

Study Report on Status of Areca-nut Cultivation and Processing Industries in Jhapa District



Government of Nepal
Ministry of Agriculture and Cooperatives
Department of Agriculture
Agribusiness Promotion and Marketing Development Directorate
Agribusiness Promotion Program
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Foreword

Commercial crops are of great importance for increasing the share of agriculture in Gross Domestic Product of the country. Commercialization of high value and low volume crops farming in the country is getting momentum at present. Majority of the farmers are switching from the farming of agronomic crops to the commercial crops. In this aspect, Areca-nut farming is gaining popularity among the farmers of eastern Nepal. Though farmers are trying to be commercial, there is lack of sufficient research and experiment in the Areca-nut farming and processing.

This study, therefore, aims to collect the basic information on the Areca-nut farming, its cultivation practices, marketing system and the scenario of processing industries.

I would like to thank Ms Sanju Rimal, Agriculture Economist, Mr. Ramraj Poudel, Agriculture Economist and Mr. Birad Siku Shrestha, Technical Assistant for primary data collection and report preparation.

I hope that this report will help in getting knowledge about the Areca-nut cultivation practices and the situation of the processing industries of Jhapa district. And, I really appreciate the valuable comments and suggestions from the readers toward this report.

31st Chaitra, 2068
Harihar Bhawan

Roseleen Maharjan
Program Chief
Agribusiness Promotion Program

Acknowledgment

Research is a basic need for development. In the absence of commodity wise research activities, appropriate and advanced processing system for a commodity cannot be identified. In this context, field study of cultivation practices and processing of **Areca-nut** was carried out as per the program of Agribusiness Promotion Program (ABPP) for the fiscal year 2068/069. This study report is an attempt to provide information on the existing farming system and processing system of Areca-nut in the Jhapa district.

For this, we are very grateful to many individuals and organizations for extending their kind and valuable supports towards the successful completion of this study.

At first, we would like to express our deep gratitude to Mrs. Roseleen Maharjan, Chief, Agribusiness Promotion Program for offering us this opportunity and valuable suggestions during the study.

We would like to extend thanks to Mr. Rajendra Prasad Kharal (Plant Protection Officer), Dr. Bhup Narayan Mandal (Fishery Development Officer), Mr. Surya Narayan Yadav (Horticultural Development Officer), Mr. Badri Prasad Poudel (Horticultural Development Officer), Mr. Salik Ram Bhattarai, Mr. Gopal Bastola, (Junior Technician) and all staff members of District Agriculture Development Office, Jhapa for disseminating their valuable knowledge and experiences to carry out the survey.

We would also like to thank Mr. Mohan Sivakoti (Chairman, Birtamod Agricultural Wholesale Market), Mr. Narayan Rijal (leader farmer and processor), Mr. Dhan Bahadur Shrestha, Mr. Prajaya Bhattarai, Mr. Suraj Bimali, Mr. Chhabhi Sivakoti, Mr. Tilak Thapa, Mr. Chhabhi Sivakoti, and many more Areca-nut farmers for their support and suggestion for the successful completion of the field survey.

Finally, the team would like to thank all Agribusiness Promotion Program staffs for creating conducive environment for the study. And, we really admire and appreciate the valuable feedbacks from the readers which will help in further improvement of the report in future.

Sanju Rimal, Agriculture Economist
Ramraj Poudel, Agriculture Economist
Birad Siku Shrestha, Technical Assistant
Agribusiness Promotion Program

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1. Introduction

1.1 Background

In an agrarian economy like Nepal, agriculture occupies a key place in the program of economic development. Agriculture has become a way of life for about 65% of the people. This sector is contributing nearby 30% to the GDP (CBS,2012). Moreover, crops account for about 60percent, livestock and forestry percent of the total agricultural gross domestic Product (AGDP). Agricultural diversification and commercialization have drawn attention of the planners and policy makers in terms of generating more income, employment opportunities and biodiversity conservation. The cultivation of high value and low volume crops and optimum utilization of the available resources for production, processing and marketing operations has been conceived for the sustainable development of the nation.

The eastern terai belt of Nepal (70 meters to 380 meters altitude) has a comparative advantage in the cultivation of Areca-nut. Compared to the traditional food grain crops like maize, wheat, rice cultivation of the Areca-nut has been found much more profitable.

1.2 Rationale of the study

Due to increasing demand for Areca-nut as a result of urbanization in the country, produce of Areca-nut are being imported in large quantity. In the viewpoint of import substitution, fetching of good price and reduction of the postharvest loss, establishment of Areca-nut processing industry is urgently needed and for this concerned matter, the Agribusiness Promotion Program has taken a self-effacing effort to vitalize the situation.

1.3 Objective of the study

The objective of the study was to explore the feasibility of Areca-nut processing industry in Nepal which will facilitate the entrepreneurs to establish Areca-nut processing industry in Nepal. The specific objectives of the study were:

1. To identify the pocket areas of the Areca-nut in Jhapa district.
2. To observe the existing farming and processing practices adopted by the farmers.
3. To identify the problems and constraints faced by the farmers.
4. To observe the existing marketing system and market linkages.

1.4 Scope of the study

The study was focused to reveal the existing production practices, marketing system and processing patterns on the production packets of Areca-nut over Jhapa district. Following are the details of the scope of work:

- Collect, compile and review available primary and secondary data/information
- Develop data collection tools, primarily interview schedules, checklists and questionnaires
- Develop survey methodology
- Identify chain actors—from input suppliers to processor
- Availability of service providers and their linkage/relationship
- Key constraints and opportunities to the processor
- Possible solution to key constraints for the processing professional

1.5 Study Area

The study was conducted in the potential Village Development Committees (VDC) of Jhapa district. The VDCs were selected jointly by District Agriculture Development Office, Jhapa and Agribusiness Promotion Program, Hariharbhawan, Lalitpur. Selected VDCs are as follows :-

- a) Budhabare,
- b) Sanischare,
- c) Khudunabari and
- d) Arjundhara

2. Methodology

Agribusiness Promotion Program adopted a holistic approach during this study period. Consultation with DADO, ASC, farmers, traders, processors, MMC, Birtamod was done during the collection of primary as well as secondary data.

Potential pockets of Areca-nut were selected after consulting with DADO. Selected VDCs were Budhabare, Sanischare, Khudunabari and Arjundhara. ABPP has developed two types of questionnaire for conducting survey; farmer's level questionnaire and processor level questionnaire. Sample farmers and processors from the selected VDCs were selected on the systematic random sampling basis. The questionnaire was then administered to 55 farmers and 6 processors.

Survey team also collected information through Video recording.

Survey data analysis was done using MS Excel as well as Statistical Package for Social Science (SPSS). Adobe Photoshop CS5 was used in editing graphics and report writing was done using MS Word.



3. General description of the production area

Jhapa district is located in the eastern development region of Nepal. West Bengal and Bihar of India borders it

and 2650 North Latitude and 8739 to 8812 East

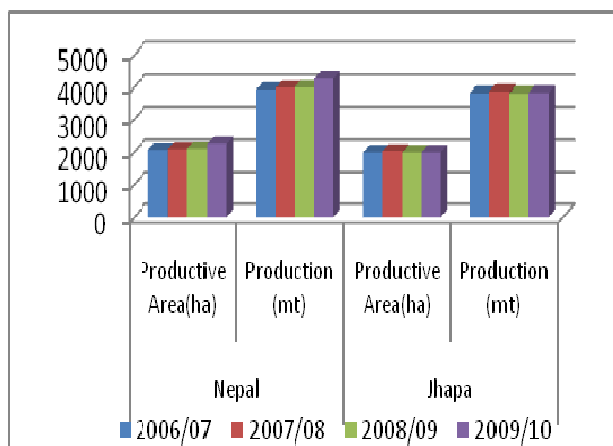
Longitude with an altitude ranging from 70 to 380 msal and occupies an area of 1,606 square kilometers (1,59,902 ha). This district comprises of 47 VDCs, 3 municipalities with Bhadrapur Municipality as a District Headquarter.

61.9 percent of total area,i.e. 98,716 ha is the total cultivable land of the district. Out of this total cultivable land, 37,447 ha have year round irrigation facility, 12,084 ha have seasonal irrigation facility, while 49,185 ha lacks irrigation facility.The mean monthly temperature is about 5-6°C in January anf about 38°C in June (DADO,2010). Maximum rainfall was recorded to be 720.60 mm in July and minimum rainfall being 0 mm in December in the FY 2066/067 (DADO,2010).



The population of this district is 755494 as per the census of 2068 B.S. (2012 A.D.). Main profession of the residents in this district is agriculture. Its agricultural land is 98,716 hectare. Main residents of this district are Bramhin, Chhetri, Rajbanshi, Limbu and Rai etc. This district is known as one of the most developed district of Nepal. Almost all the villages and towns are linked by road connectivity.

Areca nut cultivation was started in Jhapa district more than 50 years ago. It is mainly cultivated in Budhabare, sanischare, Bahundangi, Shantinagar, Arjundhara, Chandragdi, Dhulabari, Khudunabari, Dhaijan, Surunga, Anarmani, Garamani, Charali VDCs and Mechinagar Municipality.



Secondary information sources by Ministry of Agriculture and Cooperatives and District Agriculture Development Office, Jhapa during the period of 2006/07, 2007/08, 2008/09 and 2009/10 reported that the contribution of national level area of Areca nut are 94.67, 94.64, 94.64 and 86.69 percent and productive area is 96.64, 96.69, 94.66 and 87.68 percent respectively (See Table 1).

In the year 2006/07, total production of Areca nut in Nepal was 3922 metric tons. During the year 2006/07 to 2009/10, total production was in general increasing trends. In the year 2009/10 total production was 4266 metric tons, as compared to previous year (2008/09) the production was increased by 7.27 percent (See Table 1).

Table 1: Area, Productive Area and Production
(Area in hectare and Production in Metric Tons)

Fiscal Year	Nepal			Jhapa			Percent Contribution by Jhapa		
	Total Area	Productive Area	Production	Total Area	Prod ⁿ Area	Production	Total Area	Productive Area	Production
2006/07	2497	2054	3922	2364	1985	3819	94.67	96.64	97.37
2007/08	2498	2084	3972	2364	2015	3869	94.64	96.69	97.41
2008/09	2498	2098	3977	2364	1986	3813	94.64	94.66	95.88
2009/10	2727	2265	4266	2364	1986	3833	86.69	87.68	89.85
2010/11				NA	2333	6473			

Source: *Statistical Information on Nepalese Agriculture and DADO, Jhapa*

In the Jhapa district, from 2006/07 to 2009/10, the total Areca-nut cultivation area was constant (2364 ha), but the productive area in year 2006/07 to 2007/08 was increased by 1.51 percent and the productive area were constant throughout the year 2008/09 and 2009/10. And in year 2010/11, the productive area was drastically increased by 17.42 percent. The reason for the expansion of area under Areca-nut cultivation is mainly due to higher returns, less postharvest loss and easy cultivation of the Areca-nut compared to other crops.

The production is increasing year by year. It is because the old plants are being matured and giving more quantity of Areca-nut.



4. Result and Discussion

4.1 Socioeconomic status

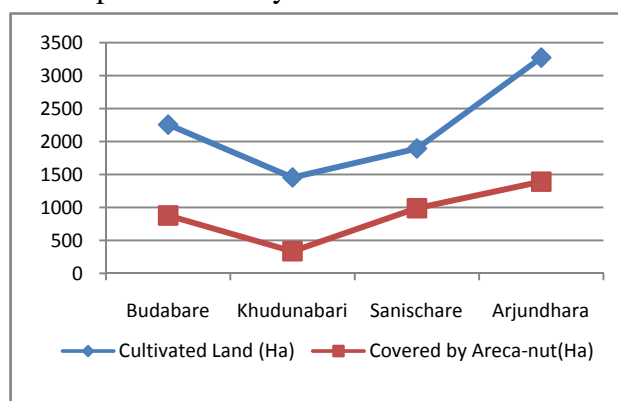
Land is one of the most economic assets of farmers as it indicates their living standards. The survey indicates that the area under Areca-nut cultivation in each sampled household averaged 0.24 ha in Budhabare, 0.13 ha in Khudunabari, 0.28 ha in Sanischare and 0.43 ha in Arjundhara VDC (See Table 2).

Table 2: Area, Fruiting and Non-fruited Plants of Areca-nut

S.N.	Name of VDC		land Acquired in Ha	Areca nut Coverage Area in Ha	No. of Fruiting plants	No. of Non Fruiting Plants	Total Plants	Total Prod ⁿ (Mt)
1	Budhabare	Total	3.04	1.18	595.00	295.00	890.00	49.60
		Average	0.61	0.24	119.00	59.00	178.00	9.92
2	Khudunabari	Total	8.26	1.91	2478.00	1588.00	4066.00	45.55
		Average	0.54	0.13	112.64	72.18	184.82	2.07
3	Sanischare	Total	6.82	3.75	14706.00	5521.00	20227.00	76.45
		Average	0.53	0.28	735.30	276.05	1011.35	3.82
4	Arjundhara	Total	1.35	0.57	15553.94	5869.23	21423.17	48.80
		Average	1.00	0.43	5184.65	1956.41	7141.06	16.27
Total of the Surveyed VDCs		Total	19.47	7.41	33332.94	13273.23	46606.17	220.40
		Average	0.39	0.15	666.66	265.46	932.12	4.41

Source: Field survey

Areca nut is a tropical (summer) undying fruit crop. The survey reveals that a farm household cultivating Areca-nut on an average harvested 9.92 metric tons in Budhabare, 2.07 metric tons in Khudunabari, 3.82 metric tons in Sanischare and 16.27 metric tons in Arjundhara VDCs. Out of the surveyed VDCs found the lowest average production 2.07 metric tons at Khudunabari and highest average production 16.27 metric tons in Arjundhara VDC respectively.



Survey found that each respondent has 666.66 numbers of fruiting plant and 265.46 numbers of non-fruiting plant. Data indicated that area under Areca-nut cultivation in Budhabare VDC was 878 hectare, Khudunabari VDC was 336 hectare, Sanischare VDC was 990 hectare and Arjundhara VDC was 1392 hectare.

4.2 Existing Farming Practices

Farming practices working by Areca-nut growers (farmers) are self acquired. The crop did not receive any technical and institutional support. This is mainly because of the limited technical expertise within this area.

a) Climate:

The areca palm is capable of growing under a variety of climatic conditions. Higher altitudes are not conducive for its production, though it can be grown up to 1000 metre above the sea level. It is unable to withstand extremes of temperature and wide diurnal variation. The best temperature at which it can flourish is from about 15° to 38° centigrade.



b) Land preparation:

The land is prepared well by digging or repeated ploughing and is leveled and terraced, if necessary channels are to be provided if the palms are to be grown under irrigated condition. Proper drainage facilities should also be provided.

Plantations are commonly found near the houses. Planting space used is inconsistent ranging from 1-2.7 meter plant to plant (PP) x 1-3 meter row to row (RR), but this could be mainly because of intercropping practiced by a majority.

c) Planting materials used:

Most of the farmers raise their own planting material. The crop is disseminating through seeds. Seed nuts are selected from the middle clusters of the second bunch from healthy, high yielding plants. Seed nuts are immediately sown after harvest or within a week after letting the husk rot. The former method is said to have faster germination. Seed beds are mulched with betel leaves or straw.

Good and healthy seedlings of 12 -18 months old are selected for transplanting in the main field.

Planting is generally done during May-August.

d) Varieties:

Several varieties of areca palm are cultivated. Following are the few important varieties being cultivated in Nepal :

Kalika, Shreedurga, Puja/Ganesh Supari, Chhali, Pakistani Sathiya, Jahaji, Aasame, Bangladeshi, Manipure, Guwa supari

e) Manuring and Weeding :

Manure is applied at planting time. 100g of nitrogen, 40 g of phosphorous and 140 g of potash along with 12 kg of compost/FYM per plant is recommended but farmers generally use about 10-15 kg of FYM per plant only.

Weeding is done time-to-time as per the need.

f) Major Insect/Pest and Diseases :

Insect/Pests: Mites, Spindle bug, White Grub, Caterpillar

Diseases: Bud rot, Fruit rot, Yellow leaf spots, Dieback, Nut splitting

g) Inter and mixed cropping:

The crops that are grown successfully in Areca-nut gardens without any loss of areca nut yield are banana, coffee, tea, ginger, turmeric, pepper, pineapple, betel vine, colocasia, yam and grass.

Intercropping in areca nut gardens helps the growers to get additional income and to cover the risk of poor yields, unfavourable weather conditions, incidence of pests and diseases, long pre-bearing age of 5 -8 years and fluctuations in the market price.

4.3 Cost of production, marketing cost and marketing margin

Cost of production is the summation variable cost and fixed costs, including household labor incurred during production process.

Variable cost: Variable costs are the cost at market prices level and incurred either in cash or as kind on items such as human labor, labor, plant (seed), manures, fertilizer, plant protection aids and other cost like transportation charges etc.

Fixed cost: Fixed costs are those cost that do not differ with size of activity and have no bearing upon decisions to up-down of production. It include land tax (revenue), interest on investment, depreciation etc.

Marketing cost: Marketing costs are summation of the produce preparation cost, handling cost, transportation cost, product losses cost, storage cost, processing cost etc under the sells and distributions process of the product.

Table 3 Cost of production per plant	
Labor (Human and Bullock) cost	50
Fertilizer/Manur	30
Irrigation	60
Rant of Land (Leasing rent)	160
Treatment	174
Annual Taxes	6
Repair and maintenance of Farm Equipment	50
Other cost	70
Variable Cost	600
Plant cost	50
Land preparation/planting cost	200
Fertilizer/Manur	170
Other	30
Fixed Cost	450
Total Cost (Variable cost+Fixed Cost)	1050
Source: Field Survey	

As per our field study, for each plant of Areca-nut, the variable cost was Rs 969.00 where as the fixed cost was Rs. 81.00. Thus, the total cost per plant was Rs. 1050. Farmers can harvest Areca-nut for 35-40 years.

After planting Areca-nut, farmers need to wait upto seventh year for getting

break-even point. Thenafter, they start getting benefit , which is shown in the table 4. One

Table 4: Cost and Return Analysis						
Year	Fixed Cost	Operating Cost	Total Cost	Return	Net Profit	Cumulative Cashflow
1	450	600	1050		-1050	-1050
2		600	600		-600	-1650
3		600	600		-600	-2250
4		660	660		-660	-2910
5		660	660	1568	908	-2002
6		660	660	1725	1065	-937
7		726	726	1897	1171	234
8		726	726	2087	1361	1595
9		726	726	2296	1570	3165
10		799	799	2525	1727	4891
11		799	799	2778	1979	6871
12		799	799	3056	2257	9128

tree can yield 14-18 kg nuts every year. Moisture rate is 15:1 Kg. The farmers who cultivate this nuts keeps only 1-2 kg nuts for themselves, rest all are sold.

Marketing margin: A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. The margin must cover the costs involved in transferring produce from one stage to the next and provide reasonable return to those doing the marketing.

4.4 Marketing Facilities

Producers (Farmers) directly sell their fresh Areca-nut (product) to the processor. Processors then process the raw Areca-nut . Processed items of Areca-nut common in Nepal are CK, RK, Dolo, Falte, Gowa, Kutka. These finished products are then sold to the wholeseller. Wholesellers then sell them to the traders from India, while only few of the wholesalers directly exporting to India. It has been found that there are few processors. Therefore, the producers (farmers) are compelled to expect the price fixed by the processor. The price of Areca-nut varies from market on account of differences in variety, grade, colour, maturity, moisture content, etc. The price fluctuation are not only due to variation in supply position of the commodity, but also due to availability or otherwise of the lack of transport facilities from one region to other, efficiency of the market services, availability of credit, processing and storage facilities and above all, the system of marketing free from exploitation. Transportation facilities in Jhapa was found to be good and there was one collection center as well as processing industry in Budhabare. Also, the wholesale market is successfully operating in Birtamod which provides marketing facilities to the surveyed VDCs.

Primary market: Birtamod, Surunga, Budhabare, Damak

Secondary market: Sanischare, Arjundhara, Mechinagar, Bhadrapur, Budhabare, Birtamod

Terminal market: India (Silgudi, Patna, Calcutta).

4.5 Market Price Analysis

The study indicated that out of the total production of Areca-nut 03 to 05 percent consumed at household level and 95-97 percent was marketable surplus at household level.

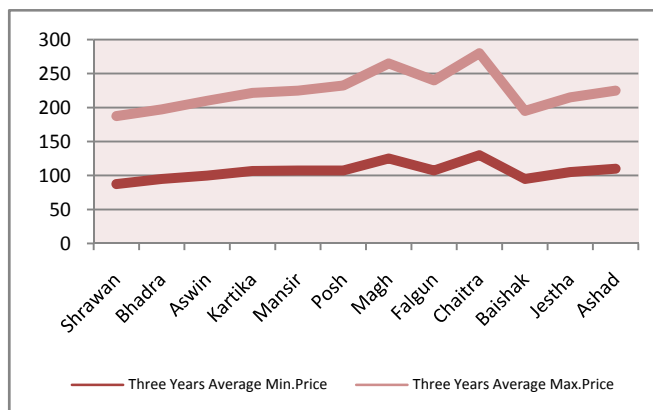
Table 4: Monthly volume arrival, minimum and maximum price at Birtamod Market

Fiscal Year	Price/(Kg) Vol.	M O N T H S						
		Shrawan	Bhadra	Aswin	Kartik	Mangsir	Poush	Magh
2064/65	Vol. (Kg)				31200	2100	2800	57800
	Min.Price				100	125	120	150
	Max.Price				115	125	150	180
2065/66	Vol. (Kg)	7400	7615	4150	10000	5100	36710	24512
	Min.Price	85	90	100	110	90	95	100
	Max.Price	100	95	100	120	110	100	100
2066/67	Vol. (Kg)		57230		2340			
	Min.Price	90	100	100	110			
	Max.Price	100	110	120	110			
Three Years Average	Vol.(Kg)	7400	64845	4150	43540	7200	39510	82312
	Min.Price	88	95	100	107	108	108	125
	Max.Price	100	103	110	115	118	125	140
Fiscal Year	Price/Kg Vol. (Kg)	M O N T H S						Total/ Average
			Falgun	Chaitra	Baishak	Jestha	Ashad	
2064/65	Vol. (Kg)		104500	96200	98500	106300		499400
	Min.Price		100	150	80	90		114.38
	Max.Price		150	180	90	100		136.25
2065/66	Vol. (Kg)		3560	7060	89001	89200	7840	292148
	Min.Price		115	110	110	120	110	102.92
	Max.Price		115	120	110	120	115	108.75
2066/67	Vol. (Kg)							59570
	Min.Price							100.00
	Max.Price							110.00
Three Years Average	Vol. (Kg)		108060	103260	187501	195500	7840	851118
	Min.Price		108	130	95	105	110	106
	Max.Price		133	150	100	110	115	118

Source: Special Issue 2065-2067, Agribusiness Promotion and Marketing Development Directorate

In the transaction at Birtamod Agricultural Produce Wholesale Market, three years moving average (maximum and minimum) price of Areca-nut was increasing in the month of Shrawan to the Magh and decreasing from Falgun to Chaitra. The degree of price fluctuation was highest in the month of Magh and lowest in Baishak respectively.

In the fiscal year 2064/065, average maximum monthly price was highest in the month of Magh (Rs. 180 per kg) with the volume arrival in the market being 57,800 Kg. It was lowest in the month of Baishak (Rs. 80 per kg) with the volume arrival in the market being 95,500 Kg.



In the fiscal year 2065/066, the average maximum monthly price was highest in the months of Kartika, Chaitra and Jestha (Rs.120 per kg) with the volume arrival during the same months being 10,000, 7,060 and 89,200 Kg respectively. It was lowest in the month of Sharwan (Rs.85 per kg) with the volume arrival in the market being 7,400 kg.

In the fiscal year 2066/67, average maximum monthly price was highest in the month of Aswin (Rs. 120 per kg) with the volume arrival in the market being 52,040 Kg. It was lowest in the month of Shrawan (Rs. 100 per kg) with the volume arrival in the market being 57,230 Kg.

4.6 Processing Scenario and Potentialities:

Areca-nut harvesting and processing is a complete people concentrated work. It is difficult to be a one man show for this business enterprise. It is a complete team work.

Steps involved during processing of Areca-nut are as follows:

1) Harvesting:

Red Variety Nut (CK, RK): It is plucked while the husk is still green or at the tender stage

White Variety Nut (Dolo, Falte): Matured nuts are harvested for this purpose. The color of the husk indicates the stage of maturity. Bunches are plucked when the color of the husk becomes pinkish red.

By the October end, ripening of nut starts and it lasts upto the end of January. So the harvesting generally starts from October to January end.

2) Plucking: Bunches of Areca-nut appears near the top, close to leaves. Climbing up an Areca palm and plucking the bunches is considered to be a special art and technique.

- 3) **Boiling:** Immediately after the fresh nut is taken out, it has to be boiled with high temperature for minimum of 12 hrs. For efficiency purposes, two huge metallic vessels of capacity of 600 liters are being used as seen in the below picture. The Areca-nut seed has to be filled in to the vessel mixing with sufficient water. Along with the water, the Areca-nut precipitate has to be mixed to get good color. This process requires lot of firewood while boiling. Arrangement of firewood has become another problem for the farmers. So, most of the processors of Jhapa was found to reuse the husk of Areca-nut after sundrying as firewood.
- 4) **Dehusking:** Trained women coolies are employed for husking, which they do it with the help of ironed sharp knife which is fixed on wooden piece (Hasiya). It is very tedious work, so the need of some special machinery tool for dehusking is felt. The main problem faced by farmers these days are of getting specialized labor for this work.
Generally 15 Kg of Arecanut is dehusked by a person in a day. They get Rs 30 /kg for dehusking.
- 5) **Drying and Grading:** Boiled kernels are the dried on a special bamboo mats for about 6 to 8 days under the sun which are spread on a land platform. Every day in the morning, the nuts are spread to get sufficient sunlight and in the evening, spreaded nuts are collected in heap and covered by the gunny bags to protect it from the falling of dew during the winter nights. After having repeated this process for about 6 to 8 days, thereafter , the nuts are sorted and graded into different varieties called CK, RK, false.
The fully ripened nuts are merely dried soon after the harvest in the sun for about 40 days without removing the husk.
- 6) **Coloring:** After the boiling of Areca-nut in a copper vessel, the water remained in the vessel is not wasted, in fact, it is re-boiled for a couple of hours and little thick liquid is prepared and now it is called tannin. The sorted and graded tender nuts are soaked or coated in this tannin to get a glossy and attractive red appearance. This process is called coloring. After the coloring, nuts are kept again under the sun for about 4 hours and in the evening time, it will be packed in a gunny bag. Now it is ready for marketing.
This step of coloring is rarely practiced in Nepal.
- 7) **Preparation of Factory varieties:** Some of the processors store the harvested ripe nuts in pits for consumption during off season. This variety is called Gowa supari in Nepal which has good market demand. After storing for period of one year also, it can be sold in the market.

Grading:

The Areca-nut will have to be graded into several varieties to suit the consumer taste. CK variety is considered to be best in taste, colour, appearance and it fetches highest price with the RK variety being of second grade. Each variety has got its own market and is consumed by people from different part of the country.

Once the drying and grading process is over, it can be packed in and kept for any number of days before selling it in the market. For every 100 kg of raw Areca-nut fruits, can expect the final dried Areca-nut in the range of 13-15 kg.

4.7 Need of the Processing Industry

There are about 6 processing industries in the district. These industries produce dry (Ready to consumption). These processing industries collect the raw materials mostly from the local farmers on a contract basis. Most of the processors were found to be dissatisfied from their profession because of the local product being dominated by imported product (Areca-nut imported via Singapore), government's open import policy, lack of subsidy, lack of skilled technician and technology, weak extension program, etc.

Processing industries diversify the product thus producing processed item for consumption, which can minimize transportation cost by reducing the volume of product, generate employment opportunities, reduce losses and damage, add value thus fetching higher price, etc. In case of Areca-nut, this product can't be consumed directly after harvesting. Processing is must. So, processing industries are to be established for value addition as well as enhancing the export.

S.N.	Before Processing	After Processing	
	Selling price (Rs/Kg)	Particular	Selling Price (Rs/Kg)
1	10-20	CK	200-225
2	10-20	RK	90-125
3	10-20	Falte	100-120
4	10-20	Dolo	120-140
5	10-20	Guwa	75-90

Source: Field Survey

From above table also, it is much clear that we can add value upto 10 times after processing Areca-nut.

4.8 Major problems of the farmers

Most of the farmers are cultivating Areca-nut conventionally. They are thus unable to reach upto the production potential. There is no availability of technically sound manpower in Areca-nut cultivation in Nepal. Site selection, irrigation, manuring, other intercultural operations are done haphazardly. Planting materials as well as varietal selection is also not practiced. Farmers were facing the severe problems of Dieback, Nut Splitting, fruit-rot and incidence of white grub, mites, ant. Control measures of these diseases and pests were unknown to the farmers. Thus they demand for the training and the technological assistantship from the government sector.

Another problem is of not fetching good price of their produce. There is unorganized market of Areca-nut. Dominance of Areca-nut imported from Singapore is masking the domestic produce. So they demand for the government to manage marketing, stop the entry of foreign Areca-nut as well as fix the price of their produce.



Processing Plant



Finished Product



Information received from respondents

5. Summary and Conclusion

5.1 Summary

Agriculture sector has been considered the most important sector in Nepalese economy as it contributes about percentage of the Gross Domestic Product (GDP) and employes about 65% of the economically active population. The eastern terai and lower hills up to 1000 masl has a comparative advantage of cultivating Areca-nut. It is easy to cultivate as well as fetch higher price than agronomic crops.

Jhapa, Morang and Sunsari are the districts which are climatically suitable for Areca-nut cultivation . Among these three districts, Jhapa is the promising one with pocket areas of Areca-nut spreading over 14 VDCs of the district.

The objective of the study was to explore the feasibility of Areca-nut processing industry in Nepal which will facilitate the entrepreneurs to establish Areca-nut processing industry in Nepal. Due to time as well as budget limitation, we carried our study on Jhapa district only. Potential pocket of Areca-nut was selected after consulting with DADO. Selected VDCs were Budhabare, Sanischare, Khudunabari and Arjundhara. The study was thus focused to identify the pocket areas of Areca-nut in the district . Consultation with District Agriculture Development Office, Agriculture Service Centre, Farmers, traders, processors and market management committee was done during the collection of primary as well as secondary data. Sample farmers and processors from the selected VDCs were selected on the systematic random sampling basis. The questionnaire was then administered to 55 farmers and 6 processors. Survey team also collected information through Video recording. Survey data analysis was done using MS Excel as well as Statistical Package for Social Science (SPSS). Adobe Photoshop CS5 was used in editing graphics and report writing was done using MS Word.

The existing farming and processing practices adopted by the farmers were also studied which was found to be traditional. Most of the farmers were found to use the sapling raised from the seed by the local private nursery or as raised on the field of their own. They applied FYM only (12-15 kg per plant) during the plantation period. Major problems faced by the farmers are diseases like nut-splitting, fruit rot, premature fruit fall, dieback and

insects/pests like white-grub, ants, mites, termites. There is wider scope for the research and development in Areca-nut cultivation.

97-98 percentage of the total product is sold for processing while only 2-3 percentage is kept for household consumption. There were just 6 processing industries in Jhapa district which is not sufficient for the processing of the Areca-nut produced over the district. It is due to the processing technology being traditional, unscientific as well the lack of skilled manpower .So, most of the farmers were compelled to sell their raw produce to the trader at lower prices (Rs.10-20/Kg). Those traders, mostly being Indians, would process the raw Areca-nut and then export to India at higher prices (Rs.90 to 200/kg depending upon type and quality). Processed items of Areca-nut are CK, RK, Falte, Dolo and Gowa Suparies.

5.2 Conclusion

The following conclusions are made based on the findings:

Areca-nut cultivation is gaining popularity among the farmers of western Nepal.

Average land holding per household under the surveyed VDCs of Jhapa district was found to be ha. The survey indicates that the area under Areca-nut cultivation in each sampled household averaged 0.24 ha in Budhabare, 0.13 ha in Khudunabari, 0.28 ha in Sanischare and 0.43 ha in Arjundhara VDC .

Majority of the farmers are using the sapling raised from the seed by the local private nursery or as raised on the field of their own.

Majority of the farmers use FYM only (12-15 kg per plant) during the plantation period.

Major problems faced by the farmers are diseases like nut-splitting, fruit rot, premature fruit fall, dieback and insects/pests like whitegrub, ants, mites, termites.

Generally, 97-98 percent of the produce is sold , keeping only 2-3 percent for the consumption.

Most of the farmers sell their Areca-nut on contract basis to the local as well as Indian traders without processing their produce.

Average farmgate price of the raw Areca-nut was Rs. 14 per kg ranging from Rs.10 to Rs. 20 per kg. Farmers fetched higher price (Rs.20 /kg) during the months of Poush-Magh and lower price (Rs.8 /kg) during the month of Bsishak-Jestha .

About 6 processing industries was found in the Jhapa district. These industries collect the raw Areca-nut mostly from the local farmers on a contract basis and process to the form which is ready for consumption.

Processed items produced by those industries are CK, RK, Falte, Dolo and Gowa Suparies. Mechi Pahadi Fruit Center is also producing Kutka and Chips which is yet to be launched in the market.

Average processing cost was found to be Rs.10/kg.

Average selling price of CK was Rs200/kg, RK was Rs.120/kg, Falte Rs.100/kg, and Dolo Rs.120/kg and Gowa Rs.75/kg respectively.

Husk of the Areca-nut obtained after processing are dried and reused as firewood for the processing.

Processing technique being practiced in Jhapa district was found to be traditional which is tedious as well as reduces the quality of the produce, thus increasing the processing cost and fetching lower price.

6. Recommendation

As the farmers are cultivating Areca-nut traditionally, productivity is not satisfactory. Also, there is lack of technically sound expertise on Areca-nut cultivation. Research on Areca-nut cultivation as well as its integrated pest management technology is to be accorded a high priority. Moreover, there is urgent need of producing technically skilled manpower and providing such technology to the farmers.

Areca-nut, which can be the promising commercial crop for Nepal should be given high priority by the government. Special programs for increasing the production and productivity of Areca-nut should be launched very soon. For example, we need to identify the production pockets of Areca-nut and then practice 'one village one product (OVOP)' type of program for this purpose.

The wide gap between the selling price of raw Areca-nut and processed Areca-nut suggests the necessity of establishing more processing industries. Appropriate processing technology should be developed and demonstrated. Then after, processors are to be trained and thus supported financially by the government (in case need). This would certainly help the farmers fetch good price of their produce.

Market of the Areca-nut is not well managed in Nepal. Nowadays, Nepal is being used as a transit point for the illegal trading of Areca-nut. Most of the farmers complain of getting lower price of their produce because of the dominance of Areca-nut which is imported to Nepal via Singapore. They are generally mixed with Nepali produce and then exported to India by using the Certificate of Origin from Nepal. This practice is discouraging Nepali farmers. So, the Ministry of Agriculture and Co-operatives, Ministry of Industries and Commerce as well as Custom Department should take an immediate action for controlling such illegal trading so as to benefit our farmers.

Annexes

Annex I : कृषक/कृषक समुह/प्रशोधन कर्तासंग सोधने प्रश्नावली

- जिल्ला : भापा कृषक समुहको नाम : ठेगाना :
१. कृषकको नाम :
 २. समुहको सदस्य संख्या :
 ३. खेती गरीएको क्षेत्रफल : ४. सिंचित क्षेत्रफल :
 ५. सुपारी खेती गरीएको क्षेत्रफल:
 ६. लगाईएका जातहरु
 ७. अन्य बालीलगाईएको भए
 ८. फल दिने बोट संख्या
 ९. फल नदिने बोट संख्या:
 १०. कति वर्ष पछि फल दिन सुरु हुन्छ ?
 ११. प्रति बोट उत्पादन
 १२. फल दिने अवधि:
 १३. कूल उत्पादन
 १४. घरायसी उपभोगको परिमाण
 १५. ताजा विक्री परिमाण
 १६. प्रशोधनको लागि छुट्याईएको परिमाण
 १७. सुपारीको प्रशोधनबाट उत्पादित वस्तुहरु
 १८. विक्री प्रकृया
 - क) आफै बगैचाबाट टिपेर नजीक बजारमा ख) समूह
 - ग) सहकारी घ) बोटबाटै विक्री ड) प्रशोधन उद्योग च) भण्डारण गरी बजारको माग अनुसार
 १९. बजार (विक्री वितरको लागि)
 - क) स्थानीय बजार ख) जिल्ला भित्र स्थान
 - ग) जिल्ला बाहिर स्थान घ) भारत तथा अन्य मूलुक ड) भण्डारण गरेर बजारको माग अनुसार
 २१. आफ्नो उत्पादनलाई प्रशोधन गर्नु भएको छ ? यदि छ भने,
 - क) प्रशोधनबाट कुन कुन वस्तुहरु उत्पादन गर्ने गर्नु हुन्छ ? ख) कस्तो किसिमले प्रशोधन गर्ने गर्नु भएको छ ?
 - ग) सुपारी प्रशोधनका लागि उपर्युक्त तरिका के के अपनाईएका छन् ? घ) अनुमानित उत्पादन लागत कति छ ?
 - ड) सुपारी खेतीबाट अन्य बालीका तुलनामा के कति फाईदा पाउनु भएको छ ?
 २२. उत्पादन स्थल देखि बजार सम्म पुर्याउँदाको खर्च
 - क) टिपाई ख) ग्रेडिंग ग) भण्डारण घ) ढुवानी ड) अन्य
 २३. ताजा फलको विक्री मूल्य.....
 २४. प्रशोधन लागत के कस्तो/कसरी छ ?
 - क) ख) ग) घ) ड)
 २५. प्रशोधित वस्तुको बजारहरु
 २६. प्रशोधित वस्तुहरुको विक्री मूल्य
 २७. अन्य उप उत्पादनहरु (By-product)
 २८. उप उत्पादनको उपयोग वा विक्रीबाट हुने आम्दानी
 २९. सुपारीको प्रशोधन सम्बन्धी अन्य सरकारी तथा गैरसरकारी निकायबाट प्राप्त सहयोगहरु
 ३०. सुपारी उत्पादन सम्बन्धि समस्याहरु भए,
 ३१. समस्या समाधानको लागि गरिएका प्रयासहरु :
 ३२. अन्य केही आवश्यक सहयोग केही भए.....
 ३३. अन्तमा तपाईंको केही सुझाव भए

Annex II : जिल्ला कृषि विकास कार्यालय सँग सोधिने प्रश्नावली

१. जिल्लाको क्षेत्रफल
२. जिल्लाको कुल खेती गरिएको भूभाग
३. जिल्लाको उचाई
४. जिल्लाको सरदर तापक्रम
५. जिल्लाको सरदर वर्षा
६. जिल्लामा सुपारी खेती गरिएको क्षेत्रफल
७. जिल्लाको सुपारीको पकेटक्षेत्रहरु (गा.वि.स. को आधारमा)
८. जिल्लामा एक गाँउ एक उत्पादन कार्यक्रम लागू भएको भए,
क) लागू भएको मिति
ख) लागू भएका गा.वि.स.हरु
९. जिल्लाको कुल उत्पादन तथा उत्पादकत्व
१०. सुपारीको खेती विस्तार, प्रशोधन तथा बजारीकरणका लागि संचालन भएका कार्यक्रमहरु
११. सुपारीको उत्पादन लागत
१२. जिल्लामा अवस्थित सुपारी प्रशोधन उद्योगहरु
१३. उत्पादित सुपारीको बजार
१४. जिल्ला कृषि विकास कार्यालयबाट संचालित कार्यक्रमहरु र तिनबाट परेको प्रभाव :

Annex III: प्रशोधन उद्योगहरु सँग सोधिने प्रश्नावली

१. नाम:
२. ठेगाना:
३. स्थापित मिति:
४. लगानी:
५. प्रशोधित वस्तुहरु:
६. प्रशोधनको परिमाण:
७. प्रशोधनमा समेटिएका गा.वि.स.हरु तथा अन्य छिमेकी जिल्लाहरु:
८. आवश्यक कच्चा सुपारीको स्रोतहरु:
९. प्रशोधित सुपारी बजार:
१०. प्रशोधन लागत/खर्च:
११. जनशक्ति:
१२. प्रशोधनको प्रकृया:
१३. प्रशोधनको प्रविधि:
१४. कच्चा सुपारीको खरिद मुल्य:
१५. ढुवानी खर्च:
१६. प्रशोधन पश्चातका प्रशोधित वस्तुको विक्री मुल्य:
१७. केही सुझाव, अपेक्षाहरु भए,
१८. केही समस्याहरु भए,

Annex IV: पत्रपत्रिकामा सुपारी सम्बन्धित प्रकाशित केही समाचारहरु :



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