sources of *Junar* saplings.**
Before three years at present
a) Self nursery a) Self nursery
b) Local nursery b) Local nursery
c) Agriculture office c) Agriculture office
- 31. Did you save money before *Junar* cultivation ?**
a) Yes b) No
- 32. Do you save money after *Junar* cultivation ?**
a) Yes b) No
- 33. In which items do you spend (based on priority 1,2,3,...)**
a) Education b) To fulfill the scarcity of food and cloth
c) Medicine d) Ceremony, festival, marriage
e) Fixed assets f) Others
- 34. Did you spend for them before *Junar* production ?**
a) Yes b) No

35. Before *Junar* cultivation what was the condition of following ?

- | | | | | |
|----|---------------------|------|----------|------|
| a) | Tiffin | Poor | Moderate | Good |
| b) | Drinking water | Poor | Moderate | Good |
| c) | Health | Poor | Moderate | Good |
| d) | Cloth and ornaments | Poor | Moderate | Good |
| e) | House structure | Poor | Moderate | Good |

36. In recent what is the condition of following ?

- | | | | | |
|----|---------------------|------|----------|------|
| a) | Tiffin | Poor | Moderate | Good |
| b) | Drinking water | Poor | Moderate | Good |
| c) | Health | Poor | Moderate | Good |
| d) | Cloth and ornaments | Poor | Moderate | Good |
| e) | House structure | Poor | Moderate | Good |

37. Most of the family member are

Before <i>Junar</i> cultivation	After <i>Junar</i> cultivation
Illiterate	Illiterate
Literate	Literate
Educated	Educated

38. Have you increased in *Junar* cultivated area per year?

- a) Yes b) No

39. Do you think you have well knowledge about *Junar* cultivation ?

- a) Yes b) No

40. Are you satisfied from the *Junar* cultivation ?

- a) Yes b) No

*** *The End* ***



Photo 7: Junar Squash in Market
(Photo courtesy: Junar Vikash Sangh, Sindhuli)



Photo 8: Junar Tree with Fruits
(Photo courtesy: Junar Vikash Sangh, Sindhuli)