

## IDENTIFICATION OF TECHNOLOGICAL GAP IN PINEAPPLE CULTIVATION IN SOME SELECTED AREAS OF WEST BENGAL

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**Abstract:** The pineapple (*Ananas sativus syn. Ananas Comosus Merr*) is one of the most important commercial tropical fruits of the world. Among the 6 agro-climatic zones of West Bengal, Darjeeling District comes under Terai and Hill zone. Some Block of Darjeeling district has a huge potential for pineapple cultivation owing to the fertile soil and conducive agro-climatic conditions (average Rain fall and average Temperature). To increase the production per unit area different agency including State and Central department of Agriculture, has disseminated different technology in the region where the study has been made.

The present study was conducted during March' 2012 to June'2012 at Phansidewa Block of Darjeeling District in West Bengal where the pineapple cultivation is prevalent. The objective of the study was to identify technological gap in pineapple cultivation, and to measure relationship of different socio-economic, socio-psychological and extension-communication variables with technological gap of respondents. The District, Block, Gram Panchayats, Villages and respondents were selected purposively. Data have been collected through well structured schedule followed by interview method and result have been analyzed by descriptive statistics, co-efficient of correlation and multiple regression analysis by taking technological gap as dependent variable and other fifteen variables as independent variables. After analyzing the data, it was found the highest technological gaps were in treatment of planting material, desuckering, fertilizer application and micro nutrient application and no gap was found in case of regulation of flowering, protection against sun burn and ripening acceleration. All independent variables viz. , caste, education, category of farmer, family type, family size, size of holding, material possession, social participation, market orientation, production orientation, risk orientation, mass media exposure, personal cosmopolite, and personal localite were negatively and significantly related with technological gap, except age. From Regression analysis, the  $R^2$  value indicates that all the casual variables put together could explain 83.66% variation in the consequent variable.

**Key Words:** Technological gap, Pineapple.

### Introduction

India has made a fairly good progress on the Horticulture Map of the world with a total annual production of the Horticulture Crops touching over 149 Million tonnes. Known

as the fruit and vegetable basket of the world, India ranks second in fruits and vegetables production in the world, after China. According to the National Horticulture Board, during 2009-2010, India produced 71 million metric tonnes of fruits and 134 million metric tonnes of vegetables. The area under cultivation for fruits is about 6 million hectares while that of vegetables is 8 hectares.

India has been bestowed with wide range of climate and physio-geographical conditions and as such is most suitable for growing various kinds of Horticultural crops like fruits, vegetables, flowers, nuts, spices and plantation crops.

With the focused attention given to horticulture, there has been spectacular change in terms of adoption of new technologies, production and availability of horticulture product.

The pineapple (*Ananas sativus syn. Ananas Comosus Merr*) is one of the most important commercial tropical fruits of the world. India ranks 6<sup>th</sup> in pineapple production in the World, 1,420,400 tonnes (data come from the U.N. Food and Agriculture Organization's FAOSTAT database and has been displayed with the permission of FAO).

In India cultivation of pineapple is being carried out since very early times in states like Assam, Kerala, Tamil Nadu, Karnataka, Goa, Pondicherry, Andhra Pradesh, Maharashtra, Tripura, West Bengal and other parts of North East India. According to FAO estimate the production of pineapple in Asia within the period between 1989 to 1998 ranged from 5886 ('000) Metric tonnes to 6214 ('000) Metric tonnes, with the contribution from India ranging from 812 ('000) Metric tonnes to 1100 ('000) Metric tonnes in the same corresponding period, as per the FAO report 1998.

Among 6 agro-climatic zones of West Bengal, Darjeeling comes under Terai and Hill zone. Some Blocks of Darjeeling District has a huge potential for pineapple cultivation owing to the fertile soil and conducive agro-climatic conditions (average Rain fall and average Temperature). The low input requirement and the remunerative returns have motivated the farmers to adopt more of their horticultural lands under pineapple cultivation. For the development of the socio-economic status of the people and proper utilization of the land which is appropriate for pineapple cultivation, different organization, especially Department of Agriculture Govt. of West Bengal and the Central Govt. jointly implemented various Agricultural and Horticultural programmes. Popularization of pineapple cultivation is one of them. The annual production of pineapple in the area is around 3.36 lakh ton, which translates to Rs. 135 crore.

Keeping in view the vast potential and importance of pineapple cultivation to the state's revenue in the broader sense and the impact of the practice on improving the social life of the farmer, this study was undertaken during March to June' 2012. Through the different efforts by the different organization in terms of technology generation and diffusion, the pineapple growers of Darjeeling district have adopted so many technologies and they are able to achieve a good production. But it has been observed that the production and productivity have not been reached to the expectation of both the researcher and the grower. As because we assume that there is a gap between technology recommendation by the researchers and technology adoption by the pineapple growers.

The commonly alleged causes for the technological gap are

- Farmer's lethargy / indifference
- Inadequate / ineffective extension system
- Inadequate input supply
- Inadequate credit support
- Inadequate market infrastructure

### **Objective of the Study**

- i. To identify the practice wise technological gap and to measure overall technological gap in pineapple cultivation and causes behind the technological gap.
- ii. To measure some socio-economic, socio-psychological and extension communication variables of the respondent farmers.
- iii. To find out the relationship between technological gap and some socioeconomic, socio-psychological and extension communication variables.

### **Material and Methods**

The study was conducted in twenty villages of Phansidewa Block of Darjeeling District, West Bengal, where the maximum number of farmers are cultivating pineapple commercially. Out of 7 gram panchayats in this block, 3 Gram Panchayats, namely Bidhannagar-I, Bidhannagar-II, Chathat-Bansgaon were purposively selected as per recommendation of Agricultural Officer of Phansidewa Block.

Purposive sampling was done for selection of District, Block, and Gram panchayats and villages. The Assistant Director of agriculture (A.D.A.) of the block and the K.P.S. of these Gram Panchayats were consulted for making an exhaustive list of respondent who are cultivating pineapple intensively and from the collected list of pineapple growers, 100 respondents were selected purposively from the 20 number of villages of 3 Gram Panchayats.

The respondents were interviewed through structured schedule followed by personal interview method.

After an intensive review work and consultation with different experts, the different variables were selected for this study. The technological gap was considered as dependent variable (Y) and 15 independent variables such as, age( $X_1$ ), caste( $X_2$ ), education( $X_3$ ), category of farmer( $X_4$ ), family type( $X_5$ ), family size( $X_6$ ), size of holding( $X_7$ ), material possession( $X_8$ ), social participation( $X_9$ ), market orientation( $X_{10}$ ), production orientation( $X_{11}$ ), risk orientation( $X_{12}$ ), mass media exposure( $X_{13}$ ), personal cosmopolite( $X_{14}$ ) and personal localite( $X_{15}$ ) were selected for the study.

Pearson's correlation coefficient and multiple regression analysis were calculated to find out the degree of association between predicted variable and predictor variables.

### Results and Discussion

From the analysis, it is revealed that the maximum farmers have moderate level technological gap and the socio-economic status of the respondents were also small to medium. The technological gap was high for practices like treatment of planting material, desuckering, fertilizer application and micro nutrient application.

### Correlation co-efficient

The term correlation is used to denote the degree of association between variables. In this, it is concerned with linear correlation, which is measured by correlation co-efficient.

**Table 1:** Correlation co-efficient of Technological gap with selected Independent variables

Independent Variables	Co-efficient correlation
Age ( $X_1$ )	-.196
Caste ( $X_2$ )	-.262 <sup>**</sup>
Education ( $X_3$ )	-.720 <sup>**</sup>
Category of farmer ( $X_4$ )	-.741 <sup>**</sup>
Family type ( $X_5$ )	-.603 <sup>**</sup>
Family size ( $X_6$ )	-.628 <sup>**</sup>
Size of land holding ( $X_7$ )	-.639 <sup>**</sup>
Material Possession ( $X_8$ )	-.775 <sup>**</sup>
Social Participation ( $X_9$ )	-.658 <sup>**</sup>
Market Orientation ( $X_{10}$ )	-.915 <sup>**</sup>

Production Orientation (X <sub>11</sub> )	-.736 <sup>**</sup>
Risk Orientation (X <sub>12</sub> )	-.676 <sup>**</sup>
Mass Media Exposure (X <sub>13</sub> )	-.780 <sup>**</sup>
Personal Cosmopolite (X <sub>14</sub> )	-.468 <sup>*</sup>
Personal Localite (X <sub>15</sub> )	-.788 <sup>**</sup>

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis showed that the variables like, caste, education, category of farmer, family type, family size, size of holding, material possession, social participation, production orientation, market orientation, risk orientation, mass media exposure, personal cosmopolite and personal localite have negative and significant relationship with technological gap. That’s indicating that there is a technological gap in the factors which have mentioned in the Table 1. This finding supports the findings of Kar *et al.* (2003), Khan and Chauhan (2005), Vinod-Prakash (2007), Patel and Padheria (2010), Patel *et al.* (2010).

The variables except age are the decisive factors for technological gap of pineapple cultivators.

**Regression analysis**

The regression analysis of technological gap of pineapple cultivars are presented by b-value (unstandardised partial regression co-efficient), standard errors of unstandardised partial regression co-efficient,  $\beta$ -value (standardised partial regression co-efficient), the co-efficient of multiple regression determination (R<sup>2</sup>).

**Table 2:** Value of regression analysis of predicted variable with predictor variables

Variables	Partial ‘b’ values	Standard error ‘b’	Standard partial ‘b’ values ( $\beta$ )	t values for ‘b’
Age (X <sub>1</sub> )	-0.070	0.069	-0.049	1.065
Caste(X <sub>2</sub> )	-0.508	0.391	-0.065	1.284
Education(X <sub>3</sub> )	-1.382	0.406	-0.145	2.824 <sup>**</sup>
Category of farmer(X <sub>4</sub> )	-3.177	1.239	0.148	3.084 <sup>**</sup>
Family type(X <sub>5</sub> )	1.167	1.074	0.064	1.218

Family size( $X_6$ )	-0.350	1.024	-0.024	0.370
Size of holding( $X_7$ )	-0.322	1.550	0.047	0.208
Material possession ( $X_8$ )	1.375	0.632	0.287	2.250*
Social participation( $X_9$ )	-0.927	0.510	-0.121	1.800
Market orientation( $X_{10}$ )	-2.145	0.631	-0.432	3.456**
Production orientation( $X_{11}$ )	-0.637	0.448	-0.141	1.519
Risk orientation( $X_{12}$ )	-0.024	0.108	-0.011	0.354
Mass media exposure( $X_{13}$ )	-0.173	0.507	0.016	0.356
Personal cosmopolite( $X_{14}$ )	-1.029	0.649	-0.145	1.548
Personal localite( $X_{15}$ )	-1.912	0.663	-0.212	2.800**

\* Significant at the 0.05 level of probability

$R^2=0.8366$

\*\* Significant at the 0.01 level of probability

The multiple regression analysis showed that variables viz. Market orientation, category of farmer, education, personal localite and material possession had substantial effect on technological gap of pineapple cultivators.

All the causal variables put together could explain 83.66% variation in the consequent variable.

## CONCLUSION

From the above study, it can be concluded that, if new technologies which are feasible, environmentally suitable, economically viable and socially acceptable can be introduced here, there is a fair chance of its success as the farmers are progressive and innovative minded. So, new and low cost technologies must be introduced here through intensive extension system with proper training programmes for farmers from time to time. The problems faced by the majority of farmers that is lack of knowledge about updated

technologies of pineapple cultivation. In this context we have to formulate and implement effective extension programme through which farmers will come to know about the latest package of practices of pineapple cultivations and they can adopt it in their own farm situations. We have to develop the proper market system so that the farmer can get remunerative price for their crops and they will be interested to increase their cropped area i.e. pineapple. Through the agglomeration of these, we can effectively transfer the technology that will be undoubtedly helpful for the betterment of the farmers and the productivity of pineapple in this region of West Bengal.

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