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Review Article

A STUDY ON SOCIO DEMOGRAPHIC ATTRIBUTES AND KNOWLEDGE LEVEL OF BETELVINE GROWERS ON IMPROVED PRACTICES OF BETEL VINE CULTIVATION IN NADIA DISTRICT OF WEST BENGAL

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ABSTRACT

Betel vine is a very important crop of West Bengal. It is one of the most important cash crops and its cultivation has already brought a perceptible and conspicuous change in the livelihood security of farming population of this district. Cultivation of betel vine as one of the most important horticultural crops and is gradually increasing its popularity in the Nadia district. A study was undertaken in Nadia district of West Bengal to assess socio- economical profile of the betelvine growers and the knowledge level of the farmers about betel vine cultivation covering four blocks Karimpur 1, Karimpur 2, Krishnagang and Chakdaha taking eight villages selected purposively where the crop is grown as a major crop . A total 200 betel vine growers were selected randomly from eight villages .It is observed that almost cent percent growers were using their own traditional planting material since long and growing their crops with their indigenous knowledge, skill and their past experiences. Most of the farmers have medium level of knowledge with clear conception about vine cultivation, but they do not follow scientific recommendations on use of fertilizer and pesticide application. They have little knowledge regarding the improved method of cultivation. Selected salient features of the Betel vine growers such as Age, level of education, occupation, family size, family type, farm size, land under Betel vine area, farming experience, material possession, economic status, media exposure, Social participation and constraints of betel vine growers greatly influenced the farmers to adopt the scientific method of cultivation. Among the selected variables Age, farming experience, scientific orientation, risk management ability and credibility of contact were significantly and positively correlated with knowledge level of the farmers. It is concluded that age had not significant influence in motivating farmers opting for betel vine cultivation and medium educated farmers irrespective to level of education were more involved in betel vine cultivation where as on the study area it is pertinent that low income group farmers preferred betel vine cultivation on the study area.

INTRODUCTION

Betel vine is an important commercial crop in India, Bangladesh, Srilanka and is grown as an cash crop across the states of Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu, Bihar, Madhya Pradesh, Maharashtra, Odisha, Uttar Pradesh and West Bengal. The Indian betel leaves are in great demand in several countries like where demand far exceeds the local supply. As far as the national employment generation is concerned, about 20 million people derive their livelihoods directly or indirectly from production, processing, handling, transportation and marketing of betel leaves in India. On an average about 66% of such production is contributed by the state of West Bengal where it is cultivated on about 20,000 ha encompassing about 4-5 lakh employing about the same number (4-5 lakh) of agricultural families (Guha, 2006). Betel vine cultivation has brought a paradigm shift in the farm economy West Bengal and offers perennial employment and

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income to small and marginal farming community because of its capital and labour intensive characteristic (Chandra & Sagar ,2004). It has been seen that a large number of techniques and practices do not reach the farmer's field and those carried to the farmers get considerably distorted or often adopted partially by which farmers don't get the potential yield and net return from the enterprise . Therefore, it is very essential that the farmers must be aware about recommended practices for getting higher production. Keeping this in mind a study was carried out to assess the knowledge level of betel vine growers on improved recommended practices of betel vine cultivation with the following specific objectives.

- To study the socio -economic profile of the betel vine growers
- To assess the knowledge level of farmers on different aspects of production technologies
- To find out the relationship of socio- economic variables with the knowledge level of farmers

MATERIAL AND METHODS

The present study was undertaken to identify socio -economic profile of Betel vine growers and to assess knowledge level of farmers on different aspects of production technologies in the Nadia district of west Bengal. Multi-stage stratified sampling procedure was employed for selection of blocks, villages and betel vine growers. This study has been conducted in the Nadia district of West Bengal covering four blocks namely Karimpur 1, Karimpur 2, Krishnaganj, and *Chakdah*. The blocks were selected purposively because these blocks are leading in terms of area and production of betel vine in the district .A sample size 200 betetlvine growers were randomly selected from eight villages ie 25 farmers from each selected village, covering four blocks as the respondents. The primary data were collected from the sample farmers on pre-structured schedules through personal interview method. . Age, education, Occupation, Annual income ,family type, family size, land holding Farming experience, Land under betel vine, Training exposure, type of house, Material possession, Scientific orientation , Economic Motivation, Social participation, Risk management were selected as the variables for the study. Statistical tools such as percentage , mean, SE , SD and "t" - Test according to Snedecor and Cochran (1994) , co-efficient of variation, correlation co-efficient, multiple regression and step wise regression were employed to reveal the results.

RESULT AND DISCUSSION

Acquiring knowledge and adoption of technologies are the multiple functions of personal, social, psychological and economic attributes of the people. The different socio economical attributes are analysed and presented in the tables. The results obtained from the present investigation as well as relevant discussion have been summarised under the following heads:

Age

The age of the Betel vine growers varied from 25 to 70 years. Considering the recorded age betel vine farmers were classified in to three categories namely Young, Middle and Old age. The distribution of the Betel vine farmers on accordance of their age are presented in table below

Table 1 Distribution of the Betel vine growers according to their age

Categories	Frequency	Percentage
Young age	06	3.0
Middle age	50	25.0
Old age	144	72.0

It is revealed from the above table that majority of the respondents (72%) are in age group of Old aged. (25%) Percent of respondents were in age group of middle aged category. Only (3%) Percent of respondents were in Young age group. It is inferred that the old aged and middle aged constitute almost (97%) of total respondents. Old age farmers were much involved in comparison to young age farmers on betel vine cultivation.

Level of Education

The level of educational scores of the Betel vine growers ranged from 0 to 5 with a mean and standard deviation of 3.560 and 0.199 respectively. Based on the educational score, the respondents were classified in to three categories such as Low, Medium and high. The distribution of the respondents according to their level of education is presented in table -2

Table 2 Distribution of the respondents based on their level of Education

Categories	Frequency	Percentage	Mean	S D
Low (<3.361)	02	1.0		
Medium(3.361 to 3.759)	192	96.0	3.560	0.199
High(>3.759)	06	3.0		

It is observed from above table that ,majority of the respondents (96%) were in the medium category. Followed by high level (3%) .An educated Betel vine growers is likely to be more responsive to the modern Knowledge, ideas, technology and information to their production. To adjust with the same, they should be progressive minded to involve with modern technology facilities in their cultivation. It is concluded that medium educated farmers irrespective to level of education were more involved in betel vine cultivation.

Occupation

The Occupation of the respondents varied with different categories. According to occupation the respondents were classified in to three categories namely Cultivation, Business and service and Business both. The distribution of the respondents according to their occupation is presented in Table-3

Table 3 distribution of the respondents on their occupation

Categories	Frequency	Percentage
Cultivation	189	94.5
Service	03	1.5
Business	08	4.0

It is evident from above table that, majority of the respondents (94.5%) were in the category of cultivation group followed by business (4%). Major occupation of the respondents was found to be agriculture in the study area.

Annual Income

Table 4 Distribution of respondents according to annual income

Categories	Frequency	Percentage	Mean	S D
Low(2.613)	180	90.0		
Medium(92.61 to 3.267)	15	7.5	2.940	0.327
High(>3.267)	05	2.5		

From the above table it has been found that majority of the respondents (90%) were in low income category followed by medium annual income category (5%). Similar findings was recorded by Manjula (1995).

Family type

The family type of the respondents were categorised as single and joint family respectively.

Table 5 Distribution of the Betel vine growers according to their family type

Categories	Frequency	Percentage
Single family	84	42.0
Joint family	116	58.0

It was evident from the above table that majority of the respondents (58%) were in joint family category and (42%) of the respondents were in single family category. It has inferred that betel vine growers mainly prefer joint family irrespective to single family. Because its need intensive care and too much labour. Single family also cultivate Betel vine due to unavailability to other option. Hence, it is concluded that the respondents having joint family system prefer more for betel vine cultivation.

Family Size

Family size of the respondents ranged from 3 to 10 family members. According to family size the respondents were classified in to three categories i.e.Small, Medium, and Large family. The distribution of the respondents to their family size was presented in tabl-.6

Table 6 Distribution of the Betel vine growers according to their family size

Categories	Frequency	Percentage
Small(up to 3)members	07	3.5
Medium(4-6)members	174	87
High(> 7 members)	19	9.5

From the above table -6 it has been found that majority of the respondents (87%) were in medium family size category followed by (9.5%) of big family size. Joint family prefers betel vine cultivation due to availability of surplus family labour. The findings therefore concluded that the respondents having more family members in the family preferred betel vine cultivation. Similar findings were recorded by Birmani and Prasad (2003).

Land holding size

The size of the land holding has an important role in deciding the economic status in the village, The land holding size of the respondents ranged from 0.94 ha to 2.01 ha with Mean and Standard deviation of 1.48 and 0.53 respectively. Based on their farm size, the respondents were classified in to three categories

Table 7 Distribution of betel leaf farmers according to their farm size

Categories	Frequency	Percentage	Mean	S D
Small(<0.941)	107	53.5		
Medium(0.941 to2.019)	89	44.5	1.480	0.539
High(>2.019)	4	2.0		

From the above table it has been found that, majority of the respondents (53.5%) were in small land holding category followed by medium land holding (45.5%). The finding of the study revealed that most of the Betel vine growers of Nadia district were small and medium land holding size farmer. The similar findings have been reported by Sarkar (2007).

Farming Experience

Based on their Farming experience, the respondents were classified in to three categories. The distribution of the Betel vine growers according to their Farming Experience is presented in table-8.

Table 8 Distribution of betel leaf farmers according to their farming experience

Categories	Frequency	Percentage	Mean	S D
Low(<20.4420)	3	1.5		
Medium(20.40 to 21.238)	163	81.5	20.840	0.398
High(>21.23	33	16.5		

It was observed from the above table that majority of the respondents(81.5%) were in medium experience category followed by high experience category (16.5%) It is concluded that new generation is not interested in betel vine cultivation. Medium and large experience group do not take risk to change or shift other option due to loss.

Land under Betel vine Cultivation

The land under Betel vine of the respondents ranged from 0.5 bigha to 2.0 bigha with Mean and Standard deviation of 13.730 and 0.771 respectively. Based on their land under Betel vine, the respondents were classified in to three categories. These categories were Small land holder, medium farm holder and high land holder. The distribution of the Betel vine growers according to their land under Betel vine is presented in table below.

Table 9 Distribution of the respondents according to Land under Betel vine cultivation

Categories	Frequency	Percentage	Mean	S D
Small(<12.959)	26	13.0		
Medium(12.959 to14.50)	46	23.0	13.730	0.771
High(>14.50)	128	64.0		

From the above table-9 it has been found that majority of the respondents (64%)were in high category followed by medium category(23%). Hence, it is revealed that Betel vine grower's maximum land was being used for Vine cultivation.

Training Exposure

Based on their training exposure, the respondents were classified in to two categories. The distribution of the Betel vine growers according to their Training exposure is presented in table -10.

Table 10 Distribution of the respondents according to training exposure

Categories	Frequency	Percentage
Yes	117	58.5
No	83	41.5

From the above table 10 it has been found that, majority of the respondents (58.5%) have training experience category and (41.5%) of the respondents were in No experience category. The findings therefore concluded that the most of the respondents are having training exposure in betel vine cultivation.

Type of house

Based on their house type respondents were classified in to three categories. They were kachha house, pucca house and mixed house.

Table 11 Distribution of the respondents according to their type of house

Categories	Frequency	Percentage
Kachha	4	2.0
Pucca	110	55.0
Mixed	86	43.0

From the above table 6.2.11 it has been found that majority of the respondents (55%) had pucca house, followed by mixed house category (43%). It is observed that the growers were economically poor, but the above poverty level economically sound farmers had better type of house than the poor farmers

Material Possession for social Status

Based on their Material possession, the respondents were classified in to three categories. These categories were low material possession, medium material possession and high material possession. The distribution of the Betel vine growers according to their material possession is presented in table.12.

Table 12 Distribution of the respondents according to Material possession

Categories	Frequency	Percentage	Mean	S D
Low(<12.398)	8	4.0		
Medium(12.39 to13.132)	175	87.5	12.765	0.367
High(>13.132)	17	8.5		

From the above table it has been found that majority of the respondents 87.5% were in medium category in material possession followed by 8.5% high category. Hence, it is concluded that the respondents of Medium category people enjoyed the normal life that possesses material like cycle, mobile, television etc.

Scientific Orientation

Based on their scientific orientation, the respondents were classified in two categories .The distribution of the Betel vine growers according to their scientific orientation farm size is presented in table -13.

Table 13 Distribution of the respondents having scientific orientation

Categories	Frequency	Percentage
Yes	196	98.0
No	4	2.0

From the above table 6.2.13 it has been concluded that majority of the respondents 98% were in scientific orientation .It is inferred that public extension system has taken initiative to promote transfer of knowledge from research to field and farmers also interested to adopt the technological recommendation.

Economic Motivation

Based on their economic motivation farm size, the respondents were classified in to two categories.

Table 14 Distribution of the respondents according to Economic motivation

Categories	Frequency	Percentage
Yes	74	37.0
No	126	63.0

From the above table 14 it has been revealed that majority of the respondents 63 % were in economic motivated category followed by 36.5% of the respondents were in no economic motivated category. It showed that betel vine growers adopt the new technology and they were ready to change their mind to accept new one for better future.

Social Participation

Individual with better social contact usually more exposed to latest developments. Farmers involved in various social organizations for gather information and they also used update knowledge in their field for better production and change practices by adopting new innovations. Information collected from the respondents have been analyzed and presented in table bellow

Table 15 Extent of social participation

Name of the organization	Mean	Std. Error	CV%	Ranking
GPS/ZP	1.080	0.022	28.399	IV
Club	1.080	0.020	26.839	III
Co-operative society	1.900	0.030	25.305	II
Educational organization	1.030	0.016	21.567	I

It is observed from the above table that co- efficient of variance of the respondents was higher in case of GP/PS/ZP organization (28.39%), followed by Club 26.838% and co operative society 25.305%.

Risk Management

Risk management is a process by which we can measure farmer's mentality to adopt new innovation. Generally progressive farmers and economically sound farmers take risk to adopt new variety, new technology for more profit in their field. But economically poor farmers do not take any risk in their field due risk of failure. The results of which were presented in table -16 below.

Table 16 Distribution of respondents according to the risk management

Risk orientation statement	Mean	Std Error	CV %	Ranking
A farmer should grow more leaves to avoid greater risk.	1.400	0.038	38.562	**IV**
Economically sound farmer should take of chance to more profit	2.280	0.039	24.177	**I**
A farmer take risk when he knows his chance of success is high	2.740	0.054	27.922	**II**
Farmer not to try new variety due to risk of failure.	2.970	0.079	37.574	**III**

From the risk management table it has been found that, majority of the farmers 38.56% had showed greater risk taking behaviour to grow more leaves to avoid greater risk, followed by (37.57%).of the respondents not interested to accept new varieties due to chance of failure .

Knowledge level of the betel Vine Growers about Different Improved Practices

Knowledge about technical know- how and production technology of beetle vine cultivation is the pre- requisite for higher production and higher net profit. The farmers should adopt the newly developed scientific recommendations to enhance their productivity from beetle vine cultivation by mitigating the risk factors. The farmers should have sufficient knowledge about different suitable Soil and Land, Land preparation, Soil Sterilization, Variety, Planting season, Construction of Baroj, cultural practices, nutrient management, Irrigation schedule ,pest and disease management ,harvesting method, bleaching or curing ,Grading & Packing, Standard quality specifications and also post harvest management specifically related to betel vine cultivation .

The farmers can enhance their productivity through adoption of recommended production technology. Thus, an attempt was made to know the knowledge level of the beetle vine growers about the improved recommended technological practices about beetle vine cultivation and the data are presented in the Table-17 as given below.

Table 17 List of various information in relation to improved practices of Betel Vine cultivation
(n=200)

Sl. No.	Particulars	Mean	Std Error	CV %	Rank
1	Variety cultivated in Nadia.	2.910	0.033	15.858	**XVI**
2	Season of betel vine cultivation.	2.955	0.020	9.772	**III**
3	Vines used for cuttings/seedlings.	2.200	0.038	24.113	**XXIV**
4	Nodeas are kept in the stem cuttings/seedling.	2.905	0.025	12.249	**IX**
5	System followed in betel vine cultivation.	2.960	0.020	9.483	**II**
6	Materials used in Boroj system cultivation.	2.960	0.020	9.483	**II**
7	Height of the boroj.	2.955	0.021	9.797	**IV**
8	Suitable height of the Baroj.	2.915	0.024	11.832	**VII**
9	Type of soil is good for betel vine cultivation.	2.940	0.022	10.587	**VI**
1o	PH which gives the best yield of betel vine.	2.275	0.040	24.903	**XXVII**
11	Soil treatment. Followed in Betel vine.	2.715	0.035	18.231	**XIX**
12	Row to row spacing of betel vine plants.	2.854	0.029	14.254	**XIV**
13	Plant to plant distance followed in betel vine	2.865	0.028	13.855	**XIII**
14	No. of stem cuttings required /katha.	2.610	0.037	20.248	**XXI**
15	Farm Yard Manure used farm.	2.795	0.032	16.160	**XVII**
16	Oil cake used for manuring.	2.940	0.022	10.580	**VI**
17	Vermi-compost used.	2.810	0.031	15.710	**XV**
18	Chemical fertilizers used for betel vine cultivation.	2.255	0.039	24.752	**XXVI**
19	When used chemical fertilizers	2.240	0.039	13.855	**XIII**
20	Micro nutrients used for betel vine.	2.865	0.028	22.795	**XXIII**
21	Times of irrigation.	2.230	0.036	10.324	**V**
22	Method followed for weeding.	2.945	0.021	10.587	**VI**
23	Foldincg of betel plants for proper growth.	2.940	0.002	16.997	**XVIII**
24	Life span of Baroj.	2.765	0.033	1.193	**I**
25	Organic pesticides are used in the vines.	2.910	0.025	12.028	**VIII**
26	Most common diseases of betel vines.	2.945	0.021	10.324	**V**
27	Dose of pesticides.	2.415	0.038	22.074	**XXII**
28	Chemical pesticides used.	2.241	0.039	24.648	**XXV**
29	Leaf harvested for the first time.	2.875	0.027	13.477	**XII**
30	Leaves harvested from each plant.	2.900	0.026	12.464	**X**
31	Leaves harvested.	2.690	0.036	19.145	**XX**
32	Best time for harvesting of leaves.	2.895	0.027	13.140	**XI**

It is revealed from the above table that, among the Knowledge Life span of Baroj ranked first (1.193) followed by which system followed in Betel cultivation (9.483), material for baroj construction(9.483), season plant betel (9.772) height of baroj (9.797), the times irrigation of vine (10.324) most common diseases that affected betel vine (10.324), soil that good for betel vine (10.587) types and quantity per kantha (10.587) method for weeding (10.587) suitable height of the baroj (11.832) organic pesticide formulation (12.028) nodes used in the stem cutting (12.249) betel leaves harvested from each plant (12.464) betel leaves harvested after spraying of pesticides (13.140) betel leaves harvested for the first time(13.477) plant distance in row (13.855), synthetic chemical fertilizers used(13.855) row to row spacing plant of betel vine (14.254), Vermi compost used for betel vine (15.710) variety cultivation land (15.858) farm yard manure used (16.160) folding the betel plants (16.997), soil treatment make for betel vine(18.231),the number of leaves harvested (19.145), cutting required per kantha of land (20.248), the organic pesticide used(22.074), the quantity of micronutrients used (22.795), selection of stem cuttings (24.113) synthetic chemical pesticides used (24.648).Ranked last synthetic fertilizer used in the field (24.752) followed by) the synthetic fertilizer used in Betel vine (24.903).

From the above table it has been concluded that most of the respondents gave the correct answer among the knowledge of betel vine, on life span of baroj, and system followed in betel vine cultivation. Most of the farmers related to vine cultivation have clear conception about vine cultivation, but they do not follow recommendation of fertilizer and pesticide application.

Table 18 Distribution of the farmers according to their knowledge level (n=200)

Knowledge level	Frequency	Percentage
Low (Mean –SD)	54	27.0
Medium (Mean ±SD)	97	48.5
High (Mean+SD)	49	24.5

It is evident from the above table that majority (48.5%) of the respondents had medium level of knowledge regarding recommended package and practices of betel vine cultivation whereas, 27.0% and 24.5 % of them had low and high level of knowledge respectively. The results of the study are in concurrence with the findings Desale et *al.* (2011). It might be due to their long farming experience, high degree of scientific orientation with enough training exposure in betel vine cultivation and frequent contact with extension agencies.

Table 19 Correlation of coefficient between independent variables and Knowledge level

Variables	Correlation Coefficient (r)	Significant
Age (X_1)	0.102	NS
Education(X_2)	-0.009	NS
Occupation($_{X3}$)	0.117	NS
Annual income(X_4)	-0.009	NS
Family type(X_5)	-0.107	NS
Family size (X_6)	-0.328*	S
Land holding(X_7)	-0.142*	S
Farming experience(X_8)	0.175*	S

Land under betel vine(X_9)	-0.127*	S
Training exposure(X_{10})	-0.066	NS
Type of house(X_{11})	-0.150*	S
Material possession(X_{12})	-0.025	NS
Scientific orientation(X_{13})	-0.021	NS
Economic Motivation(X_{14})	0.064	NS
Social participation(X_{15})	-0.101	NS
Risk management(X_{16})	-0.059	NS

(Significant at 0.05 level)

The data depicted in table -18 show that the variables like family size , land holding ,farming experience, Land under betel vine, type of house, were significantly correlated with knowledge level of the farmers .

Table 20 Regression analysis of socio-economic attributes influencing knowledge

Independent Variable	Un standardized Co-efficient		Standardized Co-efficient	't' Value	Significance
	B value	Std. Error	Beta		
(Constant)	99.287	5.426		18.299	.000
Farm size	-8.337	1.810	-0.306	-4.606	**0.000**
Farming experience	4.219	1.651	0.173	2.556	**0.011**
Land under Betel vine cultivation	-1.866	0.848	-0.148	-2.200	**0 .029**

Adj. R^2=0.64 R^2=0.684 SE=5.426

Stepwise regression analysis was carried out to find out the functional relationship, the significant variables were dropped from the analysis in stepwise manner, starting from least significant variables. It is revealed that out of sixteen selected independent variables, family type, family size, farming experience, and land under betel vine cultivation having significant 't' Value value. The R^2 value being 0.684 ,it is to conclude that the conglomeration of causal factors together has attributed 68.4 percent, so it can be concluded that socioeconomic variables like farm size , farming experience, land under betel vine cultivation had considerable influence in increasing the knowledge level of the respondents.

CONCLUSION

The findings concluded that age had not significant influence in motivating farmers opting for betel vine cultivation as old aged farmers were much involved in comparison to younger age farmers on betel vine cultivation. The findings revealed that medium educated farmers irrespective to level of education were more involved in betel vine cultivation and it was indicated that low income group farmers preferred betel vine cultivation on the study area. It was concluded that majority of betel vine growers were ready to adopt the new technologies.

It was observed that in- dependent variables like family size, land holding, farming experience, land under betel vine cultivation and type of house were significantly correlated with knowledge level of the farmers and variables like farm size, farming experience, l and under Betel vine cultivation had contributed about 68.4 % of total variation in knowledge level of the farmers. The study showed that public extension system has taken initiative to promote transfer of knowledge from research to field and farmers also interested to adopt it. But it is revealed that betel vine growers are ready to change their mind to accept new technology in their field for better result and due to in- adequate knowledge and scientific information regarding betel vine production in the sampled areas almost cent percent growers were using their own traditional planting material since long and growing their crops with their indigenous knowledge, skill and their past experiences. It is concluded that information delivery system should be strengthened to increase the effectiveness of existing agricultural research extension and farmers' linkage and more priorities should be given on advocacy, capacity development and integration of information resources.

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