

Adoption of Pineapple Production Technology in West Garo Hills District of Meghalaya

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ABSTRACT

Meghalaya has a long and well-established tradition of horticulture activity – reflected in the extensive cultivation of pineapple, orange, ginger, turmeric and a range of indigenous fruits and vegetables. Among these crops, pineapple (*Ananas comosus*) is grown extensively in different parts of Meghalaya. Although Meghalaya has large area under pineapple cultivation but its productivity is comparatively low, resulting mainly due to lack of adoption of proper pineapple production technologies. Thus the study was conducted on 100 pineapple growers of twenty villages in West Garo Hills district of Meghalaya with an attempt to assess the relationship between socio-economic and psychological characteristics of the pineapple growers with the adoption of pineapple production technology. The findings of the study showed 42 per cent respondents with low level of adoption, 35 per cent respondents with medium level of adoption and only 23 per cent respondents with high level of adoption of pineapple production technology. Correlation study showed that adoption of pineapple production technology was mostly influenced by psychological variables of the farmers with few socio-economic variables showing its association with the dependent variable. Regression analysis reported that the variables namely; area under pineapple cultivation, annual income and market orientation had substantial effect on adoption of pineapple production technology. Concerned organizations, institutions, administrators and policy makers should carefully consider these factors for effective promotion of pineapple production technology among the farming community.

Keywords: Adoption; Pineapple Production Technology; Socio-psychological Variables;

Meghalaya is blessed with tropical, semi-tropical and temperate climates. The variation of altitude, soil and climatic conditions provide ample scope for the cultivation of a wide variety of horticultural crops. Among these crops, pineapple (*Ananas comosus*) is grown extensively in different parts of the state and West Garo Hills District ranked second in pineapple production and area in Meghalaya next to Ribhoi District. Majority of the farmers in the state belong to tribal community and their social and economical conditions depend mostly on agriculture. The Garo Tribe is the predominant tribal community in West Garo Hills besides other tribes like; Hajong, Koch, Rabha etc. Meghalaya has the area of 9.7 ('000) ha under pineapple cultivation with the production of 86('000)

metric tonnes during the year 2010-2011 (*Indian Horticulture Database, 2011*). The state contributes 6.1% share of the total pineapple produced in India. West Garo Hills occupies an area of around 2825 ha with 23497 metric tonnes of production during the year 2008-09 (*District at a Glance 2009-2010*). Although Meghalaya has large area under pineapple cultivation but its productivity is comparatively low. *Lahiri and Das (2010)* found that the low agriculture productivity of Garo Hills is mainly due to the lack of proper technical know how in the field of modern agriculture. This also restricts the adoption of modern practices of agriculture. *Chanu et al. (2014)* conducted the extension research on pineapple in Manipur and reported that the socioeconomic attributes show the positive and

significant relation with adoption level of pineapple growers. New paradigms and challenges are needed for the pineapple growers of Meghalaya to tackle the problems relating to production of pineapple, marketing of produce and adoption of recommended agricultural technologies. It is evident that various agricultural technologies had been invented, but still the tribal farmers are not acquainted with the technology due to the wide gap between the research output and the adoption output. The rural tribal mass are not so much educated and endowed with the recent agricultural technological information. Government and non-government organizations such as State Department of Agriculture, KVK etc have taken up various programs regarding pineapple cultivation in various districts of Meghalaya. Training, on-farm trial and demonstration programs have been organized frequently for popularizing pineapple cultivation in different parts of West Garo Hills District. Adoption of pineapple cultivation technology can play a significant role in fostering and sustaining the tempo of rural development in the study area. Considering the backdrop, the study was conducted in West Garo Hills District with the following objectives;

- i. To find out the extent of adoption of pineapple production technology by the pineapple growers in West Garo Hills district of Meghalaya.
- ii. To assess the relationship between socio-economic and psychological characteristics of the tribal farmers with the adoption of pineapple production technology.

METHODOLOGY

Exploratory study was conducted in West Garo Hills District of Meghalaya, India which is one of the major pineapple cultivated district of the state. Purposive sampling method was followed in selecting the district as pineapple is grown extensively in this district. Out of the total eight blocks in West Garo Hills District, pineapple is extensively cultivated in the four blocks namely; Rongram, Betasing, Dadenggre and Selsella. Hence, Rongram and Dadenggre were selected from these four blocks through simple random sampling method. Then ten villages each from these two blocks were selected through simple random sampling method and all together twenty villages were selected for the study. Now, 100 farmers were selected as sample respondents from the list of pineapple growers in the

selected twenty villages through simple random sampling method. Then the respondents were interviewed through personal interview method with the help of semi-structured interview schedule during February 2013 to June 2013. Interview Schedule was finally developed after conducting the pilot study.

Data were analysed with different descriptive statistical tools. The Adoption of Pineapple Production Technology was measured with the help of Adoption Index developed by *Rahim (1961)*. *Rahim (1961)* conceived four stages in adoption process for measuring adoption and assigned one point for each. The score obtained in different practices were added up and expressed as per centage of the possible total scores. The formula used for the calculation of adoption index is given below:

$$\text{Adoption index} = \frac{A_i}{N} \times 100$$

Where,

A_i = Number of practices adopted by ith farmers.

N = Total number of practices recommended.

For the present study the scale was modified according to the study situation and 30 individual statements were taken into account as the recommended package of practices. The adoption score of each respondent was calculated by summing the scores obtained by him/ her on all the items. The maximum and minimum score that can be obtained by the respondent was 26 and 53.34. Based on the mean and standard deviation, the scores of the respondents were classified as low, medium and high.

Category	Score
Low < (mean-1/2 standard deviation)	26-33.47
Medium = (mean ± 1/2standard deviation)	33.48-40.09
High > (mean + 1/2standard deviation)	40.10-53.34

RESULTS AND DISCUSSION

Extent of adoption of pineapple production technology: The average level of adoption among the pineapple growers was found to be 36.78 per cent with the standard deviation of 6.62. From Table 1 it was evident that out of 100 pineapple growers, 42 per cent respondents had low level of adoption, 35 per cent respondents had medium level of adoption and only 23 per cent respondents showed high level of adoption of pineapple production technology. Consequently it indicates that most of the pineapple growers in West

Garo Hills follow traditional practices and had low level of adopting scientific method of pineapple cultivation.

Table 1. Distribution of respondents according to their extent of adoption

Category	No.	%
Low (mean-1/2 standard deviation)	42	42
Medium(mean ± 1/2standard deviation)	35	35
High (mean + 1/2standard deviation)	23	23

Table 2. Correlation Co-efficient of Adoption of Pineapple Production Technology (Y) with Independent Variables

Variables	(r)
Age(X ₁)	0.109 ^{NS}
Education(X ₂)	0.097 ^{NS}
Size of Holding(X ₃)	0.385**
Family Type(X ₄)	-0.025 ^{NS}
Family Size(X ₅)	0.025 ^{NS}
Area in Pineapple Cultivation(X ₆)	0.499**
Cropping Intensity(X ₇)	-0.048 ^{NS}
Annual Income(X ₈)	0.561**
Material Possession(X ₉)	0.109 ^{NS}
Social Participation(X ₁₀)	0.014 ^{NS}
<i>Psychological variables</i>	
Planning Orientation(X ₁₁)	0.216*
Production Orientation(X ₁₂)	0.377**
Market Orientation(X ₁₃)	0.487**
Risk Orientation(X ₁₄)	0.367**
Innovation Proneness(X ₁₅)	0.387**
Economic Motivation(X ₁₆)	0.447**
Farmer's Attitude(X ₁₇)	0.296**

N.S = Non significant, *Significant at 5% level and ** Significant at 1% level

It was evident from Table 2 that socio economic variables namely; size of holding (X₃), area under pineapple cultivation (X₆) and annual income (X₈) had positively significant correlation with the adoption of pineapple production technology. It implies that with the increase in- size of holding, area under pineapple cultivation and annual income there was increase in the level of adoption of pineapple production technology. The remaining socio-economic variables were found to have no significant bearing on the adoption of pineapple production technology. Psychological variables namely; production orientation (X₁₂), market orientation (X₁₃), risk orientation (X₁₄), innovation proneness (X₁₅), economic motivation (X₁₆) and farmers' attitude (X₁₇) showed positively significant correlation (at 1 per cent

level of significance) with the adoption of pineapple production technology and the variable planning orientation (X₁₁) showed positive correlation with the level of adoption at 5 per cent level of significance. Thus, it was found that all the psychological variables bear a positive and significant correlation with the dependent variable *i.e.* adoption of pineapple production technology.

Regression Analysis: A multiple regression analysis was conducted to quantify the extent of relationship between dependent variables and other causal variables, which is presented by B-Value, β- Value, coefficient of multiple regression determination and corresponding F-value.

Table-3 Multiple Regression Analysis of Adoption of Pineapple Production Technology (Y) Other causal Factors

Variables	B-value	SE	β-value	t-test
Intercept	28.040	10.498	-	2.671
Age (X ₁)	-0.027	0.071	-0.034	-0.380
Education (X ₂)	0.373	0.380	0.095	0.983
Size of Holding (X ₃)	-3.275	1.794	-0.352	-1.825
Family type (X ₄)	-0.796	1.697	-0.042	-0.469
Family size (X ₅)	0.281	1.243	0.021	0.226
Area under pineapple cultivation(X ₆)	0.971	0.471	0.386	2.062*
Cropping Intensity (X ₇)	.000	0.079	.000	0.003
Annual Income (X ₈)	2.703	1.129	0.440	2.394*
Material Possession (X ₉)	-0.250	0.219	-0.104	-1.144
Social Participation (X ₁₀)	-1.439	1.906	-0.071	-0.755
Planning Orientation(X ₁₁)	0.345	0.300	0.108	1.151
Production Orientation (X ₁₂)	-0.427	0.293	-0.168	-1.457
Market Orientation (X ₁₃)	0.666	0.266	0.282	2.506*
Risk Orientation (X ₁₄)	0.111	0.339	0.034	0.326
Innovation Proneness (X ₁₅)	0.810	0.659	0.114	1.228
Economic motivation (X ₁₆)	0.701	0.737	0.106	0.951
Farmer's attitude (X ₁₇)	0.004	0.125	0.003	0.032

R² = 0.50, F value= 4.843** and Adjusted R² = 0.398

* Significant at 5% level and

**Significant at both 1% and 5% level

Multiple regression analysis suggests that the variables namely; area under pineapple cultivation (X₆), annual income (X₈) and market orientation (X₁₃) had a substantial effect on adoption of pineapple production technology. Thus, unit change in area under pineapple cultivation, annual income and market orientation contribute a change in level of adoption of pineapple

production technology by 0.386, 0.44 and 0.282 respectively as shown in Table-3. The R² value being 0.50 indicates that all the causal variables put together, the amount of variation in the consequent variable is to the tune of 50 per cent and its F value is 4.843, which is significant at both 1% and 5% level. Hence on the basis of this regression analysis the following model can be suggested;

$$Y = 28.04 + 0.971X_6 + 2.703X_8 + 0.666X_{13}$$

Where X₆, X₈ and X₁₃ are independent variables and Y is dependent variable.

CONCLUSION

Findings of the study showed that there is a good scope of enhancing pineapple cultivation in the district. Pineapple cultivation can play a significant role in the social and economic life of the rural people of West Garo Hills. It provides better opportunity for generative income and employment at the farm level. On the basis of result of the study, it was evident that the adoption of pineapple production technology was mostly influenced

by socio-psychological variables of the farmers with few socio-economic variables showing significant correlation with the adoption of pineapple production technology. The introduction of suitable agricultural development technology coupled with the development in the infrastructure facilities of the area can help the farmers in adopting the pineapple cultivation technology more efficiently. Efforts should be made to aware the pineapple growers about the training facilities available in the district and should be properly motivated by the extension functionaries. Concerned organizations, institutions, administrators and policy makers should consider the factors such as area under pineapple cultivation, annual income and market orientation- for effective promotion of pineapple production technology among the farming community. Various government organizations and institutions should come forward with more skill oriented training and awareness programmes exclusively for pineapple growers in the area which would encourage and boost up their confidence in adopting the scientific method of pineapple cultivation.

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