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Enhancing betel vine cultivation and understanding farmer adoption constraints, and socio-economic influences

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Abstract

The study was conducted in Davanagere district of Karnataka state during the year 2019-20 to study the knowledge and adoption of Betel vine cultivation practices followed by the farmers. A total of 120 respondents were randomly selected based on betel vine cultivation area. Farmers are interviewed using a pre-tested interview schedule. Socio-economic variables like education, extension contact, mass media participation and information seeking behavior are positively significant at one percent level of significance, whereas one variable i.e., innovativeness was positively significant at five percent level of significance for knowledge level of the farmers. Land holding, annual income, innovativeness and risk orientation had positively significant relation at one percent level of significance, whereas extension contact was positively significant at five percent with adoption level of the farmers. Beetle vine growers faced many constraints like non-availability of the skilled labour, high cost of inputs, pest and disease problem (60.00%), lack of technical guidance (56.66%), lack of capital (52.50%), traditional belief (50.00%), lack of knowledge (39.16%), inadequate market facilities (35.83%), lack of plant material for raising of wind breaks (29.16%) and non-availability of packing material (16.67%) are the constraints facing by the respondents in relation to adoption of recommended cultivation practices.

Keywords: Knowledge, adoption, constraints, betel vine

Introduction

India, an agricultural nation, produces a variety of crops including cereals, legumes, cash crops, and medicinal plants. Among the narcotic crops, betel leaf (*Piper betel* L.), a member of the Piperaceae family, holds significant importance due to its medicinal properties. Known as "Paan" in India, the betel vine is a creeper climber widely cultivated across tropical and subtropical regions of India and other countries like Burma, Pakistan, Malaysia, Indonesia, and the Philippines. Betel vine is a significant plantation crop in India, cultivated on approximately 55,000 hectares of land. This crop generates around 20 million employment opportunities, both directly and indirectly, through activities such as production, processing, handling, transportation, and marketing of betel vine leaves (Biswas, 2019) [2-10]. In Karnataka, betel vine is cultivated on a substantial area of about 70,000 hectares, with an average production of 130,115 lakh leaves. The crop is grown in regions including Haveri, Davanagere, Tumkur, Bangalore Rural, Mysore, Dharwad, Shimoga, Chikmagalur, North Canara, Belgaum, and Vijayapura. Among these, Haveri district leads in betel vine production, followed by Davanagere, Tumkur, and Ramanagara over the past three years.

However, in recent years, farmers growing betel vine have faced numerous challenges, including disease, pests, lower yields, and various technical issues. Many farmers are unaware of the recommended cultivation practices for betel vine, likely due to constraints in adopting these methods. By gaining knowledge and adopting recommended practices, farmers can achieve higher yields and increased income. Therefore, it is essential to educate farmers on these practices and assist them in acquiring necessary inputs at lower costs, enabling them to implement new technologies in their fields.

Methodology

The study was conducted in Davanagere district. Two taluks are selected based on highest area on betel vine cultivation. From each taluk four villages were selected based on the highest area under betel vine cultivation. From each village 15 betel vine farmers were randomly selected. Thus, from eight villages, a total of 120 respondents were selected.

Results and Discussion

A. Contribution of Independent variables to their Knowledge level

Table 1 indicates that education and extension contact are significant at the one percent level of significance. This is likely because most respondents are from the middle and young age groups, and therefore have a good level of education, contributing to their knowledge levels. Additionally, strong extension contact with NGOs, RSKs, AHRS Kathalagere, and Techno promoters has provided respondents with valuable information on betel vine cultivation practices, enhancing their knowledge.

Mass media participation and information-seeking behavior are also significant at the one percent level in relation to knowledge levels. This significance likely stems from respondents actively engaging with various sources such as TV, radio, farm magazines, newspapers, the internet, and both formal and informal sources like family members, friends, progressive farmers, contact farmers, RSKs, and agricultural universities. These sources have provided valuable information on betel vine cultivation practices, leading to a positive and significant relationship.

Innovativeness is significant at the five percent level, likely because respondents have a medium level of extension contact, education, and mass media participation. These factors may have encouraged innovation, contributing to the positive and significant relationship observed.

The coefficient of determination (R^2) obtained was 0.712, indicating that 71.20% of the variation in knowledge levels is explained by the selected variables: Age, Education, Land Holding, Farming Experience, Annual Income, Extension Contact, Mass Media Participation, Information Seeking Behavior, Innovativeness, and Risk Orientation. The remaining variation is likely due to other independent variables not included in the study. To significantly improve respondents' knowledge of betel vine cultivation practices, positive changes in these key variables can be influential.

Table 1: Relationship between independent variables and knowledge of respondents (n=120)

Sl. No	Variables	Beta	Std. Error	t statistic
1	Age	-0.019	0.046	-0.415^{NS}
2	Education	0.146	0.048	3.073**
3	Landholding	0.068	0.069	0.994^{NS}
4	Farming experience	0.022	0.044	0.500^{NS}
5	Annual income	0.008	0.151	0.052^{NS}
6	Extension contact	0.634	0.105	6.022**
7	Mass media participation	0.175	0.049	3.551**
8	Information seeking behaviour	0.210	0.063	3.319**
9	Innovativeness	0.136	0.063	2.168*
10	Risk orientation	0.023	0.085	0.275^{NS}
R^2=0.712				

*Significantat5%levelof significant,
**Significanceat 1%level ofsignificance,
^{NS}Non-Significant

B. Contribution of Independent variables to their Adoption level

The regression analysis results presented in Table 2 reveal the contribution of independent variables to the adoption level of betel vine cultivation practices among respondents. The variables Knowledge, Land, Annual Income, Innovativeness, and Risk Orientation were found to be significantly correlated with adoption levels at the one percent level of significance, while Extension Contact was significant at the five percent level. However, Age, Education, Farming Experience, Mass Media Participation, and Information Seeking Behavior were not significantly correlated with adoption levels. The coefficient of determination (R^2) obtained was 0.756.

Land holding and Annual Income were positively significant in relation to the adoption level of the respondents. As land holdings and annual income increase, respondents are more likely to have the resources and capacity to experiment with and fully adopt new technologies in their fields, which likely explains this positive significance.

Innovativeness and Risk Orientation were also positively significant at the one percent level. The respondents' strong extension contact, education, and mass media participation may have fostered innovativeness, while increased land holding and income likely encouraged a greater willingness to take risks and try new betel vine cultivation practices. These factors contribute to the positive significance of innovativeness and risk orientation in relation to adoption levels.

Extension contact was positively significant at the five percent level. The respondents' strong connections with NGOs, RSKs, AHRS Kathalagere, and Techno promoters likely provided them with reliable information and necessary inputs, which encouraged the adoption of new cultivation practices. This explains the positive significance of extension contact with adoption levels.

Table 2: Relationship between independent variables and adoption level of respondents (n=120)

Sl. No	Variables	Beta	Std. Error	tstatistic
1	Age	-0.039	0.049	-0.789^{NS}
2	Education	0.005	0.053	0.101^{NS}
3	Landholding	0.288	0.061	4.756**
4	Farming experience	0.051	0.045	1.133^{NS}
5	Annual income	0.433	0.131	3.311**
6	Extension contact	0.297	0.101	2.950*
7	Massmedia Participation	0.021	0.045	0.465^{NS}
8	Information seeking behaviour	0.014	0.057	0.252^{NS}
9	Innovativeness	0.269	0.065	4.123**
10	Risk orientation	0.391	0.097	4.041**
R^2=0.756				

*Significantat5%levelof significant,
**Significanceat 1%level ofsignificance,
^{NS}Non-Significant

C. Constraints in relation to cultivation practices of Betel vine

Table 3 highlights the key constraints faced by respondents in the cultivation of betel vine. The most significant issue, reported by 77.50% of respondents, is that non-availability of skilled labor. This challenge likely stems from a lack of training in betel vine cultivation practices, underscoring the need to provide skill development programs for laborers.

Additionally, 75.00% of respondents identified the high cost of inputs as a major constraint. Betel vine cultivation requires generous inputs such as manures, fertilizers, pesticides, fungicides, planting materials, and packing materials, all of which are expensive. To address this, there

is a need to offer inputs at subsidized prices, potentially through the formation of cooperatives in villages.

Lastly, 60.00% of respondents cited pest and disease issues as a significant constraint. This may be due to a lack of knowledge regarding pest and disease management in betel vine cultivation. To mitigate this, farmers should be educated on plant protection measures through training sessions or by establishing information centers in villages to provide guidance on effective plant protection strategies.

According to the findings, 56.66% of respondents reported facing a lack of technical guidance, likely due to limited extension activities in their area. To address this, there is a need for the Agricultural Department and Agricultural Universities to enhance extension efforts by demonstrating new techniques in villages and having extension personnel visit farmers' fields. This would provide farmers with the necessary technical guidance for betel vine cultivation practices.

Furthermore, 52.50% of respondents identified a lack of capital as a constraint. This is likely because many respondents fall into the medium annual income category, which may not be sufficient to cover the costs of necessary inputs. To support these farmers, it is essential to provide loans at lower interest rates and in a timely manner. Additionally, efforts should be made by the relevant authorities to offer inputs at lower and subsidized prices, enabling farmers to purchase the resources they need for cultivation.

Half of the respondents (50.00%) reported that traditional beliefs are a constraint, as many continue to follow ancestral practices rather than adopting the recommended package of practices. This could be due to a stronger belief in traditional methods. To address this, it is essential to demonstrate the profitability of following modern practices and encourage visits to progressive farmers' fields.39.16% of respondents face a lack of knowledge, likely because many have only a medium level of education, extension contact, mass media participation, and information-seeking behavior. To improve their knowledge, training programs should be conducted in villages.

Inadequate market facilities were reported by 35.83% of respondents as a constraint. The absence of a standardized market, the presence of middlemen, and price fluctuations are significant issues for betel vine farmers. To resolve these problems, the administration should establish proper market facilities, eliminate middlemen, set stable prices for the crop, and provide regular market information to farmers.

Furthermore, 29.16% and 16.67% of respondents reported a lack of plant material for raising windbreaks and non-availability of packing materials, respectively. These constraints are likely due to the majority of respondents belonging to medium and low-income groups, making it difficult for them to afford the necessary materials. Providing credit facilities to these farmers would help them acquire the needed resources.

Table 3: Constraints faced by the respondents (n=120)

Sl. No.	Constraints	Frequency	Percentage	Rank
1.	Non availability of skilled labour	93	77.50	I
2.	High cost of inputs	90	75.00	II
3.	Pest and disease problem	72	60.00	III
4.	Lack of technical guidance	68	56.66	IV
5.	Lack of capital	63	52.50	V
6.	Traditional belief	60	50.00	VI
7.	Lack of knowledge	47	39.16	VII
8.	Inadequate market facilities	43	35.83	VIII
9.	Lack of plant material for raising of windbreaks	35	29.16	IX
10.	Non availability of packing material	20	16.67	X

Conclusion

There is a scope to increase the level of knowledge and adoption by conducting demonstration, organizing Exhibitions, Field days and bringing changes in the attitude of the farmers by considering the socio-economic factors The primary challenges faced by farmers include a lack of skilled labor and the high cost of inputs. To address the issue of labor shortages, it is essential to organize training programs that equip laborers with the necessary skills for betel vine cultivation. The state Department of Horticulture should take the initiative in implementing these training sessions to enhance the workforce's effectiveness. Another significant constraint is the high cost of inputs, which makes it difficult for farmers to adopt essential practices. To alleviate this burden, credit facilities should be made more accessible to farmers, allowing them to finance their operations. Additionally, providing inputs at lower and subsidized rates would enable farmers to purchase the necessary materials without financial strain. These measures would help farmers adopt more advanced cultivation practices, ultimately improving productivity and profitability.

References

1. AtchutaRaju K. Training needs of betel vine farmers in Guntur district of Andhra Pradesh. Doctoral dissertation. Professor Jayashankar Telangana State Agricultural University; c1998.
2. Biswas M, Saha A, Dash SR, Rautaray BK. A study on socio-demographic attributes and knowledge level of betel vine growers on improved practices of betel vine cultivation in Nadia district of West Bengal. Young. 2019;6:3-10.
3. Imran MK. Problems faced by the farmers in betel leaf cultivation. Doctoral dissertation. Sher-E-Bangla Agricultural University; c2016.
4. Khatun MK. Innovativeness of betel leaf growers to use improved practices. Doctoral dissertation. Sher-E-Bangla Agricultural University; c2016.
5. Pawar SK, Natikar KV, Supriya BB. Knowledge level

and technological gap in pepper cultivation. Interaction. 2015;33(1):62-70.
6. Satya P, Nutan K, Dipak D. Extent of adoption of vine-betel practices by ATMA beneficiaries in Madhubani district of Bihar. Environment and Ecology. 2010;28(4A):2584-2586.
7. Sivashankary V, Thivahary G. Entrepreneurial behaviour of betel farmers in Manmunai South and Eruvil Pattu divisional secretariat Division of Batticaloa district; c2014.
8. Sneha Elizabeth V. Economics of organic and conventional pepper production in Idukki district. Doctoral dissertation. Department of Agricultural Economics, College of Agriculture, Vellayani; c2012.
9. Venkateswarlu M. A study on technological gap in adoption of improved technology of betel vine production in Guntur district of Andhra Pradesh. Doctoral dissertation. Professor Jayashankar Telangana State Agricultural University, Hyderabad; c1992.
10. Biswas M, Anindita SS, Ranjan DB, Kumar R. A study on socio-demographic attributes and knowledge level of betel vine growers on improved practices of betel vine cultivation in Nadia district of West Bengal. Young. 2019;6:3-10.
11. Das S, Pandey AK, Kumar P, Das AK, Kumari S. Success story of Magahi Paan grower for income enhancement in rural area. International Journal of Current Microbiology and Applied Sciences. 2018;7:2760.
12. Guha P. Betel leaf: the neglected green gold of India. Journal of Human Ecology. 2006;16(2):87-93.
13. Kadam RP, Umate SM, Pawar GS, Lad AS. Constraints faced in adoption of recommended package practices of green gram. Agriculture Update. 2014;9(4):528-530.