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Economics of Areca nut Cultivation in Karnataka, a Case Study Of Shivamogga District.

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I. Introduction:

The arecanut palm, Areca catechu L. is the source of the common masticatory nut,popularly known as arecanut. Arecanut is one of the most important commercial crops in the Southeast Asia. The cultivation of arecanut can be traced back to Vedic periods. Arecanut was even used in Ayurvedic and Ethane veterinary medicines. Popularly known as betel nut or supari, arecanut grown in India, China, Bangladesh, Myanmar, Thailand, Malaysia, Indonesia, Philippines & Srilanka. India ranks first in arecanut production in the world. In India the cultivation of arecanut is mostly confined to Karnataka, Kerala & Assam.It is also cultivated to a small extent in Tamil Nadu, West Bengal, Maharastra, Andra Pradesh, Meghalaya,Goa,Tripura, Puducherry,Mizoram,Andaman and Nicobar Islands. The share of Karnataka,Kerala & Assam in terms of total area under cultivation and production is around 83 percent. Karnataka stands first both in terms of area & production followed by Kerala & Assam. The area under arecanut cultivation has increased more rapidly in Shimoga district as compared to Dakshina Kannada & Uttara Kannada districts**.**

II. USES

1. Masticatory and Socio-Religious uses: The practice of chewing the arecanut either alone or in combination with betel leaves of pan ,lime,tobacco,camphor of spices,the combination then being called "tambula" has been in existence from time immemorial. Chewing is to increase the production of saliva and gastric juices and thus aid in the digestion.It is belived to strengthen the gums & the teeth & cleanses & deodorizes the mouth.It is also an appetizer & a stimulant. The offering of betelnuts & flowers,placed on a few leaves of pan, in pujas or worship is a very common,traditional time honoured practice.Persons held in esteem are offered a few pieces of arecanut with betel leaves as a sign of respect and welcome,while entering the house.Again,exchange of betelnut with betel leaves between marriage contracting parties is an important part of betrothel ceremonies throughout India.It was also a common practice for long,among the cultivating tenants in Kerala & Karnataka & perhaps in other states as well,to offer the landlord a few arecanuts while paying the rent.
2. Medicinal Uses: Arecanut is used against leucoderma,leprosy,cough,fits,worms,anaemia and obesity,as a purgative & as a stimulant & an appetizer

According to FAO estimation, the total area under arecanut crop in the world is 468316 hectares and the production is 593275 tonnes.Of this India's contribution in terms of area and production is 57 percent and percent 53 respectively. In terms of area and production the share of Indonesia is 16 percent & 5 percent, China 16 percent & 29 percent, Bangladesh 8 percent & 5 percent, Myanmar 6 percent & 5 percent, Thailand 2 percent each & Malaysia 1 percent each.

The area under arecanut is around 4 lakh hectares with a production of around 4.78 lakh tons in India. Karnataka and Kerala together account for 70 percent of area and production of arecanut. In Karnataka, around 2.15 lakh hectares are under arecanut cultivation. Chickmangalore district stands first in both area and area followed by Shimoga,Davanagere districts. At present, arecanut is cultivated in 140 out of 175(80percent) of the taluks in Karnataka,with Kadur taluk ranking first in both area and production, followed by Channagiri and Bhadravathi taluks. The area under Shivamogga district arecanut is 94077.50 hectares with a production of around 52781 Metric tonns.

Objectives

- Arecanut production in the world and in India.
- Socio-economic background of sample farmers
- Problems of Arecanut Cultivators for selected area in Shivamogga District.
- To make suitable policy recommendations in the light of the analysis to influence the public policy Methodology

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Selection of the sample villages & Farmers.

The total sample size is 54 farmers, 19 farmers from Sagar taluk, villages were Avinahalli and E.J.Mane , 19 farmers from Thirthahalli taluk villages were Kotegadde and Hosathota and 19 farmers were selected from Gajanur & Hossalli

Villages in Shivamogga Taluk . With in the taluk out of two villages selected for the purpose 18 farmers are selected randomly from each village equally from different farm categories and from different stages of areca garden. Accordingly, in the small farmers' category, 01 respondent in first stage, 01-second stage & 01 in third stages in each village (total 09) have been selected. In the medium farmers' category, 01 respondent in first stage, 01-second stage & 01 in third stages have been selected in each village (total 09). In the large farmers' category, 01 respondent in first stage, 01-second stage & 01 in third stages (Total 9) have been selected in each village from the following table 1, 2& 3.

Key words: Arecanut,Production, Productivity,Tambula,Area,Root Grub

III. Selection of Sample Areca Gardens

According CAMPO Reports the life span (economic bearing) of the areca palm as 40 years the present study has divided this period into three stages.

First Stage 1 to 7 years

Second Stage 8 to 30 years

Third Stage 31 to 40 years.

In the first stage, the areca palm will be in an infant stage & it starts bearing the yield from 6th year. The areca gardens between 8 to 30 years are considered as second stage. In this stage, the areca palms start yielding & the yield of areca palm will go on increasing year after year upto 30 years. In the last stage may be considered as period of decline stage upto 40 years. After that the plant need to be replaced. In all 12- first stage gardens, 12-second stage gardens & 12- third stage gardens were selected from each village.

Categorization of Sample Farmers

The respondents of the sample villages were divided into three categories as small, medium & large based on the size of their land holdings.

Small up to 2 Acre

Medium 2 Acre to 4.00 Acres.

Large above 4.00 Acres.

Table 1Area, Production &Yield of Arecanut in different Countries (Area: '000ha, Production Tonnes,Productivity:KG/HA)

	2001					2009(P)				
Country	Area		Production		Productivity Kg/Ha	Area		Production		Productivity Kg/Ha
	'000ha,	% to total	'000 tonnes	% to total		'000ha,	% to total	'000 tonnes	% to total	
India	315.20	52.84	373.10	52.71	1184	400.04	54.81	489	56.38	1222
Indonesia	102.02	17.10	45.59	6.44	447	125.00	17.13	52	6.11	416
China	51.03	8.55	165.08	23.32	3235	59.00	8.08	162	18.68	2745
Bangladesh	77.80	13.04	47.00	6.64	604	79.00	10.82	56	6.46	709
Mynamar	34.98	5.86	51.46	7.27	1471	36.00	4.93	57	6.57	1583
Thailand	14.00	2.35	23.00	3.25	1643	16.00	2.19	26	3.51	1625
Malaysia	1.50	0.25	2.50	0.35	740	0.80	0.11	1.3	0.15	1625

Maldives	0.05	0.01	0.04	0.01	-	0.04	0.01	0.33	0.04	8250
Nepal	-		-	-	-	2.00	0.27	3.6	0.42	2
Srilanka	-		-	-	-	12.00	1.64	20	2.31	1667
Keny	0.00		0.09	0.01	-	-	-	0.09	0.01	-
World	596.50		707.80	100.0	1187	729.88		867.32	100.0	1188

Source: Directorate of Arecanut and Spice Development,Calicut & Food & Agricultural Organisation,Rome

Table 2 Area, Production &Yield of Arecanut in different States of Indian Union (Area: '000ha, Production Tonnes,Productivity:KG/HA)

	2009-10				
State	Area		Production		Productivity Kg/Ha
	'000ha,	% to total	'000 tonnes	% to total	
Andrapradesh	0.25	0.06	0.19	0.04	754
Assam	69.97	17.49	62.7	12.69	896
Goa	1.85	0.46	2.78	0.56	1503
Karnataka	184.52	21.12	240	48.58	1300
Kerala	97.17	24.29	112.14	22.70	1154
Maharastra	2.2	0.55	3.58	0.72	1626
Meghalaya	12.36	3.09	17.1	3.46	1384
Mizoram	6.58	1.64	8.21	1.7	1248
Nagaland	0.2	0.05	1.3	0.26	6500
Tamilnadu	5.03	1.26	10.39	2.10	2067
Tripura	4.43	1.11	8.36	1.7	1886
West Bengal	11.39	2.85	21.16	4.3	1857
Andaman Nicobar	4.1	1.02	6	1.2	1463
Pondicherry	0.06	0.01	0.08	0.02	13.06
All India	400.12	100.0	493.98	100.0	1234

Source: Directorate of Economics & Statistics, New Delhi

Table 3 Area, Production &Yield of Arecanut in different Districts of Karnataka (Area: '000ha, Production Tonnes)

District	1999-00		2004-05		2005-06		2006-07		2007-08		2008-09		
	Area	Prodn	Area	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn
Bagalkote	4	6	4	2	3	0	0	0	0	0	0	0	0
Bengaluru (U)	81	113	81	233	326	274	383	247	346	326	456	315	441
Bengaluru (R)	500	699	514	1975	2763	2099	2936	2257	3157	1377	1926	1338	1608
Belgaum				8	11	9	12	9	12	7	9	7	9
Bellary	12	17	19	32	46	58	83	62	89	62	89	62	89

Chamarajanagar	174	124	329	309	219	311	221	311	221	317	225	317	225
Chikamagalur	13506	15470	14186	16616	19032	18192	20838	19046	21816	19453	22222	19751	22623
Chitradurga	8001	7707	9827	14498	13965	12688	12222	14820	14276	15318	14755	15465	14897
Dakshina Kannada	23602	42105	25447	27209	48540	27338	48770	27481	49026	27532	49117	27575	49141
Davanegere	13860	13351	14476	22015	21206	23241	22387	22779	21942	24229	23339	26931	25942
Dharwad	10	14	17	11	15	15	21	18	25	17	24	9	13
Gadag				3	4	3	4	3	4	3	4	3	4
Hassan	1825	1783	1922	3483	3403	3680	3596	3819	3732	3880	3791	3928	3838
Haveri	239	334	360	717	1002	715	999	794	1109	922	1288	1043	1457
Kodagu	1171	1638	1198	1386	1939	1423	1991	2298	3215	2851	3988	2994	3598
Kolar	111	155	86	54	76	54	76	54	76	0	0	0	0
Mandya	681	952	700	879	1229	833	1164	868	1213	620	867	653	913
Mysore	503	357	400	676	480	556	395	1026	728	911	647	1109	787
Raichur	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramnagaram										868	1214	2051	2869
Sivamogga	21105	31759	23927	29150	43865	31167	46900	32938	49565	35492	53408	37631	56627
Tumukur	8209	10069	10428	16197	19867	19044	23360	19584	24022	19937	24455	22058	27057
Udupi	3834	6840	4012	5019	8954	5127	9146	5174	9230	5294	9444	5474	6579
Uttarakannada	9998	13590	11160	12287	16701	14324	19470	14813	20135	14988	20373	15801	18991
Total	107426	147083	119093	152759	203646	161151	214974	168401	223939	174404	231701	184515	237808

Source: Directorate of Economics & Statistics, Bengaluru.

Table 4 Selection of Sample Farmers in Sagar Taluk

	First stage			Second stage			Third stage			Total
Sagar(T)	Small	Mediu m	Large	Small	Medium	Large	Small	Medium	Large	
Avinahalli	01	01	01	01	01	01	01	01	01	09
E.J.Mane	01	01	01	01	01	01	01	01	01	09
Total	02	02	02	02	02	02	02	02	02	18

Source: Field Study data

Sagara Taluk , Sri Devappa, Totagars President, Avinahalli, Spoiled Arecanut Garden by Root Grab

(Root Grub)

Table 5 Selection of Sample Farmers in Thirthahalli Taluk

	First stage			Second stage			Third stage			Total
Thirthalli (T)	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	
Kotegadde	01	01	01	01	01	01	01	01	01	09
Hosathota	01	01	01	01	01	01	01	01	01	09
Total	02	02	02	02	02	02	02	02	02	18

Source: Field Study data

Arecanut Garden of Sri Nagarjuna and Sons , at Guddekoppa, Thirthahalli Taluk in Good Condition, Field study with Dr. B.T. Ramappa

Thirthahalli Taluk, Araga Hobli, Kotegadde Nagaraj & Sons
Spoiled Arecanut Garden, (Due to Root Grab Disease)

(Root Grub)

Table 6 Selection of Sample Farmers in Shivamogga Taluk

	First stage			Second stage			Third stage			Total
Shivamogga (T)	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	
Gajanur	01	01	01	01	01	01	01	01	01	09
Hossalli	01	01	01	01	01	01	01	01	01	09
Total	02	02	02	02	02	02	02	02	02	18

Source: Field Study data

IV.

Socio-economic background of sample farmers

A. The above sample villages are having the basic infractural facilities such as veterinary facility, primary health centre, and agro service center, primary co-operative credit society, regional rural bank (Gramina bank), Transport facilities, sub roads, main road, market, school, post & telegraph office, Agricultural Produce Marketing Committee, Nearby Co-operative Marketing Societies (MAMCOS,CAMPCO&Others) , Storage etc, all these facilities are available in these villages within a range of 10 km distance or connecting to the available facilities.

B. Housing Condition of Sample Farmers

Table 7 Housing Condition of Sample Farmers

Farmer category	Sagar Taluk		Thirthahalli Taluk		Shivamogga Taluk	
	Kutcha	Pucca	Kutcha	Pucca	Kutcha	Pucca
Small	85	15	88	12	83	17
Medium	84	16	86	14	80	20
Large	11	89	15	85	05	95

Source;Survey Data

It is clear from the table 4 that very large number of small & medium farmers in the study area own kutcha housesa.It indicates their poor economic condition.In case of large category , majority of them own

pucca houses and very few will be owning kutcha houses that large farmers because of large size of land holdings earn better income & possess better housing facilities.
The inter-taluka comparison of housing conditions of farmers reveal that in Shivamogga taluk all categories of farmers possess better housing conditions as compared to other two talukas. From this it may be concluded that majority of small & medium farmers possess kutcha houses in the study area whereas the large farmers mainly possess pucca houses. The respective conditions are certainly better in Shivamogga taluk as compared to the other talukas.

D.Family size

Table 8 Average Family Size of Sample Farmers

Farmer category	*Sagar Taluk*	*Thirthahalli Taluk*	*Shivamogga Taluk*
Small	*05*	*06*	*07*
Medium	04	05	06
Large	05	05	06

Source;Survey Data

It is clear from the table 5 that the average size of family is large in case of small farmers category as compared to medium and large farmers. very large number of small & medium farmers in the study.

E. Educational Status of Sample Farmers in the Study Area.

Table 9 Educational Status of Sample Farmers in the Study Area (percentage)

Farmer category	*Sagar Taluk (%)*		*Thirthahalli Taluk (%)*		*Shivamogga Taluk (%)*	
	Upto SSLC	*College*	*Upto SSLC*	*College*	*Upto SSLC*	*College*
Small	*70*	*30*	*65*	*35*	*60*	*40*
Medium	50	50	30	70	25	75
Large	10	90	05	95	03	97

Source;Survey Data

It is evident from the Table-6 that educational status of sample farmers seems to be better in the study area. It concluded the sample farmers in the study area are educated.

Educational Status of Sample Farmers in the Study Area.

In the study area, food & clothing account for nearly half of the total expenditure. The proportion of expenditure on education & social items is almost same in all categories of farmers in the study area, whereas the percentage of expenditure on medicine is more in the case of small and medium farmers, & less in case of large farmers.

Unlike field crops & other plantation crops, arecanut has certain unique features in terms of its geographical limitations, spacing & the type of intercrops grown with it. The average size of arecanut garden was 3.00 acres, 2.00 acres and 4.00 acres respectively in Sagar, Thirthahalli and Shivamogga. The size of the arecanut gardens was small in Thirthahalli followed by Sagar compared to other region.The number of areca palms per acre were more in case of Sagar(600),450 in Thirthahalli and 550 shivamogga taluks. The recommended spacing for the variety in the region is 9'*9*.

Majority of the farmers in all the regions had taken up intercrop (banana& pepper) in their areca gardens particularly during the early stage of arecanut establishment. This has also helped the farmers in protecting the young arecanut seedlings from sunstroke. After the establishment period, farmers have taken up the intercrop (banana) in their gardens in order to utilize the space left between the areca palms. The yields of the intercrops are utilize for home consumption & the surplus is marketed.

Table 10 Arecanut cultivated area in Sagar Taluk Area Hectares

Hobli wise	1999 -00	2000 -01	2001 -02	2002 -03	2003 -04	2004-05	2005 -06	2006 -07	2007 -08	2008 -09	2009 -10
Kasaba	615	649	649	746	746	804	823	808	808	808	915
Anandapur	594	655	719	638	638	586	630	662	662	662	661
Avinahalli	484	359	357	357	357	569	558	560	560	560	602
Karur	409	419	512	512	512	526	522	539	539	539	650
Barangi	294	310	318	260	260	276	334	341	341	341	336
Thalagoppa	560	599	606	668	668	677	645	727	727	727	743
Total	2956	2991	3161	3181	3181	3438	3512	3637	3637	3637	3907

Source: Field study data-taluk office, Sagar

VI.

Arecanut Prices in Shimoga & Sagar market in Karnataka

I.1 Shimoga in the month of March 07, 2013

Bette-- Rs. 13689- Rs. 14059 Edi-- Rs. 12606- Rs. 13136
Gorabalu --Rs.6509- Rs. 9829 Rasi Edi –Rs13100- Rs. 13446
Saraku --Rs.16590- Rs. 20808(Kannada Prabha daily news)

I.2. Sagar in the month of March 07, 2013

Beligotu(White)-- Rs. 7200- Rs. 7669 Challi-- Rs. 9601- Rs. 10655
Red Gotu --Rs.8710- Rs. 9870 Rasi Edi –Rs13189- Rs. 13389
Sippegotu --Rs.4569
(Source: Kannada Prabha daily newspaper in Karnataka P.2).

VII. Varities

There are few local varities known by the name of the place where they are grown and are furnished below:-

Table 11 Verities of Arecanut in Different Area

Name of the local verities	Place where grown
South Kanara	Dakshina kannada district & Kasaragod district of Kerala
Thirthahalli	Malnad area of Karnataka
Sreevardhan	Coastal Maharashtra
Mettupalayam	Coimbatore district
Mahitnagar	West Bengal
Kahikuchi	Assam

:N.Kumar JBM Md. ABDUL KHADER et all, Introduction to Spices,Plantation Crops,Medicinal & Aromatic Plants, OXFORD & IBH PUBLISHING CO.PVT.LTD. New Delhi Pp. 15.02-15.03

Central Plantation Crops Research Institute, Regional Station, Vittal has released three improved cultivars, they are:

Table 12 Three Improved Cultivars

Name of the Cultivar	Special attributes
Mangala	An introduction from China (VTL-3) early bearing, higher fruit set, higher yield (10 kg ripe nuts/palm/year),semitall variety.
Subangala	Aselection from Indonesia 9VTL-11), yield 17.5 kg of nuts/palm at the age of 10 years.
Sreemangala	A selection from Singapore (VTL-17), yield 16.5 kg /palm at the 10^{th} year.

Source:N.Kumar JBM Md. ABDUL KHADER et all, Introduction to Spices,Plantation Crops,Medicinal & Aromatic Plants, OXFORD & IBH PUBLISHING CO.PVT.LTD. New Delhi Pp. 15.02-15.03

VIII. MAJOR FINDINGS OF THE STUDY:

PROBLEMS OF ARECA GROWERS:

- **Yield Loss Of Arecanut In Sagar & Thirthahalli Taluks**

o The per acre yield loss of arcanut that of small,medium & large farms due to different factors . The estimated yield loss of arecanut of small farms was found to be 100 kgs. While the loss from Koleroga was 75 percent, 7percent of yield loss was due to YLD & the 6 percent yield loss was due to the menace of Root grub. Other factors made loss of about 12 percent. All together, due to different kinds of pests & diseases small farms in those two taluks observed 14.98 percent economic loss.In the total yield, loss of medium farms (120 kgs) 72 percent. Of yield, loss was in the form of Koleroga, 6 percent from YLD & 7 percent from Root grub. Other factors made 15 percent yield loss to thee total. At the aggregate level, the percent economic loss due to all kinds of estimated to 13.90. In the total yield, loss of medium farms (120 kgs) 72 percent. Of yield, loss was in the form of Koleroga, 6 percent from YLD & 7 percent from Root grub. Other factors made 15 percent yield loss to the total. At the aggregate level, the percent economic loss due to all kinds of estimated to 13.90.

- Kolerago**:**The area palm flourishes in tracts of rainfall especially in Sagar & Thirthahalli but not so well in shivamogga taluk.
- The first visible symptom is the appearance of water soaked lesions on the surface of affected nuts. The infected nuts lose their luster. The lesions gradually spread covering the entire nuts, which rot & shed from

the calyx. As the disease advances, the fruit stalks & rachis of inflorescence are also affected. Affected nuts are lighter in weight, & possess large vacuoles & dark brown radial strands internally. Infections occurring later in the season results in drying up of nut without shedding.Afart from the quantitative loss by shedding of nuts at its various stages of development, the infected nuts are also unsuitable for chewing due to deterioration in quality. The area palm flourishes in tracts of rainfall especially in Sagar & Thirthahalli but not so well in Shivamogga Taluk. However, it grows but the yield is less. Rain plays an important role in the initiation & spread of the disease, since low temperature and high humidity are favorable for the growth of the fungus (Coleman, 1910) .The period of the Koleroga June to September every year in the study area of Malnad (Source :primary data).

- The Yellow Leaf Disease (YLD) remains today as the most serious malady affecting the crop. The malady does not kill the palm outright but is only debilitating in nature. The disease may affect one or two leaflets in any part of the crown or the entire foliage. Tips of the chlorotic leaves eventually dry up. Tips and absorbing regions of young roots turn dark & gradually rot. The affected fruits fall off in large numbers and at last, stage, the crown topples off leaving a base trunk.
- Anabe Roga The initial visible symptom is the yellowing of outer whorl of leaves, which gradually extends to the inner whorls. The leaves exhibit wilting symptoms and droop down covering the stem & nuts shed. At last stage, the crown topples off leaving a base trunk.
- Bud rot affected spindle appear yellow, later changing to brown & finally the whole spindle rots.
- Mites-Adults & young ones suck the lower surfaces of the leaves, causing them to turn yellow & bronzed in appearance.
- B.K.Chandrashekar KPCC Leader has urged to the Karnataka government, Yellow Leaf Disease (YLD) has been haunting areca growers in Karnataka for decades, agriculturists and researches have failed to find a solution to the problem. He said, "According to the deputy commissioner of shimoga and chickmagalur districts, as many as 410 areca growers have committed suicide in the two districts in the past decade. Frustrated with the failure of the crop, many growers have migrated because of their inability to repay debts," (Source: HINDU daily newspaper Karnataka P.4 September 29, 2011).
- Arecanut prices break a decade-old record. Mr. Bawa, who was a former member of Mangalore APMC, said the banning of sale of tobacco products in plastic sachets had adversely affected the sale of gutka, comprising both red arecanut & tobacco .Hence; many who had the habit of consuming gutka had shifted to chewing white arecanut slices(Source: HINDU daily newspaper in Karnataka P.9 August 9, 2011).
- Lack of proper training to the farmers on aspects like grading, storage etc.
- Transportation problem.
- Non-availability of adequate organized local markets, which makes the way for the entry of intermediaries.
- Labour problems
- Uncertainty of demand for arecanut.
- Instability indices of arrivals & prices of arecanut
- In Malnad, animals spoiled the intercrops(banana &pepper).
- The trends in prices are found to be negative for all grades of arecanut for the present during 2011-12 & were higher in Saraku grade followed by Bette grade.
- The trend in prices for all the grades has been ups& downs. It may be due to the collapse of arecanut prices in the recent years.

IX.Policy Implications

- Support price needs to be revised to cover the cost of production, it protecting the farmers from loss in the arecanut production.
- Arrangements should be made to provide the new technologies to the farmers.
- Suitable steps should be initiated by the government to tackle the reasons for fall in prices of arecanut.
- Alternate use of arecanut should be looked for & promoted.
- The import duty on arecanut was increased from 35% to 100% to safeguard the interest of the farmers by the government of India. The arecanut is brought as a dry fruit. Arecanut should not be covered under dry fruit category. Appropriate action may be instituted so that the unscrupulous import should not take place.
- President of Sringeri taluk Rita sangha demanded to the government implemented Dr. Gorakh Singh recommendation & others demand to the leaf disease of the palm (Source: Chalagara daily local newspaper in Thirthahalli taluk P.2 January 04, 2012).
- Alternative uses of Arecanut
- The by products from nuts can be used for tanning leather.

- From Husk-From fibre, for making thick board, plastics, wrapping papers can be prepared from areca pulp & bamboo.

  From leaf sheath- For making paperboards for packing purpose, Ply boards, for teachers for long distance transport, it cut downs the use of softwood timber for this purpose, used as a cheap substitute for leather in house chapples & as a cheap summer wear chappels etc.
- From Arecanut Stem & Leaf- Nails made of areca stem widely used in furniture industry, from leaves are good source of organic manure.

  In view of the numerous uses for which arecanut has been put to, it is to be assumed that it will have an impact in future also, possibly through developing suitable alternative technology for its utilization.

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